

Resumé af ph.d.-afhandling- Britt Wang Jensen

Effects of a school-based intervention on dietary intake, and the association between beverage intake and the development of obesity during childhood- Results from The Copenhagen School Child Intervention Study

Forekomsten af overvægt og fedme er høj blandt børn og unge i de fleste vestlige lande, heriblandt Danmark. Sodavand og sukkersødede drikkevarer er nogle af de kostkomponenter, som er blevet foreslået at være associeret med udvikling af fedme. Den mulige sammenhæng er dog stadig til debat, og de fleste af de studier som rapporterer en direkte sammenhæng mellem indtaget af sodavand og sukkersødede drikkevarer er gennemført i USA. Generelt lever danske børns kostvaner ikke op til de nordiske næringsstofanbefalinger, da indtaget af fedt og tilsat sukker i kosten er højere end anbefalet og indtaget af kostfibre er lavere end anbefalet. Da kostvanerne kan være associeret med udvikling af livsstilssygdomme er det vigtigt at forsøge at etablere sunde kostvaner så tidligt i livet som muligt. Folkeskolerne er blevet foreslået som værende centrale arenaer til at implementere og gennemføre sundhedsfremmende aktiviteter, grundet deres potentialer til at ramme børn fra alle sociale lag.

Vi ønskede derfor at undersøge; 1) om indtaget af søde drikke i barndommen er associeret med udvikling af fedme blandt de danske børn som deltog i *The Copenhagen School Child Intervention Study* (CoSCIS); 2) effekten af en dansk multi-komponent, skolebaseret intervention, CoSCIS, på børns kostindtag, med fokus på mulige forskelle mellem børn med forskellige socioøkonomiske baggrunde.

Analyserne i afhandlingen er baseret på CoSCIS som er et treårigt multi-komponent skolebaseret interventionsstudie. Studiet inkluderer 701 børn, hvor information blev indsamlet henholdsvis præintervention (6 år), postintervention (9 år) og ved en efterfølgende opfølgning (13 år). Der blev indsamlet information om kostindtag, antropometri og socioøkonomisk status, som er de primære variable inkluderet i analyserne i afhandlingen.

Vi kunne hverken be- eller afkræfte den direkte association mellem indtag af sukkersødede drikkevarer og udvikling af fedme, som er blevet rapporteret i nogle tidligere publicerede studier. Vi observerede en svag direkte sammenhæng mellem indtaget af søde drikke postintervention (9 år) og ændringen i hudfoldstykkelser fra postintervention til opfølgningen (9-13 år). Ligeledes observerede vi en tendens til en sammenhæng mellem ændringen i indtaget af søde drikkevarer fra præ- til postintervention og efterfølgende ændring i hudfoldstykkelser fra postintervention til opfølgningen (9-13 år). Samme tendens blev observeret for indtaget af sodavand blandt børnene i interventionsgruppen, mens en tendens til en omvendt sammenhæng blev observeret i sammenligningsgruppen. For indtaget af sukkersødet drikkevarer så vi ingen sammenhæng. Vi fandt ligeledes heller ikke nogen sammenhæng for indtaget af søde drikke præintervention (6 år) eller for ændring i body mass index (BMI).

Overordnet var indtaget af søde drikke ikke associeret med udvikling af fedme. På trods af, at vi ikke var i stand til at bekræfte hypotesen om en direkte sammenhæng mellem indtaget af søde drikke og fedme, var indtaget, specielt af saft, højt blandt de danske børn. Da disse drikkevarer har et højt indhold af sukker og generelt ikke bidrager med andet til kosten end energi, bør initiativer,

som har til formål at sænke indtaget af disse drikkevarer prioriteres i fremtiden. Derudover er det muligt, at et højere indtag af søde drikke, end observeret i dette studie, kan medføre fedme.

Analyserne af interventionseffekten på kostindtaget viste nogle interessante resultater, som desværre ikke er blevet publiceret endnu, og derfor ikke er præsenteret i dette resumé.

Summary

The prevalence of overweight and obesity among children and adolescents is high in most Western countries including Denmark. Soft drinks and sugar-sweetened beverages are some of the dietary components that have been suggested to be associated with adiposity. However, the causality of the association is still debatable and most studies reporting a direct association have been conducted in the United States. Generally, the diet of Danish children and adolescents does not fulfill the Nordic Nutrition Recommendations, since the intake of fat and added sugar is too high and the intake of dietary fibre is too low. As dietary intake is associated with the development of lifestyle diseases it is important to establish healthy eating habits early in life. Public schools have been suggested as central arenas for health promoting activities due to their potential to reach children from all levels of the society. Therefore, we wanted to examine 1) if the intake of sweet drinks is associated with subsequent development in adiposity among the Danish children participating in the Copenhagen School Child Intervention Study (CoSCIS), and 2) the effect of the multi-component school-based intervention, the CoSCIS, on selected parts of the children's diet, with specific focus on possible differences between children from different socioeconomic backgrounds.

The analyses in this thesis are based on the CoSCIS which is a three-year multi-component school-based intervention study including 701 children, that were assessed pre-intervention (age 6 years), post-intervention (age 9 years) and at a follow-up (age 13 years). Information was obtained on diet, anthropometric measurements and socio-economic status, which are the main variables used for analyses included in the thesis.

Overall, we were neither able to confirm nor refute the direct association between intake of sweet drinks and subsequent development of adiposity reported in some previous studies. We observed a weak direct association between intake of sweet drinks post-intervention (age 9 years) and change in skinfold thickness from post-intervention to follow-up (age 9 to 13 years), and between change in intake from pre- to post-intervention (age 6 to 9 years) and change in skinfold thickness from post-intervention to follow-up (age 9 to 13 years). No associations were observed for intake pre-intervention (age 6 years), or for change in body mass index (BMI). Similar trend in the results was observed in the intake of soft drinks among children from the intervention group, whereas a trend towards an indirect association was observed for the comparison group. No associations were observed for the intake of sugar-sweetened beverages.

Overall, the intake of sweet drinks did not seem to be associated with subsequent development of adiposity. Even though we were not able to confirm a direct association between sweet drink intake and adiposity, the intake especially of squash was high among the Danish children. Since these beverages are high in sugar and generally add nothing to the diet than calories, initiatives aimed at decreasing the intake of these beverages should be prioritized in the future. Furthermore, it could be assumed, that there is a threshold for the level of intake of sweet drinks and the association with adiposity, whereas higher intakes than observed in the present studies may lead to adiposity.

The results of this thesis showed some encouraging findings related to the effects of the Danish school-based intervention on dietary intake. However, since the results have not been published yet they are not included in this summary.