CENTRE FOR CHILDHOOD HEALTH

Framework for establishing the **Centre for Childhood Health**

Contents

Executive Summary

The Danish Ministry of Health and the Novo Nordisk Foundation have joined forces in a visionary partnership to promote health and well-being for children in Denmark. With the launch of the Centre for Childhood Health, the Ministry of Health and the Novo Nordisk Foundation will address a common desire to work proactively and jointly with central stakeholders within this focus area. The Centre will be financed by grants from the Novo Nordisk Foundation (DKK 100 million per year) and the Government of Denmark (DKK 10 million per year), amounting to DKK 1.1 billion for the 10-year period 2023–2032.

The challenge
The prevalence of overweight and obesity is a growing and a serious health problem with severe adverse effects on health, quality of life, and life expectancy. This leads to major consequences for the individual and for society. More than half of adults in Denmark (53%) live with overweight and 19% live with obesity. Efforts to prevent and manage overweight and obesity are fragmented and have proven insufficient. The increased prevalence of overweight and obesity among children is of particular concern. Childhood overweight is a strong predictor of lifelong overweight.

Furthermore, children with overweight are particularly vulnerable to developing psychosocial problems, low self-esteem, and adverse health effects. In addition, they often experience stigmatisation. The close association between overweight and mental health emphasises the need to focus on lack of well-being as a potential causative factor and a consequence of overweight.

Significant inequality exists in overweight, obesity, and poor well-being. Children of parents with a short education have a threefold greater risk of developing overweight or obesity compared with children of parents with more education. The high risk for children with obesity of becoming adults with obesity may create a vicious circle with high risk of cardiometabolic complications, cancer, mental disorders, poor quality of life, sick leave, poor labour market attachment, etc. Overweight and obesity are also closely related to weight stigma and internalised stigma.

Vision, mission and focus areas
The vision of the Centre is that all children should be able to thrive and develop a healthy weight that can be maintained throughout life. The Centre defines healthy weight as a weight associated with physical, mental, and social well-being, which ensures a good basis for a healthy childhood and adult life. The overall mission is to contribute significantly to reducing the prevalence of overweight and improving the well-being of children in Denmark.

Four areas of activities will be central in implementing the strategy. The four areas are closely related and they interact. They are based on a holistic approach in addressing healthy weight and well-being, including general strategies to promote healthy weight and well-being as well as targeted prevention and treatment of overweight (lifestyle intervention).

- *New knowledge*: Create the basis for effective policies, initiatives, and knowledge-based changes through interdisciplinary research and development.
- *Knowledge-based change and implementation*: Create changes through research-based testing of scalable models for health promotion, prevention, and treatment.
- *Competence development*: Create education and courses to secure dissemination of evidence-based knowledge and competencies for professionals and volunteers working with children and their families.
- *Knowledge sharing*: Collect and disseminate evidence-based knowledge within Denmark and internationally.

Children in Denmark, from before birth and up to 19 years of age, are the target group for the Centre. Children are not responsible for their own weight development, but if they develop overweight or obesity, they must live with the mental, social, and physical health consequences. The main target groups for the Centre's activities are those who co-create the structural framework in settings in which children and parents live their everyday lives. This includes parents, professionals and volunteers in healthcare, daycare, schools, municipalities, and the local communities.

Instruments
The Centre will specialise in knowledge and competencies to promote healthy weight and prevent obesity among children.

The Centre will support research that develops novel ways to prevent overweight and activities that effectively promote healthy weight and well-being. The primary focus of the Centre is developing health-promoting environments and prevention throughout the child's life cycle. The secondary focus of the Centre is to support the development of evidence-based, non-pharmacological treatment (lifestyle intervention) for children who have already developed overweight. Finally, the Centre will address inequality in health and overweight and work to obtain more knowledge on how to reduce and address weight stigma and potential health risks.

Childhood overweight is a complex condition, and solutions must involve a wide range of disciplines and actors. Activities will therefore be developed in close partnerships with central stakeholders, including municipalities, administrative regions, the central government, research institutions, nongovernmental organisations, and private actors. Activities to test and implement new strategies will be monitored by relevant research methods and will, when possible, be embedded in existing structures to ensure sustainable support.

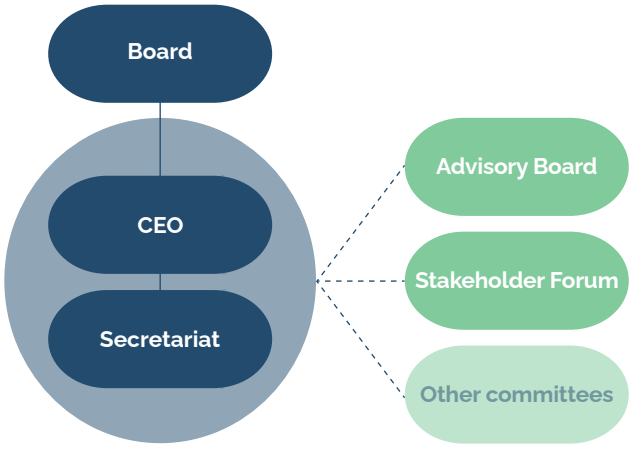
An overall premise is that all Centre activities will be developed in close collaboration with target groups and relevant stakeholders. The Centre will initiate a wide range of activities to ensure that the vision is realised. All activities will be defined in action plans. Guiding principles for the Centre's activities are:

- Focusing on initiating projects with a documented need for new knowledge or testing
- Supporting long-term research-based initiatives and research on effects when relevant
- Working evidence based but also with new, innovative activities
- Ensuring economic sustainability and aiming for integrating activities into existing structures
- Addressing inequity in health
- Coordinating activities in Denmark; and
- Preventing weight stigma in all activities

Organisation

Based on a broad political agreement in Denmark's Folketing (Parliament), the Centre will be established on 1 January 2023 as an independent association, with the Ministry of Health and the Novo Nordisk Foundation as founding partners. A Board of Directors consisting of seven to eight members will be nominated by the Minister for Health, the Ministry of Health, the Danish Health Authority, the Ministry of Food, Agriculture and Fisheries, Local Government Denmark, Danish Regions, and the Novo Nordisk Foundation (nominating two members). The Minister of Health will appoint the Chair.

The Board of Directors will oversee that the Centre is operating in alignment with the grant agreement and within the allocated budget. The Board of Directors will be responsible for the overall strategic direction of the Centre, for approving the action plans, and for the budget. The founding partners will employ the first CEO of the Centre. The Board of Directors will employ future CEOs. The CEO will be responsible for the operation of the Centre and for realising the 10-year vision and mission within the Centre's articles of association and grant agreement. The Secretariat is expected to employ about 25 people, covering research, implementation, competence development, communication, and administration. The CEO and the Secretariat will be responsible for preparing annual action plans in consultation with an Advisory Board (expert panel appointed by the Board of Directors) and in dialogue with a Stakeholder Forum (users, patient organisations, and practitioners selected by the CEO and approved by the Board of Directors).



1 Introduction

The Government of Denmark and the Novo Nordisk Foundation want to promote healthy weight and well-being among children in Denmark. The prevalence of overweight and obesity and the associated physical, mental health, and social consequences have increased markedly in many countries in recent decades. This applies to both children and adults. Social inequality and weight stigma further complicate this problem. Negative body image and stigmatisation of children with overweight create poor well-being and challenge initiatives to improve health and to correct the noticeable inequality in weight and other factors, which reinforce inequity in health into adulthood. The knowledge and resources required to change this trend are currently lacking.

No child chooses to grow up with overweight, and no parent wants their children to have overweight with worse living conditions and reduced quality of life as a potential result. Creating a better framework for and more knowledge about children's health and well-being is therefore a great responsibility. The Government of Denmark and the Novo Nordisk Foundation therefore want to contribute by establishing a Centre for Childhood Health in Denmark[i].

The Centre will be a specialised knowledge and competence centre with the purpose of providing new knowledge and evidence. The Centre will develop initiatives that effectively promote healthy weight and well-being and initiatives that prevent weight development that threatens individuals' mental or physical health. The Centre will also support the implementation and dissemination of this knowledge. The primary focus of the Centre is developing a health-promoting environment and prevention. A secondary focus is supporting the development of evidence-based, non-pharmacological treatment in the form of lifestyle interventions for children who have already developed overweight[ii]. The Centre's activities will be created through strong partnerships and will be independent of commercial interests.

The vision of the Centre is that all children should be able to thrive and develop a healthy weight that can be maintained throughout life. The Centre's mission is to contribute significantly to reducing the prevalence of overweight and improving the well-being of children in Denmark.

In close partnership with the municipalities, administrative regions, research institutions, and other actors, the Centre will develop activities and initiatives that promote healthy weight and improved well-being for children from before birth to 19 years of age and for their family members – both those who have normal weight and those who have already developed overweight.

The Centre will have four closely linked areas of activities, all of which are based on a holistic approach with a focus on general health promotion and targeted initiatives to prevent and treat overweight and promote well-being:

- **New knowledge**
  Create the basis for effective policies, initiatives and knowledge-based changes through interdisciplinary research and development.

- **Knowledge-based change and implementation**
  Create changes through research-based testing of scalable models for health promotion, prevention, and treatment.

- **Competence development**
  Create education and courses to secure dissemination of evidence-based knowledge and competencies for professionals and volunteers working with children and their families.

- **Knowledge sharing**
  Collect and disseminate evidence-based knowledge within Denmark and internationally.

The Framework for establishing the Centre for Childhood Health is a tool describing the focus areas and objectives for the Centre that the Board of Directors and the management of the Centre will use as a starting point. Annual action plans will be drawn up for the Centre's activities, which will form the basis for setting priorities for individual initiatives within the Framework outlined here.

[i] See definitions in the boxes on page 10.
[ii] The term "treatment" in this document does not include pharmacological or surgical treatment but only lifestyle interventions. The Centre is not concerned with whether overweight or obesity should be categorised as a disease – regardless of categorisation, there should be effective interventions that can be offered to the people who want them.

Vision

The vision of the Centre is that all children should be able to thrive and develop a healthy weight that can be maintained throughout life

Mission

The mission of the Centre is to contribute significantly to reducing the prevalence of overweight and improving the well-being of children in Denmark

Activities

New knowledge
Create the basis for effective policies, initiatives and knowledge-based changes through interdisciplinary research and development.

Knowledge-based change and implementation
Create changes through research-based testing of scalable models for health promotion, prevention and treatment.

Competence development
Create education and courses to secure dissemination of evidence-based knowledge and competencies for professionals and volunteers working with children and their families.

Knowledge sharing
Collect and disseminate evidence-based knowledge within Denmark and internationally.

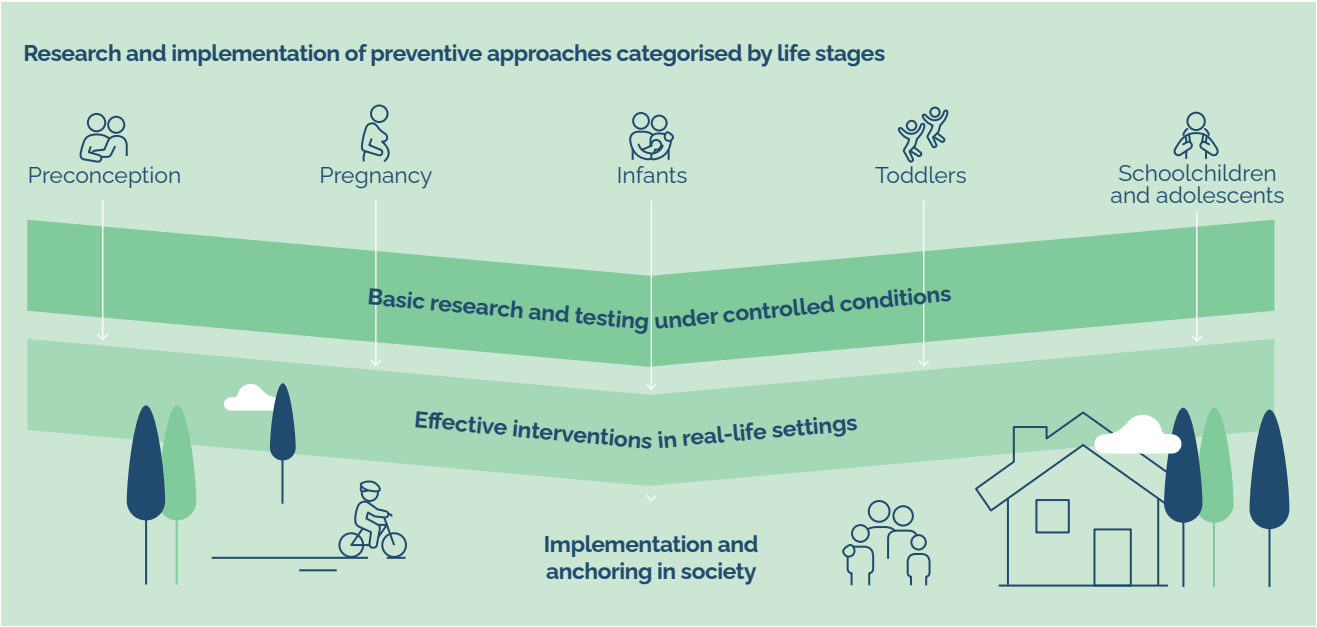


Figure 1. The Centre's vision, mission and activities

2 Background

Since the 1950s, overweight and especially obesity has been a growing societal problem that affects individuals' well-being, quality of life, health, and working life. Among children, 14% have overweight when they start school (6–7 years old), rising to 19% when they leave primary and lower secondary school (14–15 years old).[1] Today, about 20% of the adults in Denmark have obesity, and more than half have overweight.[2]

The trend in the prevalence of obesity among young people in Denmark is illustrated by the graph below.

Percentage of Danish men 17–20 years old with obesity on Forsvarets Dag (attending draft boards)

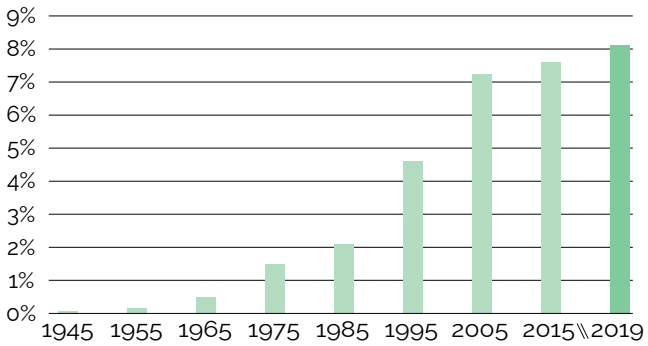


Figure 2. Proportion of 17- to 20-year-old Danish men with obesity on Forsvarets Dag (attending draft boards) in the past 75 years by decade, including the most recent figures from 2019, starting at less than 0.1% in 1945 to more than 8% in 2019 – more than a 100-fold increase since the mid-1940s

The reasons for the growing prevalence of overweight are complex, and why some people have difficulty in regulating energy intake in relation to their body's energy consumption is not fully understood. There appear to be several individual and societal risk factors – biological, psychological, socioeconomic, and structural.

Focused initiatives to prevent childhood overweight need to be initiated, since overweight considerably increases the risk of continued overweight and obesity in adulthood. Obesity among adults is associated with several comorbidities such as type 2 diabetes, cardiovascular disease, various types of cancer, sleep apnoea, arthritis and rheumatic diseases, asthma, dementia, reproductive problems, and many mental disorders such as depression. In addition, having overweight can cause a poorer response to vaccinations and treatment of diseases such as cancer.

Well-being is a resource that strengthens our ability to respond to life's challenges. Our well-being is promoted and hindered in interaction with the world around us and involves mental resources and abilities that are required to be able to develop and continually cope with the various challenges of life.

Well-being is important for health behaviour, and although relatively few studies have focused on this, mental health problems among children and young people may increase the risk of developing overweight later in life.

Studies among schoolchildren in Denmark indicate an association between well-being and weight status,[3] and although no evidence indicates that poor well-being causes weight problems, poor well-being may be a contributing cause of overweight. The Centre will work to investigate and test the association between well-being and weight development, both as a risk factor for poor well-being and as a protective factor for well-being.

Already in childhood, children with overweight experience psychological, physical, social, and cognitive consequences. The children often first experience greatly reduced quality of life because of problems with participation in play, with bullying, weight stigma, negative body image, and low self-esteem, which in turn can increase the risk of further weight gain but also anxiety, depression, and eating disorders. Poor well-being and poor mental health can directly lead to overweight, and children can be caught in a vicious circle that perpetuates both their poor well-being and overweight.

In addition to the mental health consequences of having overweight, children with obesity can develop health problems while still in childhood such as type 2 diabetes, high blood pressure, joint pain, liver damage, and sleep apnoea. In addition, research indicates that childhood overweight can cause early puberty, especially among girls, which increases the risk of developing breast cancer, cardiovascular diseases, and diabetes.[4] Children with overweight, but also with underweight, also often experience

weakened cognitive functioning compared with children with normal weight, which appears as poorer learning ability, memory, and language skills in tests.[5]

Many people with overweight are subjected to weight stigma. Many people consider overweight and obesity to be people's personal responsibility rather than a societal challenge. The Centre will promote the understanding that no child chooses to have overweight, and that society is responsible for ensuring a health-promoting environment for children and for providing information for parents and others in close contact with children that can prevent children from developing overweight. When working with promoting healthy weight it must be emphasised that the focus on weight must not lead to further weight stigma and poor self-esteem.

Conversely, the concern about weight stigma should not mean to avoid talking about weight, since this inherently can contribute to taboos and weight stigma. Nor should it lead to lack of action. Figures from the Danish National Health Survey show that the majority of young people (16–24 years old) who have obesity wants to lose weight and live healthier.

In self-assessing weight, most moderately overweight people consider their weight slightly too high, and the majority of obese people consider their weight far too high.[6] Given the serious potential health problems that having overweight can lead to over time, having effective and proven interventions that can be offered to those people who want them is a societal responsibility. The Centre would like to contribute to developing such initiatives, which of course must be developed with great attention to the children and must counteract weight stigma.

There is documented social inequality in the prevalence of overweight, since the prevalence of overweight is markedly higher among children from families with a shorter education, lower income and with an ethnic background other than Danish. This also appears socio-demographically as great differences between Denmark's municipalities, with the prevalence of overweight among schoolchildren 14–15 years old, for example, being three times as high in the Municipality of Ishøj (31%) as in the Municipality of Gentofte (9%).[7]

Education	Almost 30% of children 14–15 years old whose parents have primary and lower secondary school as their highest educational attainment have overweight or obesity versus 10% of children 14–15 years old whose parents have a long higher education.
Income	About 26% of children 14–15 years old whose families are in the lowest income group have overweight or obesity versus 11% for families in the highest income group.
Ethnicity	About 27% of children 14–15 years old who are immigrants or descendants of immigrants have overweight or obesity versus 17% among children 14–15 years old of Danish ethnic origin.

Figure 3. Example of the distribution of children with overweight according to parents' income, education and ethnicity[8]

The increasing prevalence of overweight in Denmark results in significant costs to society in the form of sick leave, early retirement, and costs for treating comorbidities. Between 2020 and 2050, the OECD countries are expected to use more than 8% of their total health expenditure on treating the consequences of overweight.[9] In Denmark, obesity results in additional costs of DKK 10 billion annually as a result of lost productivity and DKK 1.8 billion for treatment and care.[10] Some calculations estimate that every 1 krone spent on preventing overweight rather than treating it can generate up to 30 kroner in economic return in the form of reduced costs for the healthcare system.[11]

Despite the health and societal consequences as well as the research and testing in practice over many years, professionals and the general population still lack knowledge about the causes and consequences of childhood overweight and how to prevent it. Reports and reviews indicate no solid evidence for effective interventions that can prevent overweight

among children of normal weight[12] or effective programmes for treating children with overweight.[13] Many of the reports indicate that interventions are often deficient and short-lived and thus of insufficient quality to implement or develop further.

This is the background for establishing the Centre for Childhood Health.

What is a healthy weight?

The Centre for Childhood Health defines a healthy weight as a weight associated with physical, mental, and social well-being that contributes to creating the basis for a healthy childhood and adult life. At the population level, healthy weight is defined by the usual body mass index (BMI) thresholds, but at the individual level, each child's growth trajectory, body composition, health behaviour, and living situation are also decisive.

Both overweight and underweight are a problem for the health and well-being of children and young people and will therefore be part of the Centre's activities. In general, most children with underweight overcome the problem, which is not the case for those with overweight.[5] Overweight is therefore prioritised in the Centre's activities.

Well-being

The Centre for Childhood Health considers well-being to be a resource that strengthens our ability to respond to challenges and opportunities in life.

Among other things, well-being is created by experiencing supportive social relationships, by participating in activities with peers, and by recognising individual competencies and having positive self-esteem.

Well-being and weight

The Centre for Childhood Health considers poor well-being to be a risk factor for developing overweight as well as a consequence of having overweight.

It is important to highlight that people can have overweight and good well-being, and that other people can have normal weight and poor well-being. The Centre will therefore investigate how the initiated activities affect both healthy weight and well-being.

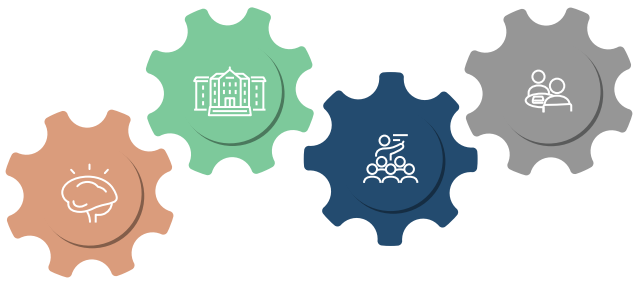
3 Goals and activities

The Centre for Childhood Health's mission is to contribute significantly to reducing the prevalence of overweight and improving the well-being of children in Denmark. The vision is that all children should be able to grow up thriving and developing a healthy weight that can be maintained throughout life.

The strategic goals for the Centre and its partners are to:

- Obtain more knowledge and thereby a wider consensus about what causes childhood overweight to develop and how overweight can be prevented and treated
- Obtain more knowledge about the associations between healthy weight, well-being, and weight stigma
- Create the basis for sustainable frameworks and models to promote healthy weight and improved well-being among children to be implemented in legislation, guidelines and recommendations and practice
- Create strong partnerships across settings and sectors to jointly undertake the task of promoting healthy weight and well-being among children
- Develop the competences of professionals in promoting healthy weight and well-being
- Ensure that more children experience improved well-being and feel better about themselves and their bodies
- Improve health behaviour among all children and especially among children in vulnerable positions
- Achieve a more nuanced view of overweight among professionals and in the general population
- Recognise the Centre as a beacon in Denmark and internationally and a go-to partner in promoting healthy weight and well-being among children

To achieve these objectives, the Centre will establish four overarching and closely linked areas of activities as described in Section 1.



The four areas of activities should not be seen as a linear development of the Centre's activities. Thus, the need for new knowledge can be identified in connection with the competence development of professionals and the testing of existing knowledge in real-life settings.

A key task of the Centre for Childhood Health will be coordinating and creating coherence between results and activities to find the optimal models that can be implemented nationwide, in society, schools, institutions, and in families, with the focus on not just one but several risk factors, such as diet, physical activity, sleep, and well-being. This 360-degree approach is considered necessary to succeed in creating change and the optimal conditions and habits to create healthy weight and well-being. Studies in, for example, Kiel, Germany, and Amsterdam, Netherlands[14] support using the 360-degree approach, and the 2021 report of the Danish Council on Health and Disease Prevention[15] concludes that more comprehensive, multicomponent initiatives are needed:

"If we are to avoid the same conclusions in a decade, the initiatives to prevent overweight must be linked to practice-based research. This can create new knowledge about combinations of the most promising elements that are long-lasting and contain many intervention components simultaneously across settings, including parental involvement, and on implementing these initiatives." (p. 11).

The Centre will help building bridges between research fields and professions. A key principle will be that projects and activities should be developed in close collaboration with the actors and with the involvement of the related target groups – such as professionals, children, or their parents. The Centre's role will primarily be to define projects the Centre will support that are carried out by individual partners or as joint projects implemented in wider partnerships. A major part of the Centre's task will therefore be to identify projects and to support this work financially.

The structure of the Centre will support the ambition to play a strong coordinating and co-creating role. The goal is that all knowledge and all projects will be accessed by and emanate from the Centre, which will be responsible for ensuring that knowledge is shared between activities and that synergy is created between the various contributions to effectuate initiatives that can be implemented in practice.

3.1 Target groups for the Centre's activities

The Centre's approach is that children's parents and the caregivers and key people who are in contact with the children determine their well-being and the living conditions and lifestyle to which they are exposed. The main target groups for the Centre's activities are therefore both the parents and the professionals who influence each child's health and well-being and are in contact with the children in their everyday lives (see Figure 4). The main target groups vary depending on the initiative and the children's age. Each life phase involves contact with public services that may include the potential for developing and implementing new knowledge about promoting healthy weight and well-being among children.

In addition to the target groups that are in direct contact with children, many indirect target groups also play a part in shaping children's daily lives, such as public authorities, the municipalities, civil society, the mass media, and the retail trade. These target groups are not linked to specific age groups but influence the framework for children's lives. In addition, research and educational institutions are target groups for the Centre's activities within developing new knowledge and ensuring the quality of professional education and training. The Centre will collaborate with all types of actors to ensure the multicomponent 360-degree approach and to ensure that the relevant partners are involved in creating the solutions.

Specific efforts may be needed to target families in vulnerable positions, such as those with a history of obesity and/or poor well-being. The weight problems of a smaller group of children should continue to be considered a symptom of more serious social and mental health problems (including eating disorders that have developed) that need to be solved in completely different ways and with a different priority outside the Centre's remit.

3.2 Collaboration and partnerships

To fulfil the Centre's goals, the Centre must establish strong partnerships with a wide range of institutions and organisations, which together can support the development of initiatives within the designated areas.

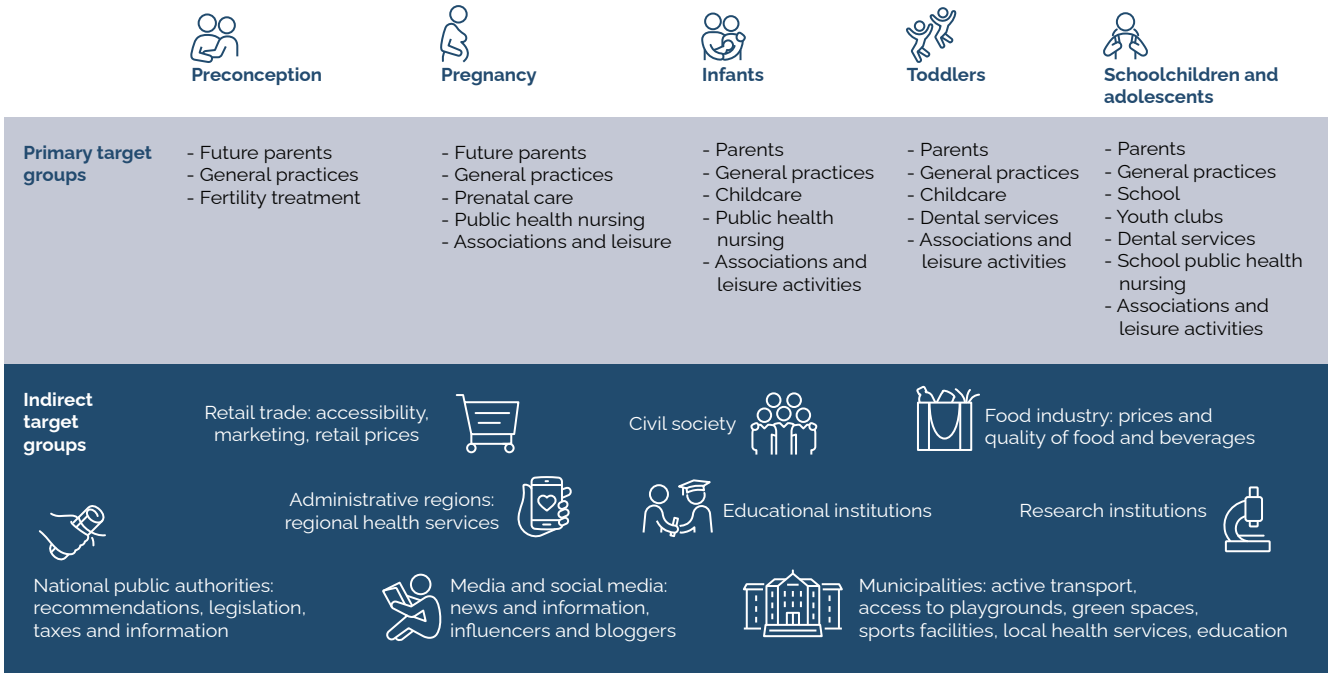


Figure 4. Primary and indirect target groups that influence children's daily lives

The Centre will be a relatively small unit without infrastructure for laboratory or clinical research and will house employees who will ensure that projects and the development and collection of knowledge are initiated between the partners. The organisation of the Centre is described at the end of this Framework.

The research partners will be universities, university colleges, and other research institutions with the skills and infrastructure to implement research projects that will be identified together with the Centre.

The implementation partners are key partners in research-based testing, implementation research, and anchoring of initiatives. The municipalities, administrative regions, and the central government are the public authorities that have the responsibility for promoting healthy weight and well-being and preventing and treating children with overweight and their families, and all three administrative units are therefore necessary for implementing the project.

The university colleges are the educational institutions that primarily educate the professionals who are in contact with children in their daily lives. The Danish Health Authority and the Danish Veterinary and Food Administration are the public authorities responsible for preparing national recommendations in this area. The Centre for Childhood Health will not have any public authority tasks or other authority to issue national recommendations but can contribute to supporting the task of public authorities by providing evidence-based knowledge and tools, and the Centre will be tasked with sharing this knowledge. To strengthen the interaction between the two government agencies and the Centre, a coordination group will be established.

In addition, new collaborations will be established with several other partners, referred to as collaboration partners. These include stakeholder groups for the direct target groups (children, young people, and families), civil society, trade unions and other professional organisations, interest groups, relevant public institutions, industry organisations, the retail trade, and nongovernmental organisations.

The Centre and its affiliated partnerships will work dedicatedly with the mission of ensuring healthy weight development

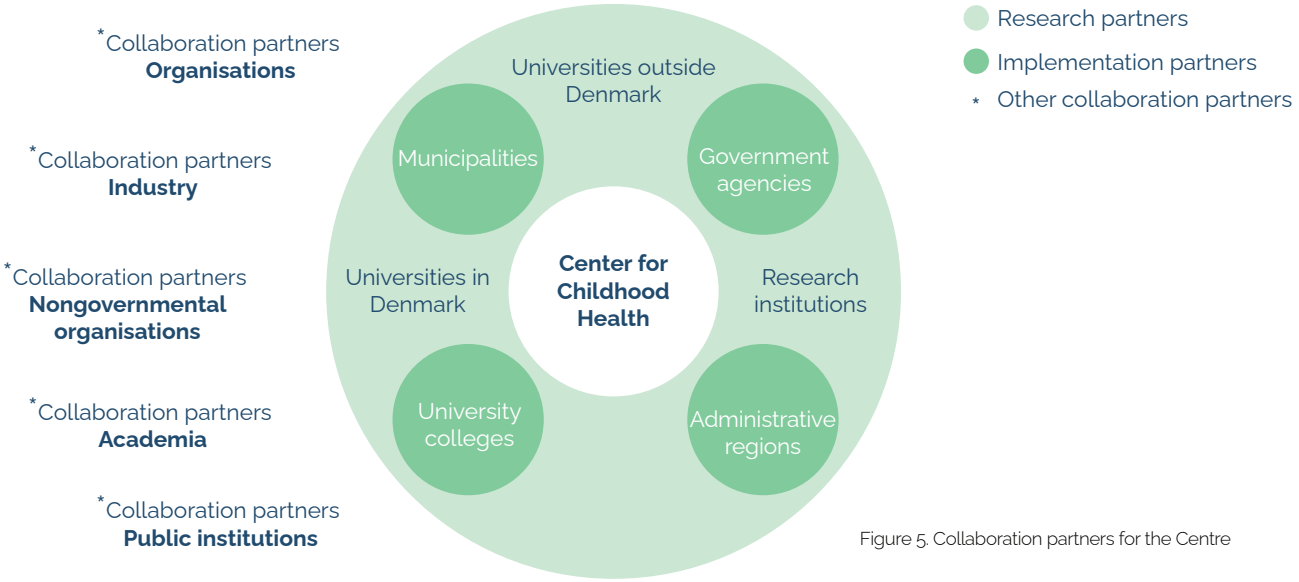


Figure 5. Collaboration partners for the Centre

among children and their families and will also strongly focus on promoting well-being and showing great respect for the children and their families. No child chooses to grow up with overweight, and no parents want their children to have overweight, with the result of potentially worse living conditions and quality of life. Children are not responsible for the framework that promotes healthy weight and well-being. The adults and the environment around the children are responsible, and older children, families, and professionals must be involved in developing the interventions required.

3.3 Activities

The Centre and its advisers have a key role in selecting and developing specific projects and activities. Typical activities will include:

- Identifying and developing research projects in close collaboration with relevant partners
- Co-creating major implementation research projects with relevant researchers, local actors, decision-makers, and target groups
- Supporting dialogue and new, innovative idea development across research disciplines, sectors and among professionals to promote new theories and research designs
- Disbursing funds for projects announced through open calls targeting overall themes and target groups that have been identified as important and need to be covered
- Acting as a sparring partner when initiating projects and activities, including research design, intervention, and implementation research in, for example, the municipalities, and initiate competence development
- Carrying out the parts of basic clinical and implementation research that do not require laboratory infrastructure
- Holding symposia and consensus conferences to ensure knowledge dissemination and promote solutions

3.4 Principles for the activities

When developing projects, the key principles will be that they must be integrated into existing structures as far as possible and that they are developed in collaboration with the target groups and stakeholders to ensure that the content is relevant and that they are easy to implement. This also means that generally the Centre will not develop activities itself but will collaborate with relevant actors on activities through partnerships and grants as described above.

The following are the guiding principles of such collaborations:

- Activities will be based on documented needs for new knowledge and testing of initiatives
- Stakeholders should be involved in the work and, when appropriate, also the children of the target groups and their parents
- Research should carry out long-term follow-up
- Impact should be evaluated
- The work should be evidence-based, but new innovative initiatives for which there is not yet evidence should also be tested
- When possible, activities should be based on existing structures
- Initiatives must have clear ownership and be sustainable – also after the project period ends.
- Activities must address inequity in health
- The Centre will ensure coordination of initiatives to avoid too many overlapping activities focusing on the same groups and local areas
- All activities should include the prevention of weight stigma

4 New knowledge

Current strategies for preventing overweight and treating people with overweight have proven to be insufficient, since the prevalence of overweight continues to increase. The Centre will use various scientific study designs and interdisciplinary research to provide robust knowledge about interventions that can promote healthy weight and improved well-being among children and form the basis for possible changes in policy and practices.

The research will increase knowledge about the importance of the societal, social, behavioural, and psychological factors that, in interaction with the biological factors, contribute to children developing or not developing overweight. This will be carried out with the aim of being able to develop new effective initiatives.

The Centre's activities will integrate existing knowledge and launch new research projects that expand knowledge within the well-established factors associated with overweight such as diet and physical activity but also other possible causes, such as insufficient sleep and poor well-being. Furthermore, the research will include well-being as a protective factor for healthy weight. On this fact-based background, solutions must be found to prevent childhood overweight and to treat the children who have it, to help them maintain a healthy weight throughout life and to promote well-being.

4.1 Research, methods, and disciplines

The Centre will monitor frontline research in Denmark and internationally, initiate, lead and evaluate research projects and identify new relevant research areas and projects. This will boost the overall level of research and prevention initiatives in Denmark, so that new knowledge and better interventions continually mature into implementation research and anchoring, which are described in Section 5.

The complex nature of the problem of overweight requires an interdisciplinary approach using various quantitative and qualitative research methods and disciplines. This includes projects that will help shedding light on the association between well-being and overweight. We do not know enough about the possible causal link between, and we do not understand the context of, the structural, cultural, socioeconomic, and sociopsychological mechanisms under which children grow up. Most of the extensive scientific literature on preventing childhood overweight and on treating children who have it comprises observational studies. This creates difficulty in identifying those factors that are possible causes of overweight. For example, a child with overweight who sleeps too little will often have more sedentary time, have insufficient physical activity, and have unhealthy eating habits. To complicate this further, such concurrent inappropriate behaviour is most frequent among children of parents with shorter education (Figure 6).

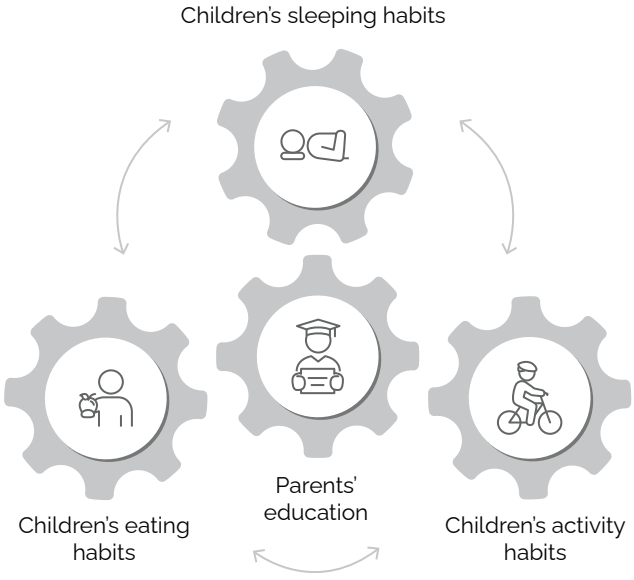


Figure 6. Children's sleeping, eating and activity habits are often closely linked and related to the parents' level of education

In observational studies alone, this concurrence of factors makes it difficult to identify the actual cause or contributing causes of overweight and what is coincidental. Knowledge that is based exclusively on observational studies will therefore have to be supplemented with randomised studies or have to include a control group (based on registry data, for example) before this knowledge can be implemented on a larger scale. This applies regardless of discipline. The Centre's activities will be based on a broad interdisciplinary understanding of childhood overweight and well-being. For instance, this can include e.g. ethnographic, anthropological, sociological, psychological, and biomedical perspectives and research methods in the Centre's work.

To deliver a continual flow of knowledge to implement effective strategies, the Centre will therefore initiate several types of research studies of different durations (Figure 7).

4.2 Understanding energy balance

People develop overweight when their energy intake exceeds their energy expenditure, and the excess energy is stored as fat. This can easily lead to simplistic messages such as "Eat less and exercise more", which help to underpin many people's attitudes that having overweight is a person's own responsibility. However, knowledge is still lacking about the mechanisms that cause or reinforce this energy imbalance and thus trigger overweight.

Research shows that genetics can explain 40–70% of individual differences in the propensity to gain weight and develop overweight and obesity. A century ago, overweight was a peculiarity, and since human genes have not changed since then, societies at that time must have prevented otherwise genetically predisposed individuals from developing overweight. Conversely, today's obesogenic society, which has high availability of tasty, energy-dense, and often cheap food and has a lack of physical activity, reveals the people who are genetically predisposed to overweight. Therefore, it is not the genes themselves but the interaction between the genes and various factors that explains much of the familial predisposition to having overweight. Consequently, it is worth recognising that while some people find maintaining a normal weight to be relatively easy, others are challenged to act in their societal environment to avoid developing overweight.

The task is, among other things, to identify those important factors we can change, to suppress the genetic predisposition to overweight, the manifestations of which were prevented a century ago. In fact, the cause is probably a very complex interaction of several biological, social, and psychological factors, several of which have probably not yet been identified. A report on overweight among children and adolescents by the Danish Council on Health and Disease Prevention[16] mentions many of these risk factors, which are listed below

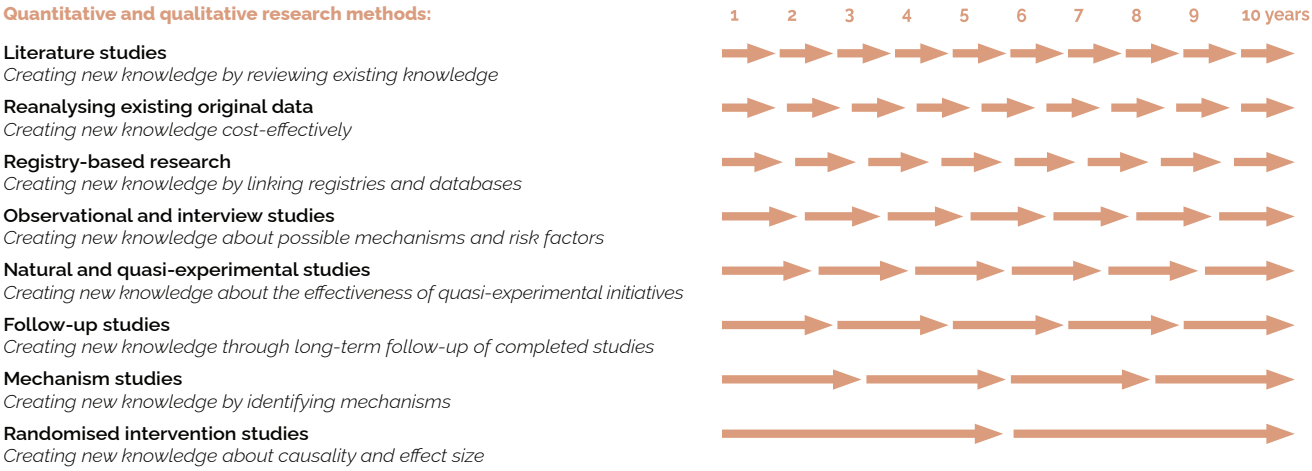


Figure 7. The Centre will use quantitative and qualitative research methods and initiate several research studies differing in duration to continually deliver knowledge to implement effective strategies. Several of these methods will also be used for monitoring (such as registry-based research) and implementation research (such as observation and interview studies)

together with additional risk factors that other experts have highlighted:

- Unhealthy food and meal habits (such as portion sizes and meal patterns)
- Short duration of breastfeeding or none
- High protein content in a child's food in the first 2 years of life
- Physical inactivity and sedentary time
- The structural framework around the availability of, for example, healthy food and physical activity
- Insufficient sleep duration and quality
- Mother and father having overweight before, during and after pregnancy
- Great weight gain during pregnancy
- Gestational diabetes
- Smoking during pregnancy and passive smoking
- Genetic and epigenetic factors
- Short education and low income
- Inappropriate bacterial composition in the gut
- Viral infections
- Various types of medicine (including antibiotics)
- Endocrine disruptors
- Air pollution and noise pollution
- Stress during pregnancy
- Stress among parents and children
- Poor well-being and poor mental health among parents and children
- Lack of early attachment between child and parents
- Weight stigma and self-stigma

One possible association the Centre will initially investigate is the association between weight and well-being – including both poor well-being as a potential cause of overweight and overweight as a potential cause of poor well-being. This might be achieved by performing an exhaustive literature review, and will be done to learn more about the association, thereby clarifying the priorities and type of initiatives to be developed. In this context, well-being as a possible protective factor will also be investigated.

Numerous projects have shown that people often react differently to the same preventive or treatment initiatives – some people lose weight, and others do not. This means that one initiative that works for everyone cannot be designed. Initiatives that are most effective for the specific individual or groups of individuals – based on either the biosciences or the social sciences – need to be identified. One example is that the presence of specific gut bacteria in combination with a high intake of fibre and whole grains in the diet leads to improved weight regulation but does not apply to people without these bacteria.[17]

This means that as research knowledge increases, initiatives should increasingly differentiate between individuals to maximise the effectiveness of lifestyle interventions.

4.3 Individual-oriented and settings-oriented initiatives

The causal relationships between the above-mentioned risk factors and the development of overweight will be tested by research on individual-oriented initiatives. These could be characterised by the individual (the child and the family) actively changing behaviour, for example by increasing sleep duration, and/or by nudging people to passively change their behaviour by integrating in society settings-oriented initiatives. For example, these could involve amending legislation and urban planning to promote physical activity and improve well-being and the availability of healthy food (Figure 8).

The Centre will perform research on both types of initiatives to create an optimal basis for new and effective interventions to promote healthy weight and good well-being among children. So far, documenting the effectiveness of the settings-oriented initiatives in reducing overweight has proved difficult. However, these initiatives are considered an important tool for creating healthier daily lives, also for vulnerable groups. Further, these types of initiatives are often less stigmatising, since they address all children.18 An important part of the Centre's activities will be to examine how settings-oriented initiatives affect children's weight development. Carrying out these types of studies in Denmark will largely be enabled by the well-developed databases, cohorts and registries, which provide a unique opportunity to follow up on differences in, for example, municipal services or practices over time and/or geographical differences.

4.4 Target groups and activity areas

An important task for the Centre is to seek to identify the main causes for the development of overweight within the various age groups and the complex interaction between the causes, the individual, and the environment. Basic research and testing of the risk factors for overweight, under controlled conditions, will form the basis for new initiatives that prevent overweight and poor well-being.[19]

4.4.1 Preconception and pregnancy

The relevant research communities are increasingly interested in preconception and pregnancy, since there are indications that the predisposition to overweight can be transferred from parent to child. The disposition is not genetic, but the development of overweight seems to be programmed. It starts from conception and continues during pregnancy, with hormones and metabolic products transferred through the placenta to the foetus. These observed associations are quite strong and indicate that about 60% of the prevalence of childhood overweight can be prevented if women with overweight reduce their weight to a normal level before pregnancy and avoid excessive weight gain during pregnancy.

That this link is causal and particularly significant is supported by the fact that those children born to mothers with overweight do not respond as well to prevention and treatment initiatives in childhood and adolescence. However, documentation for causality is still lacking, and research needs to establish whether preconception weight loss and maintaining controlled weight development until delivery can reduce the risk of women with overweight giving birth to children who develop overweight compared with a control group. If this association

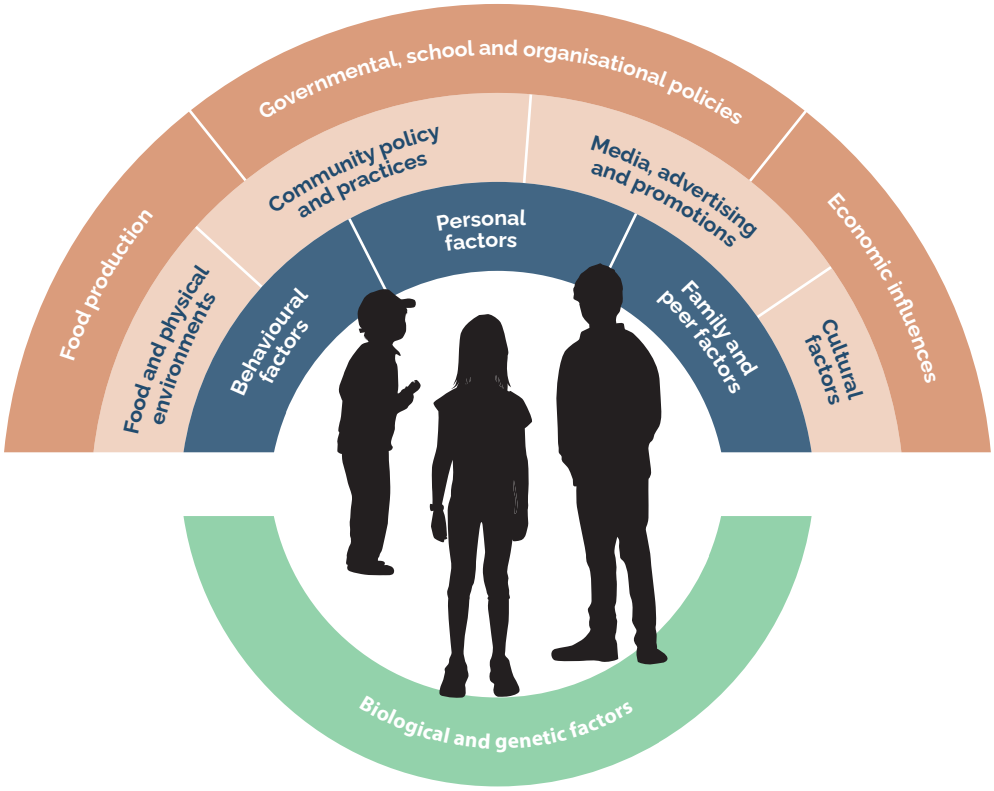


Figure 8. Model showing the complexity that affects children's daily lives on several levels and the risk of developing overweight (developed with inspiration from the Michael & Susan Dell Center for Healthy Living)

can be documented, initiatives involving this target group will represent a great potential to prevent overweight from being inherited. Within a few years, the results within this subject from relevant studies in Denmark and abroad are expected to serve as the basis for effective initiatives, which can eventually be offered to all women in Denmark with overweight who want to become pregnant. This could include, for example, the Early Interventions to Prevent Childhood Overweight programme supported by the Novo Nordisk Foundation in 2021.

Table 4.1. Examples of research approaches and areas related to preconception and pregnancy

- Weight loss, healthy diet, physical activity, sufficient sleep, smoking cessation and stress reduction initiated before and maintained during pregnancy to prevent overweight from being inherited.

- Delivering intestinal bacteria during caesarean section to prevent childhood overweight.

4.4.2 Children 0–1 year old

This age group differs in many ways from older children. Infants are breastfed or given infant formula and are gradually introduced to transitional food. Observational studies indicate that the growth pattern of breastfed children is healthier and associated with less disease later in life than children who receive infant formula. For transitional food, high protein intake is associated with overweight later in life. In addition, fibers and whole grains must be limited in this age group, and fat must be actively added to increase the energy density of transitional food. These dietary recommendations are totally different from the recommended diet for older children and adults.

In Denmark, the public sector has unique contact with families with infants through public health nurses. It would be beneficial to tailor and/or expand this contact to address healthy weight and well-being to an even greater extent.. The Novo Nordisk Foundation has already supported several research projects in this field. One example is 'the Bloom Trial', which aimed to develop new, systematic, and evidence-based interventions to support healthcare providers in addressing early signs of the development of overweight in infants. Another example is the 'Infant Health Study'', which investigates whether the training of public health nurses to support parents in accommodating the various vulnerabilities of infants can promote healthy weight development, relationships, well-being, and mental health.

The Centre will evaluate current practices together with the results of ongoing projects to identify additional initiatives in public health nursing that can help promote healthy weight and well-being among infants, including implementation research and competence development of public health nurses and other professionals.

Table 4.2. Examples of research approaches and areas related to infants

- Investigating whether focusing on parents' lifestyles can influence weight development among infants.
- Investigating whether the high fat intake in an infant's diet should be phased out more slowly than in current practice.
- Investigating whether initiatives to promote infants' and toddlers' sense of safety, well-being, motor skills and physical activity can promote healthy weight.

4.4.3 Preschool (1–5 years old) and school age (6–19 years old)

Physiologically, children react the same to the obesogenic society, regardless of age group, and recommendations for healthy lifestyles should therefore be more or less the same for children in nursery, kindergarten, and school as well as for adolescents. Research that aims to identify physiological causes and causal relationships related to overweight will therefore be relevant for the entire group of children aged 1–19 years. In contrast, research on which interventions are most effective will typically be specific to age groups, settings, and situations. One example of more implementation-ready research is those lifestyle interventions for children with overweight and obesity that municipalities have carried out. These lifestyle interventions have typically lacked control groups and systematic evaluation and the necessary long-term and

holistic approach, meaning that the potential for important documentation and learning is lost.

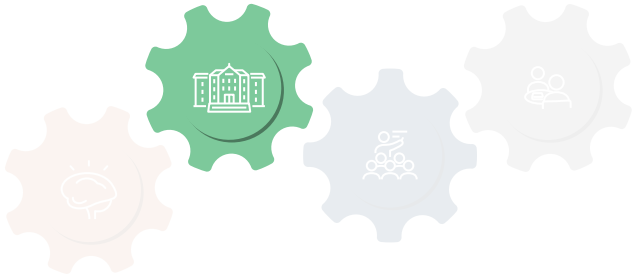
These approaches need to be evaluated more thoroughly through research to investigate whether the resources spent in the municipalities' lifestyle interventions among children with overweight and obesity are being used appropriately. This applies especially at a time when more health services probably will be delegated to the municipalities.

Such an evaluation of the most frequently applied activities could very well lead to the design and research testing of new lifestyle interventions that, for example, combine the great weight losses achieved by short intensive interventions with the longer-term interventions that can maintain or increase the weight losses already achieved. Such new lifestyle interventions will need to be tested empirically, typically through randomised intervention studies, before potentially implementing them in practice.

Table 4.3. Examples of research approaches and areas related to children and young people aged 1–19 years

- Review literature on the associations between weight and well-being – including the possible causal link.
- Evaluate and further develop municipal lifestyle interventions for children with overweight and obesity.
- Investigate the effect of a 3.5-year examination in existing public health nursing practices.
- Create consensus and facilitate innovative new thinking in designing new interventions by holding workshops and consensus conferences.
- Generate new knowledge for developing differentiated prevention and treatment programmes targeting various subgroups by reanalysing completed projects.
- Determine subgroups that have healthy and unhealthy habits at different times (for example, weekdays and weekends) to improve the design and targeting of future initiatives.
- Investigate whether insufficient sleep is causally linked to obesity.
- Carry out qualitative studies to understand life with overweight – including weight stigma, self-stigma and well-being.
- Map and develop apps and games to promote healthy habits and behaviour.
- Examine the effect of potential settings-oriented initiatives for lifestyles, healthy weight and well-being.
- Prepare data-based identification of the causes of obesity, for example by integrating municipal data and artificial intelligence, to understand social inequality in the prevalence of overweight.
- Develop a model for predicting the development of overweight.
- Develop projection models (such as dynamic simulation modelling) that compile and estimate the expected outcomes of interventions to be used in setting priorities for initiatives (for example, legislation and implementation research).

5 Implementation research and anchoring



Converting existing and new knowledge into effective and sustainable initiatives is key to achieving the overall vision that all children should be able to grow up thriving and to develop a healthy weight and maintain this throughout their lives. The Centre will contribute to this by initiating and facilitating strategic, cross-disciplinary interventions and implementation research that test promising initiatives to promote healthy weight and well-being on a large scale. In collaboration with relevant partners, the Centre will support the anchoring of effective measures. The Centre will also support a data infrastructure in Denmark that can facilitate research, monitoring, and quality development in this area.

The most important partners for activities related to implementation and intervention research will be practitioners in the municipalities, the administrative regions and at the national level as well as stakeholder organisations. Involving the relevant target groups is absolutely central.

5.1 Various strategies to promote healthy weight and well-being among children

5.1.1 Applying international experience

The Centre will monitor research in Denmark and internationally to identify initiatives that have the potential to promote healthy weight and well-being, and which will be relevant for research testing on a larger scale. Intervention and implementation research is often resource intensive and building on international experience and consensus before testing new initiatives is therefore key. However, initiatives that have proved effective abroad should also be tailored to Denmark, where special conditions may apply.

5.1.2 Different strategies for different target groups

The activities of the Centre should target children who have not developed overweight, children who are at risk of developing overweight and children who have already developed overweight. The Centre will therefore use different strategies for health promotion, prevention, and treatment to address the different groups. The strategies will be monitored through research to create evidence on whether implementation positively affects weight development and well-being and, if so, how.

Healthy settings (structural strategies): the Centre will test settings-oriented initiatives that make it easier for all children to have good well-being and live healthily. In a prevention context, these initiatives have the advantage that they can contribute to reducing inequality in health and that they are not stigmatising as they support healthy behaviour and well-being in all population groups. The settings-oriented initiatives can include legislation, such as restrictions on marketing targeting children; introducing daily physical activity at school; policies promoting health and well-being in day-care and in schools; improving access to sports facilities, playgrounds and outdoor areas that appeal to young people; safe cycle tracks and roads; and initiatives in the community that involve home, school, leisure, and the retail trade.

Initiatives for children at high risk of developing overweight and poor well-being (selective strategies): the initiatives target the children and families who have the greatest needs. For example, they target children in socioeconomically vulnerable positions or children who, based on biological, psychological, and social criteria, have an increased risk of developing overweight and poor well-being. This could involve such projects as those on healthy and safe settings at school, home and leisure that target children from residential areas with a low socioeconomic index.

Treatment (indicative strategies): the Centre will also work purposefully with children who already have overweight or obesity and with their families. The initiatives aim to test the effects of lifestyle interventions. Early detection is required in initiatives aimed both at children who already have overweight and at children at risk of developing overweight. How the children are recruited should always be considered to avoid weight stigma.

Table 5.1. Examples of projects oriented towards the various strategies

- Projects dealing with settings-oriented initiatives: research on active transport, effects of health services and initiatives to promote well-being for parents-to-be and families with children, developing courses in primary and lower secondary school, initiatives to promote mental health in children's environments and initiatives to prevent weight stigma.
- Projects focusing on children at high risk of developing overweight, such as targeted interventions in public health nursing or general practice (preventive health examinations) and qualitative investigation of the daily lives of children with overweight.
- Research testing of initiatives to treat children with overweight and mapping and development of effective, behaviour-regulating technologies for children.

5.1.3 Combining several strategies is most effective

An overall strategy should focus on the initiatives that can be most effective at the population level. A good treatment programme can have a significant effect on children who have already developed overweight. However, it is important to maintain focus on the fact that preventive measures, typically reaching far more individuals, potentially can be more effective from a societal perspective. The Centre's initiatives will therefore primarily focus on preventive measures targeting all children and especially those at high risk of developing overweight.

The age at which children develop overweight and when intervention makes the most sense should be considered when setting priorities. A survey of overweight among children in Denmark[20] shows that the prevalence of children with overweight increases with age and that this increase continues into adulthood. The need for a treatment programme targeting children increases therefore with age, and less intrusive and less resource-demanding initiatives should also be started earlier.

Although it is impossible to identify a specific point in time in childhood when interventions are most effective, it is evident that interventions to prevent overweight should start early[21] With advantage, structural strategies and strategies for high-risk groups can therefore be launched early, preferably in connection with pregnancy or with planning a pregnancy.

5.2 Large-scale research-based testing

The Centre will create new knowledge about effective and sustainable initiatives to promote healthy weight and well-being in practice. The Centre will therefore test the effectiveness of promising initiatives on a large scale and, using implementation research, describe which factors support anchoring in the short and long term.

A key focus of the Centre is that models intended for later implementation and anchoring should be sustainable. Sustainability means that interventions or strategies, if proven to be effective most likely will be maintained after the project ends. Many factors influence anchoring and later sustainability (see subsection 5.2.2). The following describes how the Centre will work with these two elements.

5.2.1 Testing effectiveness

The Centre will initiate research testing of interventions that have proven effective on a small scale in children's natural environments, either in the new projects initiated by the Centre or in those identified through literature studies (see Section 4). These can also be initiatives that are already embedded in society but for which the actual effect on weight is undocumented: for example, offers of free public health nurse visits, exercise-friendly infrastructure, or guidelines on a good learning environment. In addition, several projects have already been launched to promote healthy weight and well-being and have the potential for research follow-up. The Centre can also play an important role in supporting the study of effectiveness and implementation.

The research testing should primarily examine whether an intervention is effective in a natural setting, i.e., whether it can prevent children from gaining too much weight, whether it can help children to lose weight in their daily lives and whether it promotes well-being. These include day-care, school, after-school clubs, home or in associations and clubs.

A report by the Danish Council on Health and Disease Prevention[22] does not at this point identify one specific type of preventive intervention or initiative that should be implemented, since the evidence in this area is weak. The report concludes that interventions to prevent overweight among children seem to be most effective when they are multicomponent and implemented as an integrated part of children's daily lives (whole-systems approach).[23] This requires that many actors in a community or society collaborate, each with their own competencies and each with their own tools, with the common aim of reducing overweight.

The report also indicates that many existing studies have a short intervention and follow-up period, which is why the change and the effects do not manifest themselves in time. Finally, well-designed studies with control groups and with sufficient participants to be able to produce valid results are lacking, probably because these are resource intensive. The Centre will therefore support larger intervention studies of longer duration and of high methodological quality. For example, the Centre plans to carry out randomised controlled intervention trials, well-designed observational studies, and qualitative studies that can create evidence on the effectiveness of a new or existing initiative.

The research can be carried out by investigating natural differences that are expected to influence healthy weight and well-being (natural experiments). These could involve, for example, measuring the effects before and after the implementation of the planned new marketing legislation in the United Kingdom that restricts the marketing of unhealthy food to children. The research could also study the differences in the municipalities' services: for example, several but not all municipalities offer pregnancy visits or a consultation with a public health nurse at 3.5 years of age. Finally, the effectiveness and implementation of new legislation, such as the required 45 minutes of daily physical activity at school, will be an obvious research topic.

5.2.2 Implementation research

An important part of intervention research is implementation research, which aims to document and promote the conversion of theory into practice and thus the anchoring in society. Experience shows that implementation in practice is difficult, and lack of or incorrect implementation can therefore be one reason why many interventions or initiatives have not shown effectiveness in preventing overweight. A closed, controlled study might be able to get a child to lose weight by eating healthy school meals, being physically active at school for 45 minutes, reducing screen time, and getting enough sleep. But how does this work in reality? A controlled clinical setting for a limited period differs greatly from a permanent change in a child's everyday life.

Overall, the literature indicates that there is no fixed recipe on how to ensure and promote the implementation of preventive

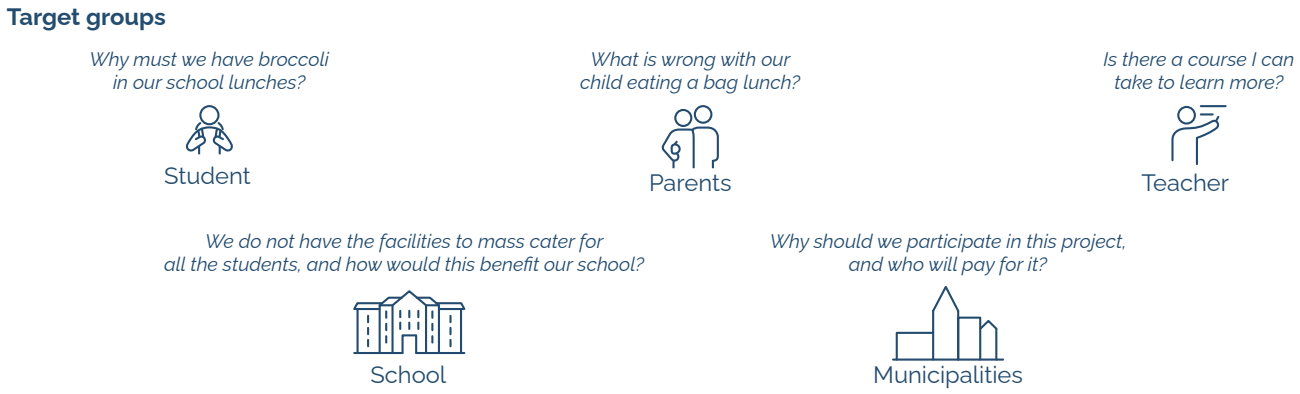


Figure 9. Examples of the barriers experienced by various target groups

initiatives. Specific circumstances – such as teachers' motivation, parents' involvement, the experience of a need, or a political approach to the problem – are important for future implementation. This requires that many stakeholders and research fields be involved, including sociology, psychology, anthropology, economics, and political science.

To increase the likelihood of a preventive initiative – for example an initiative in school – being sustainable and effective, previous studies[24] identify several surveys and factors that promote implementation (Table 5.2). These factors will therefore be key to include in the implementation research to support the implementation and effectiveness of the initiatives. The list of factors is not exhaustive but should be seen as dynamic conditions that can help shape the initiatives adopted.

Table 5.2. Overview of factors that promote implementation

Needs and desires of direct and indirect target groups	Clarifying the needs and desires the target groups have related to the tailoring of the initiative. The Centre wants close dialogue with parents, professionals and other stakeholders by establishing forums for involving stakeholders (Stakeholder Forum; see Section 8).
Involvement of future owners	Involvement of future owners early in the development process.
Involvement of direct and indirect target groups	Involvement of relevant target groups in the initiative contributes to: • Improving understanding of the target group's needs and thus initiatives • Increasing ownership of a given initiative and thus increasing the likelihood that the initiative will be accepted and implemented • Increasing the empowerment of the target group.
Financial sustainability	Early detection of willingness to pay for operating the initiative after implementation ends. Analysis of cost–effectiveness can highlight the potential for long-term savings and can therefore promote economic and political incentives for implementation.
Based on existing structures	Using existing structures for initiatives, such as in public health nursing, general practice, schools, day-care centres, clubs and associations etc. promotes implementation.
Analysis of recipient organisations	Ensure that the organisation has the resources for implementation and later operation. Ensure that the personnel have the right competencies, possibly by supporting competence development and support getting the physical framework for the initiative in place.
Monitoring and disseminating the results of initiatives	Monitor the initiatives to possibly adjust them and to assess long-term effectiveness. Communicate the results and data to relevant actors and decision-makers.

The overview shows that successful implementation requires close collaboration with the stakeholders, the organisations, and units involved in the intervention or initiative. Working in partnership across sectors and disciplines and with the relevant target groups is therefore key to jointly carrying out the task of promoting children's healthy weight and well-being.

Table 5.3. Examples of intervention and implementation research

- Testing models for promoting the health and well-being of children in day-care centres, schools and communities: what supports implementation and how effective are the models?
- Effectiveness of preventive health services for parents-to-be and families with children: who receives the services, how do they work and are they effective? Research on the effectiveness of existing measures.
- Testing programmes to promote the intake of healthy food among pregnant women.
- Testing programmes to promote healthy pregnancy, fewer birth complications and healthy weight among mothers and children: what supports implementation and how effective are the programmes?
- Introducing marketing legislation abroad: is the legislation complied with, and how does it affect children's weight and behaviour?
- Promoting active transport: investigating how the government's infrastructure funding for promoting active transport affects children's weight and behaviour and how the funding has been implemented.

5.3 Anchoring

When an intervention and implementation study has been completed and has been shown to be effective in reducing overweight and improving well-being and when it is well described as a model, it will be up to the municipalities, the administrative regions and/or the central government to decide on anchoring and thus tailor the model to the local context. Practice can also be developed in the form of instructions, guidelines, or legislation and by disseminating results from, for example, implementation studies, results from analysis of clinical-quality data, and consensus conferences. It will follow the usual decision-making process for practice development, and presupposes that the guidelines are developed based on evidence and the best knowledge in the field.

Figure 10 describes the process from research testing to implementation in society and the associated decisions. Initially, the effectiveness of an initiative will be tested through research on a smaller scale (see Section 4). Based on the effectiveness and the potential for implementation in Denmark, the Centre will decide whether it will establish or support implementation research in a larger intervention study. This can also involve research on natural experiments. The research must test the effectiveness and describe the prerequisites for implementing a model.

Based on the research results, relevant decision-makers decide to implement the initiative. Then the Centre can establish various services to support the roll-out and anchoring of effective initiatives.

The anchored initiatives will be monitored and, if necessary, to continually tailor and refine the model, further research can be initiated.

The Centre will provide expert assistance to the municipalities, the administrative regions, workplaces, and others that want support for the anchoring initiatives developed in the Centre. This assistance may include:

- Introduction to interventions and objectives
- Identifying special local conditions and needs
- Tailoring interventions
- Training personnel
- Supporting data collection and logistics locally
- Training/instruction in evaluation and data-based quality development

Furthermore, the Centre will collaborate with relevant authorities to support the updating of information material, preparation of campaigns, existing guidelines, clinical guidelines, etc. as new knowledge and new practices in the field develop.

Three measures to implement and anchor evidence-based research in society and in practice

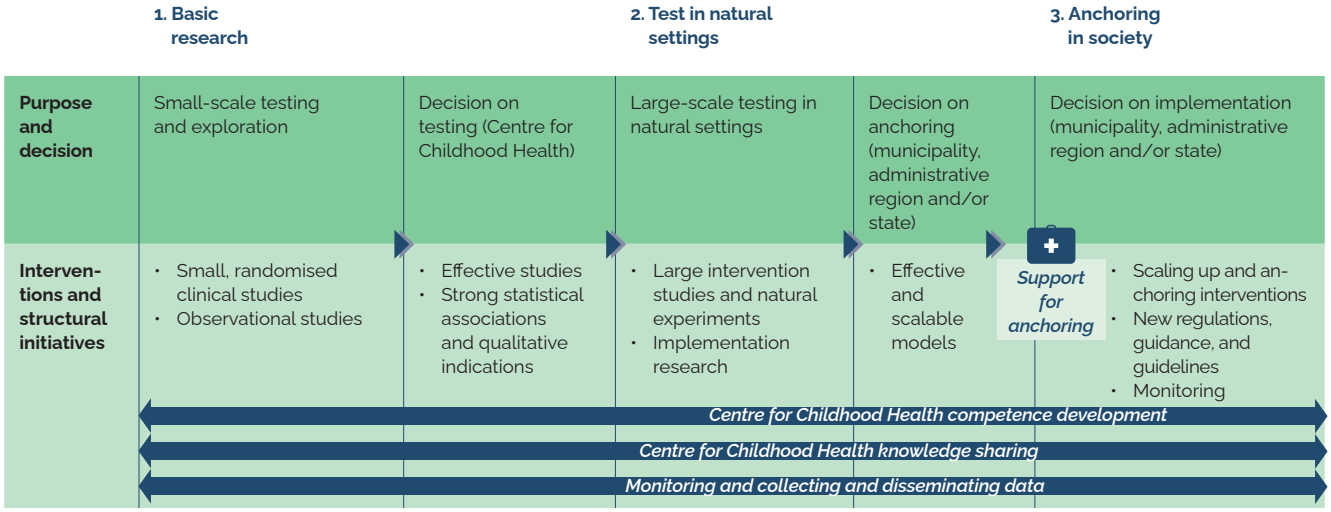


Figure 10. Process for implementation research and anchoring

The health promotion packages of the Danish Health Authority and Danish Veterinary and Food Administration are crucial tools when developing practice in this area. The packages focus on topics such as overweight, food and meals, physical activity, and mental health, and they constitute knowledge-based guidance for municipalities on preventive initiatives.

The Danish Health Authority's health promotion package on overweight focus on guidance on settings-oriented initiatives, treatment programmes, information, and early detection. The package enables the implementation of a basic and an advanced level and supports knowledge-based, harmonised initiative in the municipalities. However, the specific implementation of health promotion packages varies greatly. In collaboration with the Danish Veterinary and Food Administration and the Danish Health Authority, the Centre will be able to investigate the potential for improving advice on implementing the health promotion packages and thus build on one initiative already launched by the Novo Nordisk Foundation (Healthier Children 0–16 Years Old in the Municipalities). In collaboration with the Danish Veterinary and Food Administration and the Danish Health Authority, the Centre will also be able to contribute to proposing adjustments and expansion of the content of the health promotion packages as new knowledge about overweight and well-being emerges.

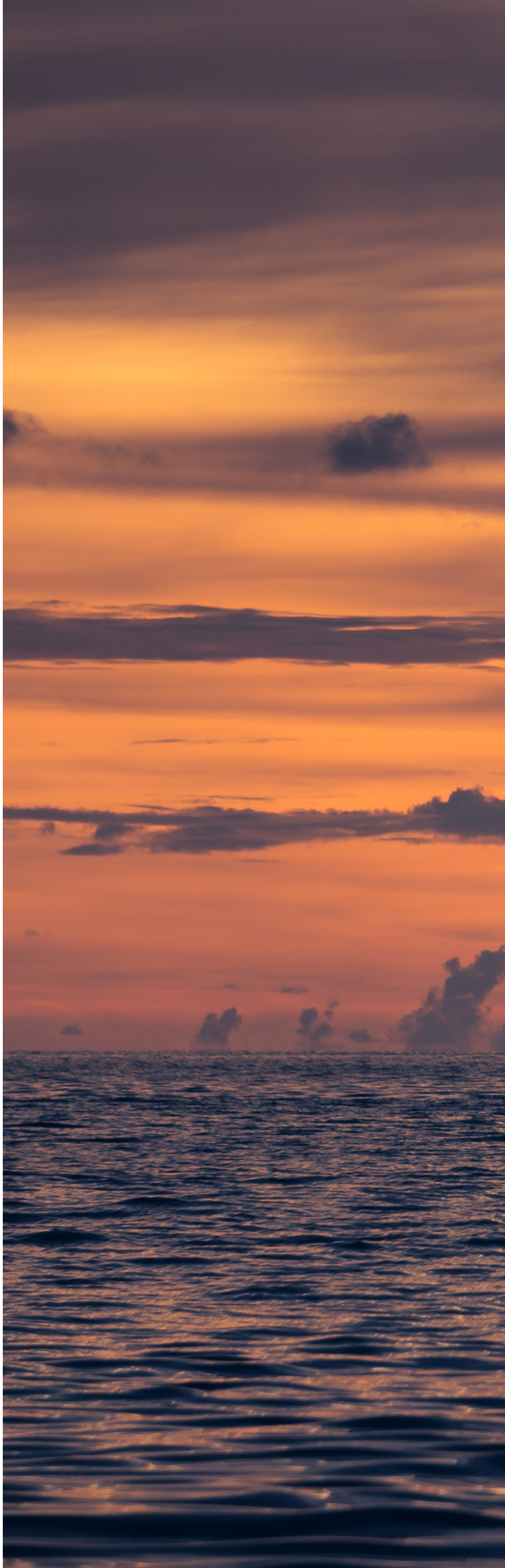
If a project is to be rolled out to many of the municipalities or even nationwide, establishing and facilitating networks among the municipalities would be advantageous, thereby enabling them to discuss and share experiences about specific problems and solutions. Here, organisations such as the Centre for Prevention in Practice of Local Government Denmark, the Danish Healthy Cities Network and the Intersectoral Prevention Laboratory are relevant partners.

Table 5.4. Examples of monitoring, data collection and dissemination activities

- Establishing a health profile for pregnant women, possibly based on the Danish National Health Survey.
- Establishing an overall health survey for children.
- Ongoing dissemination of data from health surveys.

5.4 Monitoring and collecting and disseminating data
The key to the promotion of healthy weight and well-being is a well-functioning data structure and high-quality data. This enables systematic and timely follow-up and adjustment of implemented initiatives. Denmark already has well-functioning registries, health surveys, cohort studies and databases, which provide unique opportunities for monitoring and conducting research on the trends in the health of large population groups over time. For children, however, there is still potential for stronger databases, since current population surveys and registries primarily have data on adults and diseases.

The Centre will therefore support the development of data infrastructure on the health of children and parents-to-be. This includes support for establishing such things as databases that collect health professionals' registrations but also health surveys that use questionnaires to reveal the self-reported health, well-being, and behaviour of the target group (for example, children or pregnant women). Optimally, data should be based on automatic harvesting of already collected data, so that professionals and children and parents are not burdened unnecessarily. The Centre will not build its own databases but will only support the establishment of new ones and the expansion of existing ones through partnerships. Data can be used both to monitor trends in overweight and well-being in Denmark and to assess the long-term effectiveness of specific initiatives. In addition, the Centre will strive to make data easily accessible for researchers and practitioners for planning, monitoring, and carrying out research in this field.



6 Competence development

Creating lasting change requires translating learning and knowledge into evidence-based educational programmes and activities. The Centre for Childhood Health will therefore strive to ensure that the professionals and volunteers in contact with children have the necessary knowledge and the right tools to support healthy weight development and promote well-being among children. Many professionals, directly or indirectly, influence children's lives in relation to healthy weight and well-being. However, no single profession has responsibility for health promotion, prevention, and treatment in relation to overweight and for ensuring well-being among children. With the right training, tools, and knowledge about the consequences for children, some professionals may experience in a novel way how important their role is for children.

The potential in various professions for influencing children's health and well-being can – with overlap – be categorised by their potential functions (Figure 11).

Healthy settings and detection lists the professions that contribute to children experiencing a healthy environment focusing on such things as physical activity, diet, sleep, screen time and well-being and those who have daily or fixed, regular contact with the children. Typically, these professions will be the first to become aware of, for example, poor well-being, inappropriate behaviour, and weight development[25] as well as particularly difficult family circumstances. These are thus the professions that need to know how they can bring attention to this and help the families in an appropriate way, most often by making contact with healthcare professionals or educational-psychological advisory service (PPR). Early-childhood educators and volunteers belong to this group. For the younger children, this group could also include public health nurses or general practitioners.

Prevention and treatment lists the professions that should take over the task when signs of inappropriate weight development or risky behaviour appear. Here, prevention should therefore also be understood as initiatives to ensure that the condition does not develop. Initiatives will typically be more individually oriented. Treatment is for the children who develop obesity and who need more extensive investigation and intervention. The professionals' need for competence development will typically include new knowledge, practical skills, and specific tools. This group primarily includes healthcare personnel, with whom most children do not have much contact in daily life.

Healthy settings and detection	Prevention and treatment	Education and training of professionals
• Early-childhood educators and family day-care workers • Primary school, secondary school and vocational schoolteachers • School dental care and dentists • Educational-psychological advisory service (PPR) and family departments of municipalities • Kitchen and canteen staff • Volunteers	• General practitioners • Hospital doctors • Midwives • Public health nurses • Nurses • Clinical dietitians	• Teachers at university colleges and universities • Internship supervisors • Trade unions • Employer and manager associations • Associations for subject teachers

Figure 11. Main role for professionals. Doctors and public health nurses also contribute to detection, but the contact with most children older than 5 years is sporadic

Education and training of professionals lists the groups that influence and have responsibility for, for example, basic education and the next generation of professionals and who should therefore ensure that students are offered the best education with the best teaching materials based on the latest available knowledge and in optimal settings for learning. In this group, internship supervisors play a key role in changing practice, since they are responsible for much of the professionals' internships.

In addition, key stakeholders, such as institutions and organisations and their management and trade unions must also be involved in competence development, especially when this means changing focus and practice. Without managerial and organisational anchoring and involvement, several types of competence development will not achieve the desired results – such as changing practice and understanding its importance.

6.1 Which competencies should be developed?

Competence development activities must be based on the various professions' need for new knowledge and skills within the theme of healthy weight and promoting well-being among children and with the involvement of the stakeholders. The work must build a bridge to the Centre's research activities and research testing in practice and must help to ensure that new knowledge is integrated into existing educational programmes and courses as well as contribute to scaling up the effective initiatives that are developed. Activities will therefore vary over time, as the Centre (or other actors) develops new knowledge and new practices. Below is an overview of possible initiatives.

6.1.1 Activities targeting basic or undergraduate programmes

The Centre will map the content and teaching materials of relevant educational programmes on healthy weight development and on promoting well-being. The programmes will be selected according to their relevance to children's health and well-being and the professions' contact with the children. The objective is to engage in dialogue with relevant educational institutions and public authorities to clarify whether there is a need for changes or for developing new projects that can contribute to ensuring that professionals get the necessary up-to-date knowledge and tools in their basic educational programmes.[26]

Teaching materials should be based on the latest knowledge, evidence, and practice, provide understanding of the complexity of the problem, and counteract stigma. When required, the Centre will therefore contribute to renewing teaching materials in close dialogue with relevant educational institutions and public authorities.

The Centre can also provide financial support and professional discussion and exchange of views and experiences for other activities supporting competence development, such as elective courses, summer schools, and journal clubs. This will also be offered to students and internship supervisors in the municipalities and the administrative regions.

Table 6.1: Examples of activities relating to the basic or undergraduate education of professionals

- Deep dives in several educational programmes to examine the need for developing the content of the programmes regarding health weight and how this is associated with well-being.
- Qualitative studies of several professions' competencies regarding healthy weight and well-being in, for example, the municipalities. Which competencies need to be developed?
- Developing tools for "the difficult conversation": how do you ensure a professional, non-stigmatising conversation on concern about a child's weight development with parents and the children themselves – both as continuing education and in the curricula of basic educational programmes?
- Development of supporting activities, such as teaching materials and summer schools.

6.1.2 Activities targeting continuing and further education

The Centre will also help to support and ensure activities related to continuing and further education. Continuing education will typically focus on shorter courses carried out as part of the work or in parallel with the work that upgrades qualifications in a specific area. This can, for example, include shorter courses, theme days, digitally available courses, and materials for self-study but also activities supplementing what workplaces already do in the form of peer training, work shadowing schemes, and situated learning in communities of practice. Most of the Centre's initiatives in competence development will be in this category, for instance as part of the implementation research and anchoring activities.

To a lesser degree, the Centre will also be able to provide financial or professional support for the work to develop qualifying education and training programmes. Today, there are various further education programmes in this area, and the further education for nurses to become public health nurses seems especially relevant in strengthening initiatives related to children's weight and well-being as part of the prevention task that this profession already carries out.

The Centre will therefore contribute to developing educational programmes as new knowledge and evidence emerges, including developing new master or diploma programmes that will lead to qualifications in relation to changed practice and new requirements for prevention initiatives in the municipalities, and to changed division of responsibilities between the municipalities and the administrative regions as a result of healthcare reforms etc.

Table 6.2. Examples of activities relating to further and continuing education of professionals

- Investigate the content of the public health nursing programme regarding healthy weight and well-being and the possibility of specialising within: prenatal care and newborns; infants, toddlers and young schoolchildren; older schoolchildren; and especially vulnerable families.
- Myth-busting courses: overweight is a recent professional challenge, and many professionals have never therefore been taught in this subject, which can lead to simplified explanatory models that can contribute to weight stigma, and some professions lack knowledge about how unhealthy weight development is associated with poor well-being among the children and bias among the personnel.
- Continuing education course for municipalities: training of non-health professionals in being able to recognise early high-risk behaviour for unhealthy weight development, poor well-being and understanding how being overweight affects, for example, well-being.[27] This includes knowledge about the importance of well-being in preventing overweight.
- Continuing education course for upper-secondary teachers and vocational school teachers: knowledge about and detection of high-risk behaviour in relation to weight, eating disorders, weight stigma and well-being, including knowledge about the importance of well-being in preventing overweight.
- Continuing education course and pilot project aimed at day-care cooks in the municipalities' day-care facilities and canteens: understanding overweight and how it affects the children physically and mentally, with improving insight into how they, as professionals, can influence food literacy among children and contribute to healthy weight development.
- Consensus conferences for physical education teachers and decision-makers: how to improve the integration of physical activity in primary and lower-secondary schools, and how should this be supported through education?

6.1.3 Activities targeting volunteers

Active leisure time with peers and physical activity contributes to healthy weight and well-being.
Children that have special challenges due to poor well-being, overweight or underweight might be less interested in participating in leisure activities, especially sports activities, because of low self-esteem, stigma, and bullying.

Every day, volunteers in associations and clubs make great efforts for the benefit of, and act as role models to, children and young people. However, most volunteers do not have formal training in managing problems related to weight and well-being, in the dynamics in children's groups, and in how to create inclusive peer-groups. There is great potential in developing training for volunteers, it is believed, since all leisure activities will be expected to have children with overweight as participants, and as role models volunteers can contribute to healthy weight and well-being, including by counteracting weight stigma and bullying. This training should be voluntary and should be aligned with the volunteers' resources and ability to participate more actively in this type of work. The potential responsibility of the associations and clubs for which type of association or club they are and would like to be can therefore also be emphasised as well as how the clubs and associations translate this into practice – their values. This work can be developed with the municipalities or the federations, confederations and other main organisations of the associations and clubs.

Table 6.3. Examples of leisure activities

- Courses and modules for voluntary managers and coaches on healthy weight, the importance of unhealthy weight for children, bullying, stigma and healthier habits.
- Pilot projects in several municipalities – sets of rules and best practices developed by the municipal cultural and leisure administrations and the associations and clubs and follow-up through the municipality's allocation of premises and subsidies according to the Act on Non-formal Education and Democratic Voluntary Activity.

6.1.4 Teaching materials and activities for primary, lower-secondary schools, and upper-secondary schools

The children and adolescents are an important resource in developing healthy weight and strengthening well-being and communities. The Centre will therefore initiate the development of teaching materials and services that schoolteachers can include in teaching, for example, in sports, biology, home economics, and physical education. The work will be carried out in close collaboration with educational institutions and teachers. Experts such as specialist consultants in the Ministry of Children and Education or other relevant public authorities must be involved if the process is more long-term. The materials are also meant to help support the promotion of well-being in the children's environments and the importance of well-being for action competence and making life changes.

Table 6.4. Examples of activities relating to schools

- Develop courses and materials for primary and lower secondary schools and upper secondary schools in collaboration with relevant actors that contain both theory and practice on health, prevention, well-being and the importance of well-being for health and high-risk behaviour. The topics can include enhancing students' knowledge on sugar-sweetened beverages, dietary recommendations, climate-friendly diet and body diversity and can also include practical aspects such as physiological tests, body composition scans etc.
- Develop courses and materials for vocational education and training for young people (EUD).
- Develop materials in the form of, for example, videos in collaboration with relevant partners that can be used both at school and at home.
- Develop materials in collaboration with subject teachers that can be shared through their associations or clubs or, for example, Denmark's joint learning portal EMU.dk.

6.2 Teaching methods and digital platforms

The Centre will draw on many methods and tools for teaching, including e-learning, blended learning, problem-based learning as well as situated learning in communities of practice. Methods will be developed and used so that they are relevant for the relevant level of education and/or subject area.

Platforms for digital courses, materials, and exchange of experiences, aimed at students, professionals, and volunteers, are an effective way to potentially reach many users. Platforms are also a medium that enables the professionals and target groups to be involved in the development, since they will be able to contribute, for example, specific ideas in daily life and thus contribute to the exchange of experience.

The Centre will investigate how existing platforms can be strengthened or whether new initiatives are needed. The Centre will not anchor the new platforms; like other activities, they will be implemented within existing structures – possibly as a partnership between several actors – to obtain the greatest possible breadth in terms of content, target groups, etc.

Finally, the Centre will be able to hold symposia at which various groups can be updated on new knowledge, best practices, experience from projects, etc. These can, for example, be developed in collaboration with educational institutions and trade unions.

Table 6.5. Examples of activities related to digital solutions for knowledge sharing

- Development of digital platforms for volunteers and for professionals, possibly expanding existing ones.
- Contributing to creating one point of entry to find and share material on healthy weight and obtain an overview of relevant courses, achieved, for example, with inspiration in the Catalogue of Courses on Children and Denmark's joint learning portal EMU.dk.

7 Knowledge sharing within Denmark and internationally

The Centre for Childhood Health will use communication and advocacy to contribute to creating change and promoting the conditions for all children in Denmark to have the opportunity to have a healthy weight and to maintain it throughout life. The Centre will also ensure that knowledge and experience is shared and exchanged with research institutions and actors in Denmark and internationally.

7.1 Communication and advocacy in Denmark

The Centre will provide professional communities, decision-makers, and the general public with evidence-based knowledge about overweight prevention and treatment and about well-being among children. The aim is that new initiatives and policies will be based on the best current knowledge on promoting healthy weight and well-being among children and reducing weight stigma. In addition, the Centre will facilitate intersectoral collaboration, partnerships, and advocacy to promote healthy weight and well-being among children.

7.1.1 Stakeholders and target groups

The target groups for the Centre's communication and advocacy are:

- Researchers who have a professional interest in the results and initiatives launched by the Centre
- Professionals, both healthcare personnel and other professions, who work with children, health promotion, and well-being, including early-childhood educators and teachers
- Political decision-makers, who can shape local and national settings so that children can experience healthy weight and well-being
- Civil society actors, including associations and organisations working for children to have healthy lives
- The population of Denmark, which can take a personal interest in and, with better knowledge, can help to counteract weight stigma
- Parents, who may have a personal interest in applying new knowledge and experience related to healthy weight and well-being
- Children: the Centre would like to contribute to improving children's knowledge about healthy weight, well-being, sleep, diet, physical activity, communities and about being a good friend

The Centre will develop citizen-oriented information efforts in collaboration with relevant public authorities such as the Danish Health Authority and Danish Veterinary and Food Administration but will also create visibility related to the results and the knowledge that arises from the Centre targeting, for example, researchers and decision-makers. As a result, the Centre must respond to both professional and personal attitudes towards the knowledge and the changes the Centre's work will develop.

Since the Centre operates in an area characterised by different levels of knowledge, communication must be aligned with and have respect for the target groups. For example, an initiative targeting children could be a school course focusing on accepting differences and avoiding weight stigma developed in partnerships with clubs, organisations, and other actors experienced in communicating with children. Differentiated information may also be needed according to educational background, language, and/or issue.

The Centre will help drive societal changes and change attitudes towards overweight. Denmark faces a complex task that can be compared to the changes in attitudes towards tobacco and smoking in Denmark during the past 20 years. As a society, reassessing some basic perceptions of what healthy weight entails and how we talk about weight is needed. How much responsibility can be placed on the individual, and how much can be placed on the conditions and settings and on other societal factors that affect weight and well-being? People will have many diverse attitudes towards this. The Centre must be an active participant in this debate and provide scientifically based contributions to it.

Table 7.1. Examples of activities relating to communication in Denmark

- Myth-busting campaign on Facebook or other media.
- Appointing ambassadors for the Centre.
- Establishing dialogue with children's role models, such as YouTubers, about their influence and equip them with knowledge about healthy weight, well-being, stigma and bullying.
- Participating in debate and knowledge sharing through articles, op-eds, debate posts, consultation responses, democracy festivals, networks, alliances, podcasts, TV etc.
- Conducting conferences and webinars.
- Information initiatives on topics related to preventing overweight and promoting well-being among children.
- Population surveys on attitudes towards overweight in Denmark.

7.1.2 Communication phases and channels

The Centre's communication will have two phases. In the first phase, new knowledge will primarily be disseminated to researchers, professionals, decision-makers, and civil society actors. Typical activities will include white papers, reports, and other publications as well as meetings, networks, seminars, and professional articles in media such as member magazines.

As more knowledge is created in this area, the Centre will initiate a second communication phase with increased focus on translating new knowledge and changes into information targeting the public. An example is information campaigns on social media that combat myths about weight and health. These should include ambassadors and influencers who can use their platforms to help disseminate relevant messages about healthy weight and well-being. The two communication phases are not sharply separated, and the communication to the target groups will therefore take place concurrently (Figure 12).

Figure 12. Phases of the Centre's communication

7.1.3 Collaboration with actors in Denmark

Collaborating with relevant actors in Denmark and internationally who also work to promote healthy weight and well-being will be obvious to create awareness about the problem. In Denmark, this will involve, for example, The Healthy Weight Alliance and the Obesity Alliance. The Centre for Childhood Health and the Danish National Center for Obesity are commited to join a strategic collaboration to optimally cover this entire area. Collaborating with the Danish National Center for Obesity will be especially relevant in developing consultative and treatment offers for children and young people since the Center has special knowledge and communicates this within the area of treatment. Close cooperation should be established between the two centres.

7.2 Denmark as a leading country and international orientation

A major initiative such as the Centre will enable Denmark to make a mark internationally. Most of the world experiences the same or more extensive challenges in the development of overweight and poor well-being and joining forces to reverse this trend has obvious advantages.

New research results and best practices should be exchanged rapidly. To ensure this, the Centre will stimulate and facilitate international research collaboration to strengthen the evidence base for programmes to promote healthy weight and well-being.

The Centre will involve leading international research communities, institutions, and organisations in creating consensus on professional recommendations for health-

promoting, and for preventive and treatment interventions, both structural and individually oriented. Emphasis must also be placed on gathering knowledge about the economic consequences of having overweight, including loss of productivity, highlighting the macroeconomic benefits of prevention and treatment. This is important knowledge for Danish and international health policymakers and for global organisations such as the World Health Organization (WHO).

Consensus on new knowledge and effective initiatives can also be translated into international offers for continuing education developed in collaboration with universities and university colleges and offered through platforms such as Coursera, the World Obesity Federation and WHO.

Table 7.2. Examples of activities relating to the international exchange of information

- Participating in and conducting conferences and international symposia.
- Holding consensus conferences with international experts to prepare and disseminate reports and white papers.
- Developing digital continuing education courses.

Internationally, the United Kingdom has positioned itself strongly on the agenda in recent years. The United Kingdom has the same challenges as Denmark and most of the western world as regards to social inequality, pressure on the healthcare system, and poor well-being – although it has a higher prevalence of childhood overweight than Denmark. The British government and several organisations have made their mark within this agenda, such as Bite Back 2030, Impact on Urban Health, and the Obesity Health Alliance. Collaboration and knowledge exchange with such organisations will be beneficial to draw on their experience. This might include knowledge about the effects of legislative changes, implementation of policies, and involving socially vulnerable groups, about which the United Kingdom has greater practical experience.

Other countries also have centres and partnerships with which collaboration may be relevant. For example, the Amsterdam Healthy Weight Programme (Netherlands), Ending Childhood Obesity (ECHO) under SWElife (Sweden), the Center for Childhood Obesity and Nutrition (California, USA) and the Australian Prevention Partnership Centre. Partnerships with related initiatives will provide the opportunity to launch joint initiatives within knowledge sharing, developing tools for managing linguistic actions, etc.

7.3 Communication principles for the Centre

In all its communication, the Centre will endeavour to:

- Communicate objectively about healthy weight and well-being based on knowledge and documented initiatives and based on the needs and prerequisites of the target group
- Be a significant voice in the public debate about healthy weight and well-being
- Seek to eliminate myths about weight and health
- Respect the strong feelings associated with attitudes about body weight
- Pay particular attention to how the use of language and choice of images can positively and negatively shape perceptions and attitudes about weight
- Contribute to reducing weight stigma

8 Structure of the Centre

On 1 January 2023, the Centre for Childhood Health was established as a private association, founded by the Novo Nordisk Foundation and the Danish Ministry of Health. The members of the association can include public and private partners and organisations that contribute to fulfilling the Centre's purpose through their work:

- Ministries and agencies focusing on the health and well-being of children and young people in Denmark
- Interest organisations for Denmark's administrative regions and municipalities
- Foundations and other private actors that provide grants for projects in the Centre

The association's articles of association regulate the purpose of the association, composition of members, etc.

8.1 Governance

8.1.1 Board of Directors

The Centre for Childhood Health is managed by a Board of Directors comprising seven to eight members.

(a) Minister for Health may nominate a candidate for Chair of the Board. Both founding parties must approve the candidate before nomination.
(b) The Novo Nordisk Foundation has the right to nominate two candidates.
(c) The Danish Ministry of Health has the right to nominate one candidate, unless the Ministry is already represented by the chair candidate.
(d) The Danish Health Authority has the right to nominate one candidate unless the Danish Health Authority is already represented by the chair candidate.
(e) The Danish Ministry of Food, Agriculture and Fisheries has the right to nominate one candidate.
(f) Local Government Denmark has the right to nominate one candidate.
(g) Danish Regions has the right to nominate one candidate.

The Minister for Health will appoint a Chair of the Board, either pursuant to (a) above or one of the elected Board members. Both founding parties must approve the candidate before appointment.

The Board's main tasks will be to carry out overall management, including final decisions on the action plans that specify the Centre's activities. Professional and managerial qualifications will be emphasised in the composition of the Board. The articles of association and the rules of procedure for the Board describe the Board's work, composition, areas of responsibility, and competence profiles.

The steering group for establishing the Centre, with representatives from the Danish Ministry of Health, the Danish Health Authority and the Novo Nordisk Foundation will be functioning until the Centre's Board is established and in operation.

8.1.2 CEO of the Centre

The Centre's CEO is responsible for the operation of the Centre and has overall responsibility for the Centre's activities, including recommendations to the Board and implementation of the Board's decisions. The founding parties will hire the first CEO, since the recruitment process will be initiated before the Centre's Board is established and in operation. In the future, the Board will hire the Centre's CEO.

The CEO has authority over the total budget as delegated by the Board. Professional managers or a Deputy CEO may be employed to support the CEO, so that the Centre's Management comprises a team that can broadly cover the Centre's four areas of activities and administration.

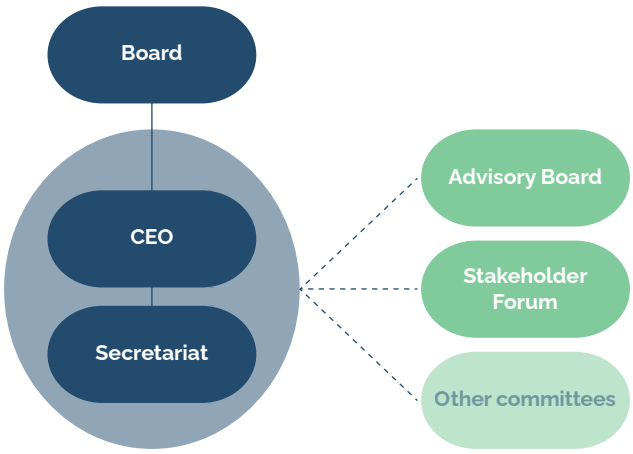


Figure 13. Governance for the Centre for Childhood Health

8.1.3 Advisory Board

To support the Centre's activities and the Centre's CEO, the Board will appoint an Advisory Board. The Advisory Board comprises 20–25 people, including experts from Denmark and abroad within the Centre's core activities related to healthy weight and well-being.

The Advisory Board will advise the Centre's Management and Secretariat and make proposals and professional recommendations related to the Centre's strategies, initiatives, and action plans, which are finally approved by the Centre's Board. The Rules of Procedure for the Advisory Board describes its composition, competence profile, and work.

8.1.4 Stakeholder involvement

The Management team is responsible for ensuring a fixed structure for involving stakeholders and actors. To ensure this, a Stakeholder Forum will be set up when the Centre is founded. The aim is to ensure dialogue, information, and involvement of actors in the Centre's work and activities. In addition, the Stakeholder Forum can act as an advisory body for the Centre. The composition of members will ensure that patient associations, civil society actors, trade professional organisations, practitioners, etc. are involved. The Centre's CEO describes the rules of procedure for the Stakeholder Forum with the approval of the Centre's Board.

8.1.5 Other committees

The Board and/or the CEO may establish permanent or ad hoc committees as necessary to assist the Centre within specific areas of the Centre's purpose.

The CEO and the Board will decide on establishing these and other committees and their rules of procedure.

8.1.5 Organisation of the Centre and Secretariat

The Centre's Secretariat has a decisive role in coordinating, developing, and co-creating to ensure progress in projects, translation of new knowledge into practice, and coordination with stakeholders. Together with the CEO and based on recommendations from the Advisory Board and possibly other committees, a main task will be to prepare the action plans that determine the Centre's activities, which must be finally approved by the Board. At all times, the CEO of the Centre determines the Centre's organisation. The organisation – in addition to the CEO – is expected to comprise several teams covering both developmental and operational tasks within the described areas of activities. The Centre is expected to have about 25 employees when fully implemented.

The Centre will have natural overlap between several teams and areas of activities, and there will be extensive collaboration, in which employees, depending on the specific projects, will be able to manage tasks in several teams. All the professional teams will also seek to affiliate thesis students and internships as part of their study programmes.

Figure 14 shows the overall organisational structure in the Centre's start-up phase.

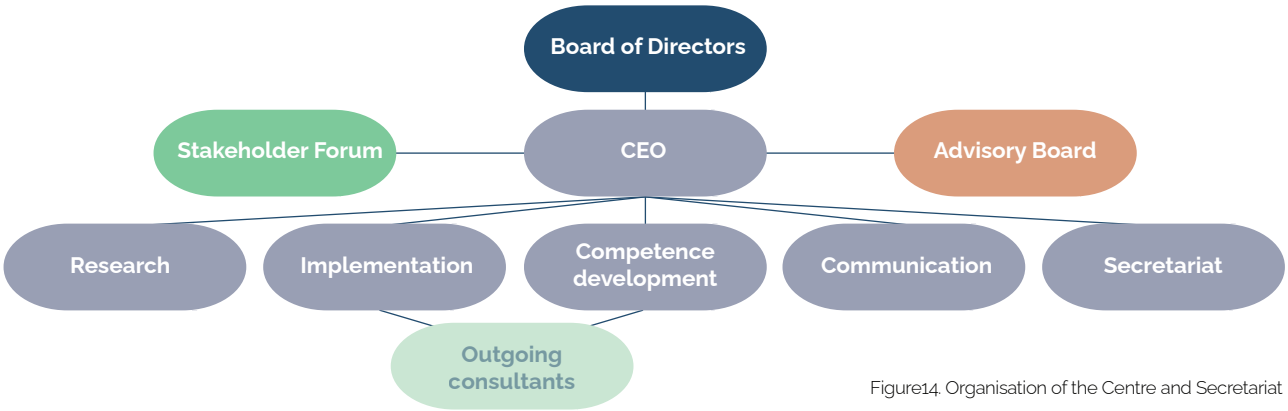


Figure14. Organisation of the Centre and Secretariat

Research team
The research team will create and gather new knowledge through research and by conducting and participating in symposia and consensus conferences, but its primary function will be to identify and provide financial support for research projects carried out by external researchers. The Centre will have a close scientific connection to all externally run projects, possibly with the Centre as a contributing project participant. Likewise, the possibility of having PhD students affiliated with the Centre in collaboration with research institutions on specific research projects should be investigated.

The team is expected to comprise about five employees with broad competencies within life sciences, health sciences, social sciences, and statistics.

Implementation team
The implementation team will comprise implementation researchers and employees who can assist processes related to anchoring in society.

The tasks of the implementation researchers comprise planning, supporting, and conducting research on the implementation of large research-based intervention studies. Another main task is to identify and financially support implementation research projects carried out by external actors. The team is expected to comprise about three employees with competencies within social sciences, health sciences, data science, and behavioural sciences.

Outgoing consultants: provide help to ensure the anchoring of effective efforts in, for example, municipalities.

Competence: in-depth knowledge of municipal practices, organisational changes, and policy.

Number of employees: the Centre will fund two employees for this area when the Centre is fully established. As implementation activities are rolled out, more employees can be hired for this area. The costs for additional employees for the team will be covered as co-funding of the implementation activities.

Competence development team
The competence development team will support and plan activities related to the competence development of professionals and volunteers and support the development of learning materials. The team will also contribute to disseminating the new learning and practice through seminars etc. A main task will be to identify and provide financial support for projects carried out by external actors.

In addition, employees from the team will be able to be deployed on projects in collaboration with the outgoing consulting team, that, for example, together with an employee from the implementation team, can kick-start anchoring activities in municipalities.

The team is expected to comprise three employees with broad competencies within education, including especially professional education, academic education, continuing and further education and didactics, learning methods and media. Preferably with a professional background within the Centre's core areas.

Communication team
The communication team will support the Centre's communication both in Denmark and internationally.

The tasks of the team will be:
- Managing special stakeholder groups of importance for the Centre's goals, focusing on, for example, evidence-based change and implementing new practices
- Supporting internal and external communication for the CEO of the Centre and the Centre, including media management
- Supporting communication on research and implementation or anchoring projects
- Developing and operating the Centre's website and social media; and
- Participating in competence development activities, such as digital portals and learning methods.

The team is expected to comprise four to five employees with competencies in strategic communication, stakeholder management, media management, and digital media.

Secretariat and operations
The Secretariat will serve the Board, the CEO of the Centre, the

Advisory Board, and possibly other committees and support strategic work and the preparation of annual action plans with the professional teams. In addition, the Secretariat will manage administrative functions such as budget, accounting, human resources, payroll, legal matters, impact assessment, portfolio management, grant administration, information technology, operation, and facility management, etc. Some of the administrative functions and facility management will be expected to be managed by external suppliers.

An administrative set-up will be prepared in which external suppliers manage information technology support and basic administrative services and systems, such as managing payroll. In addition, an important task will be the development of grant procedures and the administration of grants for the purpose of preparing and following up on the CEO's recommendations and the Board's decisions on grants. This includes preparing, establishing, and implementing procedures for implementing peer-review processes, which will ensure transparency and objectivity in the process of awarding grants.

The team is expected to comprise 10 employees, who jointly will be able to cover all the areas outlined above.

8.2 Office and facility management

When the Centre is established, the offices will be located in the Capital Region close to the founders of the association (the Danish Ministry of Health and the Novo Nordisk Foundation) as well as the closest partners (the Danish Health Authority, the Danish Veterinary and Food Administration, Local Government Denmark, and Danish Regions). The Centre will lease private premises. The lease agreement is expected to cover facility management and canteen operations.

In addition, the costs for establishment, ongoing maintenance, and extra costs for electricity, etc. will be covered by the Centre's grants.

8.3 Finances

The Novo Nordisk Foundation has allocated a financial framework for the Centre's activities of DKK 100 million per year over 10 years, and the Danish Ministry of Health has allocated a framework for an operating grant of DKK 10 million per year over 10 years. The grants will cover the costs for establishing the Centre, salaries for Centre employees, the activities initiated to execute the Centre's strategy and action plans as well as rent, administration, and other operating costs for the Centre.

8.3.1 Budget

The aim is for the Centre's costs over the grant period to be distributed as follows:

- 20–25% for salaries;
- 60–65% for strategic work and projects carried out by the Centre's employees, in partnerships or grants awarded through open calls in accordance with action plans; and
- 15–20% for administration, operation etc.

Estimated annual budget and total budget for the Centre for 2023–2032

The annual budget is estimated to be about DKK 105–110 million – although varying over the years – and the total budget DKK 1.1 billion for the entire period included an assumption of 3% annual inflation. The funds cover operating expenses for activities and projects carried out by the Centre's employees and salaries and operating expenses for developing activities and projects in collaboration with external stakeholders.

Centre	DKK million
Management, Secretariat, and operations	32
Research funds	22
Implementation funds	30
Competence development funds	10
Communication funds	4
Strategic funds	5
Buildings, energy etc.	4
Annual estimate	**105-110**
Expected establishment costs	**20**
Total estimate for the whole grant period of the Centre, including projection	**1.100**

8.3.2 Co-funding and overhead

Since the Centre has no fixed partnerships, it has no fixed agreements regarding co-funding. As one of the first tasks, the Centre will describe its principles for grant administration. These will accommodate the many different types of Centre projects, of which some will be developed and implemented by the Centre itself and others will be carried out by open calls. Several activities linked to competence development and knowledge sharing can also be expected to be managed as procurement. The principles for allocating funds will have to address both co-funding, including principles for financing outgoing consulting teams, and overheads. In principle, the Centre will not be able to cover overhead costs but rather the direct costs linked to the project. The Centre's principles for grant administration should be prepared by the steering group for establishing the Centre. The principles will become part of the grant agreement for the Novo Nordisk Foundation's grant for the Centre.

8.4 Launching the Centre and phasing it out

Centre-related activities have already started in some of the Novo Nordisk Foundation's departments, including the Healthy Weight Center. The Centre must ensure that it obtains the knowledge and experiences from these projects so that important knowledge is not lost. As part of the establishment, the Foundation will make employees who have been involved in the project available part time for a time-limited period to ensure that the new CEO gets off to a good start – with the understanding of the Centre, the expectations from the founding parties for the project and the objectives, as well as building up the organisation, including assisting with recruitment and administrative set-up. The scope of this task will be described in more detail in the grant agreement and approved by the management of the Foundation.

The grant agreement from the Foundation will describe conditions for the grant in more detail. As a starting-point, the Foundation has awarded the grant for a 10-year period, with annual payments based on written reports twice a year on the achieved results and impact as well as budgets and action plans. This is in accordance with the Foundation's currently applicable funding practices. In addition, the grant agreement and its implementation will be continually followed up in dialogue between the Foundation and the association behind the Centre. Decisions from meetings will be publicly available and will be submitted to the Centre's Board. During 2023–2032, two evaluations will be carried out. After 3 years, an evaluation will be conducted to ensure that the Centre has made good progress and can document the necessary progress. After 7 years, an evaluation will again be arranged to examine which possibilities for continuing the Centre should be investigated and possibly whether the activities should be phased out at the end of the 10-year grant period.

With the agreement on a health reform from May 2022, a broad majority in Denmark's Folketing (Parliament) decided to give priority to allocating DKK 10 million annually in 2023–2032 to obtain more knowledge about health and well-being. This funding will co-finance the Centre for Childhood Health. The conditions for the grant will be determined in more detail in autumn 2022. The grant agreement and its implementation will be followed up in dialogue between the Danish Ministry of Health and the association.

9 Definitions

Healthy weight
The Centre for Childhood Health defines healthy weight as weight associated with physical, mental, and social well-being that contributes to creating a basis for a healthy childhood and adult life. At the population level, it is guided by the usual body mass index (BMI) categories, but at the individual level, the child's growth curve, body composition, health behaviour, and living situation are also important factors.

Health promotion
Health-related activity that seeks to promote the health of the individual and public health by creating settings and opportunities for mobilising the resources and action competence of patients and other people.[28] In this context, we focus on the general population (children and their families).

Prevention
Health-related activity that seeks to prevent the occurrence and development of diseases, psychosocial problems, or accidents and thereby promote public health.[29] It is used here primarily as preventing overweight, maintaining a healthy weight, and preventing poor well-being.

Treatment
In this context, treatment is defined as lifestyle interventions targeting children who already have overweight or obesity. Initiatives are based in either the municipalities or the administrative regions. The Centre for Childhood Health does not work with pharmacological or surgical treatment of overweight.

Weight categories
For adults, underweight is defined as BMI <18.5, overweight as BMI ≥25 and obesity as BMI ≥30. For children, BMI varies with age and the onset of puberty, which is why the fixed BMI limit values used for adults cannot be used for the various weight categories for children. Therefore, no reference is made to specific BMI limit values but exclusively to the categories of underweight, overweight and obesity, of which overweight and obesity collectively refer to "overweight", unless otherwise specifically mentioned.

Mental health
Mental health is a state of well-being in which an individual can develop his or her abilities, manage the challenges and stress of everyday life and enter into communities with other people. When the definition for mental health is used, it is because well-being and mental health are treated as synonyms in this context. Thus, the work with well-being must be seen in the theoretical framework of mental health.

Well-being
Well-being is about how we feel about ourselves and our surroundings. Our well-being is promoted and inhibited in interaction with external factors and deals with mental resources and abilities that are necessary to be able to develop and continually cope with the various challenges of life. Well-being is created by such means as experiencing supportive social relationships, by being part of the community, by recognising one's own competencies and by having a positive self-image.

10 References and endnotes

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Kierkegaard L et al. Kortlægning af livsstilsinterventioner til børn og voksne med svær overvægt i regioner og kommuner. National Institute of Public Health, University of Southern Denmark, 2017.

[14]Kiel Obesity Prevention Study (KOPS), Amsterdam Healthy Weight Programme (AHWP).

[15]Bruun JM et al. Forebyggelse af overvægt blandt børn og unge [Prevention of overweight among children and young people, only main conclusion in Danish]. Danish Council on Health and Disease Prevention, 2021.

[16]Bruun JM et al. Forebyggelse af overvægt blandt børn og unge [Prevention of overweight among children and young people, only main conclusion in Danish]. Danish Council on Health and Disease Prevention, 2021. The risk markers in the first box are from page 10 of the report.

[17]Roager HM et al. Personal diet–microbiota interactions and weight loss. Proceedings of the Nutrition Society. 2022;81:243–254.

[18]Turning the tide a 10-year healthy weight strategy. London: Obesity Health Alliance, 2021, and Bruun JM et al. Forebyggelse af overvægt blandt børn og unge [Prevention of overweight among children and young people, only main conclusion in Danish]. Danish Council on Health and Disease Prevention, 2021.

[19]The Centre has drawn up a roadmap for research and implementation that deepens the scientific basis for the activities that the Centre highlights in the various age groups. This strategy is based on literature studies and Bruun JM et al. Forebyggelse af overvægt blandt børn og unge [Prevention of overweight among children and young people, only main conclusion in Danish]. Danish Council on Health and Disease Prevention, 2021 and, to a lesser extent: Evidens for livstilsinterventioner til børn og voksne med svær overvægt: en litteraturgennemgang. Performed by the University of Copenhagen on behalf of the Danish Health Authority, 2018. In addition, the Centre has developed its own analysis and discussions with leading Danish and international experts.

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[25]It will be obvious to focus on both overweight, underweight and risk behaviour in educational initiatives for professionals and volunteers with daily contact with children and adolescents. Especially for older children and young people, where most eating disorders develop.

[26]Changes in undergraduate education must be managed differently based on the level at which seeking influence will be easier or more difficult. The content of education is regulated in the educational programme's respective executive orders under the ministry. The institutions implement the content into curricula, where they coordinate and have joint curricula at the national level in some areas. Choice of teaching materials and methods is implemented locally at the institutions.

[27]The Novo Nordisk Foundation has previously provided a grant for a similar course with a focus on eating disorders and self-harm targeting teachers, early-childhood educators, inclusion supervisors in schools, social workers etc.

[28]Terminologi: forebyggelse, sundhedsfremme og folkesundhed [Terminology: prevention, health promotion and public health, only in Danish]. Danish Health Authority, 2005.

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About the Centre for Childhood Health
The Centre for Childhood Health will be established in collaboration between the Danish Ministry of Health and the Novo Nordisk Foundation. The Novo Nordisk Foundation is funding the Centre for Childhood Health through a grant of up to DKK 1 billion over 10 years. With the agreement on a health reform from May 2022, a broad majority in Denmark's Folketing (Parliament) also decided to give priority to allocating DKK 10 million annually in 2023–2032 to obtain more knowledge about health and well-being. This funding will co-finance the Centre.

The purpose of the Centre is to contribute to promoting healthy weight and well-being and to prevent overweight among children through research, implementation, and competence development. The mission of the Centre for Childhood Health is to contribute to reducing the prevalence of overweight and improving the well-being of children in Denmark.

SUNDHEDSMINISTERIET

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