

Tiltak mot overvekt og fedme hos barn og unge

Notat fra Kunnskapsenteret
Systematisk litteratursøk med
sortering
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Tittel	Tiltak mot overvekt og fedme hos barn og unge – systematisk litteratursøk med sortert referanseliste
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Nasjonalt kunnskapssenter for helsetjenesten fremskaffer og formidler kunnskap om effekt av metoder, virkemidler og tiltak og om kvalitet innen alle deler av helsetjenesten. Målet er å bidra til gode beslutninger slik at brukerne får best mulig helsetjenester. Kunnskapsenteret er formelt et forvaltningsorgan under Helse- direktoratet, men har ingen myndighetsfunksjoner og kan ikke instrueres i faglige spørsmål.

Nasjonalt kunnskapssenter for helsetjenesten
Oslo, november 2012

Hovedfunn

Nasjonalt kunnskapssenter for helsetjenesten fikk i oppdrag fra Oslo universitetssykehus og Ålesund sykehus å vurdere tiltak mot overvekt og fedme hos barn og unge. For å løse oppdraget, søkte vi etter systematiske oversikter om temaet for å få oversikt over hvilke intervensjoner som er systematisk vurdert, både innen forebygging og behandling.

Metode

Vi utarbeidet søkestrategi, og gjorde systematiske litteratursøk i relevante medisinske databaser. Søkene ble utført i juni 2012. To prosjektmedarbeidere vurderte uavhengig av hverandre, relevansen til identifiserte referanser i forhold til inklusjonskriteriene.

Resultater

- Vi identifiserte totalt 1673 referanser. Av disse var 176 mulig relevante.
- Vi sorterte referansene i underkategoriene:
 - ✓ Kombinasjon av flere typer intervensjoner
 - ✓ Livsstilsintervensjoner:
 - Primær- og sekundærforebygging
 - Intervensjoner i skole eller samfunn
 - Tertiærforebygging/behandling
 - Kombinasjon av flere livsstilsintervensjoner
 - Kostholdsintervensjoner
 - Fysisk aktivitet
 - Adferdsintervensjoner
 - Familiebaserte intervensjoner
 - ✓ Medikamentell behandling
 - ✓ Kirurgisk behandling
 - ✓ Kostnadsanalyser/økonomiske evalueringer
 - ✓ Retningslinjer
 - ✓ Protokoller

Tittel:

Tiltak mot overvekt og fedme hos barn og unge – systematisk litteratursøk med sortert referanseliste

Publikasjonstype:

Systematisk litteratursøk med sortering

Systematisk litteratursøk med sortering er resultatet av å

- søke etter relevant litteratur ifølge en søkestrategi og
- eventuelt sortere denne litteraturen i grupper presentert med referanser og vanligvis sammendrag

Svarer ikke på alt:

- Ingen kritisk vurdering av studienes kvalitet
- Ingen analyse eller sammenfatning av studiene
- Ingen anbefalinger

Hvem står bak denne publikasjonen?

Kunnskapssenteret har gjennomført oppdraget etter forespørsel fra Oslo Universitetssykehus og Ålesund sykehus

Når ble litteratursøket utført?

Søk etter studier ble avsluttet Juni 2012.

Key messages

The Norwegian Knowledge Centre for the Health Services has on behalf of Oslo University Hospital and Ålesund Hospital searched for publications on interventions in the management of overweight and obesity in children and adolescents.

Method

We performed a systematic search in various medical databases for systematic reviews in June 2012. Two authors screened the identified references for relevance in accordance with the inclusion criteria.

Results

- We identified 1673 references in total. Of these 176 were considered potentially relevant.
- We arranged the references into groups:
 - ✓ Combination of several interventions
 - ✓ Lifestyle interventions:
 - Primary and secondary prevention
 - School or community based interventions
 - Treatment
 - Combination of several lifestyle interventions
 - Dietary interventions
 - Physical activity interventions
 - Behavioural therapy interventions
 - Family based interventions
 - ✓ Weight loss drugs
 - ✓ Bariatric surgery
 - ✓ Cost-effectiveness/economic evaluations
 - ✓ Guidelines
 - ✓ Protocols

Title:

Interventions in the management of overweight and obesity in children and adolescents – systematic literature search

Type of publication:

Systematic reference list

A systematic reference list is the result of a search for relevant literature according to a specific search strategy. The references resulting from the search are then grouped and presented with their abstracts.

Doesn't answer everything:

- No critical evaluation of study quality
- No analysis or synthesis of the studies
- No recommendations

Publisher:

Norwegian Knowledge Centre for the Health Services

Updated:

Last search for studies: June 2012.

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Forord

Nasjonalt kunnskapssenter for helsetjenesten fikk i oppdrag fra Oslo universitetssykehus, Barneklubben, sosialpediatrisk seksjon ved Magnhild P Kolsgaard og Norunn Vetlesand, og Ålesund sykehus ved barnelege Bjørn Magne Jåtun å vurdere litteratur om tiltak mot overvekt og fedme hos barn og unge. Dette notatet er første del av et større prosjekt. Her presenterer vi resultatene fra systematiske søk etter systematiske oversikter om tiltak mot overvekt og fedme hos barn og unge. Vi har inkludert tiltak om forebygging og behandling.

Prosjektgruppen har bestått av:

- Ida-Kristin Ørjasæter Elvsaas, forsker, Kunnskapssenteret
- Liv Giske, rådgiver, Kunnskapssenteret
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Prosjektleder

Innledning

Overvekt hos barn og ungdom har økt betydelig de siste 30 årene. Studier har vist at mellom 15 og 20 % av barn og unge i Norge er overvektige (1), og andelen blant 8- og 12-åringer i Oslo er 21 % (2). Overvekt hos barn og unge synes å være mer utbredt i sosioøkonomisk svake grupper i industrialiserte land, mens det er sosioøkonomisk sterke grupper som har vært mest utsatt i ikke-industrialiserte land (3). I land med økonomisk vekst synes trenden å gå fra sterke grupper mot sosioøkonomisk svake grupper.

Det er ikke entydige grenseverdier for overvekt og fedme hos barn og ungdom. Internasjonalt er det utarbeidet alders- og kjønnsjusterte grenseverdier, den såkalte Coles indeks (4). Som for voksne beregnes kroppsmasseindeksen (KMI) for barn ved å dividere vekten med kvadratet av høyden (kg/m^2). KMI-verdien settes inn i tabeller og leses av på en kurve i forhold til alder, kjønn og grenseverdier for henholdsvis overvekt (iso-KMI 25) og fedme (iso-KMI 30).

Vekt klassifisering og behandlingskriterier i henhold til Helsedirektoratets anbefalinger (5):

Tiltaksnivå	Klassifisering	KMI*	Hovedtiltak
1	Normalvekt	KMI < iso-KMI 25	Systemarbeid med fokus på strukturell og individuell helsefremmende og forebyggende virksomhet i kommunen
2	Overvekt	KMI \geq iso-KMI 25	Som nivå 1 + individuell kartlegging og veiledning hos helsesøster
3	Fedme	KMI \geq iso-KMI 30	Som nivå 2 + tverrfaglig samarbeid og ansvarsgruppe. Utredning hos fastlege. Evt. henvisning til spesialist
4	Alvorlig fedme	KMI \geq iso-KMI 35	Som nivå 3 + henvisning til spesialist

KMI = kroppsmasseindeks

Behandling av overvekt er nødvendig, men ofte komplisert. Forebyggende tiltak er derfor viktige for å hindre utvikling av overvekt, eller for å normalisere eller begrense vektøkning mens det fremdeles er mulig å vokse seg ut av overvekten (5).

I dette notatet presenter vi resultatene fra systematiske søk etter systematiske oversikter der vi har inkludert publikasjoner som tar for seg primærforebyggende (innsats før problemer oppstår), sekundærforebyggende (begrense problemer blant personer i faresonen) og tertiærforebyggende tiltak (behandle helseproblem som har oppstått). Vi har også inkludert kostnadsanalyser, retningslinjer og protokoller.

Styrker og svakheter ved litteratursøk med sortering

Ved litteratursøk gjennomfører vi systematiske litteratursøk for en gitt problemstilling. Vi gjennomgår søkeresultatet og sorterer ut ikke-relevante publikasjoner. Dette gjøres basert på tittel og eventuelt sammendrag. Artikkene innhentes ikke i fulltekst. Det gjør at vi kan ha inkludert titler som ville vist seg ikke å være relevante ved gjennomlesning av fulltekst. Vi benytter kun databaser for identifisering av litteratur og kan derfor ha gått glipp av potensielt relevante upubliserte studier. Andre måter å identifisere studier på, som søk i referanselister, kontakt med eksperter på fagfeltet og upublisert litteratur, er ikke utført i dette oppdraget. Vi gjennomfører ingen kvalitetsvurdering av artiklene.

I dette prosjektet vil vi senere publisere en full forskningsoppsummering der vi innhenter primærartikler i fulltekst. Inkluderte studier vil så bli kvalitetsvurdert i henhold til våre sjekklister, og resultater sammenstilt og diskutert (se detaljer i prosjektplan for behandling av overvekt og fedme hos barn og unge).

Metode

Vi utførte systematiske søk etter systematiske oversikter fra 2007 til juni 2012.

Vi søkte i databasene:

- Cochrane Database of Systematic Reviews
- Cochrane Central Register of Controlled Trials Register (CENTRAL),
- Medline (ovid),
- Embase (Ovid),
- CINAHL via EBSCOhost,
- PsycINFO,
- ISI Web of Science,
- DARE (Database of abstracts of reviews of effects),
- HTA.

Søkestrategier ble utarbeidet i samarbeid med bibliotekar Malene Gundersen i Helsebiblioteket. Søkestrategien ligger vedlagt i vedlegg 1.

Inklusjonskriterier

Populasjon: Barn og unge med fedme (iso-KMI ≥ 30) gjennomsnittsalder under 18 år ved oppstart av studien

Intervensjon: Livsstiltak:
- primær- og sekundærforebyggende tiltak
- tertiærforebyggende tiltak (behandling)
Medikamentell behandling i minst 3 måneder (orlistat, metformin, rimonabant).
Kirurgi (gastrisk bypass, justerbar gastrisk banding)

Livsstiltakene kan være rettet mot: barn og unge med eller uten familien, og foregå på skolen, i nærmiljøet, på sykehus og andre helseinstitusjoner, eller andre arenaer.

Språk: Ingen språkbegrensninger i søket

Studiedesign: Systematiske oversikter, kostnadsanalyser, økonomiske evalueringer, retningslinjer, protokoller, konferansesammendrag

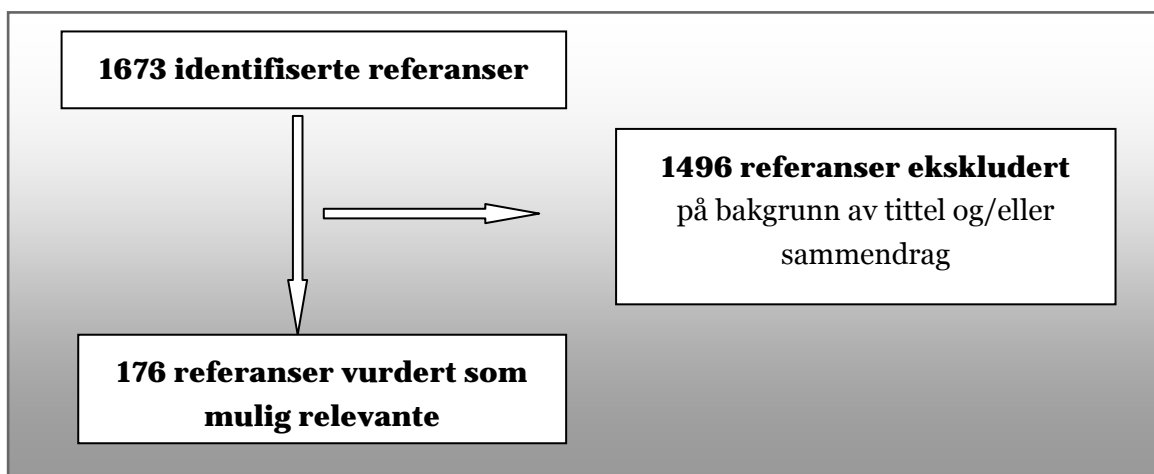
Utvelgelse av referanser

To prosjektmedarbeidere (LG, IKØE) vurderte uavhengig av hverandre tittel og sammendrag på identifiserte referanser opp mot inklusjonskriteriene. Vurderingene ble gjort uavhengig av hverandre og sammenlignet i etterkant. Der det var uenighet om vurderingene, ble inklusjon eller eksklusjon avgjort ved konsensus.

Utvelging av litteratur ble kun gjort basert på tittel og sammendrag. Vi bestilte ikke publikasjonene i fulltekst.

Resultat

Søket resulterte i 1673 referanser. Vi vurderte 176 av de identifiserte referansene til å være mulig relevante i henhold til inklusjonskriteriene.



Figur 1. Flytskjema over identifisert litteratur

Resultat av sorteringen

De mulig relevante referansene ble sortert i kategorier ut fra tiltak (tabell 1-2). I vedlegg 2 presenteres referansene i alfabetisk rekkefølge. Vi har oppgitt forfattere, tittel på publikasjonen, publikasjonssted og sammendrag av artikkelen slik de fremkom i de elektroniske databasene.

Tabell 1: Sorterte referanser

Tiltak	Antall referanser:
Kombinasjon av flere intervensjoner	10
Livsstilsintervensjoner:	
- primær- og/eller sekundærforebygging	26
- intervensjoner i skole eller samfunn	32

- tertiærforebygging/behandling	26
- kombinasjon av flere livsstilsintervensjoner	15
- kostholdsintervensjoner	7
- intervensjoner for økt fysisk aktivitet	14
- adferdsintervensjoner	16
- familiebaserte intervensjoner	12
Medikamentell behandling	13
Kirurgisk behandling	9
<i>Andre typer publikasjoner:</i>	
Kostnadsanalyser/økonomiske evalueringer	17
Retningslinjer	3
Protokoller	2

Oversikter som dekker flere intervensjoner

Oude 2009	Interventions for treating obesity in children. Cochrane Database of Systematic Reviews 2009;(1):CD001872.	Livsstil, medikamentell og kirurgisk behandling
Whitlock 2008	Effectiveness of weight management programs in children and adolescents. Evidence Report/Technology Assessment 2008;(170):1-308.	Livsstil, medikamentell og kirurgisk behandling
Canoy 2011	Obesity in children. Clinical Evidence 2011;2011,2011.	Livsstil og kirurgisk behandling
Fabricatore 2011	Intentional weight loss and changes in symptoms of depression: A systematic review and meta-analysis. Int J Obes 2011;35(11):1363-76.	Livsstil og medikamentell behandling
Whitlock 2010	Effectiveness of primary care interventions for weight management in children and adolescents: an updated, targeted systematic review for the USPSTF. 2010. Tilgjengelig fra: http://www.ncbi.nlm.nih.gov/books/NBK36416/ .	Livsstil og medikamentell behandling
Whitlock 2010	Effectiveness of weight management interventions in children: A targeted systematic review for the USPSTF. Pediatrics 2010;125(2):e396-e418.	Livsstil og medikamentell behandling
Gilles 2008	Comparing active pediatric obesity treatments using meta-	Livsstil og medi-

	analysis. Journal of Clinical Child and Adolescent Psychology 2008;37(4):886-92.	kamentell behandling
McGovern 2008	Clinical review: treatment of pediatric obesity: a systematic review and meta-analysis of randomized trials. The Journal of clinical endocrinology and metabolism 2008;93(12):4600-5.	Livsstil og medikamentell behandling
McGovern 2008	Treatment of pediatric obesity: A systematic review and meta-analysis of randomized trials. J Clin Endocrinol Metab 2008;93(12):4600-5.	Livsstil og medikamentell behandling
Pyle 2007	A meta-analysis of treatments for childhood and adolescent obesity. Dissertation Abstracts International: Section B: The Sciences and Engineering Vol 67(7-B),2007, pp 4093 2007;(7-B):2007, pp.	Livsstil og medikamentell behandling

Livsstilsintervensjoner

Intervensjoner for å forebygge og/eller redusere overvekt/fedme

Karnik 2012	Childhood obesity: a global public health crisis. International Journal of Preventive Medicine 2012;3(1):1-7.
Laska 2012	Interventions for weight gain prevention during the transition to young adulthood: a review of the literature. J Adolesc Health 2012;50(4):324-33.
Bond 2011	Systematic review of the effectiveness of weight management schemes for the under fives. Obesity Reviews 2011;12(4):242-53.
Branscum 2011	A systematic analysis of childhood obesity prevention interventions targeting Hispanic children: Lessons learned from the previous decade. Obesity Reviews 2011;12(501):e151-e158.
Daniels L 2011	Obesity interventions in the very young: Rationale and evidence. Obesity Reviews 2011;Conference: 18th European Congress on Obesity, ECO 2011 Istanbul Turkey. Conference Start: 20110525 Conference End: 20110528. Conference Publication:(var.pagings):25-6.
Kesten 2011	A systematic review to determine the effectiveness of interventions designed to prevent overweight and obesity in pre-adolescent girls. Obesity Reviews 2011;12(12):997-1021.
Larson 2011	What role can child-care settings play in obesity prevention? A review of the evidence and call for research efforts. J Am Diet Assoc 2011;111(9):1343-62.
Monasta 2011	Interventions for the prevention of overweight and obesity in preschool children: A systematic review of randomized controlled trials. Obesity Reviews 2011;12(501):e107-e118.
Nelson 2011	Do youth sports prevent pediatric obesity? A systematic review and commentary. Current Sports Medicine Reports 2011;10(6):360-70.
Waters 2011	Interventions for preventing obesity in children. Cochrane Database of Systematic Reviews 2011;12:CD001871.

Weker 2011	Models of safe nutrition of children and adolescents as a basis for prevention of obesity. <i>Medycyna Wieku Rozwojowego</i> 2011;15(3):288-97.
Wilks 2011	Objectively measured physical activity and obesity prevention in children, adolescents and adults: A systematic review of prospective studies. <i>Obesity Reviews</i> 2011;12(501):e119-e129.
Ciampa 2010	Interventions aimed at decreasing obesity in children younger than 2 years: A systematic review. <i>Arch Pediatr Adolesc Med</i> 2010;164(12):1098-104.
Hesketh 2010	Interventions to prevent obesity in 0-5 year olds: An updated systematic review of the literature. <i>Obesity</i> 2010;18(SUPPL. 1):S27-S35.
Luckner 2010	Meta-analysis of interventions to prevent overweight and obesity in children and adults. <i>Obesity Reviews</i> 2010;Conference: 11th International Congress on Obesity, ICO 2010 Stockholm Sweden. Conference Start: 20100711 Conference End: 20100715. Conference Publication:(var.pagings):452.
Stevens 2010	Obesity prevention interventions for middle school-age children of ethnic minority: A review of the literature. <i>Journal for Specialists in Pediatric Nursing</i> 2010;15(3):233-43.
Bond 2009	Systematic review of the effectiveness and cost-effectiveness of weight management schemes for the under fives: A short report. <i>Health Technol Assess</i> 2009;13(61):1-75.
Froeschl 2009	[Overweight prevention in adolescents and children (behavioural and environmental prevention)]. 2009. Tilgjengelig fra: http://portal.dimdi.de/de/hta/hta_berichte/hta242_summary_en.pdf .
Kamath 2008	Behavioral interventions to prevent childhood obesity: A systematic review and metaanalyses of randomized trials. <i>J Clin Endocrinol Metab</i> 2008;93(12):4606-15.
Kamath 2008	Clinical review: behavioral interventions to prevent childhood obesity: a systematic review and metaanalyses of randomized trials. <i>The Journal of clinical endocrinology and metabolism</i> 2008;93(12):4606-15.
Spurrier 2008	Preventing childhood obesity: the effects of nutritional education on increasing fruit and vegetable consumption in preschoolers University of South Carolina; 2008.
Wofford 2008	Systematic Review of Childhood Obesity Prevention. <i>J Pediatr Nurs</i> 2008;23(1):5-19.
Campbell K.J 2007	Strategies which aim to positively impact on weight, physical activity, diet and sedentary behaviours in children from zero to five years. A systematic review of the literature. <i>Obesity Reviews</i> 2007;8(4):327-38.
Connelly 2007	A systematic review of controlled trials of interventions to prevent childhood obesity and overweight: A realistic synthesis of the evidence. <i>Public Health</i> 2007;121(7):510-7.
Conroy 2007	An integrative review of Canadian childhood obesity prevention programmes. <i>Obesity Reviews</i> 2007;8(1):61-7.
Small 2007	Prevention and early treatment of overweight and obesity in young children: a critical review and appraisal of the evidence. <i>Pediatr Nurs</i> 2007;33(2):149-52, 155.

Intervensjoner i skole eller samfunn

Khambalia 2012	A synthesis of existing systematic reviews and meta-analyses of school-based behavioural interventions for controlling and preventing obesity. <i>Obesity Reviews</i> 2012;13(3):214-33.
Krishnaswami 2012	Community-engaged interventions on diet, activity, and weight outcomes in u.s. Schools: a systematic review. <i>Am J Prev Med</i> 2012;43(1):81-91.
Nixon 2012	Identifying effective behavioural models and behaviour change strategies underpinning preschool- and school-based obesity prevention interventions aimed at 4-6-year-olds: A systematic review. <i>Obesity Reviews</i> 2012;13(SUPPL. 1):106-17.
De Bourdeaudhuij 2011	School-based interventions promoting both physical activity and healthy eating in Europe: A systematic review within the HOPE project. <i>Obesity Reviews</i> 2011;12(3):205-16.
Guedes 2011	A systematic review of school-based interventions for obesity reduction in children and adolescents. <i>Ann Nutr Metab</i> 2011;Conference: 11th European Nutrition Conference, FENS 2011 Madrid Spain. Conference Start: 20111026 Conference End: 20111029. Conference Publication:(var.pagings):402.
Hillier 2011	Evidence base for primary prevention of obesity in children and adolescents. <i>Bundesgesundheitsblatt, Gesundheitsforschung, Gesundheitsschutz</i> 2011;54(3):259-64.
Jensen 2011	Economic incentives and nutritional behavior of children in the school setting: A systematic review. <i>Nutr Rev</i> 2011;69(11):660-74.
Pereira G 2011	Interventions in the school environment in order to reduce obesity: A systematic review of the Bank of Thesis from the Higher Education Personnel Improvement Coordination (CAPES). <i>Ann Nutr Metab</i> 2011;Conference: 11th European Nutrition Conference, FENS 2011 Madrid Spain. Conference Start: 20111026 Conference End: 20111029. Conference Publication:(var.pagings):313.
Safron 2011	Effects of School-based Interventions Targeting Obesity-Related Behaviors and Body Weight Change: A Systematic Umbrella Review. <i>Behav Med</i> 2011;37(1):15-25.
Sargent 2011	Components of primary care interventions to treat childhood overweight and obesity: A systematic review of effect. <i>Obesity Reviews</i> 2011;12(501):e219-e235.
Silveira 2011	Effectiveness of school-based nutrition education interventions to prevent and reduce excessive weight gain in children and adolescents: A systematic review. <i>J Pediatr (Rio J)</i> 2011;87(5):382-92.
Clark 2010	Evidence summary: Achieving equity in community-based obesity prevention interventions for children and adolescents. <i>Obesity Reviews</i> 2010;Conference: 11th International Congress on Obesity, ICO 2010 Stockholm Sweden. Conference Start: 20100711 Conference End: 20100715. Conference Publication:(var.pagings):448.
Clark 2010	Evidence summary: Remote and rural issues in the prevention of obesity for pre-adolescents and adolescents. <i>Obesity Reviews</i> 2010;Conference: 11th International Congress on Obesity, ICO 2010 Stockholm Sweden. Conference Start: 20100711 Conference End: 20100715. Conference Publication:(var.pagings):451.

D'Onise 2010	Can preschool improve child health outcomes? A systematic review. <i>Soc Sci Med</i> 2010;70(9):1423-40.
Lopez 2010	Effectiveness of population-based interventions on the prevention of overweight in children and adolescents. <i>Med Clin (Barc)</i> 2010;135(10):462-9.
Van Cauwen-berghe 2010	Effectiveness of school-based interventions in Europe to promote healthy nutrition in children and adolescents: systematic review of published and 'grey' literature. <i>The British journal of nutrition</i> 2010;103(6):781-97.
Brown T 2009	Systematic review of school-based interventions that focus on changing dietary intake and physical activity levels to prevent childhood obesity: An update to the obesity guidance produced by the National Institute for Health and Clinical Excellence. <i>Obesity Reviews</i> 2009;10(1):110-41.
Cook-Cottone 2009	A meta-analytic review of obesity prevention in the schools: 1997-2008. <i>Psychology in the Schools</i> 2009;46(8):695-719.
Gonzalez-Suarez 2009	School-Based Interventions on Childhood Obesity. A Meta-Analysis. <i>Am J Prev Med</i> 2009;37(5):418-27.
Harris 2009	Effect of school-based physical activity interventions on body mass index in children: A meta-analysis. <i>CMAJ</i> 2009;180(7):719-26.
Jaime 2009	Do school based food and nutrition policies improve diet and reduce obesity? <i>Prev Med</i> 2009;48(1):45-53.
Katz 2009	School-based interventions for health promotion and weight control: not just waiting on the world to change. <i>Annu Rev Public Health</i> 2009;30:253-72.
Perez-Morales 2009	Randomized controlled school based interventions to prevent childhood obesity: Systematic review from 2006 to 2009. <i>Arch Latinoam Nutr</i> 2009;59(3):253-9.
Van Wijnen 2009	The impact of school-based prevention of overweight on psychosocial well-being of children. <i>Obesity Reviews</i> 2009;10(3):298-312.
Gao 2008	Community-based interventions to reduce overweight and obesity in China: A systematic review of the Chinese and English literature. <i>Journal of Public Health</i> 2008;30(4):436-48.
Kanekar 2008	Meta-analysis of school-based childhood obesity interventions in the U.K. and U.S. <i>International quarterly of community health education</i> 2008;29(3):241-56.
Katz 2008	Strategies for the prevention and control of obesity in the school setting: Systematic review and meta-analysis. <i>Int J Obes</i> 2008;32(12):1780-9.
Kropski 2008	School-based obesity prevention programs: An evidence-based review. <i>Obesity</i> 2008;16(5):1009-18.
Li 2008	A systematic review of school-based intervention studies for the prevention or reduction of excess weight among Chinese children and adolescents. <i>Obesity Reviews</i> 2008;9(6):548-59.
Shaya 2008	School-based obesity interventions: a literature review. <i>J Sch Health</i> 2008;78(4):189-96.
Davidson 2007	Childhood obesity prevention and physical activity in schools. <i>Health Education Vol</i> 107(4), 2007, pp 377-395 2007;(4):2007, pp-2007,395.
Lissau 2007	Prevention of overweight in the school arena. <i>Acta Paediatr</i> 2007;96(Supplement

Intervensjoner for å behandle overvekt/fedme

Kombinasjon av flere livsstilsintervensjoner

Jinks 2011	Obesity interventions for people with a learning disability: an integrative literature review. J Adv Nurs 2011;67(3):460-71.
Kelly KP 2011	Immersion treatment of childhood and adolescent obesity: The first review of a promising intervention. Obesity Reviews 2011;12(1):37-49.
Reinehr 2011	Effectiveness of lifestyle intervention in overweight children. Proc Nutr Soc 2011;70(4):494-505.
Souza 2011	Physical activity and healthy eating in Brazilian students: a review of intervention programs. Cad Saude Publica 2011;27(8):1459-71.
Ben 2010	Role of the combination of the caloric restriction and the individualized exercise training in the treatment of infantile obesity. Science and Sports 2010;25(3):111-20.
Johnson 2010	In search of quality evidence for lifestyle management and glycemic control in children and adolescents with type 2 diabetes: A systematic review. BMC pediatrics 2010;10:97.
Kitzmann 2010	Lifestyle interventions for youth who are overweight: a meta-analytic review. Health psychology : official journal of the Division of Health Psychology, American Psychological Association 2010;29(1):91-101.
Seo 2010	Meta-Analysis of Obesity Interventions Among U.S. Minority Children. J Adolesc Health 2010;46(4):309-23.
Kelly SA 2008	Systematic review of multicomponent interventions with overweight middle adolescents: Implications for clinical practice and research. Worldviews on Evidence-Based Nursing 2008;5(3):113-35.
No author indicated 2008	Lifestyle interventions for overweight children and adolescents: A meta-analysis. Journal of Sport & Exercise Psychology Vol 30(3), Jun 2008, pp 435-436 2008;(3):Jun-436.
Arteburn 2007	Arteburn DE. Obesity in children. Clinical Evidence 2007;2007,2007.
Bluford 2007	Interventions to prevent or treat obesity in preschool children: A review of evaluated programs. Obesity Vol 15(6), Jun 2007, pp 1356-1372 2007;(6):Jun-1372.
DeMattia 2007	Do interventions to limit sedentary behaviours change behaviour and reduce childhood obesity: a critical review of the literature. Obesity Reviews 2007;8(1):69-81.
Lowry 2007	The effects of weight management programs on self-esteem in pediatric overweight populations. J Pediatr Psychol 2007;32(10):1179-95.
Wilfrey 2007	Lifestyle Interventions in the Treatment of Childhood Overweight: A Meta-Analytic Review of Randomized Controlled Trials. Health Psychol 2007;26(5):521-32.

Kostholdsintervensjoner

Onakpoya 2012	The efficacy of long-term conjugated linoleic acid (CLA) supplementation on body
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	composition in overweight and obese individuals: A systematic review and meta-analysis of randomized clinical trials. <i>Eur J Nutr</i> 2012;51(2):127-34.
Perez-Escamilla 2012	Dietary Energy Density and Body Weight in Adults and Children: A Systematic Review. <i>Journal of the Academy of Nutrition & Dietetics</i> 2012;112(5):671-84.
Daniels MC 2010	Impact of water intake on energy intake and weight status: a systematic review. <i>Nutr Rev</i> 2010;68(9):505-21.
Gibson 2008	Sugar-sweetened soft drinks and obesity: a systematic review of the evidence from observational studies and interventions. <i>Nutrition Research Reviews</i> 2008;21(2):134-47.
Royal college of nursing 2008	Effective dietary interventions for overweight and obese children. <i>Nursing standard (Royal College of Nursing (Great Britain))</i> 1987) 2008;22(18):35-40.
Collins 2007	Systematic review of interventions in the management of overweight and obese children which include a dietary component. <i>International Journal of Evidence-Based Healthcare</i> 2007;j.(1):2-53.
Winzenberg 2007	Calcium supplements in healthy children do not affect weight gain, height, or body composition. <i>Obesity</i> 2007;15(7):1789-98.

Fysisk aktivitet

Demetriou 2012	Physical activity interventions in the school setting: a systematic review. <i>Psychology of Sport and Exercise</i> 2012;13(2):186-96.
Escalante 2012	Improvement of the lipid profile with exercise in obese children: A systematic review. <i>Prev Med</i> 2012;54(5):293-301.
Leung 2012	Intervening to Reduce Sedentary Behaviors and Childhood Obesity among School-Age Youth: A Systematic Review of Randomized Trials. <i>Journal of Obesity</i> 2012;2012:685430.
Gordon 2011	Physical activity and obesity among preschoolaged children: A meta-analytic review of the effectiveness of health promotion interventions. <i>Canadian Journal of Diabetes</i> 2011;Conference: 2nd National Obesity Summit Montreal, QC Canada. Conference Start: 20110428 Conference End: 20110501. Conference Publication:(var.pagings):163-4.
Laframboise 2011	The effects of aerobic physical activity on adiposity in school-aged children and youth: a systematic review of randomized controlled trials. <i>Journal of the Canadian Chiropractic Association</i> 2011;55(4):256-68.
Saavedra 2011	Improvement of aerobic fitness in obese children: A meta-analysis. <i>International Journal of Pediatric Obesity</i> 2011;6(3-4):169-77.
Annesi 2010	Initial body mass index and free-time physical activity moderate effects of the Youth Fit for Life treatment in African-American pre-adolescents. <i>Percept Mot Skills</i> 2010;110(3 Pt 1):789-800.
Cliff 2010	The impact of child and adolescent obesity treatment interventions on physical activity: A systematic review. <i>Obesity Reviews</i> 2010;11(7):516-30.
Brown AS 2009	Promoting physical activity amongst adolescent girls. <i>Issues Compr Pediatr Nurs</i> 2009;32(2):49-64.

Duche 2008	Duche P. Physical activity and infantile obesity: Tracking, prevention and treatment. <i>Science and Sports</i> 2008;23(6):278-82.
Kelley G.A 2008	Effects of aerobic exercise on non-high-density lipoprotein cholesterol in children and adolescents: a meta-analysis of randomized controlled trials. <i>Prog Cardiovasc Nurs</i> 2008;23(3):128-32.
Lee 2008	Systematic review of active commuting to school and children's physical activity and weight. <i>Journal of Physical Activity and Health</i> 2008;5(6):930-49.
Kelley G.A 2007	Aerobic exercise and lipids and lipoproteins in children and adolescents: A meta-analysis of randomized controlled trials. <i>Atherosclerosis</i> 2007;191(2):447-53.
Ohkawara 2007	A dose-response relation between aerobic exercise and visceral fat reduction: systematic review of clinical trials. <i>Int J Obes</i> 2007;31(12):1786-97.

Adferdsintervensjoner (inkl. Internet/spill)

Kuhl 2012	Obesity in preschoolers: behavioral correlates and directions for treatment. <i>Obesity</i> 2012;20(1):3-29.
Steeves 2012	A review of different behavior modification strategies designed to reduce sedentary screen behaviors in children. <i>Journal of Obesity</i> 2012;2012:379215.
Barnett 2011	Active video games for youth: A systematic review. <i>Journal of Physical Activity and Health</i> 2011;8(5):724-37.
Guy 2011	Moving beyond the stigma: systematic review of video games and their potential to combat obesity. <i>International Journal Of Hypertension</i> 2011;2011:179124.
Hamel 2011	Computer- and web-based interventions to increase preadolescent and adolescent physical activity: a systematic review. <i>J Adv Nurs</i> 2011;67(2):251-68.
Kaplan 2011	Motivational interviewing in the treatment of pediatric obesity: Research and promise. <i>Psychosom Med</i> 2011;Conference: 69th Annual Meeting of the American Psychosomatic Society San Antonio, TX United States. Conference Start: 20110309 Conference End: 20110312. Conference Publication:(var.pagings):A7.
Nguyen 2011	A review of electronic interventions for prevention and treatment of overweight and obesity in young people. <i>Obesity Reviews</i> 2011;12(501):e298-e314.
Sahota 2011	Effective behavioural components in child and adolescent weight management programmes. <i>Obesity Reviews</i> 2011;Conference: 18th European Congress on Obesity, ECO 2011 Istanbul Turkey. Conference Start: 20110525 Conference End: 20110528. Conference Publication:(var.pagings):57-8.
Sbruzzi 2011	Educational and behavioral interventions in childhood obesity: A systematic review with metanalysis of randomized clinical trials. <i>Eur Heart J</i> 2011;Conference: European Society of Cardiology, ESC Congress 2011 Paris France. Conference Start: 20110827 Conference End: 20110831. Conference Publication:(var.pagings):502-3.
Van Stralen 2011	What works in school-based energy balance behaviour interventions and what does not? A systematic review of mediating mechanisms. <i>Int J Obes</i> 2011;35(10):1251-65.
Wahi 2011	Effectiveness of interventions aimed at reducing screen time in children: A sys-

	tematic review and meta-analysis of randomized controlled trials. Arch Pediatr Adolesc Med 2011;165(11):979-86.
Nowicka 2010	Strategies that motivate children and their families to take positive action: Empowering self efficacy and change. International Journal of Pediatric Obesity 2010;Conference: 19th European Childhood Obesity Group Meeting 'Moving Towards Health' Dublin Ireland. Conference Start: 20090917 Conference End: 20090919. Conference Publication:(var.pagings):25-7.
O'Brien 2010	"Web-based weight management programs for children and adolescents: a systematic review of randomized controlled trial studies" by An, Hayman, Park, Dusaj, and Ayres (July-September 2009, Vol 32, No 3, pp 222-240). ANS 2010;Advances in nursing science. 33(1):2-Mar.
An 2009	Web-based weight management programs for children and adolescents: A systematic review of randomized controlled trial studies. Advances in Nursing Science 2009;32(3):222-40.
Limbers 2008	Promoting healthy lifestyles: Behavior modification and motivational interviewing in the treatment of childhood obesity. Journal of Clinical Lipidology 2008;clin.(3):169-78.
Norman 2007	A review of eHealth interventions for physical activity and dietary behavior change. Am J Prev Med 2007;33(4):336-45.

Familiebaserte intervensjoner

Farnesi 2012	Family-health professional relations in pediatric weight management: an integrative review. Pediatric Obesity 2012;7(3):175-86.
Knowlden 2012	Systematic review of family and home-based interventions targeting paediatric overweight and obesity. Obesity Reviews 2012;13(6):499-508.
Gerards 2011	Interventions addressing general parenting to prevent or treat childhood obesity. International Journal of Pediatric Obesity 2011;6(2-2):e28-e45.
Golley 2011	Interventions that involve parents to improve children's weight-related nutrition intake and activity patterns: what nutrition and activity targets and behaviour change techniques are associated with intervention effectiveness? Obesity Reviews 2011;12(2):114-30.
Hammons 2011	Is frequency of shared family meals related to the nutritional health of children and adolescents? Pediatrics 2011;127(6):e1565-e1574.
Shrewsbury 2011	The role of parents in pre-adolescent and adolescent overweight and obesity treatment: A systematic review of clinical recommendations. Obesity Reviews 2011;12(10):759-69.
Skouteris 2011	Parental influence and obesity prevention in pre-schoolers: A systematic review of interventions. Obesity Reviews 2011;12(5):315-28.
Hingle 2010	Parental involvement in interventions to improve child dietary intake: A systematic review. Prev Med 2010;51(2):103-11.
Kitzman-Ulrich 2010	The integration of a family systems approach for understanding youth obesity, physical activity, and dietary programs. Clinical Child and Family Psychology Re-

	view 2010;13(3):231-53.
Pocock 2010	Parental perceptions regarding healthy behaviours for preventing overweight and obesity in young children: A systematic review of qualitative studies. Obesity Reviews 2010;11(5):338-53.
Nowicka 2008	Strategies that motivate children and their families to take positive action: Empowering self efficacy and change. International Journal of Pediatric Obesity 2010;Conference: 19th European Childhood Obesity Group Meeting 'Moving Towards Health' Dublin Ireland. Conference Start: 20090917 Conference End: 20090919. Conference Publication:(var.pagings):25-7.
Young 2007	A meta-analysis of family-behavioral weight-loss treatments for children. Clin Psychol Rev 2007;27(2):240-9.

Medikamentell behandling

Baur 2011	The role of medications in treatment of obesity in childhood and adolescence. Obesity Research and Clinical Practice 2011;Conference: Australian and New Zealand Obesity Society Annual Scientific Meeting 2011 Adelaide, SA Australia. Conference Start: 20111020 Conference End: 20111022. Conference Publication:(var.pagings):S7.
Garcia 2011	Systematic review of the clinical efficacy of sibutramine and orlistat in weight loss, quality of life and its adverse effects in obese adolescents. Nutr Hosp 2011;26(3):451-7.
Bouza 2010	Metformin for the treatment of childhood obesity: A systematic review and meta-analysis. Value in Health 2010;Conference: ISPOR 13th Annual European Congress Prague Czech Republic. Conference Start: 20101106 Conference End: 20101109. Conference Publication:(var.pagings):A385.
Castaeda-Gonzales 2010	Long-term randomized clinical trials of pharmacological treatment of obesity: systematic review. Colombia Medica 2010;41(1):17-25.
Czernichow 2010	Efficacy of weight loss drugs on obesity and cardiovascular risk factors in obese adolescents: A meta-analysis of randomized controlled trials. Obesity Reviews 2010;11(2):150-8.
Park 2010	Pharmacotherapy for the treatment of obesity in children and adolescents: A systematic review. Obesity Reviews 2010;Conference: 11th International Congress on Obesity, ICO 2010 Stockholm Sweden. Conference Start: 20100711 Conference End: 20100715. Conference Publication:(var.pagings):231.
Viner 2010	Efficacy and safety of anti-obesity drugs in children and adolescents: systematic review and meta-analysis. Obesity Reviews 2010;11(8):593-602.
Greydanus 2009	Pharmacotherapy for obese adolescents. International Journal of Child Health and Human Development Vol 1(4), 2009, pp 387-393 2009;(4):2009, pp-2009,393.
Min 2009	Metformin for obesity in children and adolescents: A systematic review. Diabe-

	tes Care 2009;32(9):1743-5.
Tziomalos 2009	The use of sibutramine in the management of obesity and related disorders: an update. <i>Vascular Health and Risk Management</i> 2009;5(1):441-52.
Desilets 2008	Role of metformin for weight management in patients without type 2 diabetes. <i>Ann Pharmacother</i> 2008;42(6):817-26.
Golay 2008	Metformin and body weight. <i>Int J Obes</i> 2008;32(1):61-72.
Dunican 2007	Pharmacotherapeutic options for overweight adolescents. <i>Ann Pharmacother</i> 2007;41(9):1445-55.

Kirurgisk behandling

Padwal 2011	Bariatric surgery: A systematic review of the clinical and economic evidence. <i>J Gen Intern Med</i> 2011;26(10):1183-94.
Karmali 2010	Bariatric surgery: a primer. <i>Can Fam Physician</i> 2010;56(9):873-9.
Picot 2009	The clinical effectiveness and cost-effectiveness of bariatric (weight loss) surgery for obesity: A systematic review and economic evaluation. <i>Health Technol Assess</i> 2009;13(41):ix-214.
Pratt 2009	Best practice updates for pediatric/adolescent weight loss surgery. <i>Obesity</i> 2009;17(5):901-10.
Treadwell 2008	Systematic review and meta-analysis of bariatric surgery for pediatric obesity. <i>Ann Surg</i> 2008;248(5):763-76.
Buchwald 2007	Trends in mortality in bariatric surgery: a systematic review and meta-analysis. <i>Surgery</i> 2007;142(4):621-35.
Hayes Inc 2007	Pediatric bariatric surgery for morbid obesity. 2007. Tilgjengelig fra: http://www.hayesinc.com/ .
Inge 2007	Bariatric surgery for pediatric extreme obesity: Now or later? <i>Int J Obes</i> 2007;31(1):1-14.

Endoskopisk behandling

Swidnicka-Siergiejko 2011	Endoscopic treatment of obesity. <i>Can J Gastroenterol</i> 2011;25(11):627-33.
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Kostnadsanalyser/økonomiske evalueringer

Cecchini 2010	Tackling of unhealthy diets, physical inactivity, and obesity: health effects and cost-effectiveness. <i>Lancet</i> 2010;376(9754):1775-84.
Berra 2009	Overweight in the teenager population: quality of life, access to health care services and cost-effectiveness of interventions]. 2009. Tilgjengelig fra: http://www.gencat.cat/salut/depsan/units/aatrm/pdf/sobrepeso_adolescentes_

	pcsns07_aatrm2009.pdf].
Pelone 2012	Economic impact of childhood obesity on health systems: a systematic review. <i>Obesity Reviews</i> 2012;13(5):431-40.
Mernagh 2011	Cost-effectiveness analysis of public health interventions to prevent obesity in New Zealand. <i>Value in Health</i> 2011;Conference: ISPOR 14th Annual European Congress Madrid Spain. Conference Start: 20111105 Conference End: 20111108. Conference Publication:(var.pagings):A382.
Moodie 2011	Assessing cost-effectiveness in obesity: Active transport program for primary school children: TravelSMART Schools Curriculum program. <i>Journal of Physical Activity and Health</i> 2011;8(4):503-15.
Ananthapavan 2010	Assessing cost-effectiveness in obesity: laparoscopic adjustable gastric banding for severely obese adolescents. <i>Surgery for Obesity and Related Diseases</i> 2010;6(4):377-85.
Campbell J 2010	Cost-effectiveness of laparoscopic gastric banding and bypass for morbid obesity. <i>Am J Manag Care</i> 2010;16(7):174-87.
McAuley 2010	Economic evaluation of a community-based obesity prevention program in children: the APPLE project. <i>Obesity</i> 2010;18(1):131-6.
Moodie 2010	The cost-effectiveness of Australia's Active After-School Communities program. <i>Obesity</i> 2010;18(8):1585-92.
Kalavainen 2009	Cost-effectiveness of routine and group programs for treatment of obese children. <i>Pediatr Int</i> 2009;51(5):606-11.
Magnus 2009	The cost-effectiveness of removing television advertising of high-fat and/or high-sugar food and beverages to Australian children. <i>Int J Obes</i> 2009;33(10):1094-102.
Moodie 2009	Cost-effectiveness of active transport for primary school children: Walking School Bus program. <i>International Journal of Behavioral Nutrition and Physical Activity</i> 2009;6:63.
Wake 2009	Outcomes and costs of primary care surveillance and intervention for overweight or obese children: the LEAP 2 randomised controlled trial. <i>BMJ</i> 2009;339:b3308.
Moodie 2008	Cost-effectiveness of a family-based GP-mediated intervention targeting overweight and moderately obese children. <i>Economics and Human Biology</i> 2008;6(3):363-76.
Wake 2008	Economic evaluation of a primary care trial to reduce weight gain in overweight/obese children: the LEAP trial. <i>Ambulatory Pediatrics</i> 2008;8(5):336-41.
Wang 2008	Cost-effectiveness of a school-based obesity prevention program. <i>J Sch Health</i> 2008;78(12):619-24.
Brown 2007	The cost-effectiveness of a school-based overweight program. <i>International Journal of Behavioral Nutrition and Physical Activity</i> 2007;4:47.

Retningslinjer

Summerbell 2012	Evidence-based recommendations for the development of obesity prevention programs targeted at preschool children. <i>Obesity Reviews</i> 2012;13(SUPPL. 1):129-32.
Ayliffe 2010	Achieving healthy body weight in teenagers: evidence-based practice guidelines for community nutrition interventions. <i>Canadian Journal of Dietetic Practice & Research</i> 2010;71(4):205.
Janssen 2010	Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. <i>International Journal of Behavioral Nutrition and Physical Activity</i> 2010;7 , 2010. Article Number: 40. Date of Publication: 11 May 2010.

Protokoller

Martin 2012	Lifestyle intervention for improving school achievement in overweight or obese children and adolescents. <i>Cochrane Database of Systematic Reviews</i> 2012.
Askie 2010	The Early Prevention of Obesity in CHildren (EPOCH) Collaboration--an individual patient data prospective meta-analysis. <i>BMC public health</i> 2010;10:728.

Referanseliste

1. HUNT forskningsenter. Folkehelse i endring, Helseundersøkelsen Nord-Trøndelag. HUNT 1 (1984-86) - HUNT 2 (1995-97) - HUNT 3 (2006-08). Levanger, Norway 2011. Tilgjengelig fra: www.ntnu.no/hunt/
2. Vilimas K, Glavin K, Donovan ML. [Overweight among eight and twelve-year-old children in Oslo in 2004]. Tidsskr Nor Laegeforen 2005;125(22):3088-9.
3. Lobstein T, Baur L, Uauy R. Obesity in children and young people: a crisis in public health. Obes Rev 2004;5 Suppl 1:4-104.
4. Cole TJ, Bellizzi MC, Flegal KM, Dietz WH. Establishing a standard definition for child overweight and obesity worldwide: international survey. BMJ 2000;320(7244):1240-3.
5. Helsedirektoratet. Nasjonale faglige retningslinjer for primærhelsetjenesten. Forebygging og behandling av overvekt og fedme hos barn og unge.: Helsedirektoratet; 2010.

Vedlegg 1: Søkestrategi

Kontaktperson: Ida-Kristin Ørjasæter Elvsaa

Søk: Malene W. Gundersen

Prosjektnr: 679

Kommentar: Dette er en del av et større søk innen behandling av overvekt hos barn og unge. Dette søket fokuserer på innhenting av systematiske oversikter om tiltak innen behandling av overvekt hos barn og unge.

Årstallavgrensning: 2007-

Pico-skjema

Hva handler spørsmålet om?	Spørsmålet i PICO format				Kjente relevante studier
	Population	Intervention	Comparison	Outcome(s)	
Behandling av overvekt hos barn					
For behandling av overvekt hos barn, hvilken effekt har forskjellige behandlinger?	Overvektige barn og unge under 18 år	Behandling ----- Livsstilsintervensjoner Medikamentell behandling Kirurgi	Ikke relevant for søket	Ikke relevant for søket	2009 Cochrane Review
Kommentarer	Avgrense til barn som limit og i tillegg legge på "barne-søk"	For søk etter systematiske oversikter spesifiseres de tre intervensjonene ikke	Ikke relevant for søket	Ikke relevant for søket	

Database: Embase 1974 to 2012 June 19, Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) 1946 to Present

Dato: 20.06.2012

Antall treff: 792

Kommentarer: Filter for systematiske oversikter i OVID: "Reviews (maximizes specificity)"

1	overnutrition/	2506
2	obesity/	308207
3	obesity, abdominal/	4470
4	obesity, morbid/	19143
5	body weight changes/	3838
6	Body Weight/	318031
7	Weight Loss/	94165
8	weight gain/	72097
9	overweight/	208165
10	exp Body Fat Distribution/	7688
11	Waist-Hip Ratio/	7243
12	body mass index/	201850
13	(obesity or obese).tw.	327806
14	(overweight or (over adj weight) or (weight adj change*) or (weight adj (gain* or loss))).tw.	249011
15	((bmi or body mass index) adj2 (gain* or loss or change*)).tw.	6397
16	or/1-15	968663
17	adolescent/	2665092
18	exp child/	3103758
19	(child* or adolescen* or pediatric* or paediatric* or teen* or youth* or schoolchild* or boy* or girl* or youngster* or (young adj person*) or (young adj people)).tw.	2610102
20	or/17-19	5229594
21	limit 16 to ("preschool child (2 to 5 years)" or "child (6 to 12 years)" or "adolescent (13 to 18 years)") [Limit not valid in Embase; records were retained]	636866
22	16 and 20	177596
23	21 or 22	646277
24	limit 23 to (yr="2007 -Current" and "reviews (maximizes specificity)")	3371
25	24 use prmz	554
26	overnutrition/	2506
27	obesity/	308207
28	abdominal obesity/	4470
29	morbid obesity/	19143
30	weight change/	3804
31	body weight/	318031
32	weight reduction/	94165
33	weight gain/	72097
34	body fat distribution/	4324
35	waist hip ratio/	7243

36	body mass/	136639
37	(obesity or obese).tw.	327806
38	(overweight or (over adj weight) or (weight adj change*) or (weight adj (gain* or loss))).tw.	249011
39	((bmi or body mass index) adj2 (gain* or loss or change*)).tw.	6397
40	or/26-39	940954
41	exp adolescent/	2672081
42	child/ or boy/ or brain damaged child/ or gifted child/ or girl/ or handicapped child/ or hospitalized child/ or orphaned child/ or preschool child/ or school child/ or toddler/	2923830
43	(child* or adolescen* or pediatric* or paediatric* or teen* or youth* or schoolchildren or boy* or girl* or youngster* or (young adj person*) or (young adj people)).tw.	2610102
44	or/41-43	5104315
45	40 and 44	166984
46	limit 40 to (child <unspecified age> or preschool child <1 to 6 years> or school child <7 to 12 years> or adolescent <13 to 17 years>) [Limit not valid in Ovid MED-LINE(R),Ovid MEDLINE(R) In-Process; records were retained]	449520
47	45 or 46	468618
48	limit 47 to ("reviews (maximizes specificity)" and yr="2007 -Current")	2470
49	48 use oemezd	549
50	25 or 49	1103
51	remove duplicates from 50	792

Database: The Cochrane Library: Cochrane Database of Systematic Reviews - Issue 6 of 12, June 2012

Dato: 20.06.12

Antall treff: 61

#1	MeSH descriptor Overnutrition, this term only	2
#2	MeSH descriptor Obesity, this term only	5488
#3	MeSH descriptor Obesity, Abdominal, this term only	35
#4	MeSH descriptor Obesity, Morbid, this term only	491
#5	MeSH descriptor Body Weight Changes, this term only	0
#6	MeSH descriptor Body Weight, this term only	5406
#7	MeSH descriptor Weight Loss, this term only	2693
#8	MeSH descriptor Weight Gain, this term only	1334
#9	MeSH descriptor Overweight, this term only	924
#10	MeSH descriptor Body Fat Distribution explode all trees	247
#11	MeSH descriptor Waist-Hip Ratio, this term only	156
#12	MeSH descriptor Body Mass Index, this term only	4768
#13	(obesity or obese):ti,ab,kw	9238
#14	(overweight or (over NEXT weight) or (weight NEXT change*) or (weight NEXT (gain* or loss))):ti,ab,kw	10484

#15	((bmi or body mass index) NEAR/2 (gain* or loss or change*)):ti,ab,kw	261
#16	(#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15)	20964
#17	MeSH descriptor Adolescent, this term only	68534
#18	MeSH descriptor Child explode all trees	1
#19	(child* or adolescen* or pediatric* or paediatric* or teen* or youth* or schoolchild* or boy* or girl* or youngster* or (young NEXT person*) or (young NEXT people)):ti,ab,kw	120447
#20	(#17 OR #18 OR #19)	120447
#21	(#16 AND #20)	4866
#22	(#16 AND #20), from 2007	61

Database: CRD
Dato: 20.06.2012
Antall treff: 1207

1	MeSH DESCRIPTOR overnutrition	0
2	MeSH DESCRIPTOR obesity	412
3	MeSH DESCRIPTOR obesity, morbid	125
4	MeSH DESCRIPTOR body weight changes	0
5	MeSH DESCRIPTOR Body Weight	118
6	MeSH DESCRIPTOR Weight Loss	230
7	MeSH DESCRIPTOR weight gain	82
8	MeSH DESCRIPTOR overweight	61
9	MeSH DESCRIPTOR Body Fat Distribution EXPLODE ALL TREES	6
10	MeSH DESCRIPTOR Waist-Hip Ratio	3
11	MeSH DESCRIPTOR body mass index	172
12	obesity or obese	895
13	((overweight or (over weight) or (weight change*) or (weight (gain* or loss))))	9985
14	((((bmi or body mass index) NEAR2 (gain* or loss or change*)))	37
15	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14	10321
16	MeSH DESCRIPTOR adolescent	2913
17	MeSH DESCRIPTOR child EXPLODE ALL TREES	3082
18	((child* or adolescen* or pediatric* or paediatric* or teen* or youth* or schoolchild* or boy* or girl* or youngster* or (young person*) or (young people)))	8752
19	#16 OR #17 OR #18	8752
20	#15 AND #19	2487
21	(#20) WHERE PD FROM 01/01/2007 TO 20/06/2012	1207

22	(#21) IN DARE WHERE PD FROM 01/01/2007 TO 20/06/2012	757
23	(#21) IN NHSEED WHERE PD FROM 01/01/2007 TO 20/06/2012	395
24	(#21) IN HTA WHERE PD FROM 01/01/2007 TO 20/06/2012	55

Database: PsycINFO 1806 to June Week 2 2012

Dato: 21.06.2012

Antall treff: 151

1	obesity/	12592
2	body weight/	9358
3	weight loss/	1769
4	weight gain/	1216
5	overweight/	1979
6	body fat/	463
7	body mass index/	1675
8	"obesity (attitudes toward)"/	191
9	(obesity or obese).tw.	18648
10	(overweight or (over adj weight) or (weight adj change*) or (weight adj (gain* or loss))).tw.	18391
11	((bmi or body mass index) adj2 (gain* or loss or change*)).tw.	505
12	or/1-11	34326
13	limit 12 to (childhood <birth to 12 years> or adolescence <13 to 17 years>)	7717
14	limit 12 to (160 preschool age <age 2 to 5 yrs> or 180 school age <age 6 to 12 yrs> or 200 adolescence <age 13 to 17 yrs>)	6631
15	(child* or adolescen* or pediatric* or paediatric* or teen* or youth* or schoolchild* or boy* or girl* or youngster* or (young adj person*) or (young adj people)).mp.	654737
16	12 and 15	8946
17	13 or 14 or 16	10242
18	limit 17 to ("reviews (maximizes specificity)" and yr="2007 -Current")	151

Database: Cinahl via EBSCOhost

Dato: 21.06.2012

Antall treff: 167

S1	(MH "Hyperphagia")	159
S2	(MH "Obesity")	27727
S3	(MH "Obesity, Morbid")	1220
S4	(MH "Body Weight Changes")	44
S5	(MH "Body Weight")	7917
S6	(MH "Weight Loss")	7735
S7	(MH "Weight Gain")	4200

S8	(MH "Adipose Tissue Distribution")	1287
S9	(MH "Waist-Hip Ratio")	1180
S10	(MH "Body Mass Index")	25370
S11	(MH "Attitude to Obesity")	141
S12	TX (obesity or obese)	36407
S13	TX (overweight or (over weight) or (weight change*) or (weight N2 (gain* or loss)))	23821
S14	TX ((bmi or body mass index) N2 (gain* or loss or change*))	727
S15	S1 or S2 or S3 or S4 or S5 or S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or S14	68453
S16	(MH "Adolescence+")	173364
S17	(MH "Child+") OR (MH "Child, Abandoned") OR (MH "Child, Adopted") OR (MH "Child, Disabled") OR (MH "Child, Foster") OR (MH "Child, Gifted") OR (MH "Child, Hospitalized") OR (MH "Child, Institutionalized") OR (MH "Child, Medically Fragile") OR (MH "Child, Preschool") OR (MH "Latchkey Children") OR (MH "Only Child")	258687
S18	TX (child* or adolescen* or pediatric* or paediatric* or teen* or youth* or school-child* or boy* or girl* or youngster* or (young person*) or (young people))	478455
S19	S16 or S17 or S18	479044
S20	S1 or S2 or S3 or S4 or S5 or S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or S14 Limiters - Age Groups: Child, Preschool: 2-5 years, Child: 6-12 years, Adolescent: 13-18 years, All Child	17804
S21	S15 and S19	21263
S22	S20 or S21	21263
S23	S20 or S21 Limiters - Clinical Queries: Review - High Specificity; Published Date from: 20070101-20120731	167

Vedlegg 2. Inkluderte studier i alfabetisk rekkefølge

Effective dietary interventions for overweight and obese children. Nursing standard (Royal College of Nursing (Great Britain) : 1987) 2008;22(18):35-40.

Ref ID: 426

Abstract: This information on best practice discusses the evidence on dietary interventions for children and adolescents who are overweight and obese. The article has been reproduced with the permission of the Joanna Briggs Institute. It is based on a systematic review of research published by Blackwell Publishing Asia and conducted by the Australian Centre for Evidence Based Nutrition and Dietetics (Collins et al 2007). The primary references in this review are available online at: www.blackwell-synergy.com and to members of the Joanna Briggs Institute via the website: www.joannabriggs.edu.au

An J-Y, Hayman LL, Park Y-S, Dusaj TK, Ayres CG. Web-based weight management programs for children and adolescents: A systematic review of randomized controlled trial studies. Advances in Nursing Science 2009;32(3):222-40.

Ref ID: 331

Abstract: More than 17% of children aged 6 to 19 years living in the United States are classified as overweight. Medical costs related to overweight and obesity were recently estimated to approximate \$100 billion annually. The purpose of this systematic review was to provide the scientific evidence regarding Web-based weight management programs for overweight children and adolescents. Results suggest the potential for Web-based behavioral change programs for weight management in overweight children and adolescents. Future research should emphasize rigorous methodological adequacies, develop theory-based standardized frameworks, investigate types of interventions appropriate for boys and girls in this age group, evaluate long-term effect of interventions, and examine cost as well as clinical effectiveness. Copyright 2009 Wolters Kluwer Health Lippincott Williams & Wilkins

Ananthapavan J, Moodie M, Haby M, Carter R. Assessing cost-effectiveness in obesity: laparoscopic adjustable gastric banding for severely obese adolescents. Surgery for Obesity and Related Diseases 2010;6(4):377-85.

Ref ID: 1284

Abstract: XST: This is an economic evaluation that meets the criteria for inclusion on NHS EED. If you would like us to consider prioritising the writing of a critical abstract for this economic evaluation please e-mail: CRD-NHSEED@york.ac.uk quoting the Accession Number of this record. Please note that priority is given to fast track requests from the UK National Health Service

CO1: Australia

Annesi JJ. Initial body mass index and free-time physical activity moderate effects of the Youth Fit for Life treatment in African-American pre-adolescents. Percept Mot Skills 2010;110(3 Pt 1):789-800.

Ref ID: 218

Abstract: In about 80% of youth obesity-prevention programs, significant decrease in Body Mass Index has not been observed. A meta-analysis of 16 trials of the 12-wk.

Youth Fit For Life intervention suggested better success; however, the effects for children who were overweight or obese remain unclear because data from participants of all weights were aggregated. Also unclear were effects on increasing free-time physical activity, a goal of this and most obesity-prevention treatments. Of the 200 African American pre-adolescents assessed in the present investigation, reductions in Body Mass Index associated with Youth Fit For Life were larger for participants who were overweight and obese, but these two groups did not differ. Voluntary physical activity at baseline was inversely related to change in voluntary physical activity ($r = -.53$, $p < .001$). Regression analyses suggested improvements in theoretical dimensions of self-efficacy significantly predicted increases in voluntary physical activity especially well for participants initially classified as insufficiently active ($R^2 = .61$). These data clarified and extended findings to date for the Youth Fit For Life treatment, but replications across age groups, ethnicities, and administration formats are required

Arteburn DE. Obesity in children. Clinical Evidence 2007;2007,2007.

Ref ID: 560

Abstract: INTRODUCTION: Obesity is the result of long-term energy imbalances, where daily energy intake exceeds daily energy expenditure. Along with long-term health problems, obesity in children is associated with short-term psychosocial problems, including social marginalisation, low self-esteem, and impaired quality of life. Most obese adolescents stay obese as adults. Obesity is increasing among children and adolescents, with 14% of boys and 17% of girls in the UK aged 2-15 years obese in 2004. METHODS AND OUTCOMES: We conducted a systematic review and aimed to answer the following clinical question: What are the effects of lifestyle interventions for the treatment of childhood obesity? We searched: Medline, Embase, The Cochrane Library and other important databases up to August 2006 (Clinical Evidence reviews are updated periodically, please check our website for the most up-to-date version of this review). We included harms alerts from relevant organisations such as the US Food and Drug Administration (FDA) and the UK Medicines and Healthcare products Regulatory Agency (MHRA). RESULTS: We found 10 systematic reviews, RCTs, or observational studies that met our inclusion criteria. We performed a GRADE evaluation of the quality of evidence for interventions. CONCLUSIONS: In this systematic review we present information relating to the effectiveness and safety of the following interventions: behavioural interventions, diet, multifactorial interventions, and physical activity

Askie LM, Baur LA, Campbell K, Daniels LA, Hesketh K, Magarey A, et al. The Early Prevention of Obesity in CHildren (EPOCH) Collaboration--an individual patient data prospective meta-analysis. BMC public health 2010;10:728.

Ref ID: 209

Abstract: Efforts to prevent the development of overweight and obesity have increasingly focused early in the life course as we recognise that both metabolic and behavioural patterns are often established within the first few years of life. Randomised controlled trials (RCTs) of interventions are even more powerful when, with forethought, they are synthesised into an individual patient data (IPD) prospective meta-analysis (PMA). An IPD PMA is a unique research design where several trials are identified for inclusion in an analysis before any of the individual trial results become known and the data are provided for each randomised patient. This methodology minimises the publication and selection bias often associated with a retrospective meta-analysis by allowing hypotheses, analysis methods and selection criteria to be specified a priori. The Early Prevention of Obesity in CHildren (EPOCH) Collaboration was formed in 2009. The main objective of the EPOCH Collaboration is to determine if early intervention for childhood obesity impacts on body mass index (BMI) z scores at age 18-24 months. Additional research questions will focus on whether early intervention has an impact on children's dietary quality, TV viewing time, duration of breastfeeding and parenting styles. This protocol includes the hypotheses, inclusion criteria and outcome measures to be used in the IPD PMA. The sample size of the combined dataset at final outcome assessment (approximately 1800 infants) will allow greater precision when exploring differences in the effect of early intervention with respect to pre-specified participant- and intervention-level characteristics.

Finalisation of the data collection procedures and analysis plans will be complete by the end of 2010. Data collection and analysis will occur during 2011-2012 and results should be available by 2013. ACTRN12610000789066

Ayliffe B, Glanville NT. Achieving healthy body weight in teenagers: evidence-based practice guidelines for community nutrition interventions. Canadian Journal of Dietetic Practice & Research 2010;71(4):205.

Ref ID: 2070

Abstract: An evidence-based review of research on obesity prevention and treatment in youth was conducted to identify successful elements of community nutrition interventions. Guidelines for dietetic practice appropriate to this age group were synthesized. Following a systematic review of English-language research papers published from 1996 to 2009, 63 interventions met inclusion criteria and were graded according to methodological quality, quantity, consistency, and reproducibility. They also were analyzed for common themes and used to develop guideline statements and a practice algorithm. A national panel of experts in community nutrition, public health, adolescent health, academia, and endocrinology assessed the guidelines and the practice algorithm for validity, acceptability, and applicability. Successful prevention strategies are comprehensive, address social and environmental influences, include nutrition education and physical activity, and use schools as a health promotion delivery venue. Computer- or technology-based and peer-modelling strategies are promising, developmentally appropriate approaches. Effective obesity treatment strategies utilize diet plans and behaviour modification techniques, and involve families in intensive, multidisciplinary interventions. Given the distinct needs of this age group, healthy body weight must be promoted through a comprehensive school-based approach. In summary, obesity prevention and treatment interventions should be comprehensive, multidisciplinary, and developmentally appropriate

Barnett A, Cerin E, Baranowski T. Active video games for youth: A systematic review. Journal of Physical Activity and Health 2011;8(5):724-37.

Ref ID: 72

Abstract: Background: A population level increase in physical activity (PA) is critical to reduce obesity in youth. Video games are highly popular and active video games (AVGs) have the potential to play a role in promoting youth PA. Method: Studies on AVG play energy expenditure (EE) and maintenance of play in youth were systematically identified in the published literature and assessed for quality and informational value. Results: Nine studies measuring AVG play EE were identified. The meta-analytic estimates of average METs across these studies were 3.1 (95% CI: 2.6, 3.6) to 3.2 (95% CI: 2.7, 3.7). No games elicited an average EE above the 6 MET threshold for vigorous EE. Observed differences between studies were likely due to the different types of games used, rather than age or gender. Four studies related to maintenance of play were identified. Most studies reported AVG use declined over time. Studies were of low-to-medium quality. Conclusion: AVGs are capable of generating EE in youth to attain PA guidelines. Few studies have assessed sustainability of AVG play, which appears to diminish after a short period of time for most players. Better-quality future research must address how AVG play could be maintained over longer periods of time. 2011 Human Kinetics, Inc

Baur LA. The role of medications in treatment of obesity in childhood and adolescence. Obesity Research and Clinical Practice 2011;Conference: Australian and New Zealand Obesity Society Annual Scientific Meeting 2011 Adelaide, SA Australia. Conference Start: 20111020 Conference End: 20111022. Conference Publication:(var.pagings):S7.

Ref ID: 194

Abstract: While behavioural programs for weight management are the mainstay of obesity treatment in childhood and adolescence, there is a role for drug therapy in more severely obese adolescents, and in those with clinical insulin resistance. In the 2009 Cochrane Review on childhood obesity treatment, pooled meta-analysis in 579 participants from two separate studies, found an additional effect of orlistat over placebo on absolute BMI at 6 months follow up, when given in combination with a lifestyle intervention (-0.76 kg/m², 95% CI:-1.07 to-0.44, P < 0.00001) [1]. Reported

adverse events were largely in relation to the expected gastrointestinal side-effects of the therapy. Anecdotal experience suggests adolescents find it difficult to adhere to this therapy. Sibutramine is now withdrawn from the market. Metformin has been used in obese older children and adolescents with clinical insulin resistance. A 2010 systematic review [2] and a subsequent RCT [3] comparing the effect of 6 months of metformin with placebo, showed that metformin results in improvements in measures of insulin action, with modest although significant reductions in BMI. Mild gastrointestinal symptoms were reported in about 1/5th of participants. Research into the pharmacotherapy of obesity in adolescence is important, although challenging. Longer-term trials, with a range of outcomes (e.g. weight loss, weight maintenance, comorbidities) are required. Consideration should be given as to the expected duration of treatment (life-long?), strategies for adherence, and applicability of therapy developed for use in adults in the adolescent age group

Ben OO, Elloumi M, Amri M, Zouhal H, Tabka Z, Lac G. Role of the combination of the caloric restriction and the individualized exercise training in the treatment of infantile obesity. *Science and Sports* 2010;25(3):111-20.

Ref ID: 282

Abstract: Aim: This review aimed to synthesize current scientific knowledge on the part played by the combination of individualized physical activity and diet in prevention and treatment of the paediatric obesity. Current: The physical activity is now recognized like an essential element of the fight against the obesity increase in children and adolescents. In the treatment the last meta-analysis and literature reviews confirm that the best strategy is the reduction of the sedentary behaviours, the increase in the physical activity associated with an education and restriction nutritional. The physical activity must be adapted to the required objective and the possibilities physical and physiological of obese subjects. Combination of diet and individualized physical training drive allows improvement in the body composition, usual index of insulin resistance, the use of the lipids during sub-maximal exercise and the plasma levels of adipokines in obese adolescents. Conclusion: Although the prescription of the physical activity or the diet has a beneficial effect on health obese children, the association of both methods resulted in a more significant decrease of levels in cardiovascular risk factors present at this population. 2009 Elsevier Masson SAS

Berra S, Lopez L, Lopez-Aguila S, Audisio Y, Rajmil L. [Overweight in the teenager population: quality of life, access to health care services and cost-effectiveness of interventions]. 2009. Tilgjengelig fra:

http://www.gencat.cat/salut/depsan/units/aatrm/pdf/sobrepeso_adolescentes_pcsns07_aatrm2009.pdf.

Ref ID: 903

Abstract: XST: This is a bibliographic record of a published health technology assessment from a member of INAHTA. No evaluation of the quality of this assessment has been made for the HTA database
CO1: Spain

Bluford DAA, Sherry B, Scanlon KS. Interventions to prevent or treat obesity in preschool children: A review of evaluated programs. *Obesity* Vol 15(6), Jun 2007, pp 1356-1372 2007;(6):Jun-1372.

Ref ID: 2368

Abstract: Objective: To identify effective programs to prevent or treat overweight among 2- to <6-year-old children. Research Methods and Procedures: We searched six databases to identify evaluated intervention programs assessing changes in weight status or body fat and systematically summarized study attributes and outcomes. Results: Four of the seven studies (two intervention, two prevention) documented significant reductions in weight status or body fat. Among these, three sustained reductions at 1 or 2 years after program initiation, three incorporated a framework/theory, two actively and one passively involved parents, three included multicomponent strategies, and all four monitored behavioral changes. Of the three (prevention) studies that did not show reduction in weight or fat status, all performed assessments between 4 and 9 months after program initiation, and one used a mul-

ticomponent strategy. Other significant changes reported were reductions in television viewing, cholesterol, and parental restriction of child feeding. Discussion: The paucity of studies limits our ability to generalize findings. Among the available studies, multicomponent programs with 1- to 2-year follow-up in clinics or child care settings were successful in their impact on weight; they were likely enhanced by parental involvement. Both treatment programs and two of five prevention programs reduced weight/fat status. Our review highlights the need to evaluate more programs, advocate for use of a framework/behavioral theory and objective behavioral measures, further examine the impact of involving parents and the impact of intervention duration and follow-up time, strengthen prevention programs, and further evaluate successful programs in other settings and among other racial/ethnic groups. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)

Bond M, Wyatt K, Lloyd J, Welch K, Taylor R. Systematic review of the effectiveness and cost-effectiveness of weight management schemes for the under fives: A short report. *Health Technol Assess* 2009;13(61):1-75.

Ref ID: 341

Abstract: Objective: To search for, review and synthesise studies of the effectiveness and cost-effectiveness of weight management schemes for the under fives. Data sources: MEDLINE [Ovid], MEDLINE In-Process [Ovid], EMBASE [Ovid], CAB [Ovid], Health Management Information Consortium [Ovid], The Cochrane Database of Systematic Reviews, Cochrane Register of Controlled Trials, Science Citation Index Expanded [Web of Science], Conference Proceedings Citation Index [The Web of Science], Database of Abstract Reviews [CRD; Centre for Reviews and Dissemination], HTA [CRD], PsycINFO [Ebsco], NHS CRD. These databases were searched from 1990 to February 2009. Supplementary internet searches were additionally conducted. Review methods: Relevant clinical effectiveness studies were identified in two stages. Titles and abstracts returned by the search strategy were examined independently by three researchers and screened for possible inclusion. Disagreements were resolved by discussion. Full texts of the identified studies were obtained. Three researchers examined these independently for inclusion or exclusion, and disagreements were again resolved by discussion. Results: One of the randomised controlled trials (RCTs) was from the UK. It measured the effects of a physical activity intervention for children in nurseries combined with home-based health education for their parents; this was compared to usual care. The main outcome measure was body mass index (BMI); secondary measures were weight and physical activity. At the 12-month follow-up, no statistically significant differences were found between the groups on any measure. However, a trend, favouring the intervention, was found for BMI and weight. The other two RCTs were from the USA. The larger trial investigated the effects of a combined preschool and home intervention in African American and Latino communities. Nutrition education and physical activity programmes were aimed at under fives in preschool. The home component consisted of related health education and homework for the parents, who received a small financial reward on completion. The 1- and 2-year results for the African American sites showed a significantly slower rate of increase in BMI than for results at baseline, for the intervention group than for the control group. However, in the Latino communities no such differences were found. The second US trial was a much smaller home-based parental education programme in Native American communities in the USA and Canada. The intervention consisted of a parental skills course for parents to improve their children's diet and physical activity. This was compared with a course providing skills to improve child behaviour. Follow-up was at 16 weeks and showed no significant differences between groups in BMI. Conclusions: No controlled trials addressing the issue of treating obesity or evidence of cost-effectiveness studies in the under fives' population were found. From the three prevention studies, apart from the larger US trial, the interventions showed no statistically significant differences in BMI and weight between the intervention and control groups (although there was some evidence of positive trends for BMI and weight). It should also be noted that these conclusions are based on only three dissimilar studies, thereby making the drawing of firm conclusions difficult. Further research is urgently needed in well-designed UK-based RCTs of weight management schemes aimed at the prevention of obesi-

ty, that combine with cost-effectiveness studies targeted at preschool children with long-term follow-up. 2009 Queen's Printer and Controller of HMSO. All rights reserved

Bond M, Wyatt K, Lloyd J, Taylor R. Systematic review of the effectiveness of weight management schemes for the under fives. Obesity Reviews 2011;12(4):242-53. Ref ID: 156

Abstract: Overweight and obesity in pre-school children are an increasing problem, with poor diet and exercise habits laying the foundation for serious health risks in later life. Yet most research into childhood obesity has focused on school-age children. Two previous systematic reviews of pre-school children have included uncontrolled designs and self-report outcomes potentially biasing the results in favour of the interventions. We have conducted a systematic review of the effectiveness and cost-effectiveness of weight management schemes for the under fives restricting the inclusion criteria to controlled trials with objective measures. We found four effectiveness randomized controlled trials of prevention. No treatment or cost-effectiveness studies were found. Only one study in a Latino community showed a statistically significant advantage from the intervention in a slower rate of increase in body mass index. However, trends in decrease in body mass index and weight loss favoured the intervention groups in other studies. From the studies characteristics we hypothesize that important features to include in future interventions may be; cultural sensitivity, sustained moderate to vigorous exercise, active engagement of the parents in the programme and as role models of healthy living and active engagement of the children in nutrition education. Further randomized controlled trials are needed in this population. 2010 The Authors. obesity reviews 2010 International Association for the Study of Obesity

Bouza C, Gutierrez L, Lopez-Cuadrado T. Metformin for the treatment of childhood obesity. A systematic review and meta-analysis. Value in Health 2010;Conference: ISPOR 13th Annual European Congress Prague Czech Republic. Conference Start: 20101106 Conference End: 20101109. Conference Publication:(var.pagings):A385. Ref ID: 294

Abstract: OBJECTIVES: Childhood obesity associates with significant morbidity and premature death; its prevalence has increased greatly during the past three decades; and it is recognized as a worldwide public health problem. However, the efficacy of treatments for childhood obesity remains unclear. In recent years the use of metformin, an insulin sensitizer, has aroused a great interest for the treatment of obesity in adults. Our aim was to assess the efficacy and safety of metformin for childhood obesity. METHODS: Systematic review of literature and meta-analysis of randomized controlled trials in obese subjects age ≤ 19 years without diabetes or other morbidities. Structured electronic searches of published studies until March 2010 were performed. Changes in the Body Mass Index (BMI) were considered our main outcome measure of efficacy whereas metabolic parameters such as insulin levels, glucose, HOMA, lipid profile and leptin levels were considered as secondary outcomes. Safety parameters included adverse events and losses from adverse effects. Individual studies were graded using published methodologies. Pooled estimates of effect and confidence intervals were derived using a fixed effects model and tested for heterogeneity. Consistency across studies was evaluated by means of the I-square statistic. RESULTS: Seven trials met the inclusion criteria. All trials compared metformin with placebo and used behavioural co-interventions. Average follow-up was six months. Though with small sample sizes, methodological quality of trials was adequate. Meta-analysis showed that compared to placebo, metformin provided a significant decrease in BMI (-1.90 (-3,-.8)). No statistical significant differences were found in secondary outcomes. Main adverse effects were digestive, no serious adverse events were reported. CONCLUSIONS: Available evidence suggests that, added to behavioural interventions, metformin is a relatively safe and effective treatment for childhood obesity in the short term. Further research with longer follow-up periods is needed to solve this important health issue. Partially supported by Spanish National I+D Program

Branscum P, Sharma M. A systematic analysis of **childhood obesity prevention interventions** targeting Hispanic children: Lessons learned from the previous decade. *Obesity Reviews* 2011;12(501):e151-e158.

Ref ID: 146

Abstract: Hispanic children suffer from the highest overall rates of prevalence for overweight and obesity in the US. In the last decade some interventions for prevention of childhood obesity have been developed and tailored to target this subgroup. **The purpose of this review is to systematically analyze and summarize findings for health education and promotion interventions aimed at the prevention of childhood overweight and obesity among primarily Hispanic children.** A systematic review of PubMed, CINAHL, and ERIC was done for the time period 2000 to May 2010. A posteriori effect size for the primary outcome of each intervention was calculated using G*Power. A total of nine interventions were located; five randomized controlled trials and four were either quasi-experimental or pilot studies. Among these studies, only four had significant findings, and calculated effect sizes (Cohen's *f*) ranged from small to medium with the highest *f*=0.26. Interventions were more likely to be successful when participants were at higher risk for obesity, a parental component was included, the intervention contained theoretical underpinnings, the intervention was delivered by a dedicated staff, the intervention served older children and the intervention was longer in duration. More interventions need to be developed for Hispanic children. Future interventions should also develop and utilize culturally appropriate and sensitive materials and approaches. 2010 The Authors. *obesity reviews* 2010 International Association for the Study of Obesity

Brown AS. **Promoting physical activity** amongst adolescent girls. *Issues Compr Pediatr Nurs* 2009;32(2):49-64.

Ref ID: 1167

Abstract: XST: This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn

XAO: The review objective appeared to be to **assess the effectiveness of methods of promoting physical activity among adolescent girls**

XSS: PubMed, PsycINFO and CINAHL were searched for articles published in English during the previous 15 years. Search terms were reported

XVC: The author did not state that study validity was assessed

XDE: Data on between- and within-group differences were reported descriptively, with *p* values in some cases. The author did not state how many reviewers extracted data

XRR: Fourteen studies were included (*n*= 5,862, range 17 to 2,744). Fewer than half of the interventions in the included studies increased physical activity. Two studies (*n*=25 and *n*=2,744) reported increased frequency and duration of moderate and/or vigorous activity in the intervention group compared to controls (*p*=0.04, *p*<0.05). A third study (*n*=68) reported a significantly greater increase in four-day pedometer step count in the intervention group than in controls. **Other studies reported that the intervention significantly improved cognitive or affective outcomes (three studies) or significantly decreased body fat (two studies).** Two studies reported that the intervention significantly improved physical fitness, but did not significantly increase physical activity. **Four studies found no significant difference between the groups in measures of physical activity or body fat.** The results of two other studies were presented in study tables

XCL: Cognitive and affective interventions were as important as physical interventions for promoting physical activity in adolescent girls

XCM: As the objective of the review appeared to be to increase physical activity, it was not entirely clear why inclusion was limited to studies that specifically targeted overweight or obesity. Relevant sources were searched. The restriction to published studies in English meant that the review was at risk of publication and language biases; potential for such biases was not discussed. The processes of study selection and data extraction were not reported and it was unclear whether they were conducted independently by more than one reviewer (there was only one author), so risk of reviewer error and bias could not be ruled out. Study designs were not de-

scribed and study validity was apparently not assessed. There was marked variability between the studies in size, setting, intervention and outcomes. Most studies utilised complex interventions in which the effect of individual components could not be determined. Where p values were reported in the review they did not always relate clearly to between-group differences. All these factors made it difficult to interpret review findings or determine their clinical significance. In view of substantial limitations in the review, which included poorly defined objectives, heterogeneity between studies, failure to assess study quality and a lack of clear, consistent findings, the author's conclusions should be interpreted with caution

XIM: Practice: The authors stated that clinicians should utilise interventions that combined cognitive, affective and physical components in order to increase physical activity in adolescent girls and promote long-term change. Interventions could include screening for sedentary behaviour, provision of educational material, goal setting or use of a pedometer. Research: The authors stated that researchers should design multifaceted interventions that included cognitive, affective and physical elements to increase physical activity in adolescent girls

Brown HS, Perez A, Li YP, Hoelscher DM, Kelder SH, Rivera R. **The cost-effectiveness** of a school-based overweight program. *International Journal of Behavioral Nutrition and Physical Activity* 2007;4:47.

Ref ID: 1659

Abstract: XST: This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn

XFU: Supported by grants from The Texas Department of State Health Services Innovations Grants; and the National Institutes of Health

XOP: Coleman KJ, Tiller CL, Sanchez J, et al. Prevention of the Epidemic Increase in Child Risk of Overweight in Low-Income Schools: The El Paso Coordinated Approach to Child Health (El Paso). *Arch Pediatr Adolesc Med* 2005;159:217-24. Oster G, Thompson D, Edelsberg J, et al. Lifetime health and economic benefits of weight loss among obese persons. *Am J Public Health* 1999;89:1536-42. Peeters A, Barendregt JJ, Willekens F, et al. Obesity in adulthood and its consequences for life expectancy: a life-table analysis. *Ann Intern Med* 2003;138:24-32. Whitaker RC, Wright JA, Pepe MS, et al. Predicting obesity in young adulthood from childhood and parental obesity. *N Engl J Med* 1997;337:869-73

CO1: United States

Brown T, Summerbell C. Systematic review of school-based interventions that focus on changing dietary intake and physical activity levels **to prevent childhood obesity**: An update to the obesity guidance produced by the National Institute for Health and Clinical Excellence. *Obesity Reviews* 2009;10(1):110-41.

Ref ID: 378

Abstract: **To determine the effectiveness of school-based interventions that focus on changing dietary intake and physical activity levels to prevent childhood obesity.**

MEDLINE and EMBASE were searched (January 2006 to September 2007) for controlled trials of school-based lifestyle interventions, minimum duration of 12 weeks, reporting weight outcome. Thirty-eight studies were included; 15 new studies and 23 studies included within the National Institute for Health and Clinical Excellence obesity guidance. One of three diet studies, five of 15 physical activity studies and nine of 20 combined diet and physical activity studies demonstrated significant and positive differences between intervention and control for body mass index. There is insufficient evidence to assess the effectiveness of dietary interventions or diet vs. physical activity interventions. School-based physical activity interventions may help children maintain a healthy weight but the results are inconsistent and short-term. Physical activity interventions may be more successful in younger children and in girls. Studies were heterogeneous, making it difficult to generalize about what interventions are effective. The findings are inconsistent, but overall suggest that combined diet and physical activity school-based interventions may help prevent children becoming overweight in the long term. Physical activity interventions, particularly in

girls in primary schools, may help to prevent these children from becoming overweight in the short term. 2008 The Authors

Buchwald H, Estok R, Fahrback K, Banel D, Sledge I. Trends in mortality in **bariatric surgery**: a systematic review and meta-analysis. *Surgery* 2007;142(4):621-35. Ref ID: 1035

Abstract: XST: This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn

XAO: **To review published mortality data following any form of bariatric surgery**

XSS: MEDLINE, Current Contents Connect and the Cochrane Library were searched for English language studies published from January 1990 to April 2006. Search terms were reported. Manual searches of reference lists and recent reviews were also carried out

XVC: The authors assessed the validity of randomised controlled trials (RCTs) using the Jadad scale. Each RCT was awarded a score between 0 and 5 points. The quality of other study designs did not appear to have been assessed. The authors did not state how many reviewers assessed the validity of the studies or how discrepancies were resolved

XDE: Early (within 30 days of the surgery) and late (>30 days to 2 years) mean percentage mortality rates were extracted. Mortality data collected two years or more after surgery was not included. Zero mortality was assumed where other data were reported and it was clear there were no deaths. Raw weighted means were calculated for patient characteristics. The authors did not state how data were extracted for the review, or how many reviewers performed the data extraction

XRR: Three hundred and sixty-one studies (n=85,048 patients) with 478 treatment arms were included in the review. Only four studies were classified as providing class I evidence. Nineteen of the studies were randomised. The majority of studies (67.9%) were retrospective and most (87%) were only single arm studies. Further details about the quality of the studies were not reported. Mortality according to procedure: Total early mortality (475 treatment arms and 84,931 patients) was 0.28% (95% confidence interval (CI): 0.22 to 0.34) and late mortality (140 treatment arms and 19,928 patients) was 0.35% (95% CI: 0.12 to 0.58). Rates were usually lower in laparoscopic procedures compared open surgery, with the exception of biliopancreatic diversion/duodenal switch and late mortality in gastric bypass procedures. Significant statistical heterogeneity was reported for the analyses of early mortality in biliopancreatic diversion/duodenal switch, and late mortality in open gastric bypass procedures. Higher mortality rates were also associated with revision surgery and malabsorptive procedures. Further details were reported in the review. Mortality according to subgroups: **Higher mortality rates were reported for all subgroups, with the exception of females and adolescents, as compared with the population as a whole.** Super-obese patients were also reported to have higher early and late mortality rates. Despite small numbers of studies, male subgroups were reported to have higher early mortality rates than female subgroups, but this was only based on 22 patients. In elderly patients (at least 65 years old), late mortality was found to be lower than early mortality. Further details and results were reported in the review

XCL: Both early and late mortality rates after bariatric surgery were low and could be used to carry out prospective risk assessments and risk stratification for comparative analyses

XCM: This review answered a clear research question using a broad range of study designs, patients and interventions. Searches were carried out for published studies in a number of electronic databases, but relevant studies may have been missed through the exclusion of non-English language articles and the apparent lack of any specific attempts to locate unpublished studies. It is also unclear whether precautions were taken to reduce the risk of reviewer error and bias when selecting, extracting and assessing the quality of the included studies. Study validity was assessed using the Jadad scale, but details of this assessment, along with important details about the design of the studies, were not reported, even in summary form. The quality of other study designs (98% of studies) was not assessed. This makes it

difficult to assess the reliability of the data, although it is likely to be poor given the reliance on mainly single arm studies. The authors also noted that significant statistical heterogeneity was detected for some of the analyses and rightly report that mortality rates between the different interventions and subgroups were not comparable. Overall, the review findings should be interpreted with caution given concerns about the review methods and the quality of the study data

XIM: Practice: The authors stated that data from a meta-analysis such as this can provide the necessary information for institutions, carriers, government health agencies and patients under the care of physicians/bariatric surgeons, to assess the risk of death from bariatric surgery. Research: The authors stated that, in order to assess the risk of death from bariatric surgery, further research is required to develop an assessment tool comparing risks in different populations, between high and low volume centres, different locations and using different databases. They also stated that this review may serve as a foundation for such a tool

Campbell J, McGarry LA, Shikora SA, Hale BC, Lee JT, Weinstein MC. Cost-effectiveness of laparoscopic gastric banding and bypass for morbid obesity. *Am J Manag Care* 2010;16(7):174-87.

Ref ID: 1431

Abstract: XST: This is an economic evaluation that meets the criteria for inclusion on NHS EED. If you would like us to consider prioritising the writing of a critical abstract for this economic evaluation please e-mail: CRD-NHSEED@york.ac.uk quoting the Accession Number of this record. Please note that priority is given to fast track requests from the UK National Health Service

CO1: United States

Campbell KJ, Hesketh KD. Strategies which aim to positively impact on weight, physical activity, diet and sedentary behaviours in children from zero to five years. A systematic review of the literature. *Obesity Reviews* 2007;8(4):327-38.

Ref ID: 516

Abstract: Preventing the development of obesity in children is an international health priority. To assess the effectiveness of interventions designed to prevent obesity, promote healthy eating and/or physical activity and/or to reduce sedentary behaviours in 0-5-year-old children, a systematic review of the literature was performed. Literature searches were limited to articles published between January 1995 and June 2006, printed in English and sampling children aged 0-5-years. Searches excluded literature concerned with breastfeeding, eating disorders, and interventions which were school-based or concerned with obesity treatment. Two reviewers independently extracted data and assessed study strengths and weaknesses. Nine included studies were grouped based on the settings in which they were delivered. Most studies involved multi-approach interventions, were conducted in the USA and varied in study designs and quality. All showed some level of effectiveness on at least one obesity-behaviour in young children. These studies support, at a range of levels, the premise that parents are receptive to and capable of some behavioural changes that may promote healthy weight in their young children. The small quantity of research heralds the need, particularly given the potential for early intervention to have long-lasting impacts on individual and population health, to build in a substantial way upon this evidence base. 2007 The Authors

Canoy D, Bundred P. Obesity in children. *Clinical Evidence* 2011;2011,2011.

Ref ID: 556

Abstract: INTRODUCTION: Obesity is the result of long-term energy imbalances, where daily energy intake exceeds daily energy expenditure. Along with long-term health problems, obesity in children may also be associated with psychosocial problems, including social marginalisation, low self-esteem, and impaired quality of life. Most obese adolescents stay obese as adults. Obesity is increasing among children and adolescents, with 16.8% of boys and 15.2% of girls in the UK aged 2 to 15 years obese in 2008. METHODS AND OUTCOMES: We conducted a systematic review and aimed to answer the following clinical questions: What are the effects of lifestyle interventions for the treatment of childhood obesity? What are the effects of surgical interventions for the treatment of childhood obesity? We searched: Medline,

Embase, The Cochrane Library, and other important databases up to January 2010 (Clinical Evidence reviews are updated periodically, please check our website for the most up-to-date version of this review). We included harms alerts from relevant organisations such as the US Food and Drug Administration (FDA) and the UK Medicines and Healthcare products Regulatory Agency (MHRA). RESULTS: We found 14 systematic reviews and RCTs that met our inclusion criteria. We performed a GRADE evaluation of the quality of evidence for interventions. CONCLUSIONS: In this systematic review we present information relating to the effectiveness and safety of the following lifestyle interventions: behavioural, diet, and multifactorial interventions; physical activity; and bariatric surgery

Castañeda-González L, Camberos-Solis R, Bacardí-Gascón M, Jiménez-Cruz A. Long-term randomized clinical trials of **pharmacological treatment of obesity**: systematic review. *Colombia Médica* 2010;41(1):17-25.

Ref ID: 2082

Abstract: Introduction: Obesity has become a public health problem. The increment in energy intake and the reduction of caloric expenditure as a result of sedentary lifestyles promotes a positive energetic balance resulting in the increase of fat deposits. In response to this, the prescription of pharmacological treatments has also increased. Objective: **To evaluate the long-term weight loss effectiveness of pharmacological treatments**. Methodology: A systematic review was conducted on randomized clinical trials registered in Pub Med, Scielo, and EBSCOHOST from January 1st 1999 to December 31st 2008, including those with an intervention program with orlistat, sibutramine, and rimonabant equal or greater to two years. Two hundred and twelve articles were identified, 201 studies were excluded, and eleven were analyzed; seven from orlistat, two from sibutramine, and two from rimonabant. Information of design, intervention time, number of patients, age, body mass index and weight loss, difference between the intervention group versus the placebo, significance level, and methodological quality were obtained. Main findings: The percentage of weight loss with orlistat ranged between 5 and 12%, the mean weight loss was 8 kg, and a difference between IG vs. placebo of 3.7 kg. Weight loss with sibutramine ranged between 4 and 10%, the mean weight loss was 7.4 kg and a difference between the intervention group versus placebo was 5.5 kg. Weight loss with rimonabant was 7% with a mean weight loss of 7.3 kg, and the difference compared with the placebo was 4.4 kg. Conclusions: Weight loss with pharmacotherapy is modest; weight regain after interruption of treatment, adverse effects, costs and lack of evidence related to long-term morbidity-mortality, do not justify the generalized use of pharmacological treatment of obesity

Cecchini M, Sassi F, Lauer JA, Lee YY, Guajardo-Barron V, Chisholm D. Tackling of unhealthy diets, physical inactivity, and obesity: health effects and **cost-effectiveness**. *Lancet* 2010;376(9754):1775-84.

Ref ID: 1678

Abstract: XST: This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn

XFU: Not stated

CO1: Multinational

Ciampa PJ, Kumar D, Barkin SL, Sanders LM, Yin HS, Perrin EM, et al. Interventions aimed at **decreasing obesity in children younger than 2 years**: A systematic review. *Arch Pediatr Adolesc Med* 2010;164(12):1098-104.

Ref ID: 261

Abstract: Objective: **To assess the evidence for interventions designed to prevent or reduce overweight and obesity in children younger than 2 years**. Data Sources: MEDLINE, the Cochrane Central Register of Controlled Trials, CINAHL, Web of Science, and references from relevant articles. Study Selection: Included were published studies that evaluated an intervention designed to prevent or reduce overweight or obesity in children younger than 2 years. Data Extraction: Extracted from eligible studies were measured outcomes, including changes in child weight status,

dietary intake, and physical activity and parental attitudes and knowledge about nutrition. Studies were assessed for scientific quality using standard criteria, with an assigned quality score ranging from 0.00 to 2.00 (0.00-0.99 is poor, 1.00-1.49 is fair, and 1.50-2.00 is good). Data Synthesis: We retrieved 1557 citations; 38 articles were reviewed, and 12 articles representing 10 studies met study inclusion criteria. Eight studies used educational interventions to promote dietary behaviors, and 2 studies used a combination of nutrition education and physical activity. Study settings included home (n=2), clinic (n=3), classroom (n=4), or a combination (n=1). Intervention durations were generally less than 6 months and had modest success in affecting measures, such as dietary intake and parental attitudes and knowledge about nutrition. No intervention improved child weight status. Studies were of poor or fair quality (median quality score, 0.86; range, 0.28-1.43). Conclusions: Few published studies attempted to intervene among children younger than 2 years to prevent or reduce obesity. Limited evidence suggests that interventions may improve dietary intake and parental attitudes and knowledge about nutrition for children in this age group. For clinically important and sustainable effect, future research should focus on designing rigorous interventions that target young children and their families. 2010 American Medical Association. All rights reserved

Clark R, Allender S, Waters E, Armstrong R, Swinburn B. Evidence summary: Achieving equity in **community-based obesity prevention interventions** for children and adolescents. Obesity Reviews 2010;Conference: 11th International Congress on Obesity, ICO 2010 Stockholm Sweden. Conference Start: 20100711 Conference End: 20100715. Conference Publication:(var.pagings):448.

Ref ID: 313

Abstract: Introduction: Among developed countries obesity prevalence through childhood and adolescence has increased rapidly over the past thirty years. Community-based interventions are showing signs of successfully reducing obesity prevalence but there is a pressing need for these interventions to be informed by the best research evidence available. Achieving equity is a common struggle. Often interventions intended for disadvantaged populations benefit more advantaged groups. There is a need to understand the concept of equity and consider how universal community-wide programs in particular can reach those who need it most.

This paper presents systematic review evidence about achieving equity in the prevention of obesity for children and adolescents. Methods: The literature searches, evidence presented and format of summaries were guided by a consultation and feedback process with potential users. A review of systematic reviews was conducted and relevant reviews were extracted. Reviews were assessed and scored using an equity checklist. Results: There was little evidence that systematic reviews had considered equity directly and few studies had considered the differential effects of intervention. Most studies had been conducted in schools and evidence in pre-school, community and family settings was lacking. Interventions targeting individuals were common. Findings were inconsistent and inconclusive beyond recommending continued implementation of multi-faceted, multi-component interventions in the community (especially schools) to tackle the wider determinants of obesity. Conclusions: Current evidence is inconclusive but there remains a pressing need for action. This paper provides guidance to assist in using this evidence, working within the gaps and contributing to the evidence-base

Clark R, Allender S, Waters E, Armstrong R, Swinburn B. Evidence summary: Remote and rural issues in the **prevention of obesity for pre-adolescents and adolescents.** Obesity Reviews 2010;Conference: 11th International Congress on Obesity, ICO 2010 Stockholm Sweden. Conference Start: 20100711 Conference End: 20100715. Conference Publication:(var.pagings):451.

Ref ID: 312

Abstract: Introduction: Among developed countries obesity prevalence in preadolescents and adolescents has increased rapidly in the past 30 years. Community based interventions are showing signs of successfully reducing obesity prevalence but there is a pressing need for these interventions to be informed by the best research evidence available. This need is complicated by the influence the different community contexts have for the scope of an intervention. This is particularly true in, rural and

remote communities due to problems with access, seasonal weather and transient populations. This paper presents systematic review evidence about remote and rural issues in the prevention of obesity for pre-adolescents and adolescents. Methods: The literature searches, evidence presented and format of summaries were guided by a consultation and feedback process with potential users. A review of systematic reviews was conducted and relevant reviews were extracted. Results: There was limited evidence of studies conducted specifically in rural and remote settings. The majority of studies identified were school-based targeting physical activity, nutrition or both. Interventions targeting individuals were common. Findings were inconsistent and inconclusive beyond recommending continued implementation of multi-faceted, multi-component interventions in the community (especially schools) to tackle the wider determinants of obesity. Conclusions: Current evidence is inconclusive but there remains a pressing need for action. This paper provides guidance to help in using this evidence, working within the gaps and contributing to the evidence-base

Cliff DP, Okely AD, Morgan PJ, Jones RA, Steele JR. The impact of child and adolescent obesity treatment interventions on physical activity: A systematic review. *Obesity Reviews* 2010;11(7):516-30.

Ref ID: 254

Abstract: Efforts to treat obesity in childhood and adolescence would benefit from a greater understanding of evidence-based strategies to modify physical activity behaviour. A systematic review was conducted to examine the impact of child and adolescent obesity treatment interventions on physical activity. Studies included were randomized controlled trials or controlled trials, with overweight and obese youth (aged < 18 years), which reported statistical analysis of free-living physical activity at pretreatment and post-treatment. Two independent reviewers assessed each study for methodological quality. Seventeen child and three adolescent studies were retrieved, half of which were conducted in the USA. Studies were characterized by small samples of limited cultural and economic diversity. Fifteen studies reported an increase in at least one physical activity outcome at post-test or follow-up. Overall, study quality was rated as low (child median score = 3/10, range = 0-9; adolescent median score = 3/10, range = 2-5) with three child studies classified as high quality (>=6/10). Research evaluating the effect of child and adolescent obesity treatment trials on physical activity is limited in both quantity and quality. Studies testing innovative, theoretically driven treatment approaches that use robust methodologies are required to better understand generalizable approaches for promoting physical activity participation among obese youth. 2009 International Association for the Study of Obesity

Collins CE, Warren JM, Neve M, McCoy P, Stokes B. Systematic review of interventions in the management of overweight and obese children which include a dietary component. *International Journal of Evidence-Based Healthcare* 2007;j.(1):2-53.

Ref ID: 554

Abstract: Background[en space] The prevalence of overweight and obesity in children and adolescents is increasing at an alarming rate around the world and prevention has become a key public health objective. Treatment and management of those already overweight and obese must be aligned with the best available evidence on effectiveness, if the risk of obesity-related morbidity and mortality is yet to be reduced. Diet plays a pivotal role in successful treatment of obesity but to date, there is limited evidence on which to base practice. Objectives[en space] To identify and present the best available evidence on the optimal dietetic treatment and management of children and adolescent who are overweight or obese. Search strategy[en space] Published English language literature was searched using the electronic databases CINAHL, MEDLINE, PRE-MEDLINE, DARE, COCHRANE, EMBASE, AUSTROM, Current Concepts and Dissertation Abstracts. The databases were limited to English Language from 1975 until 2003. Government reports from the UK, USA and Australian were also searched and a hand search performed for the Journal of the Dietitians Association of Australia, International Journal of Obesity and the Journal of Human Nutrition and Dietetics and the bibliographies of retrieved articles. Selection criteria[en space] (i) Interventions that evaluated the effectiveness of nutrition or dietary interventions to treat or manage overweight and obesity; (ii) Children aged less

than 18[em space]years; and (iii) Participants were defined as overweight or obese by relative weight or a measure of body weight status, studies that reported body weight per se were excluded. Data collection and analysis[en space] An experienced professional librarian searched the databases, and two trained research assistants independently identified studies for retrieval and assessed each article for inclusion. The included studies were critically appraised for methodological quality by two people independently. Data were extracted from the appropriate articles and when a discrepancy arose, a third party would arbitrate. Main results[en space] There were 116 articles that met the inclusion criteria. While 49 articles described randomised controlled trials, they arose from 37 separate studies. There were 67 non-randomised trials. Meta-analyses were performed on eight studies that included both a dietary intervention component and an adequate control group and on four studies that had follow-up data. There was a high degree of heterogeneity between studies and this made comparisons between studies problematic. Interventions that include diet therapy generally result in significant weight loss, at least in the short term. Many studies were poorly designed and had no or only minimal follow up. The details of the dietary intervention were often inadequately described and dietary outcomes rarely reported, making repetition of the studies difficult. Reviewers' conclusions[en space] There is an urgent need for high quality studies investigating the optimal dietary approach to management of paediatric overweight and obesity. These studies require adequate follow up to ascertain if weight loss can be sustained in the long term. Details of the dietary prescription, adherence to the dietary intervention and diet-specific outcomes need to be reported in order to inform best practice

Connelly JB, Duaso MJ, Butler G. A systematic review of controlled trials of interventions to **prevent childhood obesity and overweight**: A realistic synthesis of the evidence. *Public Health* 2007;121(7):510-7.

Ref ID: 518

Abstract: Background: Preventing childhood overweight and obesity has become a major public health issue in developed and developing countries. Systematic reviews of this topic have not provided practice-relevant guidance because of the generally low quality of research and the heterogeneity of reported effectiveness. Aim: **To present practice-relevant guidance on interventions to reduce at least one measure of adiposity in child populations that do or do not contain overweight or obese children.** Design: Systematic review of eligible randomized, controlled trials or controlled trials using a novel approach to synthesizing the trial results through application of descriptive epidemiological and realistic evaluation concepts. Eligible trials involved at least 30 participants, lasted at least 12 weeks and involved non-clinical child populations. Results: Twenty-eight eligible trials were identified to 30 April 2006. Eleven trials were effective and 17 were ineffective in reducing adiposity. Blind to outcome, the main factor distinguishing effective from ineffective trials was the provision of moderate to vigorous aerobic physical activity in the former on a relatively 'compulsory' rather than 'voluntary' basis. Conclusions: By using a novel approach to synthesizing trials, a decisive role for the 'compulsory' provision of aerobic physical activity has been demonstrated. Further research is required to identify how such activity can be sustained and transformed into a personally chosen behaviour by children and over the life course. 2007 The Royal Institute of Public Health

Conroy S, Ellis R, Murray C, Chaw-Kant J. An integrative review of Canadian childhood **obesity prevention programmes**. *Obesity Reviews* 2007;8(1):61-7.

Ref ID: 791

Abstract: **To examine successful Canadian nursing and health promotion intervention programmes for childhood obesity prevention during gestation and infancy**, an integrative review was performed of the literature from 1980 to September 2005. The following databases were used: PubMed; Cochrane Database of Systematic Reviews; Cochrane Controlled Trials Register; Database of Abstracts of Reviews of Effects; ACP Journal Club; MEDLINE; EMBASE; CINAHL; Web of Science; Scopus; Sociological Abstracts; Sport Discus; PsycInfo; ERIC and HealthStar. MeSH headings included: infancy (0-24 months), gestation, gestational diabetes, nutrition, prenatal care, pregnancy, health education, pregnancy outcome, dietary services with limits of Canadian, term birth. Of 2028 articles found, six Canadian childhood obesity

prevention programmes implemented during gestation and/or infancy were found; three addressed gestational diabetes with five targeting low-income Canadian urban and/or Aboriginal populations. No intervention programmes specifically aimed to prevent childhood obesity during gestation or infancy. This paucity suggests that such a programme would be innovative and much needed in an effort to stem the alarming increase in obesity in children and adults. Any attempts either to develop new approaches or to replicate interventions used with obese adults or even older children need careful evaluation and pilot testing prior to sustained use within the perinatal period. [References: 50]

Cook-Cottone C, Casey CM, Feeley TH, Baran J. A meta-analytic review of **obesity prevention in the schools**: 1997-2008. *Psychology in the Schools* 2009;46(8):695-719.

Ref ID: 1897

Abstract: XST: This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn

XAO: **To examine the research conducted over a 10-year period on school-based interventions to reduce obesity in children**

XSS: PsycINFO, MEDLINE, CINAHL, Academic Search Premier and Cochrane Database of Systematic Reviews were searched for English-language articles published between January 1997 and July 2008. Reference lists of retrieved articles were searched

XVC: The authors did not state that they assessed study quality

XDE: The mean difference between intervention and control group in change from baseline to follow-up was extracted and the standardised mean difference (SMD) calculated. Studies were coded for a range of population and intervention moderator variables. Authors were contacted for further data where necessary. One reviewer extracted data; 30% were independently extracted by a second reviewer: the level of agreement was high (97.2%)

XRR: Forty controlled studies that provided 66 comparisons (n=31,059) were included. There was a small statistically significant benefit with school-based interventions compared to control (r=0.05, 95% CI 0.04 to 0.06); there was statistically significant heterogeneity in this analysis (p<0.001). There were statistically significant between-group differences for several of the moderator variables. More successful interventions were those that were universal (r=0.07, 95% CI 0.05 to 0.08; 37 comparisons), undertaken with four to nine year olds (r=0.06, 95% CI 0.05 to 0.07; 41 comparisons), implemented collaboratively (r=0.12, 95% CI 0.10 to 0.14; 19 comparisons), primarily included children of Asian ethnicity (r=0.30, 95% CI 0.27 to 0.33; five comparisons), encouraged nutritional change (r=0.13, 95% CI: 0.11 to 0.14; 28 comparisons) and sought to reduce sedentary behaviours (r=0.15, 95% CI 0.13 to 0.17; 17 comparisons). There was a negative effect for short-duration interventions (r=-0.04, 95% CI -0.08 to 0.00; 11 comparisons) and those that implemented system-wide changes in nutrition (r=-0.03, 95% CI -0.04 to -0.01; 15 comparisons)

XCL: There was much more work to be done to identify a robust best practice model for obesity prevention in schools. Overall the findings indicated small effects on BMI for school-based obesity prevention programmes and significant variability between studies in outcome

XCM: There was a clearly stated review question. A number of relevant databases were searched. Relevant studies may have been missed as only published English-language studies published during a 10-year period were included. Attempts were made to reduce error and bias in the processes for data extraction; it was unclear whether this was the case for study selection. Study quality was not assessed or taken into consideration in the evidence synthesis or conclusions. It was unclear whether or not the included studies were randomised. Several relevant variables were considered in subgroup analysis and it was appropriate to do so, although the results should be interpreted cautiously as the effect sizes remained small in most subgroups and because of the inherent limitations of such subgroup analyses. Despite these limitations, the authors' overall conclusions seem reasonable and appropriately cautious

XIM: Practice: The authors stated that weight prevention programmes must be carefully planned and suited to each school's population, risk and needs. Goals must include more than BMI reduction or weight loss. Research: The authors stated that obesity prevention research was required that assessed the efficacy of integrating a holistic body and mind approach with integrative prevention of binge eating and eating disorders. Further analysis was required to explore possible interaction between the moderator variables investigated in the review

Czernichow S, Lee CMY, Barzi F, Greenfield JR, Baur LA, Chalmers J, et al. Efficacy of **weight loss drugs on obesity** and cardiovascular risk factors in obese adolescents: A meta-analysis of randomized controlled trials. *Obesity Reviews* 2010;11(2):150-8. Ref ID: 276

Abstract: Weight loss drugs have been developed to reduce the comorbidities associated with excess weight. **We conducted a meta-analysis of the efficacy of orlistat and sibutramine on weight, body mass index, waist circumference and cardiovascular risk factors in overweight adolescents.** MEDLINE and the Cochrane Library were searched for relevant articles using MESH terms and keywords. Studies were included if they had reported quantitative estimates and standard deviations of the association between each weight loss drug and weight, with information on at least one cardiovascular risk factor. A total of eight trials (three orlistat and five sibutramine) with information on 1391 individuals was included in the present analysis. The mean decrease in weight between the intervention and control groups was 5.25 kg (95% confidence interval: 3.03-7.48) after a minimum follow-up of 6 months. There was evidence of statistical heterogeneity between the studies ($I^2 = 76%$) that was no longer apparent after exclusion of trials of orlistat (mean weight decrease = 5.32 kg; $I^2 = 38%$). There was little evidence that treatment was associated with adverse effects on cardiovascular risk factors but this requires verification from future large trials with longer study follow-up. 2009 International Association for the Study of Obesity

D'Onise K, Lynch JW, Sawyer MG, McDermott RA. Can preschool improve child health outcomes? A systematic review. *Soc Sci Med* 2010;70(9):1423-40. Ref ID: 279

Abstract: Early childhood development interventions (ECDIs) have the potential to bring about wide ranging human capital benefits for children through to adulthood. Less is known, however, about the potential for such interventions to improve population health. **The aim of this study was to examine the evidence for child health effects of centre-based preschool intervention programs for healthy 4 year olds, beyond the preschool years.** Medline, Embase, ERIC, Psych Info, Sociological Abstracts, the Cochrane Library, C2-SPECTR and the Head Start database were searched using terms relating to preschool and health from 1980 to July 2008, limited to English language publications. Reference lists and the journal *Child Development* were hand searched for eligible articles missed by the electronic search. There were 37 eligible studies identified. The reviewed studies examined a range of interventions from centre-based preschool alone, to interventions also including parenting programs and/or health services. The study populations were mostly sampled from populations at risk of school failure (76%). Only eight of the 37 studies had a strong methodological rating, 15 were evaluated as at moderate potential risk of bias and 14 as at high potential risk of bias. The review found generally null effects of preschool interventions across a range of health outcomes, **however there was some evidence for obesity reduction**, greater social competence, improved mental health and crime prevention. We conclude that the great potential for early childhood interventions to improve population health across a range of health outcomes, as anticipated by policy makers worldwide, currently rests on a rather flimsy evidence base. Given the potential and the increasingly large public investment in these interventions, it is imperative that population health researchers, practitioners and policy makers worldwide collaborate to advance this research agenda. 2010 Elsevier Ltd

Daniels L, Magarey A. **Obesity interventions in the very young:** Rationale and evidence. *Obesity Reviews* 2011;Conference: 18th European Congress on Obesity, ECO 2011 Istanbul Turkey. Conference Start: 20110525 Conference End:

20110528. Conference Publication:(var.pagings):25-6.

Ref ID: 185

Abstract: Introduction: Infant feeding practices influence early intake and eating behaviours which in turn track into childhood and are associated with later obesity risk. Rapid early weight gain is an established risk factor for childhood obesity. Early feeding practices determine infant exposure to food (type, texture, amount) and include parent response (e.g. coercion) to infant feeding behaviour (e.g. food refusal). Feeding practices are influenced by culture and family tradition. They evolved in times of relative food scarcity and have not adapted to the current food environment that is characterised by excess. Early feeding practices fall short of ideal and are a potentially modifiable risk factor for childhood obesity. However, evidence to guide effective early intervention strategies is scarce. This paper aims to present evidence that obesity prevention should start very early and review the very few obesity prevention intervention trials, including NOURISH, that have commenced prior to age 12 months. Methods and results: A review (Hesketh et al., 2009) of interventions to impact on weight status of children 0-5 years included 22 studies; only two of the seven studies with children <2 years presented growth data. Only two small RCTs have evaluated very early feeding interventions (Harvey-Berino, 2003; Paul, 2010). Four large RCTs are underway in Australia/New Zealand with a prospective meta-analysis planned (Askie, 2010). Conclusion: Despite the acceptance of a life course approach to preventing chronic disease, including obesity, the potential of very early interventions has been neglected. Results from four large trials currently underway will redress this evidence gap

Daniels MC, Popkin BM. Impact of water intake on energy intake and weight status: a systematic review. Nutr Rev 2010;68(9):505-21.

Ref ID: 2091

Davidson F. Childhood obesity prevention and physical activity in schools. Health Education Vol 107(4), 2007, pp 377-395 2007;(4):2007, pp-2007,395.

Ref ID: 2359

Abstract: Purpose: The aim of this literature review is to summarise and synthesise the research base concerning childhood obesity and physical activity, particularly in relation to teachers and schools and within a policy context of the UK. The review investigates childhood obesity, physical activity, physical education, the role of teachers, the role of schools and physical activity in the classroom. Design/methodology/approach: A literature review was undertaken involving selection of primary research and other systematic reviews. A computer search was performed using a combination of keywords including: obesity, prevention, intervention, preventive, teachers, schools, healthy schools, role models, physical activity, physical education, active school, active classroom. The review also includes samples of media coverage of the issue. Findings: This review highlights the complex and ambiguous nature of the evidence in relation to this important contemporary issue. Originality/value: A limited understanding of childhood obesity is evident from the review and this precludes definitive conclusions in relation to almost all aspects of the agenda. More quality research is needed in almost all areas of the topic, including areas such as the engagement of schools and teachers. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)

De Bourdeaudhuij I, Van CE, Spittaels H, Oppert J-M, Rostami C, Brug J, et al. School-based interventions promoting both physical activity and healthy eating in Europe: A systematic review within the HOPE project. Obesity Reviews 2011;12(3):205-16.

Ref ID: 160

Abstract: It is the purpose of this study to systematically review the evidence of school-based interventions targeting dietary and physical activity behaviour in primary (6-12 years old) and secondary school (12-18 years old) children in Europe. Eleven studies (reported in 27 articles) met the inclusion criteria, six in primary school and five in secondary school children. Interventions were evaluated in terms of behavioural determinants, behaviour (diet and physical activity) and weight-related outcomes (body mass index [BMI] or other indicators of obesity). The results suggest

that combining educational and environmental components that focus on both sides of the energy balance give better and more relevant effects. Furthermore, computer-tailored personalized education in the classroom showed better results than a generic classroom curriculum. Environmental interventions might include organized physical activities during breaks, or before and after school; improved availability of physical activity opportunities in and around the school environment; increased physical education lesson time; improved availability or accessibility of healthy food options; and restricted availability and accessibility of unhealthy food options. More high-quality studies are needed to assess obesity-related interventions in Europe. 2010 The Authors obesity reviews 2010 International Association for the Study of Obesity

DeMattia L, Lemont L, Meurer L. Do interventions to limit sedentary behaviours change behaviour and reduce childhood obesity: a critical review of the literature. *Obesity Reviews* 2007;8(1):69-81.

Ref ID: 1816

Abstract: XST: This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn

XAO: To evaluate the effects of interventions to reduce sedentary behaviours (SB) on behaviour and weight in children and adolescents

XSI: Studies that evaluated interventions to reduce SB in natural settings were eligible for inclusion. Multilevel interventions that included a reduction in SB component were included. Sedentary behaviour was defined as recreational screen time and did not include educational activities such as homework or reading. Some of the included studies were clinic-based (e.g. speciality clinics and primary care); others were population-based and included pre-school, elementary school and middle school settings. The studies used a variety of interventions (details were reported) and some had active control interventions. The duration of the interventions ranged from 20 minutes to 4 years

XPA: Studies of children and adolescents were eligible for inclusion in the review. Some of the included studies were in children at risk or obese children; other studies targeted all children regardless of baseline weight. Studies targeted children aged from pre-school to middle school

XOA: Studies that assessed measures of SB or weight were eligible for inclusion. In most studies, SB measurements were based on self-report questionnaires. Weight measures included body mass index (BMI), BMI z-scores, changes in the percentage of overweight participants, body fat and triceps skin-fold measurements. The outcomes were measured post-intervention in most of the included studies

XSD: Controlled studies were eligible for inclusion in the review. Observational studies and cross-sectional studies were excluded

XSS: MEDLINE, PsycINFO, HealthSTAR, the Cochrane Database of Systematic Reviews and CINAHL were searched from inception to February 2005 using the reported search terms. In addition, the reference lists in reviews and relevant studies were screened and experts in the field were contacted for missing studies

XVC: Two reviewers independently assessed validity using the following criteria: use of randomisation; randomisation described and adequate; level of blinding; allocation concealment; completeness of follow-up; use of intention-to-treat analysis; baseline similarity of the treatment groups; equal treatment of groups; appropriate biometric measures assessed; and self-reporting of SB

XDC: Two reviewers independently selected the studies. A third author resolved any disagreements on inclusion

XDE: The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. For each study, means and standard deviations of SB and BMI were presented for each treatment group, together with the mean difference and 95% confidence interval (CI)

XCS: Differences between the studies precluded meta-analysis. The studies were grouped by setting and age group targeted, and combined in a narrative. A funnel plot was used to assess publication bias

XDS: Differences between the studies were described in the text and tables

XRR: Twelve studies were included: 11 randomised controlled trials (RCTs);

n=2,790) and one non-randomised controlled study (n=16 schools). The sample size in the RCTs ranged from 10 to 1,295. Eleven studies randomised participants either individually or by school; most concealed allocation. Studies generally analysed data on an intention-to-treat basis where there were complete data. Follow-up was reported for between 61% and 98.5% of participants. Some studies had small sample sizes. Blinding was not used in any of the studies. SB. One study in a speciality setting reported that the intervention was associated with a significant reduction in SB compared with the control. Two studies set in primary care reported no significant difference in SB between the intervention and control. Three of four school-based studies reported that the intervention was associated with a significant reduction in SB compared with the control; the fourth reported no significant difference between treatments. Changes in BMI. Three studies in speciality settings reported no significant difference in change in BMI between the intervention and control. One study set in primary care reported that the intervention was associated with a significant reduction in BMI compared with the control. Three school-based studies reported no significant difference in the change in BMI between treatments. The funnel plot showed no evidence of publication bias

XCL: Interventions with an emphasis on reducing SB are effective in reducing SB and controlling weight in children and adolescents

XCM: The review addressed a clear question that was defined in terms of the participants, intervention, outcomes and study design. Several relevant sources were searched but no attempts to minimise publication or language bias were reported. Publication bias was assessed and no evidence of it was found. Methods were used to minimise reviewer error and bias at the study selection and validity assessment stages, but it was not clear whether similar steps were taken in the data extraction. Validity was assessed using specified criteria and the results of this assessment. In view of the differences between the studies, a narrative synthesis with studies grouped by setting and age group was appropriate. The results from individual studies were described rather than the evidence being synthesised, and study quality was not taken into account when reporting the results from individual studies. The control interventions varied, many studies used multi-component interventions and many studies used an active control, and this made it difficult to assess the effects of interventions to reduce SB. In view of the differences between the studies and the use of multi-component interventions, a more cautious conclusion may be more appropriate

XIM: Practice: The authors did not state any implications for practice. Research: The authors stated that further research is required to evaluate brief office interventions and community-based interventions. There is also a need to develop reliable and valid SB measures that can be used for very young children, and a need to determine which behaviours are replacing SB and whether there are changes in eating habits associated with the interventions

Demetriou Y, Honer O. Physical **activity interventions in the school setting**: a systematic review. *Psychology of Sport and Exercise* 2012;13(2):186-96.

Ref ID: 1640

Abstract: XST: This is a systematic review that meets the criteria for inclusion on DARE. If you would like us to consider prioritising the writing of a critical abstract for this review please e-mail CRD-DARE@york.ac.uk quoting the Accession Number of this record. Please note that priority is given to fast track requests from the UK National Health Service

Desilets AR, Dhakal-Karki S, Dunican KC. Role of **metformin for weight management** in patients without type 2 diabetes. *Ann Pharmacother* 2008;42(6):817-26.

Ref ID: 750

Abstract: OBJECTIVE: **To evaluate the efficacy and safety of metformin for weight management in overweight and obese patients without type 2 diabetes.** DATA SOURCES: Literature was obtained through MEDLINE Ovid (1950-February week 3, 2008), EMBASE (all years), and a bibliographic review of relevant articles. Key words included metformin, obesity, overweight, and weight loss. STUDY SELECTION/DATA EXTRACTION: All studies published in the English language that evaluated the effects of metformin on weight in obese or overweight individuals were crit-

ically analyzed. Relevant articles were selected for inclusion in this review. DATA SYNTHESIS: Metformin is first-line pharmacotherapy in the treatment of overweight or obese patients with type 2 diabetes, with beneficial effects on weight in this population. Multiple trials have evaluated the effect of metformin on weight and other metabolic parameters in adults and adolescents without diabetes. Five of 12 trials in adults evaluated weight loss as a primary endpoint. Significant weight reduction was found in 4 of these studies; however, the trials were small and of weak design. Weight reduction was significant in 5 of the 6 adolescent trials; similarly, these studies were limited by weak study design and small patient population. Metabolic parameters (blood pressure, waist circumference, cholesterol parameters, insulin/glucose levels) often showed varying results. Metformin was well tolerated; gastrointestinal effects were the most frequently reported adverse effects. CONCLUSIONS: The weight loss effects of metformin in overweight or obese adults and adolescents without diabetes appear promising; however, trials have been limited by small patient populations and weak design. Metformin may also have a positive effect on metabolic parameters such as waist circumference, fasting insulin and glucose levels, and triglycerides. Further research involving large-scale trials that evaluate weight loss as a primary outcome is necessary to firmly establish the role of metformin in this population. [References: 57]

Duche P. Physical activity and infantile obesity: Tracking, prevention and treatment. *Science and Sports* 2008;23(6):278-82.

Ref ID: 470

Abstract: Aim: This review is aimed to synthesize current scientific knowledge on the part played by physical activity in prevention and treatment of the paediatric obesity.

Current: The physical activity (and inactivity?) is unanimously recognized like an essential element of the fight against the obesity increase in children and adolescents. In the treatment the last meta-analysis and literature reviews confirm that the best strategy is the reduction of the sedentary behaviours, the increase in the physical activity associated with an education and restriction nutritional. On the other hand, the part played by the physical activity in the prevention interventions although not discussed, must be specified in its association with other elements such as nutritional education according to the age, of the obesity level... The physical activity practice as of the youth is to be associated an early tracking factor of risk. The recommendations of physical activity must be adapted to the required objective and the possibilities physical, physiological, sociological... of the subjects. Conclusion: Although characteristics of the physical activity to prescribe for each specific objective; prevention, loss of or not taken again body mass weight, remain to be specified for the child and the teenager, an active way of life is one of the major factors of the fight against the increase in the prevalence of obesity. 2008 Elsevier Masson SAS. All rights reserved

Dunican KC, Desilets AR, Montalbano JK. Pharmacotherapeutic options for overweight adolescents. *Ann Pharmacother* 2007;41(9):1445-55.

Ref ID: 776

Abstract: OBJECTIVE: To evaluate the safety and efficacy of current pharmacotherapeutic options for weight loss in overweight adolescents. DATA

SOURCES: Literature was obtained through MEDLINE Ovid (1996-April 2007) and EMBASE Drugs and Pharmacology (1991-2nd quarter 2007) searches and a bibliographic review of published articles. Key words included adolescents, overweight, obesity, anti-obesity agents, drug therapy, orlistat, sibutramine, and metformin.

STUDY SELECTION AND DATA EXTRACTION: All studies published in the English language that evaluated the use of pharmacotherapy for the treatment of overweight adolescents were critically analyzed; pertinent articles were selected for this review. DATA SYNTHESIS: Orlistat has been approved for use in adolescents between the ages of 12 and 16 years. The most frequently reported adverse effects of orlistat were gastrointestinal; reduced concentrations of fat-soluble vitamins were also observed. Of the 6 clinical trials published, 5 have shown statistically significant reductions in body mass index (BMI) from baseline, ranging from 0.55 to 4.09 kg/m²; one small trial failed to demonstrate significant weight reduction compared with placebo. Sibutramine has also been evaluated for use in overweight adolescents in 6 trials.

Trials demonstrated a statistically significant reduction in BMI up to 5.6 kg/m² (from baseline). Of concern is evidence indicating that sibutramine therapy may be associated with elevated blood pressure, increased pulse rate, depression, and suicidal ideations. Lastly, metformin has recently been evaluated for weight loss in overweight adolescents; small, short-term trials demonstrate modest reductions in weight and BMI. CONCLUSIONS: Orlistat has been proven both safe and effective for weight reduction in overweight adolescents. Sibutramine has also been proven effective in reducing weight in this population; however, the potential for severe adverse effects requires further investigation. Metformin has demonstrated promising results in small trials; its role in the treatment of overweight adolescents will remain investigational until further research is conducted. [References: 69]

Escalante Y, Saavedra JM, Garcia-Hermoso A, Dominguez AM. Improvement of the lipid profile with **exercise** in obese children: A systematic review. *Prev Med* 2012;54(5):293-301.

Ref ID: 14

Abstract: Objective: The objective of this systematic review was to assess the **effectiveness of different physical exercise interventions on the lipid profile (high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), total cholesterol (TC), and triglycerides (TG)) of obese children**. Method: A computerized search was made of seven databases using keywords. Effect sizes (ES) and 95% confidence intervals were calculated, and the heterogeneity (I^2) of the studies was estimated using Cochran's Q-statistic applied to the effect size means. The studies were grouped according to the intervention program-aerobic alone or combined (aerobic fitness, strength, and flexibility). Results: Seven studies were selected for review as satisfying the inclusion criteria. Six were randomized controlled trials ($n = 318$) and one was a controlled clinical trial (groups not randomly assigned) ($n = 38$). The main cumulative evidence indicates that the programs based on aerobic exercise alone have a moderate ($ES = -0.49$; $I^2 = 87$) and a large effect ($ES = -0.55$; $I^2 = 77$) on LDL-C and TG concentrations, respectively; and the programs based on combined exercise have a moderate effect ($ES = 0.50$; $I^2 = 0$) on HDL-C concentration. Conclusions: The programs based on aerobic exercise (60 min, 3 times/week, $\leq 75\%$ maximum heart rate) improve the LDL-C and TG concentrations. Moreover, the programs based on combined exercise (≥ 60 min, $> 75\%$ maximum heart rate) also improve the HDL-C concentration. 2012 Elsevier Inc

Fabricatore AN, Wadden TA, Higginbotham AJ, Faulconbridge LF, Nguyen AM, Heymsfield SB, et al. Intentional weight loss and changes in symptoms of depression: A systematic review and meta-analysis. *Int J Obes* 2011;35(11):1363-76.

Ref ID: 138

Abstract: Objective: Obesity is related to increased risk of several health complications, including depression. Many studies have reported improvements in mood with weight loss, but results have been equivocal. The present meta-analysis **examined changes in symptoms of depression that were reported in trials of weight loss interventions**. Between-groups comparisons of different weight loss methods (for example, lifestyle modification, diet-alone and pharmacotherapy) were examined, as were within-group changes for each treatment type. Method: MEDLINE was searched for articles published between 1950 and January 2009. Several obesity-related terms were intersected with terms related to depression. Results were filtered to return only studies of human subjects, published in English. Of 5971 articles, 394 were randomized controlled trials. Articles were excluded if they did not report mean changes in weight or symptoms of depression, included children or persons with psychiatric disorders (other than depression), or provided insufficient data for analysis. Thirty-one studies ($n = 7937$) were included. Two authors independently extracted a description of each study treatment, sample characteristics, assessment methods and changes in weight and symptoms of depression. **Treatments were categorized as lifestyle modification, non-dieting, dietary counseling, diet-alone, exercise-alone, pharmacotherapy, placebo or control interventions**. Results: Random effects models found that lifestyle modification was superior to control and non-dieting interventions for reducing symptoms of depression, and marginally better than dietary counseling

and exercise-alone programs. Exercise-alone programs were superior to controls. No differences were found for comparisons of pharmacologic agents and placebos. Within-group analyses found significant reductions in symptoms of depression for nearly all active interventions. A meta-regression found no relationship between changes in weight and changes in symptoms of depression in lifestyle modification interventions. Conclusions: On average, obese individuals in weight loss trials experienced reductions in symptoms of depression. Future studies should examine incidence and resolution of clinically significant depressive disorders with weight loss interventions. 2011 Macmillan Publishers Limited All rights reserved

Farnesi BC, Ball GD, Newton AS. **Family-health professional relations** in pediatric weight management: an integrative review. *Pediatric Obesity* 2012;7(3):175-86. Ref ID: 545

Abstract: In this integrative review, we examined contemporary literature in pediatric weight management to identify characteristics that contribute to the relationship between families and health professionals and describe how these qualities can inform healthcare practices for obese children and families receiving weight management care. We searched literature published from 1980 to 2010 in three electronic databases (MEDLINE, PsycINFO and CINAHL). Twenty-four articles identified family-health professional relationships were influenced by the following: health professionals' weight-related discussions and approaches to care; and parents' preferences regarding weight-related terminology and expectations of healthcare delivery. There was considerable methodological heterogeneity in the types of reports (i.e. qualitative studies, review articles, commentaries) included in this review. Overall, the findings have implications for establishing a positive clinical relationship between families and health professionals, which include being sensitive when discussing weight-related issues, using euphemisms when talking about obesity, demonstrating a non-judgmental and supportive attitude and including the family (children and parents) in healthcare interactions. Experimental research, clinical interventions and longitudinal studies are needed to build on the current evidence to determine how best to establish a collaborative partnership between families and health professionals and whether such a partnership improves treatment adherence, reduces intervention attrition and enhances pediatric weight management success. Copyright 2012 The Authors. *Pediatric Obesity* Copyright 2012 International Association for the Study of Obesity

Froeschl B, Haas S, Wirl C. **[Overweight prevention in adolescents and children (behavioural and environmental prevention)]**. 2009. Tilgjengelig fra: http://portal.dimdi.de/de/hta/hta_berichte/hta242_summary_en.pdf.

Ref ID: 1446

Abstract: XST: This is a bibliographic record of a published health technology assessment from a member of INAHTA. No evaluation of the quality of this assessment has been made for the HTA database

XSD: Review

CO1: Germany

Gao Y, Griffiths S, Chan EYY. **Community-based interventions to reduce overweight and obesity** in China: A systematic review of the Chinese and English literature. *Journal of Public Health* 2008;30(4):436-48.

Ref ID: 412

Abstract: Background Overweight and obesity pose a challenge to public health in China. According to Chinese definition, 303 million Chinese are overweight (body mass index, BMI ≥ 24 kg m⁻²). Among them, 73 million are clinically obese (BMI ≥ 28 kg m⁻²). In line with the global trend, the rate of obesity in China continues to increase, with associated morbidity and mortality. This study was to identify interventions, which are effective in Mainland Chinese society. Methods All non-drug-controlled interventions (≥ 3 months) in Mainland China, which used anthropometric outcome measures, were selected from three Chinese and nine international electronic databases (before May 2006) and included in this systematic review. Results A total of 20 studies met the selection criteria and were included in the review. Among them only one was published in an international journal.

Most studies combined at least physical activity, dietary intervention and health education. Seventeen studies (85) reported significant effects in anthropometric measurement outcomes. Comprehensive interventions with at least physical activity, dietary intervention and health education may be effective in reducing obesity in Chinese children. The role of grandparents as carers in the one-child society is worth considering further. Current evidence of effective interventions for adults is limited. Publication bias in Chinese databases should be taken into account. The Author 2007, Published by Oxford University Press on behalf of Faculty of Public Health. All rights reserved

Garcia DE, Martin FT. Systematic review of the clinical efficacy of sibutramine and orlistat in weight loss, quality of life and its adverse effects in obese adolescents. *Nutr Hosp* 2011;26(3):451-7.

Ref ID: 600

Abstract: INTRODUCTION: The prevalence of obesity, a serious public health problem, is increasing among teenagers and thus also increases cardiovascular morbidity and mortality in adulthood. OBJECTIVE: To provide a systematic review of the best evidence about the effect of sibutramine and orlistat in weight loss, quality of life and its adverse effects in adolescents diagnosed with obesity. METHODS: We searched electronic databases and bibliographies of selected articles were inspected for any further reference. We included only randomized controlled trials that met a set of predefined criteria. The studies were reviewed by a narrative synthesis. RESULTS: We included 6 randomized controlled trials of sibutramine and 3 of orlistat. The majority reached a moderate to high methodological quality. Sibutramine and orlistat showed a reduction in body mass index (BMI) that was significantly higher compared with the placebo group. We also found a variation of weight with these drugs significantly better than placebo. Only one trial evaluated the quality of life. The incidence of adverse effects was similar for sibutramine and placebo, except for tachycardia. The most common adverse reactions associated with orlistat were gastrointestinal, mild to moderate. CONCLUSIONS: Sibutramine and orlistat in combination with a hypocaloric diet and changes in lifestyle in obese adolescents achieve a short-term loss of weight greater than that achieved through the dietary-behavioral therapy alone

Gerards SM, Sleddens EF, Dagnelie PC, De Vries NK, Kremers SP. Interventions addressing general parenting to prevent or treat childhood obesity. *International Journal of Pediatric Obesity* 2011;6(2-2):e28-e45.

Ref ID: 1632

Abstract: XST: This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn

XAO: To provide an overview of interventions which addressed general parenting in order to prevent or treat childhood obesity

XSS: PubMed, PsycINFO and Scopus were searched to February 2010. Search terms were reported. Relevant reference lists were screened

XVC: There was no formal quality assessment

XDE: Effect sizes (Cohen's d) were used to express differential changes in weight measurements across the intervention and control groups. Effect sizes of 0.00 to 0.32 were rated as small, 0.33 to 0.55 as moderate, and 0.56 and above as large. Data were abstracted by one reviewer and checked by another reviewer

XRR: Seven intervention studies were included in the review (n=361 participants, range 12 to 111). Six studies were randomised controlled trials; one study was a pre-test/post-test study. Follow-up periods ranged from 20 weeks to three years. All seven studies showed statistically significant intervention effects on one or more anthropometric outcome measure. In five studies, the effect sizes were calculated for differences in weight change between groups. The effect sizes of these studies were small to moderate, ranging from -0.20 to 0.60. Two studies, which lacked an appropriate control group, the effect sizes were calculated for weight changes over time. The effect sizes of these studies were moderate, ranging from 0.28 to 1.22

XCL: The promotion of authoritative parenting was an effective strategy for the pre-

vention and management of childhood obesity

XCM: The review question and inclusion criteria were clear. Relevant databases were searched. Only studies published in the English language were included, which raised the issue of language bias. Two reviewers were involved in the process of study selection and data extraction, which helped to minimise reviewer bias and error. No formal quality assessment was performed, so the quality of the included studies was unclear. It was clear from the study details presented that several studies included small sample sizes, short follow-up and /or lacked a control group. Methodological limitations in the review and uncertain quality of the included studies mean that the results should be interpreted with caution

XIM: Practice: The authors did not state any implications for practice. Research: The authors recommended the further development and testing of theory and practice-based general parenting interventions for the treatment of childhood obesity. They also suggested that future studies should include a control condition which excluded the general parenting intervention component, and that there should be long-term follow-up

Gibson S. **Sugar-sweetened soft drinks and obesity**: a systematic review of the evidence from observational studies and interventions. *Nutrition Research Reviews* 2008;21(2):134-47.

Ref ID: 403

Abstract: Sugar-sweetened soft drinks (SSD) are a special target of many obesity-prevention strategies, yet critical reviews tend to be more cautious regarding the aetiological role of SSD in promoting excess body weight. Since ongoing evaluation of this issue is important, **the present systematic review re-examined the evidence from epidemiological studies and interventions, up to July 2008**. Database searches of Medline, Cochrane reviews, Google scholar and a hand search of cross-references identified forty-four original studies (twenty-three cross-sectional, seventeen prospective and four intervention) in adults and children, as well as six reviews. These were critically examined for methodology, results and interpretation. Approximately half the cross-sectional and prospective studies found a statistically significant association between SSD consumption and BMI, weight, adiposity or weight gain in at least one subgroup. The totality of evidence is dominated by American studies where SSD consumption tends to be higher and formulations different. Most studies suggest that the effect of SSD is small except in susceptible individuals or at high levels of intake. Methodological weaknesses mean that many studies cannot detect whether soft drinks or other aspects of diet and lifestyle have contributed to excess body weight. Progress in reaching a definitive conclusion on the role of SSD in obesity is hampered by the paucity of good-quality interventions which reliably monitor diet and lifestyle and adequately report effect sizes. Of the three long-term (>6 months) interventions, one reported a decrease in obesity prevalence but no change in mean BMI and two found a significant impact only among children already overweight at baseline. Of the six reviews, two concluded that the evidence was strong, one that an association was probable, while three described it as inconclusive, equivocal or near zero. Reasons for some discrepancies are presented

Gilles A, Cassano M, Shepherd EJ, Higgins D, Hecker JE, Nangle DW. Comparing active pediatric obesity treatments using meta-analysis. *Journal of Clinical Child and Adolescent Psychology* 2008;37(4):886-92.

Ref ID: 411

Abstract: The current meta-analysis reviews research on the **treatment of pediatric obesity focusing on studies that have been published since 1994**. Eleven studies (22 comparisons, 115 effect sizes, N=447) were included in the present meta-analysis. Results indicated that **comprehensive behavioral interventions** may be improved in at least two ways: increasing the "dose" of behavioral components and increasing parental involvement. Although limited to just one investigation, **support for the use of medication was also found**. The addition of cognitive therapy techniques did not appear to increase, and possibly detracted from, the efficacy of established treatments. Copyright Taylor & Francis Group, LLC

Golay A. **Metformin** and body weight. *Int J Obes* 2008;32(1):61-72.

Ref ID: 762

Abstract: Most patients with type 2 diabetes are overweight or obese, overweight or obesity increases the risk of developing type 2 diabetes and obesity per se is strongly associated with multiple cardiometabolic risk factors. However, many antidiabetic treatments increase body weight. The oral antidiabetic agent, metformin, has been evaluated in hundreds of clinical studies in diverse patient populations during approximately five decades of clinical use. **This review summarizes the effects of metformin on body weight, with special reference to studies of longer duration (>=6 months) as both diabetes and obesity are long-term conditions.** Approximately half of studies in drug-naïve type 2 diabetic patients demonstrated significant weight loss with metformin compared with baseline or comparator drugs, although pooled analyses have suggested no significant effect versus placebo. Similarly, metformin has been shown to induce weight loss in obese nondiabetic populations, although studies of long duration in this population are scarce. Metformin does appear to mitigate the adverse effects of insulin on body weight. The weight-neutral or weight-sparing effects of metformin constitute a therapeutic advantage in diabetes management where other first-line oral antidiabetic treatments often promote clinically significant weight gain. [References: 115]

Golley RK, Hendrie GA, Slater A, Corsini N. **Interventions that involve parents to improve children's weight-related nutrition intake and activity patterns:** what nutrition and activity targets and behaviour change techniques are associated with intervention effectiveness? *Obesity Reviews* 2011;12(2):114-30.

Ref ID: 1388

Abstract: XST: This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn

XAO: **To determine whether food and activity behaviours targeted and behaviour change techniques employed in family-targeted interventions were associated with intervention effectiveness**

XSS: The following databases were searched for studies in English from 1998 and 2008: PubMed, Web of Science, The Cochrane Library, PsycINFO and Dissertation Abstracts. Search terms were reported. Reference lists of relevant publications were screened

XVC: The quality of studies was assessed using the Effective Public Health Practice Project quality assessment tool. The criteria assessed were selection bias; study design and allocation bias; confounders; blinding; data collection methods; withdrawals; intervention integrity; and analysis. The quality of studies was judged as 'strong' if four criteria were rated strong, 'moderate' if less than four criteria were rated strong and one criterion was rated weak, and 'weak' if at least two criteria were rated weak. Two reviewers performed quality assessment, with any disagreements resolved by discussion

XDE: Data were extracted on mean and standard deviation for continuous outcomes, and event rates for dichotomous outcomes. Two reviewers independently performed data extraction

XRR: Seventeen studies were included in the review. The total number of participants was not reported. Two studies were judged as strong quality, five studies as weak quality, and ten studies as moderate quality. Eleven out of the seventeen studies reported results in favour of family-targeted intervention effectiveness. Of six studies that evaluated an obesity prevention intervention, three studies reported that the intervention was associated with a significant benefit on weight status. One study targeting coronary risk factors reported a significant decrease in the cholesterol levels of children in the intervention group. Only two out of the ten studies reported that interventions were associated with a significant dietary change for reduced fat intake. Four studies reported that interventions aimed at reducing energy intake to prevent excess weight gain were associated with a significant benefit. Only one out of the six studies (including a measure of physical activity) showed that interventions were associated with a significant change in the activity level in children. Of eleven studies with results favoured intervention effectiveness, six studies included behav-

four change techniques covering the spectrum of behaviour change process. A number of behavioural change techniques appeared more frequently in effective interventions, including prompt barrier identification, restructure home environment, prompt self-monitoring and prompt specific goal setting

XCL: Energy intake and food choice were more likely to be targeted in effective interventions. Intervention effectiveness was favoured when behaviour change techniques spanned the spectrum of behaviour change process

XCM: The review inclusion criteria were clear. A number of relevant sources were searched. Efforts were made to find both published and unpublished studies, which minimised the potential for publication bias. Only studies in English were included in the review, which may have increased the risk of language bias. Steps were made to minimise biases and errors in the processes of data extraction and quality assessment. However, only one reviewer assessed studies for inclusion, so reviewer error and bias could not be ruled out. Appropriate criteria were used to assess study quality; most studies were found to be of limited quality. Given the clinical heterogeneity of included studies for study population and outcomes, a narrative synthesis was appropriately employed. The authors' conclusions should be interpreted with caution given the limited quality of most included studies

XIM: Practice: The authors stated that this review provided a guidance to make informed decisions on how best to use resources in family-targeted interventions to support and engage parents. The authors made a number of recommendations for practitioners to design and implement behavioural change interventions involving parents. Research: The authors stated that future researchers in this research area should improve reporting of study quality and design, as well as intervention content

Gonzalez-Suarez C, Worley A, Grimmer-Somers K, Dones V. **School-Based Interventions on Childhood Obesity**. A Meta-Analysis. Am J Prev Med 2009;37(5):418-27. Ref ID: 349

Abstract: Background: Over the past decade, childhood obesity has been recognized as an increasing health problem worldwide. It is a predictor of obesity during adulthood, which is strongly linked to chronic lifestyle diseases. Purpose: **This paper aims to evaluate the effectiveness of school-based programs in the prevention and management of childhood obesity**. Methods: A comprehensive literature search was undertaken for RCTs and clinical controlled trials on school-based interventions that addressed childhood obesity, published between 1995 and 2007. The papers included for the meta-analysis were those in which ORs or standardized mean differences and their 95% CIs were reported or could be calculated from available data. Results: Meta-analysis showed that the odds of participants' being overweight and obese in the school-based intervention programs compared with the control arm were significantly protective in the short term (OR=0.74, 95% CI=0.60, 0.92). Interventions that were conducted for more than 1 year had a higher OR of decreasing the prevalence of obesity. However, intervention programs were not effective in decreasing BMI compared with control treatments, with a weighted mean difference of -0.62 (95% CI=-1.39, 0.14). Conclusions: This meta-analysis showed that there was convincing evidence that school-based interventions are effective, at least short-term, in reducing the prevalence of childhood obesity. Longer-running programs were more effective than shorter programs. 2009 American Journal of Preventive Medicine

Gordon ES, Tucker PA, Burke SM, Carron AV. **Physical activity and obesity** among preschoolaged children: A meta-analytic review of the effectiveness of health promotion interventions. Canadian Journal of Diabetes 2011;Conference: 2nd National Obesity Summit Montreal, QC Canada. Conference Start: 20110428 Conference End: 20110501. Conference Publication:(var.pagings):163-4. Ref ID: 201

Abstract: The World Health Organization (2010) has estimated that globally, there are more than 42 million overweight children under the age of five. Many adult health behaviours, such as physical activity participation, develop during the preschool years. Thus, it is worthwhile to investigate the efficacy of health promotion interventions directed at this cohort. **The main purpose of the study was to examine the effectiveness of health promotion interventions aimed at increasing physical activity**

levels and/or decreasing obesity among preschoolaged children (aged two to five years). A secondary purpose was to investigate the influence of a number of moderator variables (e.g., gender, location of intervention, follow-up period, etc.) on the physical activity behaviours and obesity rates of preschoolers. Nine databases were systematically searched using several combinations of keywords. A total of 20 studies met the inclusion criteria (i.e., were available in English; contained a health promotion intervention; and presented data pertaining to physical activity levels and/or obesity-related outcomes in preschool-aged children), and were included in the analyses. Effect sizes (i.e., Hedges g values) were calculated using Comprehensive Meta-Analysis (CMA) software, and a random effects model was used to reduce Type 1 error and generalize the results beyond the sample of observed studies. Results pertaining to the overall effectiveness of health promotion interventions aimed at preschool-aged children, as well as the influence of several moderator variables, will be presented and discussed. Keywords: meta-analysis, health promotion intervention, obesity, physical activity, preschooler

Greydanus DE, Feucht C, Patel DR. **Pharmacotherapy** for obese adolescents. International Journal of Child Health and Human Development Vol 1(4), 2009, pp 387-393 2009;(4):2009, pp-2009,393.

Ref ID: 2305

Abstract: **This discussion reviews various medications currently used and being studied for weight loss induction in adults and adolescents.** The search for medication to induce weight loss was stimulated by the US FDA's 1959 approval of phentermine, a sympathomimetic amine, for short-term weight loss despite limited research supporting its claims of causing weight loss. In addition to noradrenergic products like phentermine, other reviewed medications include herbal products (such as Korean herbal formula based on Taeumjowi-tang), sibutramine (mixed noradrenergic serotonergic chemical), orlistat (lipase inhibitor), metformin (biguanide), rimonabant (CB1-selective cannabinoid receptor antagonist), and others. Only two non amphetamine-related medications are FDA-approved for adolescents: sibutramine for those 16 years of age and older, and orlistat for those 12 years of age and older. Pharmacotherapy for morbidly obese adolescents should only be used as part of a comprehensive weight loss program that involves diet, exercise, and behavioral modification. The side effects of these products should always be considered as well as the potential for serious adverse events. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)

Guedes D, V, Bernardo G, Valerio dos SM, Ibarra OS, Das NJ, Gonzalez D. A systematic review of **school-based interventions** for obesity reduction in children and adolescents. Ann Nutr Metab 2011;Conference: 11th European Nutrition Conference, FENS 2011 Madrid Spain. Conference Start: 20111026 Conference End: 20111029. Conference Publication:(var.pagings):402.

Ref ID: 11

Abstract: Introduction: It is a systematic review of school-based interventions for obesity reduction. Objectives: **To describe the current literature evidence on school-based interventions to prevent or reduce overweight/obesity in children and adolescents.** Method/Design: PubMed electronic database was searched up to August 2010. Inclusion criteria: school-based nutrition interventions aiming to reduce overweight/obesity, promote healthy nutrition consumption and/or nutrition knowledge, with ≥ 4 weeks of intervention and ≥ 6 months of follow-up for outcome assessment; studies published in English, Portuguese or Spanish and focusing on individuals aged 0-19 years. Exclusion criteria: studies including specific groups; interventions not involving children directly. Results: Search strategy using selected keywords founded 4637 studies, and after evaluation for two independent reviewers only 109 studies remained for data extraction, which included 295 different analyses. 44% of the studies were published in the last 10 years; 40% of the interventions were educational, 11% environmental, 46% combined both and only 4% were regulatory. More than a half (57%) of the interventions lasted 6-24 months, and most of them were conducted in North America (55%) or Europe (30%). Only 45% of 118 analyses for overweight/obesity reduction (or evaluating other similar outcomes: BMI, abdominal obesity, skinfolds thickness, body fatness) showed an improvement

in the intervention group, and in 4% the results were worse than in the controls. For healthy nutrition attitudes (increase of fruit, vegetable and/or water intake, and reduction of snacks, soft drinks, candies and/or fat intake), 56% of the 151 analyses showed a significant positive effect in the intervention group and only in 3% the results were worse than in controls. Knowledge about healthy nutrition showed better results, and 89% of the 26 analyses showed a positive effect in the intervention group (11% without effect). Conclusions: Interventions showed modest effectiveness to reduce obesity/overweight or modifying nutrition behavior, although improvement in nutrition knowledge was found

Guy S, Ratzki-Leewing A, Gwadry-Sridhar F. Moving beyond the stigma: systematic review of **video games and their potential to combat obesity**. International Journal Of Hypertension 2011;2011:179124.

Ref ID: 565

Abstract: Increasing epidemic proportions of overweight children in the United States presents formidable challenges for education and healthcare. Given the popularity and pervasiveness of video gaming culture in North American children, the perfect opportunity arises to investigate the potential of video games to promote healthful behaviour. Our **objective was to systematically review the literature for possible benefits of active and educational video games targeting diet and physical activity in children**. A review of English-language journal articles from 1998 to 2011 using EMBASE and PubMed was conducted. Thirty-four studies concerned with children, video games, physical, and/or nutritional outcomes were included. Results of these studies that showed some benefit (increased physical activity and nutritional knowledge as a result of gaming) demonstrate the possibility of video games to combat childhood obesity-looking beyond the stigma attached to gaming

Hamel LM, Robbins LB, Wilbur J. **Computer- and web-based interventions** to increase preadolescent and adolescent physical activity: a systematic review. J Adv Nurs 2011;67(2):251-68.

Ref ID: 633

Abstract: AIM: **This review examined evidence regarding computer- or web-based interventions to increase preadolescent and adolescent physical activity**. BACKGROUND: Today's youth are less active and more overweight than their counterparts from 25 years ago. Overweight youth tend to become overweight adults with weight-related maladies, including type 2 diabetes and cardiovascular problems. Interventions to increase physical activity that reach a large audience are needed. Computer- and web-based physical activity interventions are an appealing means to influence physical activity in preadolescents and adolescents. However, their effectiveness must be determined. DATA SOURCES: The following electronic databases were searched for studies published from 1998 through 2010: CINAHL, PubMed, PsycINFO, Sociological Abstracts, SportDISCUS and Proquest. REVIEW METHODS: A systemic review was conducted. Fourteen randomized control trials or quasi-experimental studies were reviewed to: (1) determine the effect of computer- or web-based interventions on increasing physical activity and/or improving body mass index, weight, percent body fat or waist circumference as a result of increasing physical activity; and (2) examine if additional components associated with these interventions increased success. RESULTS: [en space] Although most interventions demonstrated statistically significant increases in physical activity or positive health changes related to physical activity, findings were small or short-lived. The value of conducting the interventions at school, using a theory or model as a framework, and supplementing with individual tailoring and parental involvement, is discussed. CONCLUSION: Computer- and web-based interventions can promote physical activity among preadolescents and adolescents, particularly in schools. However, further efforts are needed to sustain positive changes. Copyright 2010 The Authors. Journal of Advanced Nursing Copyright 2010 Blackwell Publishing Ltd

Hammons AJ, Fiese BH. Is **frequency of shared family meals related** to the nutritional health of children and adolescents? Pediatrics 2011;127(6):e1565-e1574.

Ref ID: 620

Abstract: OBJECTIVE: **We used meta-analytic methods to examine the frequency of**

shared family mealtimes in relation to nutritional health in children and adolescents.

The primary objective was to determine consistency and strength of effects across 17 studies that examined overweight and obese, food consumption and eating patterns, and disordered eating. METHODS: The total sample size for all studies was 182 836 children and adolescents (mean sample age: 2.8-17.3 years). Pooled odds ratios were calculated. A random-effects model was used to estimate all outcomes. RESULTS: The frequency of shared family meals is significantly related to nutritional health in children and adolescents. Children and adolescents who share family meals 3 or more times per week are more likely to be in a normal weight range and have healthier dietary and eating patterns than those who share fewer than 3 family meals together. In addition, they are less likely to engage in disordered eating. CONCLUSIONS: Educational and public health initiatives aimed at promoting shared family mealtimes may improve nutritional health of children and adolescents. Clinicians may advise their patients about the benefits of sharing 3 or more family mealtimes per week; benefits include a reduction in the odds for overweight (12%), eating unhealthy foods (20%), and disordered eating (35%) and an increase in the odds for eating healthy foods (24%)

Harris KC, Kuramoto LK, Schulzer M, Retallack JE. Effect of **school-based physical activity interventions** on body mass index in children: A meta-analysis. CMAJ 2009;180(7):719-26.
Ref ID: 366

Abstract: Background: The prevalence of childhood obesity is increasing at an alarming rate. Many local governments have enacted policies to increase physical activity in schools as a way to combat childhood obesity. **We conducted a systematic review and meta-analysis to determine the effect of school-based physical activity interventions on body mass index (BMI) in children.** Methods: We searched MEDLINE, EMBASE, CINAHL and the Cochrane Central Register of Controlled Trials up to September 2008. We also hand-searched relevant journals and article reference lists. We included randomized controlled trials and controlled clinical trials that had objective data for BMI from before and after the intervention, that involved school-based physical activity interventions and that lasted for a minimum of 6 months. Results: Of 398 potentially relevant articles that we identified, 18 studies involving 18 141 children met the inclusion criteria. The participants were primarily elementary school children. The study duration ranged from 6 months to 3 years. In 15 of these 18 studies, there was some type of cointervention. Meta-analysis showed that BMI did not improve with physical activity interventions (weighted mean difference -0.05 kg/m², 95% confidence interval -0.19 to 0.10). We found no consistent changes in other measures of body composition. Interpretation: School-based physical activity interventions did not improve BMI, although they had other beneficial health effects. Current population-based policies that mandate increased physical activity in schools are unlikely to have a significant effect on the increasing prevalence of childhood obesity. 2009 Canadian Medical Association or its licensors

HAYES, Inc. Pediatric **bariatric surgery** for morbid obesity. 2007. Tilgjengelig fra: <http://www.hayesinc.com/>.

Ref ID: 1708

Abstract: XST: This is a bibliographic record of a published health technology assessment. No evaluation of the quality of this assessment has been made for the HTA database

XAO: Surgical treatment of obesity involves reducing the size of the stomach to restrict calorie intake and/or changing the intestinal anatomy to induce malabsorption. The goal of surgical treatment for obesity is to induce significant weight loss and, thereby, reduce the incidence or progression of obesity-related comorbidities, as well as to improve quality of life. The purpose of performing bariatric surgery in pediatric patients is to reduce the lifelong impact of severe obesity

XTI: Laparoscopy

XSD: Review

CO1: United States

Hesketh KD, Campbell KJ. **Interventions to prevent obesity in 0-5 year olds**: An updated systematic review of the literature. *Obesity* 2010;18(SUPPL. 1):S27-S35.

Ref ID: 232

Abstract: The small number and recency of the early childhood obesity-prevention literature identified in a previous review of interventions to prevent obesity, promote healthy eating, physical activity, and/or reduce sedentary behaviors in 0-5 year olds suggests this is a new and developing research area. **The current review was conducted to provide an update of the rapidly emerging evidence in this area and to assess the quality of studies reported.** Ten electronic databases were searched to identify literature published from January 1995 to August 2008. Inclusion criteria: interventions reporting child anthropometric, diet, physical activity, or sedentary behavior outcomes and focusing on children aged 0-5 years of age. Exclusion criteria: focusing on breastfeeding, eating disorders, obesity treatment, malnutrition, or school-based interventions. Two reviewers independently extracted data and assessed study quality. Twenty-three studies met all criteria. Most were conducted in preschool/childcare (n = 9) or home settings (n = 8). Approximately half targeted socioeconomically disadvantaged children (n = 12) and three quarters were published from 2003 onward (n = 17). The interventions varied widely although most were multifaceted in their approach. While study design and quality varied most studies reported their interventions were feasible and acceptable, although impact on behaviors that contribute to obesity were not achieved by all. Early childhood obesity-prevention interventions represent a rapidly growing research area. Current evidence suggests that behaviors that contribute to obesity can be positively impacted in a range of settings and provides important insights into the most effective strategies for promoting healthy weight from early childhood. 2010 The Obesity Society

Hillier F, Pedley C, Summerbell C. **Evidence base for primary prevention** of obesity in children and adolescents. *Bundesgesundheitsblatt, Gesundheitsforschung, Gesundheitsschutz* 2011;54(3):259-64.

Ref ID: 627

Abstract: Effective interventions to prevent obesity in children have never been more necessary. There have been over 30 published reviews and meta-analyses on such interventions (randomized and controlled trials) since 2008. In summary, interventions which involve the whole community (community-based) in complex interventions (promoting healthy eating, reduction in sedentary behaviours and increase in physical activity) that target environments and upstream determinants appear to be more effective. In this article the strengths and weaknesses of community-based complex interventions which aim to prevent obesity in children will be discussed and a selection of recent and ongoing interventions that are shaping the evidence-base in this field will be highlighted (beyond those reported in other papers in this supplement: KOPS, CHILT, TigerKids, IDEFICS and TrinkFit). **This paper reviews the challenges and opportunities associated with designing and evaluating community-based complex interventions and initiatives.** These include a) design issues (strengths and weaknesses of different types of evidence), b) measurement of (effectiveness) outcomes, c) development of interventions (pilot work, planning frameworks and underpinning theories), d) partnership working and community engagement and e) health inequalities

Hingle MD, O'Connor TM, Dave JM, Baranowski T. **Parental involvement in interventions** to improve child dietary intake: A systematic review. *Prev Med* 2010;51(2):103-11.

Ref ID: 256

Abstract: Objective: Interventions that aim to improve child dietary quality and reduce disease risk often involve parents. The most effective methods to engage parents remain unclear. **A systematic review of interventions designed to change child and adolescent dietary behavior was conducted to answer whether parent involvement enhanced intervention effectiveness, and what type of involvement was most effective in achieving desired outcomes.** Method: In 2008, Pub Med, Medline, Psych Info, and Cochrane Library databases were searched to identify programs designed to change child and adolescent dietary intake that also involved parents. Methods of parental involvement were categorized based on the type and intensity of parental

involvement. These methods were compared against intervention design, dietary outcomes, and quality of reporting (evaluated using CONSORT checklist) for each study. Results: The literature search identified 1774 articles and 24 met review criteria. Four studies systematically evaluated parent involvement with inconsistent results. Indirect methods to engage parents were most commonly used, although direct approaches were more likely to result in positive outcomes. Four studies met > 70% of CONSORT items. Conclusion: Limited conclusions may be drawn regarding the best method to involve parents in changing child diet to promote health. However, direct methods show promise and warrant further research. 2010 The Institute For Cancer Prevention

Inge TH, Xanthakos SA, Zeller MH. **Bariatric surgery** for pediatric extreme obesity: Now or later? *Int J Obes* 2007;31(1):1-14.

Ref ID: 533

Abstract: Obesity is a multifactorial disease of epidemic and global proportions that poses the most significant threat to the health of our younger generations. Those who are the most extremely affected bear the largest burden of health problems. In the US, extreme obesity affects approximately 9 million adults and 2 million children, and is associated with both immediate health problems and later health risk, including premature mortality. Present medical and behavioral interventions for extreme obesity in adults and children rarely result in the significant, durable weight loss necessary to improve health outcomes, prompting a search for more aggressive measures. Weight loss (bariatric) surgery has been advocated as an intervention for those with extreme obesity. In adults, bariatric surgery results in prolonged weight control and improvement in serious obesity comorbidities, namely type 2 diabetes, dyslipidemias, hypertension and obstructive sleep apnea syndrome. A surge in weight loss operations for adolescents has been observed recently, with a threefold increase in case volumes nationwide from 2000 to 2003. **Current evidence suggests that after bariatric surgery, adolescents lose significant weight and serious obesity-related medical conditions and psychosocial status are improved.** Thus it is reasonable to propose that bariatric surgery performed in the adolescent period may be more effective treatment for childhood-onset extreme obesity than delaying surgery for extremely obese youth until adulthood. This position has been echoed by a number of groups and an independent systematic review. Finally, it is conceivable that bariatric surgery performed in adulthood for childhood onset extreme obesity may not be as effective for comorbidity treatment as surgery performed earlier during adolescence. **The purpose of this review is to examine the evidence, which supports early rather than later use of bariatric surgery in the treatment of extreme obesity, and to present this information in light of the medical and surgical risks of bariatric surgery.** 2007 Nature Publishing Group All rights reserved

Jaime PC, Lock K. Do **school based food and nutrition policies** improve diet and reduce obesity? *Prev Med* 2009;48(1):45-53.

Ref ID: 384

Abstract: Objective: **To review the effectiveness of school food and nutrition policies world wide in improving the school food environment, student's dietary intake, and decreasing overweight and obesity.** Methods: Systematic review of published and unpublished literature up to November 2007 of three categories of nutrition policy; nutrition guidelines, regulation of food and/or beverage availability, and price interventions applied in preschools, primary and secondary schools. Results: 18 studies met the inclusion criteria. Most evidence of effectiveness was found for the impact of both nutrition guidelines and price interventions on intake and availability of food and drinks, with less conclusive research on product regulation. Despite the introduction of school food policies worldwide few large scale or national policies have been evaluated, and all included studies were from the USA and Europe. Conclusion: Some current school policies have been effective in improving the food environment and dietary intake in schools, but there is little evaluation of their impact on BMI. As schools have been proposed worldwide as a major setting for tackling childhood obesity it is essential that future policy evaluations measure the long term effectiveness of a range of school food policies in tackling both dietary intake and overweight and obesity. 2008 Elsevier Inc. All rights reserved

Janssen I, LeBlanc AG. **Systematic review of the health benefits of physical activity and fitness in school-aged children and youth.** International Journal of Behavioral Nutrition and Physical Activity 2010;7 , 2010. Article Number: 40. Date of Publication: 11 May 2010.

Ref ID: 258

Abstract: Background: **The purpose was to: 1) perform a systematic review of studies examining the relation between physical activity, fitness, and health in school-aged children and youth, and 2) make recommendations based on the findings.** Methods: The systematic review was limited to 7 health indicators: high blood cholesterol, high blood pressure, the metabolic syndrome, obesity, low bone density, depression, and injuries. Literature searches were conducted using predefined keywords in 6 key databases. A total of 11,088 potential papers were identified. The abstracts and full-text articles of potentially relevant papers were screened to determine eligibility. Data was abstracted for 113 outcomes from the 86 eligible papers. The evidence was graded for each health outcome using established criteria based on the quantity and quality of studies and strength of effect. The volume, intensity, and type of physical activity were considered. Results: Physical activity was associated with numerous health benefits. The dose-response relations observed in observational studies indicate that the more physical activity, the greater the health benefit. Results from experimental studies indicate that even modest amounts of physical activity can have health benefits in high-risk youngsters (e.g., obese). To achieve substantive health benefits, the physical activity should be of at least a moderate intensity. Vigorous intensity activities may provide even greater benefit. Aerobic-based activities had the greatest health benefit, other than for bone health, in which case high-impact weight bearing activities were required. Conclusion: **The following recommendations were made: 1) Children and youth 5-17 years of age should accumulate an average of at least 60 minutes per day and up to several hours of at least moderate intensity physical activity. Some of the health benefits can be achieved through an average of 30 minutes per day. [Level 2, Grade A]. 2) More vigorous intensity activities should be incorporated or added when possible, including activities that strengthen muscle and bone [Level 3, Grade B]. 3) Aerobic activities should make up the majority of the physical activity. Muscle and bone strengthening activities should be incorporated on at least 3 days of the week [Level 2, Grade A].** 2010 Janssen and LeBlanc; licensee BioMed Central Ltd

Jensen J, Hartmann H, de M, Schuit A, Brug J. **Economic incentives and nutritional behavior of children in the school setting: A systematic review.** Nutr Rev 2011;69(11):660-74.

Ref ID: 2117

Jinks A, Cotton A, Rylance R. Obesity interventions for people with a learning disability: an integrative literature review. J Adv Nurs 2011;67(3):460-71.

Ref ID: 631

Abstract: AIM: **This paper is a review of the effectiveness of non-surgical, non-pharmaceutical interventions designed to promote weight loss in people with a learning disability and how qualitative evidence on people's experiences and motivations can help understanding of the quantitative research outcomes.** BACKGROUND: The health risks of obesity underline the importance of effective evidence-based weight loss interventions for people with learning disabilities as they are at increased risk of being overweight. DATA SOURCES: Papers published from 1998 to 2009 were identified through searches of the Cumulative Index for Nursing and Allied Health Literature, Proquest, Medline (PubMed), PSYCHINFO databases, and the Cochrane Library. REVIEW METHODS: An integrative review method was used. Studies included were non-surgical or non-pharmaceutical interventions aimed at weight reduction for people with a learning disability. Synthesis of the findings related to study design, participants, types of interventions, outcome measures and participant perspectives. RESULTS: Twelve studies met the inclusion criteria. The most common research design was quasi-experimental pretest and post-test. Few researchers used a clinical trial approach, and there was only one predominantly qualitative study. Interventions were mainly focused on energy intake, energy expenditure or health promotion. Only a few studies incorporated behaviour modification approach-

es. CONCLUSION: Nurses who work with clients with learning disabilities have a key role to play in the management of obesity. Future research needs to focus on qualitative studies of the perceptions of clients and their families, controlled trials investigating the effectiveness of interventions and their costs and sustainability, and longitudinal studies examining weight loss over time. Copyright 2010 Blackwell Publishing Ltd

Johnson ST, Newton AS, Chopra M, Buckingham J, Huang TT, Franks PW, et al. In search of quality evidence for lifestyle management and glycaemic control in children and adolescents with type 2 diabetes: A systematic review. *BMC pediatrics* 2010;10:97.

Ref ID: 208

Abstract: Our purpose was to evaluate the impact of lifestyle behavior modification on glycaemic control among children and youth with clinically defined Type 2 Diabetes (T2D). We conducted a systematic review of studies (randomized trials, quasi-experimental studies) evaluating lifestyle (diet and/or physical activity) modification and glycaemic control (HbA1c). Our data sources included bibliographic databases (EMBASE, CINAHL, Cochrane Library, Medline, PASCAL, PsycINFO, and Sociological Abstracts), manual reference search, and contact with study authors. Two reviewers independently selected studies that included any intervention targeting diet and/or physical activity alone or in combination as a means to reduce HbA1c in children and youth under the age of 18 with T2D. Our search strategy generated 4,572 citations. The majority of citations were not relevant to the study objective. One study met inclusion criteria. In this retrospective study, morbidly obese youth with T2D were treated with a very low carbohydrate diet. This single study received a quality index score of < 11, indicating poor study quality and thus limiting confidence in the study's conclusions. There is no high quality evidence to suggest lifestyle modification improves either short- or long-term glycaemic control in children and youth with T2D. Additional research is clearly warranted to define optimal lifestyle behaviour strategies for young people with T2D

Kalavainen M, Karjalainen S, Martikainen J, Korppi M, Linnosmaa I, Nuutinen O. Cost-effectiveness of routine and group programs for treatment of obese children. *Pediatr Int* 2009;51(5):606-11.

Ref ID: 1520

Abstract: XST: This is an economic evaluation that meets the criteria for inclusion on NHS EED. If you would like us to consider prioritising the writing of a critical abstract for this economic evaluation please e-mail: CRD-NHSEED@york.ac.uk quoting the Accession Number of this record. Please note that priority is given to fast track requests from the UK National Health Service
CO1: Finland

Kamath CC, Vickers KS, Ehrlich A, McGovern L, Johnson J, Singhal V, et al. Behavioral interventions to prevent childhood obesity: A systematic review and metaanalyses of randomized trials. *J Clin Endocrinol Metab* 2008;93(12):4606-15. Ref ID: 434

Abstract: Context: The efficacy of lifestyle interventions to encourage healthy lifestyle behaviors to prevent pediatric obesity remains unclear. Objective: Our objective was to summarize evidence on the efficacy of interventions aimed at changing lifestyle behaviors (increased physical activity, decreased sedentary activity, increased healthy dietary habits, and decreased unhealthy dietary habits) to prevent obesity. Data Sources: Data sources included librarian-designed searches of nine electronic databases, references from included studies and reviews (from inception until February 2006), and content expert recommendations. Study Selection: Eligible studies were randomized trials enrolling children and adolescents assessing the impact of interventions on both lifestyle behaviors and body mass index (BMI). Data Extraction: Two reviewers independently abstracted data on methodological quality, study characteristics, intervention components, and treatment effects. Data Analysis: We conducted random-effects metaanalyses, quantified inconsistency using I^2 , and conducted planned subgroup analyses for each examined outcome. Data Synthesis: Regarding target behaviors, the pooled effect size for physi-

cal activity (22 comparisons; n = 9891 participants) was 0.12 [95% confidence interval (CI) = 0.04-0.20; I² = 63%], for sedentary activity (14 comparisons; n = 3003) was -0.29, (CI = -0.35 to -0.22; I² = 0%), for healthy dietary habits (14 comparisons, n = 5468) was 0.00 (CI = -0.20; 0.20; I² = 83%), and for unhealthy dietary habits (23 comparisons, n = 9578) was -0.20 (CI = -0.31 to = 0.09; I² = 34%). The effect of these interventions on BMI (43 comparisons, n = 32,003) was trivial (-0.02; CI = -0.06-0.02; I² = 17%) compared with control. Trials with interventions lasting more than 6 months (vs. shorter trials) and trials with postintervention outcomes (vs. in-treatment outcomes) yielded marginally larger effects. Conclusion: Pediatric obesity prevention programs caused small changes in target behaviors and no significant effect on BMI compared with control. Trials evaluating promising interventions applied over a long period, using responsive outcomes, with longer measurement timeframes are urgently needed. Copyright 2008 by The Endocrine Society

Kamath CC, Vickers KS, Ehrlich A, McGovern L, Johnson J, Singhal V, et al. Clinical review: **behavioral interventions to prevent childhood obesity**: a systematic review and metaanalyses of randomized trials. *The Journal of clinical endocrinology and metabolism* 2008;93(12):4606-15.

Ref ID: 405

Abstract: CONTEXT: The efficacy of lifestyle interventions to encourage healthy lifestyle behaviors to prevent pediatric obesity remains unclear. OBJECTIVE: **Our objective was to summarize evidence on the efficacy of interventions aimed at changing lifestyle behaviors (increased physical activity, decreased sedentary activity, increased healthy dietary habits, and decreased unhealthy dietary habits) to prevent obesity.** DATA SOURCES: Data sources included librarian-designed searches of nine electronic databases, references from included studies and reviews (from inception until February 2006), and content expert recommendations. STUDY SELECTION: Eligible studies were randomized trials enrolling children and adolescents assessing the impact of interventions on both lifestyle behaviors and body mass index (BMI). DATA EXTRACTION: Two reviewers independently abstracted data on methodological quality, study characteristics, intervention components, and treatment effects. DATA ANALYSIS: We conducted random-effects metaanalyses, quantified inconsistency using I², and conducted planned subgroup analyses for each examined outcome. DATA SYNTHESIS: Regarding target behaviors, the pooled effect size for physical activity (22 comparisons; n = 9891 participants) was 0.12 [95% confidence interval (CI) = 0.04-0.20; I² = 63%], for sedentary activity (14 comparisons; n = 3003) was -0.29, (CI = -0.35 to -0.22; I² = 0%), for healthy dietary habits (14 comparisons, n = 5468) was 0.00 (CI = -0.20; 0.20; I² = 83%), and for unhealthy dietary habits (23 comparisons, n = 9578) was -0.20 (CI = -0.31 to -0.09; I² = 34%). The effect of these interventions on BMI (43 comparisons, n = 32,003) was trivial (-0.02; CI = -0.06-0.02; I² = 17%) compared with control. Trials with interventions lasting more than 6 months (vs. shorter trials) and trials with postintervention outcomes (vs. in-treatment outcomes) yielded marginally larger effects. CONCLUSION: Pediatric obesity prevention programs caused small changes in target behaviors and no significant effect on BMI compared with control. Trials evaluating promising interventions applied over a long period, using responsive outcomes, with longer measurement timeframes are urgently needed

Kanekar A, Sharma M. Meta-analysis of **school-based childhood obesity interventions** in the U.K. and U.S. *International quarterly of community health education* 2008;29(3):241-56.

Ref ID: 400

Abstract: **This study conducted a meta-analysis on the outcome indicator of body mass index from published school-based childhood obesity interventions done in the United States and the United Kingdom between 2000 and 2007.** Electronic databases were searched for school-based childhood obesity interventions and a total of five studies were analyzed. The results of the pooled estimate of reviewed studies were not significant for the outcome measure body mass index at p < 0.05 level for fixed (effect estimate -0.0649 (95% CI: -0.29, 0.16)) as well as random effects (effect estimate 0.179 (95% CI: -0.38, 0.72)) models. In conclusion, it can be said that cur-

rent school-based childhood obesity interventions do not seem to modify body mass index

Kaplan SG. **Motivational interviewing in the treatment** of pediatric obesity: Research and promise. *Psychosom Med* 2011;Conference: 69th Annual Meeting of the American Psychosomatic Society San Antonio, TX United States. Conference Start: 20110309 Conference End: 20110312. Conference Publication:(var.pagings):A7. Ref ID: 202

Abstract: Purpose: Pediatric obesity is widely regarded as an epidemic whose prevalence has more than tripled to nearly 17% from 1963 to 2008. Identification of effective and pragmatic treatment methods is imperative. **The purpose of this presentation is to review the evidence for the use of Motivational Interviewing (MI) for the treatment of pediatric obesity and to discuss the potential for MI interventions for this population.** Methods: The author conducted a systematic review of the literature searching Pub Med for citations using key words such as 'motivational interviewing', 'pediatric obesity', and 'adolescent overweight'. The review also included verbal discussions with content experts seeking information about both published and ongoing studies in progress to help understand the potential of MI with this population. Results: Results revealed three studies with published outcomes using MI as part of an intervention for pediatric obesity and related conditions (high cholesterol). Two additional studies used MI as an element of treatment for adolescent diabetes. In general, results across studies supported MIs feasibility and indicated strong patient and family satisfaction with MI. Additional evidence that MI interventions could have an impact on health-related outcomes such as caloric intake and hemoglobin A1c levels were encouraging. Discussions with experts, as well as literature review, revealed two important multi-site randomized controlled trials in progress; the first targeting the training of pediatricians in brief MI (BMI2 clinical trial) and the second combining MI and Cognitive Behavioral Therapy for adolescent overweight and obesity in Australia (Choose Health). Conclusion: The scientific literature regarding the use of MI for the treatment of pediatric obesity is modest but promising. There are strong signals that MI interventions could have significant impact and be implemented on a large scale. Furthermore, it is worth noting that the American Academy of Pediatrics has recommended the use of MI as the preferred method of patient-centered communication for engagement of families

Karmali S, Johnson SC, Sharma A, Stadnyk J, Christiansen S, Cottreau D, et al. **Bariatric surgery**: a primer. *Can Fam Physician* 2010;56(9):873-9.

Ref ID: 577

Abstract: OBJECTIVE: **To review the management of bariatric surgical patients.** QUALITY OF EVIDENCE: MEDLINE, EMBASE, and Cochrane Library databases were searched, as well as PubMed US National Library, from January 1950 to December 2009. Evidence was levels I, II, and III. MAIN MESSAGE: Bariatric surgery should be considered for obese patients at high risk of morbidity and mortality who have not achieved adequate weight loss with lifestyle and medical management and who are suffering from the complications of obesity. Bariatric surgery can result in substantial weight loss, resolution of comorbid conditions, and improved quality of life. The patient's weight-loss history; his or her personal accountability, responsibility, and comprehension; and the acceptable level of risk must be taken into account. Complications include technical failure, bleeding, abdominal pain, nausea or vomiting, excess loose skin, bowel obstruction, ulcers, and anastomotic stricture. Lifelong monitoring by a multidisciplinary team is essential. CONCLUSION: Limited long-term success of behavioural and pharmacologic therapies in severe obesity has led to renewed interest in bariatric surgery. Success with bariatric surgery is more likely when multidisciplinary care providers, in conjunction with primary care providers, assess, treat, monitor, and evaluate patients before and after surgery. Family physicians will play a critical role in counseling patients about bariatric surgery and will need to develop skills in managing these patients in the long-term

Karnik S, Kanekar A. Childhood obesity: a global public health crisis. *International Journal of Preventive Medicine* 2012;3(1):1-7.

Ref ID: 548

Abstract: INTRODUCTION: Childhood obesity is a major public health crisis nationally and internationally. The prevalence of childhood obesity has increased over few years. It is caused by imbalance between calorie intake and calories utilized. One or more factors (genetic, behavioral, and environmental) cause obesity in children. Physical, psychological, and social health problems are caused due to childhood obesity. Hence, effective intervention strategies are being used to prevent and control obesity in children. **The purpose of this manuscript is to address various factors influencing childhood obesity, a variety of interventions and governmental actions addressing obesity and the challenges ahead for managing this epidemic.** METHODS: In order to collect materials for this review a detailed search of CINAHL, MEDLINE, ERIC, Academic Search Premier databases was carried out for the time period 1999-2011. RESULTS: Some of the interventions used were family based, school based, community based, play based, and hospital based. The effective school-based interventions were seen targeting physical activity along with healthy diet education. The major challenges faced by these intervention programs are financial, along with stigmatization of obese children. Governments along with other health care organizations are taking effective actions like policy changing and environmentally safe interventions for children to improve physical activity. CONCLUSIONS: In conclusion, **childhood obesity can be tackled at the population level by education, prevention and sustainable interventions related to healthy nutrition practices and physical activity promotion**

Katz DL, O'Connell M, Njike VY, Yeh M-C, Nawaz H. **Strategies for the prevention and control of obesity in the school setting:** Systematic review and meta-analysis. Int J Obes 2008;32(12):1780-9.
Ref ID: 433

Abstract: Objective: **To determine the effectiveness of school-based strategies for obesity prevention and control using methods of systematic review and meta-analysis.** Methods: Peer-reviewed studies published between 1966 and October 2004 were considered for review. Studies meeting eligibility criteria were published in English, targeted children aged 3-18 in a school setting, reported weight-related outcomes, included a control measurement and had at least a 6-month follow-up period. Studies employed interventions related to nutrition, physical activity, reduction in television viewing or combinations thereof. Weight related data were analyzed using RevMan software. Results: Sixty-four studies were considered for inclusion. Fourteen did not meet inclusion criteria; 29 were excluded due to poor methodological quality. Twenty-one papers describing 19 studies were included in the systematic review and 8 of these were included in the meta-analysis. Nutrition and physical activity interventions resulted in significant reductions in body weight compared with control ((standardized mean difference, SMD=-0.29, 95% confidence interval (CI)=-0.45 to -0.14), random effects model). Parental or family involvement of nutrition and physical activity interventions also induced weight reduction ((SMD=-0.20, 95%CI=-0.41 to 0.00), random effects model). Conclusion: Combination nutrition and physical activity interventions are effective at achieving weight reduction in school settings. Several promising strategies for addressing obesity in the school setting are suggested, and warrant replication and further testing. 2008 Macmillan Publishers Limited All rights reserved

Katz DL. **School-based interventions** for health promotion and weight control: not just waiting on the world to change. Annu Rev Public Health 2009;30:253-72.
Ref ID: 696

Abstract: Controversy persists regarding the utility of school-based interventions for obesity prevention and control and for related health promotion. **This article reviews the pertinent evidence, based partly on a recent systematic review and meta-analysis by the author and colleagues.** Of 64 relevant papers, 21 papers representing 19 distinct studies met quality criteria; half of these were published since 2000. Despite marked variation in measures, methods, and populations that handicap interpretation of this literature, evidence clearly demonstrated that school-based interventions had significant effects on weight. Thus available research evidence does present a case for school-based interventions. Despite the fact that such evidence is limited to date, the urgency of the obesity and diabetes epidemics cries out for ac-

tion. Intervention is warranted on the basis of both extant evidence and common sense, with methodologically robust evaluation concomitantly to test our assumptions and verify our intuition

Kelley GA, Kelley KS. **Aerobic exercise** and lipids and lipoproteins in children and adolescents: A meta-analysis of randomized controlled trials. *Atherosclerosis* 2007;191(2):447-53.

Ref ID: 528

Abstract: Objective: Use the meta-analytic approach to examine the effects of aerobic exercise on total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), and triglycerides (TG) in children and adolescents. Study design: Randomized controlled trials which were limited to aerobic exercise ≥ 4 weeks in children and adolescents 5-19 years of age. Results: Twelve outcomes representing 389 subjects were available for pooling. Using random-effects modeling, a trend for statistically significant decreases of 12% was found for TG (over(X,) +/- S . E . M . , -11.0 +/- 6.1 mg/dl; 95% CI, -22.8-0.8 mg/dl) with no statistically significant changes for TC, HDL-C, and LDL-C. Decreases in LDL-C were associated with increased training intensity ($r = -0.89$; 99% CI, -0.99 to -0.04) and older age ($r = -0.90$; 99% CI, -0.99 to -0.25) while increases in HDL-C were associated with lower initial HDL-C ($r = -0.75$; 99% CI, -0.94 to -0.80). Statistically significant decreases in TG were observed in overweight/obese subjects with a trend for increases in HDL-C (TG, over(X,) +/- S . E . M . , -23.9 +/- 7.0 mg/dl; 95% CI, -37.6 to -10.1 mg/dl; HDL-C, over(X,) +/- S . E . M . , 4.0 +/- 2.3 mg/dl; 95% CI, -0.5-8.5 mg/dl). Conclusions: Aerobic exercise decreases TG in overweight/obese children and adolescents. 2006 Elsevier Ireland Ltd. All rights reserved

Kelley GA, Kelley KS. **Effects of aerobic exercise** on non-high-density lipoprotein cholesterol in children and adolescents: a meta-analysis of randomized controlled trials. *Prog Cardiovasc Nurs* 2008;23(3):128-32.

Ref ID: 409

Abstract: The authors used the meta-analytic approach to examine the effects of aerobic exercise on non-high-density lipoprotein cholesterol (non-HDL-C) in children and adolescents. Thirteen non-HDL-C outcomes in 404 males and females (221 exercise, 183 control) were available for pooling. Random-effects modeling yielded a nonstatistically significant exercise minus control group reduction of 0.61% in non-HDL-C (X +/- SEM, -0.7 +/- 2.4 mg/dL, 95% confidence interval [CI], -5.4 to 5.0 mg/dL). A statistically significant decrease of 7% was found for percent body fat (X +/- SEM, -2.1 +/- 0.5%, 95% CI, -3.0 to -1.2%) as well as an 8% increase in aerobic capacity (X +/- SEM, 3.4 +/- 1.0 mL/kg/min, 95% CI, 1.4-5.3 mL/kg/min), both secondary outcomes of the study. It was concluded that aerobic exercise does not reduce non-HDL-C but does improve percent body fat and aerobic capacity in children and adolescents. However, a need exists for additional studies on this topic

Kelly KP, Kirschenbaum DS. Immersion treatment of childhood and adolescent obesity: The first review of a promising intervention. *Obesity Reviews* 2011;12(1):37-49.

Ref ID: 142

Abstract: Obese children have attended **weight loss camps** and residential programmes for more than 40 years. This paper provides the first systematic review of the effects of those programmes. Twenty-two studies met inclusion criteria (targeted and assessed change in weight status, minimal stay of 10 days and nights). Similar components across programmes included controlled diet, activities, nutrition education, and therapy and/or education regarding behaviour change. Participants lost substantial amounts of weight in all 22 studies, as measured by reductions in per cent-overweight duringx intervention. Eleven programmes included long-term follow-up evaluations. Compared with results highlighted in a recent meta-analysis of out-patient treatments, these immersion programmes produced an average of 191% greater reductions in per cent-overweight at post-treatment and 130% greater reduction at follow-up. Furthermore, mean attrition rates were much lower when compared with standard out-patient treatment. Inclusion of a cognitive-behavioural therapy (CBT) component seemed especially promising; follow-up evaluations showed decreased per cent-overweight at follow-up by an average of 30% for CBT immersion

programmes vs. 9% for programmes without CBT. Explanations for the potentially greater impact of immersion relative to out-patient treatments are presented, including possibly differential effects on self-efficacy for both children and their parents. 2010 The Authors. obesity reviews 2010 International Association for the Study of Obesity

Kelly SA, Melnyk BM. Systematic review of **multicomponent interventions** with overweight middle adolescents: Implications for clinical practice and research. *Worldviews on Evidence-Based Nursing* 2008;5(3):113-35.

Ref ID: 446

Abstract: Background: Being overweight is a global epidemic that occurs in more than 10% of school-aged children (age 5-17) worldwide. The rate of adolescents being overweight continues to rise despite numerous public health campaigns and programs to increase awareness and modify unhealthy lifestyle patterns. Aims: **The purpose of this systematic review was to determine the most efficacious intervention for treating overweight adolescents.** Evidence from this systematic review could guide clinical practice and future research with this high-risk population in youth. Methods: In adolescents of 13-17 years of age who are above ideal body weight, are multicomponent interventions that integrate nutrition, activity, and behavioral components more efficacious than any type of comparison group in improving weight, body mass index (BMI), percentage body fat, or behaviors of dietary intake or activity level? Literature searches were completed in Cochrane Library, MEDLINE, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), and PsycINFO databases as well as hand searching. Results: Due to a lack of consistency among the studies regarding methods and rigor of the studies, the evidence is not entirely clear on the best multicomponent program for addressing overweight in middle adolescents. The success of an intervention was associated with the dose of the intervention received by the adolescent and parent. Conclusions: A structured program addressing nutrition, physical activity, and behavioral skills appears to be efficacious in reducing weight and cardiovascular risk factors. Primarily, interventions have included the individual and varying degrees of parental participation. In the past few years, more research has addressed the multiple levels of the ecological model. Further research addressing the five levels of the ecological model will assist in illuminating the impact of the environment on behavior change in adolescents. 2008 Sigma Theta Tau International

Kesten JM, Griffiths PL, Cameron N. A systematic review to determine the effectiveness of **interventions designed to prevent overweight and obesity** in pre-adolescent girls. *Obesity Reviews* 2011;12(12):997-1021.

Ref ID: 83

Abstract: Summary: Childhood overweight/obesity is recognized as an increasing health problem. **The objective of this review was to determine the effectiveness of interventions designed to prevent overweight and obesity in pre-adolescent girls.** The papers included were those studying children (must include results for girls) from within the 7-11 years age range from any country and ethnic background. The included interventions lasted at least 12 weeks and modified a combination of nutrition, physical activity, knowledge, attitudes or health-related behaviours associated with the development of childhood overweight and obesity. Effect sizes were calculated where possible using Cohen's classifications of small (0.2-0.5), medium (0.5-0.8) and large (>0.8) effect sizes. Thirty studies met the inclusion criteria of which four were cluster randomized controlled trials, 14 were randomized controlled trials, 11 were controlled trials and one was a cohort pre-post trial. There were four weak, 11 moderate and 15 strong quality studies. Eleven studies were considered short term and 19 long term (>=12 months). There were 66 effect sizes less than 0.2, 56 categorized as low, 16 as medium and two as high. There is the potential for interventions aimed at pre-adolescent girls to reduce the risk factors associated with childhood overweight and obesity, although the sustainability of the effects of such interventions is less clear. 2011 The Authors. obesity reviews 2011 International Association for the Study of Obesity

Khambalia AZ, Dickinson S, Hardy LL, Gill T, Baur LA. A synthesis of existing systematic reviews and meta-analyses of **school-based behavioural interventions for controlling and preventing obesity**. *Obesity Reviews* 2012;13(3):214-33.

Ref ID: 579

Abstract: Schools are an attractive and popular setting for implementing interventions for children. There is a growing body of empirical research exploring the efficacy of school-based obesity prevention programs. While there have been several reviews on the topic, findings remain mixed. To examine the quality of evidence and compare the findings from existing systematic reviews and meta-analyses of school-based programs in the prevention and control of childhood obesity. **This paper systematically appraises the methodology and conclusions of literature reviews examining the effectiveness of school-based obesity interventions published in English in peer-reviewed journals between January 1990 and October 2010.** Eight reviews were examined, three meta-analyses and five systematic reviews. All of the reviews recognized that studies were heterogeneous in design, participants, intervention and outcomes. Intervention components in the school setting associated with a significant reduction of weight in children included long-term interventions with combined diet and physical activity and a family component. Several reviews also found gender differences in response to interventions. Of the eight reviews, five were deemed of high quality and yet limited evidence was found on which to base recommendations. As no single intervention will fit all schools and populations, further high-quality research needs to focus on identifying specific program characteristics predictive of success. Copyright 2011 The Authors. *obesity reviews* Copyright 2011 International Association for the Study of Obesity

Kitzman-Ulrich H, Wilson DK, St George SM, Lawman H, Segal M, Fairchild A. The **integration of a family systems approach for understanding youth obesity**, physical activity, and dietary programs. *Clinical Child and Family Psychology Review* 2010;13(3):231-53.

Ref ID: 1763

Abstract: XST: This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn

XAO: **To evaluate the effectiveness of interventions based on the family systems approach to promote weight loss, physical activity and dietary modification in the youth population**

XSS: PubMed and PsycINFO databases and Google Academic Search were accessed to find articles of interest. Search dates were not reported. Search terms were listed. Reference lists of relevant articles were scanned to identify further studies

XVC: The authors did not report any quality assessment

XDE: Data were extracted on change in percentage overweight or BMI and/or difference in outcome measures between groups. Where possible, Cohen's d effect sizes were calculated. The authors did not state how many reviewers carried out data extraction

XRR: Forty-six studies were included in the review. Twenty-one studies (which included 18 randomised controlled trials and one clinical controlled study) evaluated weight-loss interventions. Twenty-five studies (which included 19 randomised controlled trials) evaluated interventions that targeted physical activity and diet. Sample sizes ranged from 23 to 5,106 participants. Weight loss: Twelve studies reported a range of effect sizes from 0.05 to 0.84. Effect sizes were moderate to large (0.43 to 0.84; three RCTs, n=104) in favour of interventions that included the promotion of authoritative parenting style and child management strategies (including boundary setting in the home environment, positive reinforcement of child behaviours and parent-child communication). The effects were maintained over one year. Two RCTs (n=92) showed moderate effect sizes (0.43 and 0.65) that favoured the promotion of authoritative parenting alone. One RCT (n=43) reported a moderate effect (0.49) in decreasing BMI that resulted from a brief parenting-skills intervention. Studies of family functioning or therapies targeting weight loss were limited and inconclusive. Physical activity and dietary behaviour: Positive results were reported in studies

conducted in school settings (16 RCTs). Effect sizes ranged from 0.03 to 2.31. The largest effect sizes were reported for one RCT (n=238) with an effect size of 2.31 for reduced dietary fat intake and one quasi-experiment with an effect size of 2.15 for increased knowledge about physical activity and nutrition. Both studies focused on the same intervention to improve quality of interaction between home and school environments. Two RCTs (34 mothers and 60 daughters) conducted in the community setting reported large effect sizes for increased fruit and vegetable consumption in African-American youths (effect size 2.66) and a reduction in the consumption of sweetened beverages (effect size 1.07). Both interventions focused on enhancing the community and home relationship

XCL: Family-based programmes that incorporated training for authoritative parenting styles, parenting skills, child management and family functioning had positive effects on youth weight loss. Programmes to improve physical activity and diet that targeted the family system also demonstrated improvements in youth health behaviours, but the direct effect of parent-targeted programming was not clear

XCM: The review question and inclusion criteria were broad and the extent to which these would be reproducible was unclear. The search strategy included a limited number of relevant data sources, but the absence of search dates meant that the search findings could not be contextualized in time and made the strategy of limited use to others who might wish to update the review. There was no reported assessment of study quality, which made it difficult to interpret the reliability of the included studies. It was not clear how many reviewers were involved in study selection and data extraction, so potential for errors and bias could not be ruled out. The extensive study details presented indicated wide variation that justified a narrative synthesis. The substantial number of potential methodological limitations and limited reporting of results made the reliability of the conclusions uncertain

XIM: Practice: The authors did not state any implications for practice. Research: The authors stated a need for larger studies to explore the impact of parenting styles and the home environment in weight loss interventions and evaluate the impact of components to improve parenting styles, skills, and family functioning in physical activity and dietary programmes. Future studies should assess culturally-tailored programmes in prevention and treatment of obesity

Kitzmann KM, Dalton 3rd.W.T., Stanley CM, Beech BM, Reeves TP, Buscemi J, et al. **Lifestyle interventions for youth who are overweight**: a meta-analytic review. *Health psychology : official journal of the Division of Health Psychology, American Psychological Association* 2010;29(1):91-101.

Ref ID: 231

Abstract: OBJECTIVE: Clear evidence suggests that lifestyle interventions can be helpful in the treatment of youth who are overweight, but translational research is needed to address the gap between treatment research and clinical care. DESIGN: This meta-analysis integrated the results of 66 treatment-control comparisons and 59 alternate treatment comparisons evaluating lifestyle interventions for children and adolescents who were overweight. MAIN OUTCOME MEASURES: Between-groups differences in weight-related outcomes and other health-related behaviors at the end of treatment. RESULTS: Lifestyle interventions were effective in a range of settings and with a range of participants. Even relatively brief programs had benefits apparent months after the end of treatment. A key component appeared to be the expectation that parents would be actively involved in treatment. Program benefits included not only better weight management but also better eating habits. CONCLUSION: The results suggest that lifestyle interventions can be effective under a wide range of conditions not limited to the highly controlled conditions of efficacy studies. Parent involvement is associated with significantly better results

Knowlden AP, Sharma M. Systematic review of family and **home-based interventions** targeting paediatric overweight and obesity. *Obesity Reviews* 2012;13(6):499-508.

Ref ID: 9

Abstract: The family and home environment is a highly influential psychosocial antecedent of paediatric obesity. **The purpose of this investigation was to systematically analyze family and home-based randomized control trials aimed at treating overweight and obesity in children ages 2-7 years.** In gathering materials for this review,

a search of Cumulative Index to Nursing and Allied Health, MEDLINE, Education Resources Information Center, Psychology and Behavioural Sciences Collection and CENTRAL databases was conducted for the time frame of January 2001 to August 2011. The data extraction spanned three phases resulting in a total of nine interventions that met the specified inclusion criteria. Among the identified studies, eight produced significant outcomes. The majority of the programmes incorporated educational sessions targeting parents as the primary modality for intervention delivery. Less than one-quarter of the interventions included home visitations; however, all of the interventions included home-based activities to reinforce behaviour modification. Only three of the interventions applied social and behavioural theory, and only two interventions employed process evaluation. Additional research is needed to gauge the efficacy of the home and family milieu for treating paediatric obesity. 2012 International Association for the Study of Obesity

Krishnaswami J, Martinson M, Wakimoto P, Anglemeyer A. **Community-engaged interventions** on diet, activity, and weight outcomes in u.s. Schools: a systematic review. *Am J Prev Med* 2012;43(1):81-91.

Ref ID: 535

Abstract: CONTEXT: Community engagement literature suggests that capacity-building approaches and community partnership in health intervention design, delivery, and analysis improve outcomes. School communities influence childhood diet and activity patterns affecting lifelong obesity risk. **This systematic review's purpose is to assess whether incorporating community engagement principles in school-based interventions influences weight-related outcomes.** EVIDENCE ACQUISITION: Obesity-prevention interventions (published January 2000-2011) in diverse U.S. schools, meeting a minimum threshold of community engagement and targeting weight-, diet- or activity-related outcomes were identified in MEDLINE, PsycINFO, and CINAHL (December 2010-March 2011). Two reviewers scored community engagement performance on 24 metrics of capacity building and partner involvement along four research stages. Outcome performance was calculated as percentage of targeted primary and/or secondary outcomes achieved. EVIDENCE SYNTHESIS: Sixteen studies were included, targeting anthropometric (n = 12); dietary (n = 13); and activity (n = 10) outcomes in schoolchildren (mean age=10.7 years). Studies averaged 46% of targeted outcomes (95% CI = 0.33, 0.60) and met 60% of community engagement metrics. Positive correlations existed between community engagement performance and all-outcome performance (r = 0.66, 95% CI = 0.25, 0.87) and secondary-outcome performance (r = 0.67, 95% CI = 0.22, 0.89), but not primary-outcome performance (r = 0.26, 95% CI = -0.27, 0.67). Number of outcomes met was not correlated with number of outcomes targeted, number of partners, or study size. Specific qualitative and quantitative trends suggested that capacity-building efforts, engagement in needs assessments and results dissemination, and durable partnerships positively influence outcomes. CONCLUSIONS: Results suggest that meaningful partnership of diverse school communities within obesity prevention interventions can improve health outcomes. Copyright Copyright 2012 American Journal of Preventive Medicine. Published by Elsevier Inc. All rights reserved

Kropski JA, Keckley PH, Jensen GL. **School-based obesity prevention programs:** An evidence-based review. *Obesity* 2008;16(5):1009-18.

Ref ID: 423

Abstract: Objective: **This review seeks to examine the effectiveness of school-based programs for reducing childhood overweight or obesity.** Methods and Procedures: A systematic review of the research literature published since 1990 was conducted to identify experimental or quasi-experimental school-based curricular or environmental preventive interventions, with evaluation ≥ 6 months after baseline, which reported outcomes in terms of a measure of overweight. Results: Fourteen studies were identified, including one involving a nutrition-only program, two physical activity promotion interventions and eleven studies combining nutrition and physical activity components. Most studies (n = 10) offered weak (grade 2) quality evidence. One study offered strong (grade 4) evidence reducing the odds ratio for overweight in girls only, while four grade 2 studies reported significant improvements in BMI or at-risk-for overweight or overweight prevalence in boys, girls, or both. Twelve studies reported

significant improvement in at least one measure of dietary intake, physical activity, and/or sedentary behavior. Discussion: Our ability to draw strong conclusions as to the efficacy of school-based obesity prevention programs is limited by the small number of published studies and by methodological concerns. Qualitative analysis suggests programs grounded in social learning may be more appropriate for girls, while structural and environmental interventions enabling physical activity may be more effective for boys. High-quality evaluation protocols should be considered essential components of future programs. 2008 The Obesity Society

Kuhl ES, Clifford LM, Stark LJ. Obesity in preschoolers: behavioral correlates and directions for treatment. *Obesity* 2012;20(1):3-29.

Ref ID: 575

Abstract: Nearly 14% of American preschoolers (ages 2-5) are obese (BMI \geq 95th percentile for age and gender), yet this group has received little attention in the obesity intervention literature. This review examines what is known about behavioral correlates of obesity in preschoolers and the developmental context for lifestyle modification in this age group. Information was used to critically evaluate existing weight management prevention and intervention programs for preschoolers and formulate suggestions for future intervention research development. A systematic search of the medical and psychological/behavioral literatures was conducted with no date restrictions, using PubMed, PsycInfo, and MEDLINE electronic databases and bibliographies of relevant manuscripts. Evidence suggests several modifiable behaviors, such as sugar sweetened beverage intake, television use, and inadequate sleep, may differentiate obese and healthy weight preschoolers. Developmental barriers, such as food neophobia, food preferences, and tantrums challenge caregiver efforts to modify preschoolers' diet and activity and parental feeding approaches, and family routines appear related to the negative eating and activity patterns observed in obese preschoolers. Prevention programs yield modest success in slowing weight gain, but their effect on already obese preschoolers is unclear. Multi-component, family-based, behavioral interventions show initial promise in positive weight management for already obese preschoolers. Given that obesity intervention research for preschoolers is in its infancy, and the multitude of modifiable behavioral correlates for obesity in this age group, we discuss the use of an innovative and efficient research paradigm (Multiphase Optimization Strategy; MOST) to develop an optimized intervention that includes only treatment components that are found to empirically reduce obesity in preschoolers

Laframboise MA, Degrauw C. The effects of aerobic physical activity on adiposity in school-aged children and youth: a systematic review of randomized controlled trials. *Journal of the Canadian Chiropractic Association* 2011;55(4):256-68.

Ref ID: 553

Abstract: CONTEXT: The role of aerobic physical activity as a standalone treatment in decreasing adiposity in school-aged children and youth has not been well established. OBJECTIVE: To systematically search and assess the quality of the literature on the efficacy of aerobic physical activity to decrease adiposity in school-aged children and youth. METHODS: An electronic search strategy was conducted in EBSCO databases, including MEDLINE and CINAHL. Retrieved articles that met the eligibility criteria were rated for methodological quality by using the Downs and Black checklist. RESULTS: 10 articles met the inclusion criteria in the form of RCTs. Results indicate that five articles had positive results in decreasing adiposity compared to controls and five articles had no change in adiposity compared to controls. CONCLUSION: There is a paucity of evidence to support aerobic physical activity as a successful standalone treatment for decreasing adiposity. Despite the heterogeneity of the methods there is some evidence to support that school-aged children and youth benefit from aerobic physical activity to decrease adiposity and to limit weight gain

Larson N, Ward DS, Neelon SB, Story M. What role can child-care settings play in obesity prevention? A review of the evidence and call for research efforts. *J Am Diet Assoc* 2011;111(9):1343-62.

Ref ID: 615

Abstract: Given the widespread use of out-of-home child care and an all-time high prevalence of obesity among US preschool-aged children, it is imperative to consider the opportunities that child-care facilities may provide to reduce childhood obesity. This review examines the scientific literature on state regulations, practices and policies, and interventions for promoting healthy eating and physical activity, and for preventing obesity in preschool-aged children attending child care. Research published between January 2000 and July 2010 was identified by searching PubMed and MEDLINE databases, and by examining the bibliographies of relevant studies. Although the review focused on US child-care settings, interventions implemented in international settings were also included. In total, 42 studies were identified for inclusion in this review: four reviews of state regulations, 18 studies of child-care practices and policies that may influence eating or physical activity behaviors, two studies of parental perceptions and practices relevant to obesity prevention, and 18 evaluated interventions. Findings from this review reveal that most states lack strong regulations for child-care settings related to healthy eating and physical activity. Recent assessments of child-care settings suggest opportunities for improving the nutritional quality of food provided to children, the time children are engaged in physical activity, and caregivers' promotion of children's health behaviors and use of health education resources. A limited number of interventions have been designed to address these concerns, and only two interventions have successfully demonstrated an effect on child weight status. Recommendations are provided for future research addressing opportunities to prevent obesity in child-care settings. Copyright Copyright 2011 American Dietetic Association. Published by Elsevier Inc. All rights reserved

Laska MN, Pelletier JE, Larson NI, Story M. Interventions for weight gain prevention during the transition to young adulthood: a review of the literature. *J Adolesc Health* 2012;50(4):324-33.

Ref ID: 546

Abstract: PURPOSE: To review studies examining weight gain prevention interventions among young adults. METHODS: A snowball strategy was used to identify relevant studies, beginning with systematic PubMed, MEDLINE, PsychINFO, Education Resources Information Center (ERIC), and Cumulative Index to Nursing and Allied Health Literature (CINAHL) searches. Included studies: (a) were published from 1985 to 2011; (b) were completed in the United States or Canada; (c) focused on weight gain prevention among young adults aged 18-35 years, assessing weight, body mass index, body composition, diet, or physical activity as an outcome; and (d) comprised pre- and postintervention assessments. RESULTS: Thirty-seven interventions were identified. Ten interventions assessed weight, body mass index, or body composition; 27 addressed other relevant outcomes (e.g., diet, physical activity). Of the studies examining weight or body composition, six evaluated university courses or seminar-based interventions. Overall, many studies focused on individual-level intervention delivery and changes in weight-related knowledge and/or skills, although some incorporated relatively unique aspects (e.g., focusing on eating disorders and obesity simultaneously, using online technology, providing personalized feedback on weight change). Most showed promising results as small-scale pilot studies but lacked data from fully powered randomized trials. CONCLUSIONS: There is an urgent need to develop effective young adult-focused weight gain prevention strategies. This review identified promising areas for future work, although much additional research is needed. Copyright A Copyright 2012 Society for Adolescent Health and Medicine. Published by Elsevier Inc. All rights reserved

Lee MC, Orenstein MR, Richardson MJ. Systematic review of active commuting to school and children's physical activity and weight. *Journal of Physical Activity and Health* 2008;5(6):930-49.

Ref ID: 410

Abstract: Background: The recent decline in children's active commuting (walking or biking) to school has become an important public health issue. Recent programs have promoted the positive effects of active commuting on physical activity (PA) and overweight. However, the evidence supporting such interventions among schoolchildren has not been previously evaluated. Methods: This article presents the results of a systematic review of the association between active commuting to school and out-

comes of PA, weight, and obesity in children. Results: We found 32 studies that assessed the association between active commuting to school and PA or weight in children. Most studies assessing PA outcomes found a positive association between active commuting and overall PA levels. However, almost all studies were cross-sectional in design and did not indicate whether active commuting leads to increased PA or whether active children are simply more likely to walk. Only 3 of 18 studies examining weight found consistent results, suggesting that there might be no association between active commuting and reduced weight or body mass index. Conclusion: Although there are consistent findings from cross-sectional studies associating active commuting with increased total PA, interventional studies are needed to help determine causation. 2008 Human Kinetics, Inc

Leung MM, Agaronov A, Grytsenko K, Yeh MC. **Intervening to Reduce Sedentary Behaviors** and Childhood Obesity among School-Age Youth: A Systematic Review of Randomized Trials. *Journal of Obesity* 2012;2012:685430.
Ref ID: 552

Abstract: Objective. **To assess the effectiveness of interventions that focus on reducing sedentary behavior (SB) among school-age youth and to identify elements associated with interventions' potential for translation into practice settings.** Methods. A comprehensive literature search was conducted using 4 databases for peer-reviewed studies published between 1980 and April 2011. Randomized trials, which lasted at least 12 weeks, aimed at decreasing SB among children aged 6 to 19 years were identified. Results. Twelve studies were included; 3 focused only on SB, 1 focused on physical activity (PA), 6 were combined SB and PA interventions, and 2 studies targeted SB, PA, and diet. The majority of the studies were conducted in a school setting, while others were conducted in such settings as clinics, community centers, and libraries. Conclusions. Overall, interventions that focused on decreasing SB were associated with reduction in time spent on SB and/or improvements in anthropometric measurements related to childhood obesity. Several of the studies did consider elements related to the intervention's potential for translation into practice settings

Li M, Li S, Baur LA, Huxley RR. A systematic review of **school-based intervention studies for the prevention or reduction of excess weight** among Chinese children and adolescents. *Obesity Reviews* 2008;9(6):548-59.
Ref ID: 441

Abstract: **The aim of this paper was to conduct a systematic review of intervention studies in China aimed at the prevention or control of excess weight gain among children and adolescents.** Two Chinese databases (The China Full Text Database and Wanfang Database) and two English databases (Medline and Meditext) were searched with keywords for intervention studies published between 1990 and 2006. Data were extracted on aspects of study quality, methodology and effectiveness of interventions. Quality assessment was conducted using a previously established assessment tool. Twenty-two studies were included, of which 17 were conducted among overweight and/or obese children and/or adolescents. Interventions strategies varied across studies but the majority focused on improving the level of knowledge, physical activity levels and/or diet of overweight children and adolescents. Most studies reported a beneficial effect of the intervention with one or more of the study outcomes, but all of the studies had serious, or moderate, methodological weaknesses. None of the trials identified by this systematic review demonstrated convincing evidence of the efficacy of any single intervention for the prevention of overweight and obesity in children and adolescents from Mainland China. Future intervention trials should address the methodological weaknesses identified in this review. 2008 The Authors

Limbers CA, Turner EA, Varni JW. Promoting healthy lifestyles: **Behavior modification and motivational interviewing** in the treatment of childhood obesity. *Journal of Clinical Lipidology* 2008;clin.(3):169-78.
Ref ID: 557

Abstract: Childhood obesity has increased dramatically during the past two decades. The growing incidence of childhood obesity is alarming, given the significant short-

and long-term health consequences associated with obesity and the strong tracking of obesity from childhood to adulthood. Lifestyle plays an important role in the development and maintenance of obesity. Behavior modification programs targeting eating, exercise, and diet behaviors continue to be the mainstay for treating obese children. Although family-based behavioral weight management programs have resulted in significant improvements in weight status, maintaining improvements in weight status continues to be a challenge, with many interventions resulting in considerable relapse. **Motivational interviewing is one innovative approach, used alone or in conjunction with standard behavioral modification programs, which has been proposed to have the potential to enhance motivation for change and therefore improve long-term treatment outcomes for obese children.** A broad literature search using two electronic databases, Medline and PsycINFO, to identify studies that used an intervention with a motivational interviewing component to modify diet and/or physical activity in the prevention or treatment of childhood obesity identified two studies that targeted weight as a primary outcome. The studies reviewed indicate that, although initial findings are encouraging, further research is needed to determine the effectiveness of motivational interviewing for prevention and treatment of childhood obesity. Concerted efforts are clearly needed to elucidate the mechanisms for maintenance of initial treatment gains, as well as the ultimate achievement of more ideal weight once formal treatment ceases

Lissau I. **Prevention of overweight in the school arena.** Acta Paediatr 2007;96(Supplement 454):12-8.

Ref ID: 1695

Abstract: XST: This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn

XAO: **To assess school-based interventions to prevent paediatric obesity**

XSI: Studies of interventions conducted at schools that aimed to prevent overweight, or that provided activities to high-risk children, were eligible for inclusion. The interventions included aerobic dance, reduction in television watching, increased physical activity, reduced intake of fat, reduced intake of carbonated drinks, increased intake of fruit and vegetables, parental support, nutrition education for children and parents, and improved school lunches or healthy snacks

XPA: Studies of school students, including those with a high risk of becoming overweight, were eligible for inclusion. The included studies evaluated children from 5 years of age to high-school students

XOA: Studies that reported at least one of following outcomes were eligible for inclusion: body mass index, skin fold (biceps or triceps), waist circumference, or fat percentage (as measured by bioimpedance or dual X-ray absorptiometry)

XSD: Controlled studies were eligible for inclusion. The included studies were randomised controlled trials (RCTs) and non-randomised controlled trials

XSS: PubMed, EMBASE, PsycINFO, NHS EED and ERIC were searched from 2001 to August 2005; the keywords were provided. The lists of included studies from relevant Cochrane Reviews were also evaluated. Experts in the field were contacted for additional relevant studies

XVC: The author did not state how the validity assessment was performed

XDC: The author did not state how the papers were selected for the review, or how many reviewers performed the selection

XDE: The author did not state how the data were extracted for the review, or how many reviewers performed the data extraction

XCS: A narrative synthesis was provided

XDS: The author reported that the studies differed by age group, outcomes measured, and type and length of intervention. The papers were summarised by the target group and type of intervention

XRR: Fourteen studies (n=12,840) were included: 12 RCTs (n=8,925) and 2 non-randomised controlled trials (n=3,915). Studies that targeted high-risk groups. The *Keil Obesity Prevention Study*[™] evaluated an exercise programme for children and home visit support for parents, while the El Paso Catch study targeted American-Indian children aged 8 to 10 years. Both demonstrated a positive effect on

overweight (statistical results not reported). In contrast, the "Pathway" study (that also targeted American-Indian children) and an obesity programme for inactive girls called "New Moves" did not demonstrate significant effects. Studies that aimed to increase physical activity. Two studies demonstrated a significant effect on the prevalence of obesity (statistical results not reported): the "Medical College of Georgia FitKid Project" which involved a healthy snack, physical activity and coaching, and a "Dance for Health" programme. Two studies did not demonstrate a significant effect on overweight: the "Promoting lifestyles activities in youths" and the "New Moves" studies. Studies that aimed to decrease physical inactivity. The "San Jose" and the "Planet Health" studies both encouraged children to reduce the amount of time spent in front of the TV, and both reported positive effects on overweight. Studies that focused on nutrition. One study aimed to reduce the intake of carbonated drinks: "The Christchurch obesity prevention projects in schools". However, no significant difference in body mass index was observed between the intervention and control groups. Studies that focused on physical activity and diet. Six studies aimed to increase physical activity and improve diet: the "Planet Health" study and "Keil Obesity Prevention Study" demonstrated at least some positive effects, whereas the "Active Programme Promoting Lifestyle in Schools", the "Be Smart", the "Pathway" and the "Nebraska" studies did not have a significant effect on overweight

XCL: Overall, half of the studies demonstrated significant effects, suggesting that school-based interventions are important to help reduce the prevalence of overweight or obesity

XCM: The inclusion criteria were clearly reported. The author searched a number of databases, although it is not clear whether the search was limited to English language publications, which might have introduced the potential for language bias. However, the author contacted experts in the field for additional studies, and this might have helped limit publication bias. The validity of the included studies was not adequately assessed and taken into account, thus the results from these studies may not be reliable. The number of reviewers involved in the review process was not reported. Details of the included studies were presented, although more detailed information on the interventions and any statistical analyses would have been useful. No information was given about what happened in the control groups. The narrative synthesis of the studies was appropriate given the differences between them. Despite the limitations of this review, the very general conclusion appears to reflect the results

XIM: Practice: The author did not state any implications for practice other than that all children should be offered prevention services. Research: The author stated that more research is needed to understand how school-based interventions may effectively prevent paediatric obesity in different groups

Lopez L, Audisio Y, Berra S. Effectiveness of **population-based interventions on the prevention** of overweight in children and adolescents. *Med Clin (Barc)* 2010;135(10):462-9.

Ref ID: 283

Abstract: **This study aimed to assess the available scientific evidence on the effectiveness or cost-effectiveness of interventions to prevent obesity, carried out in child and adolescent population.** We conducted a systematic review, searching 10 databases and other resource directories for the period January 1998-July 2008. We assessed study quality and extracted and summarized information that met the established criteria. Results included 40 studies that evaluated interventions showing mostly components of physical activity, nutrition and education. We found no evaluations of cost-effectiveness. Thirteen studies resulted in a significant reduction in favor of intervention in some of the anthropometric measurements. In conclusion, some interventions showed an impact in preventing weight gain. However, it is weak, since most studies have not had the expected result, were heterogeneous and of short duration. 2009 Elsevier Espana, S.L. All rights reserved

Lowry KW, Sallinen BJ, Janicke DM. The effects of **weight management programs** on self-esteem in pediatric overweight populations. *J Pediatr Psychol*

2007;32(10):1179-95.

Ref ID: 767

Abstract: OBJECTIVE: Review published findings on self-esteem and pediatric overweight, and changes in self-esteem subsequent to weight management programs. METHODS: We used PsycInfo and MedLine searches to identify peer-reviewed journal articles examining self-esteem changes following participation in weight management programs. RESULTS: Data regarding the relationship between self-esteem and obesity is mixed. Factors that place overweight children "at-risk" for low self-esteem include early adolescence, female gender, identification with majority cultural standards of body shape, exposure to teasing and peer victimization, a history of greater parental control over feeding, and internal attributions about weight status. Data from intervention studies suggest positive effects on self-esteem across settings. Components related to self-esteem improvements include weight change, parent involvement, and group intervention format. CONCLUSIONS: Well-designed, longitudinal studies using multidimensional measures of self-esteem, and following CONSORT guidelines are needed to confirm and expand these findings. Emphasis should be placed on examining mediators and moderators of self-esteem change. [References: 86]

Luckner H, Gericke CA, Moss J. Meta-analysis of interventions to prevent overweight and obesity in children and adults. Obesity Reviews 2010;Conference: 11th International Congress on Obesity, ICO 2010 Stockholm Sweden. Conference Start: 20100711 Conference End: 20100715. Conference Publication:(var.pagings):452. Ref ID: 311

Abstract: Introduction: The rising prevalence of overweight and obesity is a global concern. Policy decision-makers need to be informed about robust evidence on the most effective strategies to prevent weight gain. The aim of this study was to quantify the best evidence available concerning interventions that measured reductions in body mass index (BMI) and/or percentage of body fat (%BF) in normal and overweight populations across all age groups. Methods: The Cochrane Database of Systematic Reviews, the Database of Abstracts of Reviews of Effects (DARE) and PubMed were searched for well-conducted systematic reviews. Full-text articles were extracted and all studies that assessed prevention programs and measured BMI and/or %BF as outcomes were reviewed. These were grouped for comparison by intervention type and age. Studies in each group were pooled through a meta-analysis applying a random effects model. Results: Fifty three studies were pooled across ten comparison groups. In children, the highest reduction in BMI was achieved through reduced TV watching [-0.33 kg/m², 95% CI -0.49, 0.16]. On the other hand, physical activity, education, nutrition or combinations of these were less effective, only partially significant and all highly heterogeneous. Education was the only effective intervention for adults, reducing %BF by 1.22%, 95% CI -1.92, 0.52). Conclusion: There is limited evidence for some small but significant reductions in outcomes. Reduced TV watching for children appears to be the most promising strategy. However, future evaluation of prevention trials should focus on improving data reporting, since the imputation of effect estimates may contribute largely to the observed heterogeneity

Magnus A, Haby MM, Carter R, Swinburn B. The cost-effectiveness of removing television advertising of high-fat and/or high-sugar food and beverages to Australian children. Int J Obes 2009;33(10):1094-102. Ref ID: 1670

Ref ID: 1670

Abstract: XST: This is an economic evaluation that meets the criteria for inclusion on NHS EED. If you would like us to consider prioritising the writing of a critical abstract for this economic evaluation please e-mail: CRD-NHSEED@york.ac.uk quoting the Accession Number of this record. Please note that priority is given to fast track requests from the UK National Health Service
CO1: Australia

Martin A, Saunders DH, Shenkin SD, Sproule J. Lifestyle intervention for improving school achievement in overweight or obese children and adolescents. Cochrane Database of Systematic Reviews 2012.

Ref ID: 809

Abstract: This is the **protocol for a review** and there is no abstract. The objectives are as follows: To assess whether lifestyle interventions (in the areas of diet, physical activity, sedentary behaviour and behavioural therapy) improve school achievement, cognitive function and future success in overweight or obese children and adolescents

McAuley KA, Taylor RW, Farmer VL, Hansen P, Williams SM, Booker CS, et al. **Economic evaluation** of a community-based obesity prevention program in children: the APPLE project. *Obesity* 2010;18(1):131-6.

Ref ID: 1528

Abstract: XST: This is an economic evaluation that meets the criteria for inclusion on NHS EED. If you would like us to consider prioritising the writing of a critical abstract for this economic evaluation please e-mail: CRD-NHSEED@york.ac.uk quoting the Accession Number of this record. Please note that priority is given to fast track requests from the UK National Health Service

CO1: New Zealand

McGovern L, Johnson JN, Paulo R, Hettinger A, Singhal V, Kamath C, et al. Clinical review: **treatment of pediatric obesity**: a systematic review and meta-analysis of randomized trials. *The Journal of clinical endocrinology and metabolism* 2008;93(12):4600-5.

Ref ID: 404

Abstract: CONTEXT: The efficacy of treatments for pediatric obesity remains unclear. OBJECTIVE: **We performed a systematic review of randomized trials to estimate the efficacy of nonsurgical interventions for pediatric obesity.** DATA SOURCES: Librarian-designed search strategies of nine electronic databases from inception until February 2006, review of reference lists from published reviews, and content expert advice provided potentially eligible studies. STUDY SELECTION: Eligible studies were randomized trials of overweight children and adolescents assessing the effect of nonsurgical interventions on obesity outcomes. DATA EXTRACTION: Independently and in duplicate, reviewers assessed the quality of each trial and collected data on interventions and outcomes. DATA SYNTHESIS: Of 76 eligible trials, 61 had complete data for meta-analysis. Short-term medications were effective, including sibutramine [random-effects pooled estimate of body mass index (BMI) loss of 2.4 kg/m² with a 95% confidence interval (CI) of 1.8-3.1; proportion of between-study inconsistency not due to chance (I(2) = 30%) and orlistat (BMI loss = 0.7 kg/m²; CI = 0.3-1.2; I(2) = 0%). Trials that measured the effect of physical activity on adiposity (i.e. percent body fat and fat-free mass) found a moderate treatment effect (effect size = -0.52; CI = -0.73 to -0.30; I(2) = 0%), whereas trials measuring the effect on BMI found no significant effect (effect size = -0.02; CI = -0.21 to 0.18; I(2) = 0%), but reporting bias may explain this finding. Combined lifestyle interventions (24 trials) led to small changes in BMI. CONCLUSIONS: Limited evidence supports the short-term efficacy of **medications and lifestyle interventions**. The long-term efficacy and safety of pediatric obesity treatments remain unclear

McGovern L, Johnson JN, Paulo R, Hettinger A, Singhal V, Kamath C, et al. **Treatment of pediatric obesity**: A systematic review and meta-analysis of randomized trials. *J Clin Endocrinol Metab* 2008;93(12):4600-5.

Ref ID: 435

Abstract: Context: The efficacy of treatments for pediatric obesity remains unclear. Objective: **We performed a systematic review of randomized trials to estimate the efficacy of nonsurgical interventions for pediatric obesity.** Data Sources: Librarian-designed search strategies of nine electronic databases from inception until February 2006, review of reference lists from published reviews, and content expert advice provided potentially eligible studies. Study Selection: Eligible studies were randomized trials of overweight children and adolescents assessing the effect of nonsurgical interventions on obesity outcomes. Data Extraction: Independently and in duplicate, reviewers assessed the quality of each trial and collected data on interventions and outcomes. Data Synthesis: Of 76 eligible trials, 61 had complete data for meta-analysis. Short-term medications were effective, including sibutramine [random-

effects pooled estimate of body mass index (BMI) loss of 2.4 kg/m² with a 95% confidence interval (CI) of 1.8-3.1; proportion of between-study inconsistency not due to chance (I^2) = 30%] and orlistat (BMI loss = 0.7 kg/m²; CI = 0.3-1.2; I^2 = 0%). Trials that measured the effect of physical activity on adiposity (i.e. percent body fat and fat-free mass) found a moderate treatment effect (effect size = -0.52; CI = -0.73 to -0.30; I^2 = 0%), whereas trials measuring the effect on BMI found no significant effect (effect size = -0.02; CI = -0.21 to 0.18; I^2 = 0%), but reporting bias may explain this finding. Combined lifestyle interventions (24 trials) led to small changes in BMI. Conclusions: Limited evidence supports the short-term efficacy of **medications and lifestyle interventions**. The long-term efficacy and safety of pediatric obesity treatments remain unclear. Copyright 2008 by The Endocrine Society

Mernagh P, Coleman K, Cumming J, Green T, Harris J, Paech D, et al. **Cost-effectiveness analysis** of public health interventions to prevent obesity in New Zealand. Value in Health 2011;Conference: ISPOR 14th Annual European Congress Madrid Spain. Conference Start: 20111105 Conference End: 20111108. Conference Publication:(var.pagings):A382.

Ref ID: 189

Abstract: OBJECTIVES: **To provide evidence to assist decision making and cost-effective investment in population-based public health interventions designed to prevent obesity and obesity-related health problems in New Zealand.** The findings will inform policy makers about the relative merits of different investments, with a view to reducing the prevalence of a range of chronic health problems. METHODS: Following a systematic review of literature, a cost-utility analysis was conducted using a lifetime model to rank the cost-effectiveness of selected intervention scenarios in the New Zealand setting. In all, 1- scenarios across six interventions were considered; six interventions considered the whole New Zealand population, two of which considered separate estimates of the cost-effectiveness relevant to the Maori and the Pacific populations individually. For each intervention, a simulation model estimated the increase in BMI for individuals exposed to the intervention and for those not exposed. The model then calculated the likelihood of individuals in each group contracting any of fourteen BMI-related chronic illnesses, and the consequential survival and quality of life. From this, the quality adjusted years of life gained from the intervention were estimated. Similarly the additional cost of the intervention group was estimated by considering the cost of the intervention itself, and the lifetime costs of healthcare in relation to the fourteen chronic conditions for both the intervention and control groups. Increases in expenditure due to increased life expectancy were also considered. RESULTS: The ten scenarios ranged from highly cost-effective to not offering good value. Four of the interventions appeared highly cost-effective at less than NZ\$10,000 per QALY gained. CONCLUSIONS: The most cost-effective interventions for obesity prevention would appear to be a school-based programme for children and general health screening and advice for adults in a primary care setting, though all were highly sensitive to duration of benefit and discounting

Min HP, Kinra S, Ward KJ, White B, Viner RM. **Metformin** for obesity in children and adolescents: A systematic review. Diabetes Care 2009;32(9):1743-5.

Ref ID: 361

Abstract: OBJECTIVE - **To summarize the efficacy of metformin in reducing BMI and cardiometabolic risk in obese children and adolescents without diabetes.** RESEARCH DESIGN AND METHODS - We performed a systematic review and meta-analysis of randomized controlled trials (RCTs). Double-blind RCTs of ≥ 6 months duration in obese subjects age ≤ 19 years without diabetes were included. Our primary outcomes of interest include changes in BMI and measures of insulin sensitivity. RESULTS - Five trials met inclusion criteria (n = 320 individuals). Compared with placebo, metformin reduced BMI by 1.42 kg/m² (95% CI 0.83-2.02) and homeostasis model assessment insulin of resistance (HOMA-IR) score by 2.01 (95% CI 0.75-3.26). CONCLUSIONS - Metformin appears to be moderately efficacious in reducing BMI and insulin resistance in hyperinsulinemic obese children and adolescents in the short term. Larger, longerterm studies in different populations are

needed to establish its role in the treatment of overweight children. 2009 by the American Diabetes Association

Monasta L, Batty GD, Macaluso A, Ronfani L, Lutje V, Bavcar A, et al. Interventions for the prevention of overweight and obesity in preschool children: A systematic review of randomized controlled trials. *Obesity Reviews* 2011;12(501):e107-e118.

Ref ID: 150

Abstract: The objective of this study was to analyse interventions for the prevention of overweight and obesity in children under 5 years of age. We carried out a systematic review focusing exclusively on randomized controlled trials (RCTs). Data sources include Medline, Cochrane Library, EMBASE, CINHALL, PsychInfo and Web of Science. Data were extracted from seventeen articles describing seven RCTs identified through electronic search, screening of references in systematic reviews, own files and contact with authors. RCTs were assessed with the Jadad scale. Four trials were carried out in preschool settings, one with an exclusive educational component, two with an exclusive physical activity component and one with both. Two trials were family-based, with education and counselling for parents and children. The remaining trial was carried out in maternity hospitals, with a training intervention on breastfeeding. None of the interventions had an effect in preventing overweight and obesity. The failure to show an effect may be due to the choice of outcomes, the quality of the RCTs, the suboptimal implementation of the interventions, the lack of focus on social and environmental determinants. More rigorous research is needed on interventions and on social and environmental factors that could impact on lifestyle. 2010 The Authors. *obesity reviews* 2010 International Association for the Study of Obesity

Moodie M, Haby M, Wake M, Gold L, Carter R. Cost-effectiveness of a family-based GP-mediated intervention targeting overweight and moderately obese children. *Economics and Human Biology* 2008;6(3):363-76.

Ref ID: 2033

Abstract: XST: This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn

XFU: Not stated

XOP: Haby MM, Vos T, Carter R, Moodie M, Markwick A, Magnus A, Tay-Teo K, Swinburn B. New approaches to assessing the health benefit from obesity interventions in children and adolescents: methodologies and a specific example from the assessing cost-effectiveness in obesity (ACE-Obesity) project. *International Journal of Obesity* 2006; 30: 1463-1475. McCallum Z, Wake M, Gerner B, Harris C, Gibbons K, Gunn J, Waters E, Baur L. Can Australian general practitioners tackle childhood overweight/obesity? Methods and processes from the LEAP randomised controlled trial. *Journal of Paediatric Child Health* 2005; 41: 488-494

CO1: Australia

Moodie M, Haby M, Galvin L, Swinburn B, Carter R. Cost-effectiveness of active transport for primary school children: Walking School Bus program. *International Journal of Behavioral Nutrition and Physical Activity* 2009;6:63.

Ref ID: 2042

Abstract: XST: This is an economic evaluation that meets the criteria for inclusion on NHS EED. If you would like us to consider prioritising the writing of a critical abstract for this economic evaluation please e-mail: CRD-NHSEED@york.ac.uk quoting the Accession Number of this record. Please note that priority is given to fast track requests from the UK National Health Service

CO1: Australia

Moodie M, Haby MM, Swinburn B, Carter R. Assessing cost-effectiveness in obesity: Active transport program for primary school children: TravelSMART Schools Curriculum program. *Journal of Physical Activity and Health* 2011;8(4):503-15.

Ref ID: 1098

Abstract: XST: This is an economic evaluation that meets the criteria for inclusion on

NHS EED. If you would like us to consider prioritising the writing of a critical abstract for this economic evaluation please e-mail: CRD-NHSEED@york.ac.uk quoting the Accession Number of this record. Please note that priority is given to fast track requests from the UK National Health Service
CO1: Australia

Moodie ML, Carter RC, Swinburn BA, Haby MM. **The cost-effectiveness of Australia's Active After-School Communities program**. *Obesity* 2010;18(8):1585-92.

Ref ID: 1287

Abstract: XST: This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn

XFU: Funded by the Victorian Government Department of Human Services, Australia

CO1: Australia

Nelson TF, Stovitz SD, Thomas M, LaVoi NM, Bauer KW, Neumark-Sztainer D. Do youth sports **prevent pediatric obesity**? A systematic review and commentary. *Current Sports Medicine Reports* 2011;10(6):360-70.

Ref ID: 80

Abstract: Sport is a promising setting for obesity prevention among youth, but little is known about whether it prevents obesity. **We reviewed research comparing sport participants with nonparticipants on weight status, physical activity, and diet**. Among 19 studies, we found no clear pattern of association between body weight and sport participation. Among 17 studies, we found that sport participants are more physically active than those who do not participate. We found seven studies that compared the diet of sport participants with non-participants. These studies reported that youth involved in sport were more likely to consume fruits, vegetables, and milk, and also more likely to eat fast food and drink sugar-sweetened beverages and consume more calories overall. It is unclear from these results whether sports programs, as currently offered, protect youth from becoming overweight or obese. Additional research may foster understanding about how sport, and youth sport settings, can help promote energy balance and healthy body weight. Copyright 2011 by the American College of Sports Medicine

Nguyen B, Kornman KP, Baur LA. A review of **electronic interventions for prevention and treatment of overweight and obesity in young people**. *Obesity Reviews* 2011;12(501):e298-e314.

Ref ID: 169

Abstract: **The objective of this systematic review is to provide a qualitative comparison of interactive electronic media interventions for the prevention or treatment of obesity and/or obesity-related behaviours in children and adolescents**. Literature searches of 12 databases from the earliest publication date until March 2010 were conducted. Twenty-four studies in which children and/or adolescents interacted with electronic interventions delivered as adjunct or sole interventions for the prevention or treatment of obesity and/or obesity-related behaviours met the inclusion criteria. Fifteen focussed on obesity prevention and nine on treatment interventions. The average study quality design score was 45%. Most studies demonstrated some form of significant outcome (e.g. reported changes in dietary and/or physical activity behaviours) in participants receiving interactive electronic interventions, with 11 out of 15 studies leading to positive changes in measured or reported adiposity outcomes. In 87% of studies, the effects of interactive electronic interventions were not separately evaluated from other intervention components. These results should be viewed with caution because of the overall poor quality of the studies. Studies were mostly conducted in the USA, largely in minority populations, and the direct transferability of interventions to other populations is unclear. Further high quality research is needed in this area to accurately inform the evidence base. 2011 The Authors. *obesity reviews* 2011 International Association for the Study of Obesity

Nixon CA, Moore HJ, Douthwaite W, Gibson EL, Vogele C, Kreichauf S, et al. Identifying effective behavioural models and behaviour change strategies underpinning pre-school- and school-based obesity prevention interventions aimed at 4-6-year-olds: A systematic review. *Obesity Reviews* 2012;13(SUPPL. 1):106-17.

Ref ID: 46

Abstract: The aim of this comprehensive systematic review was to identify the most effective behavioural models and behaviour change strategies, underpinning pre-school- and school-based interventions aimed at preventing obesity in 4-6-year-olds. Searching was conducted from April 1995 to April 2010 using MEDLINE, EMBASE, CINAHL, PsycINFO and The Cochrane Library. Epidemiological studies relevant to the research question with controlled assignment of participants were included in the review, if they had follow-up periods of 6 months or longer. Outcomes included markers of weight gain; markers of body composition; physical activity behaviour changes and dietary behaviour changes. Twelve studies were included in the review. The most commonly used model was social cognitive theory (SCT)/social learning theory (SLT) either as a single model or in combination with other behavioural models. Studies that used SCT/SLT in the development of the intervention had significant favourable changes in one, or more, outcome measures. In addition, interventions that (i) combined high levels of parental involvement and interactive school-based learning; (ii) targeted physical activity and dietary change; and (iii) included long-term follow-up, appeared most effective. It is suggested that interventions should also be focused on developing children's (and parents') perceived competence at making dietary and physical changes. 2012 The Authors. *obesity reviews* 2012 International Association for the Study of Obesity

No author indicated. Lifestyle interventions for overweight children and adolescents: A meta-analysis. *Journal of Sport & Exercise Psychology* Vol 30(3), Jun 2008, pp 435-436 2008;(3):Jun-436.

Ref ID: 2334

Abstract: The primary purpose of the study was to conduct a meta-analysis to empirically examine the efficacy of lifestyle interventions in the treatment of overweight children. A secondary purpose was to identify potential moderator variables. Based on their findings, the authors advanced several recommendations for future pediatric lifestyle intervention studies. These recommendations include the adoption of standard guidelines for follow-up assessment points, the use of weight outcome measures that take into account height, and, finally, the reporting of information that would improve the meaningfulness of research findings to clinicians. It was also suggested that future research should focus on identifying the optimal length and intensity of treatment required to produce long-term changes in weight status in pediatric populations. (PsycINFO Database Record (c) 2012 APA, all rights reserved)

Norman GJ, Zabinski MF, Adams MA, Rosenberg DE, Yaroch AL, Atienza AA. A review of eHealth interventions for physical activity and dietary behavior change. *Am J Prev Med* 2007;33(4):336-45.

Ref ID: 773

Abstract: OBJECTIVE: To review eHealth intervention studies for adults and children that targeted behavior change for physical activity, healthy eating, or both behaviors. DATA SOURCES: Systematic literature searches were performed using five databases: MEDLINE, PsychInfo, CINAHL, ERIC, and the Cochrane Library to retrieve articles. STUDY INCLUSION AND EXCLUSION CRITERIA: Articles published in scientific journals were included if they evaluated an intervention for physical activity and/or dietary behaviors, or focused on weight loss, used randomized or quasi-experimental designs, measured outcomes at baseline and a follow-up period, and included an intervention where participants interacted with some type of electronic technology either as the main intervention or an adjunct component. All studies were published between 2000 and 2005. RESULTS: Eighty-six publications were initially identified, of which 49 met the inclusion criteria (13 physical activity publications, 16 dietary behaviors publications, and 20 weight loss or both physical activity and diet publications), and represented 47 different studies. Studies were described on multiple dimensions, including sample characteristics, design, intervention, measures, and results. eHealth interventions were superior to comparison groups for 21 of 41

(51%) studies (3 physical activity, 7 diet, 11 weight loss/physical activity and diet). Twenty-four studies had indeterminate results, and in four studies the comparison conditions outperformed eHealth interventions. CONCLUSIONS: Published studies of eHealth interventions for physical activity and dietary behavior change are in their infancy. Results indicated mixed findings related to the effectiveness of eHealth interventions. Interventions that feature interactive technologies need to be refined and more rigorously evaluated to fully determine their potential as tools to facilitate health behavior change. [References: 72]

Nowicka P, Savoye M. **Strategies that motivate children and their families to take positive action:** Empowering self efficacy and change. International Journal of Pediatric Obesity 2010;Conference: 19th European Childhood Obesity Group Meeting 'Moving Towards Health' Dublin Ireland. Conference Start: 20090917 Conference End: 20090919. Conference Publication:(var.pagings):25-7.
Ref ID: 292

Abstract: Introduction Management of childhood obesity is commonly based on lifestyle interventions in which nutrition, physical activity, and behavior modification are main targets. To motivate children and their families to incorporate lifestyle interventions, treatment models use different psychological models, such as behavior modification, cognitive behavior therapy, motivational interviewing and family therapy. **This paper identifies current challenges in motivational issues in the field of childhood obesity such as clinicians' frustrations with obesity counseling, lack of patient motivation or parent involvement and patient non-compliance and high drop out levels.** In addition, examples of strategies how to motivate children and their families are presented from two successful programs: one intensive - Bright Bodies Weight Management Program (BB) and one less-intensive - Standardized Obesity Family Therapy (SOFT). Both programs are family-based and originated from an outpatient pediatric obesity clinic of a university hospital. However, the content of the programs and the motivational strategies employed differ indicating that it is possible to enhance motivation in many ways. Motivation for whom and how? Motivation is a challenge in the field of childhood obesity, both for clinicians and families. This can be concluded from a recently published comprehensive systematic review of primary care physicians' knowledge, attitudes, beliefs and practices regarding childhood obesity (1). The survey showed that almost all physicians believed they had a low self-efficacy in their treatment of obesity. Particularly in the use of behavioural management strategies, guidance in parenting techniques and addressing family conflict, physicians expressed a high interest in additional training. Indeed, additional training seems of great importance because physicians who were trained rated themselves significantly more competent. This might be of even greater importance because physicians considered obesity counseling frustrating and not professionally gratifying. The most important barriers identified by physicians were patient-related barriers such as lack of patient motivation or parent involvement, and patient non-compliance (1). One of the most important goals of the treatment is that the family returns to the clinic. This should be highly motivating for the clinician and also an indicator that a family is interested in the program. However, drop out rates in childhood obesity are high. In eighteen randomized controlled trials of lifestyle interventions for treating obesity in children in Cochrane review from 2003 drop out ranged from 7% to 41% with an average of 21.2% (2). The 2009 Cochrane Review shows that many studies still dealt with high dropout rates; only 31 studies out of the 64 included, reported follow up of more than 80% of the baseline participants (3). What makes people change? In the field of obesity, there is an ongoing debate about whether changes in nutrition (decrease in energy intake) or physical activity (increase of energy expenditure) contribute most to treatment success (weight loss/decrease in BMI). An equally interesting question might be what motivates the patients to take positive actions. In a widely cited survey of psychotherapy outcome studies, therapeutic alliance was estimated as a stronger predictor of successful outcome in psychotherapy than the method employed (4). Interestingly, many studies show that it is the patient's perception of the alliance as opposed to that of the clinicians which matters most (5,6), justifying the need to gain systematic feedback from the patient rather than relying on therapist judgments. Strikingly, the quality of the therapeutic process may increase patients' hope for change. Research has shown that if a pa-

tient can be encouraged to believe change is possible then this is a major contribution to a successful outcome (7). This further emphasizes the necessity of clinicians' continued education, especially in motivational techniques that may increase clinicians' self-efficacy in and optimism for change.

How to motivate through action - Bright Bodies Bright Bodies is a family-based, lifestyle intervention that has demonstrated impressive long term results on psychosocial well being, body composition and insulin resistance in overweight children (8-11). In this intensive program children attend the active phase (BMI decrease is goal) of the program with a caregiver or parent twice per week for six months or longer if they desire. Motivation through active participation The minimum activity that each participant completes is 100 minutes per week (two 50-minute sessions) during the active phase and 100 minutes twice per month during the maintenance phase. In order to reach this goal the child is involved in a variety of fun, high-intensity games, obstacle courses, basketball, flag football, sprinting games, and basic sport drills. Motivational tools to encourage regular attendance include games in which the children accumulate points for each exercise class attended. The nutrition education component of the weight management program uses a non-diet approach that emphasizes low-fat, nutrient-dense foods of moderate portion sizes. The group leader increases motivation by having a contest every two to three months (alternating topic chosen) in which the families will vote on the best ideas or ways parents showed support for their child's weight management efforts. Motivation through behaviour modification The behavior modification classes encompass topics provided from the Smart Moves Workbook, a curriculum developed for overweight children and used in Bright Bodies studies. Sample topics included "Ready, Set, Goal!", "Risky Business: Identifying High-risk Situations," "Bullies, Teasers, and Other Annoying People," and "Oops I Slipped Understanding a Relapse." Children learn self-awareness, goal setting, stimulus control, coping skills training (CST), cognitive behavior strategies, and contingency management. CST includes communication skills training, which includes social skills training and assertiveness training, social problem solving, conflict resolution, and cognitive behavior modification (2-15). Motivation through parental support, education, and empowerment In addition to parents attending the nutrition topics, parents attend a support group that further emphasizes the parents' role in modeling healthy behavior change. In this informal support group parents air their concerns and gain support from other parents experiencing similar situations. The facilitator guides the discussions, allowing other parents to help with the solution. The primary goal of this class is to empower the parents and give them a sense of "ownership" to the program.

How to motivate through relation - SOFT What distinguishes Standardized Obesity Family Therapy (SOFT) from other weight management programs are the focus on family interactions as a source for motivating to lifestyle changes and a limited number of sessions (three to four per year) (12). Another unique feature of SOFT is the multidisciplinary team approach starting with the first visit of the family's when the entire team is present. During subsequent visits part of the team (at least two team members) meets the family. The efficacy of SOFT has been documented in several studies showing positive effects on the children and adolescents with respect to degree of obesity, physical fitness, self-esteem, and family functioning (13-15). Involve parents - to motivate children The motivational process starts with an invitation letter to the family once the referral letter has reached the unit, emphasizing the involvement of the whole family and outlining the family-based framework of SOFT. Early in treatment strengths of the family are reinforced by involving the family system in constructive mutual cooperation and support. By engaging many family members, the child will experience help in motivation and control of healthy routines not once a week, but every hour of the child's daily life. Thus, in SOFT the increased involvement of family can replace the intense treatment frequency. Assume and enhance motivation A basic premise in SOFT is that the families that come for treatment want change. Following the tradition of solution focused therapy, the team promotes cooperation by first connecting the present to the future and pointing out to the families what they are already doing that is useful/good for them. Once the family realizes that the team is on their side, the team members can suggest something new that might benefit them. SOFT's experience is that families seek help because they want to change their situation and have tried many changes that have not worked. The assumption that they will resist change is

misguided. Instead, prejudice on the part of the therapist could generate a self fulfilling prophecy of an unsuccessful outcome (16). Other motivational strategies that are used in SOFT include adoption of a non-blaming position, use of scaling questions, reframing, highlighting expectations to the problem and focusing on small positive changes towards the goal. Summary and future research This paper has described important issues in increasing motivation for obesity treatment both in clinicians and families. Further efforts are needed to increase patient motivation or parent involvement and decrease non-compliance. Behaviour modification and family therapy are examples of two promising models that can empower self efficacy and change

Nowicka P, Flodmark CE. **Family in pediatric obesity management**: A literature review. International Journal of Pediatric Obesity Vol 3(Suppl 1), 2008, pp 44-50
2008;(Suppl 1):2008, pp-50.

Ref ID: 2335

Abstract: A dramatic increase in prevalence of pediatric obesity has occurred in most countries over the past few decades. This is of particular significance given the fact that overweight children and adolescents are at increased risk for multiple medical co-morbidities, as well as psychosocial and behavioral difficulties. While considerable attention has recently been paid to identifying obesity and the importance of associated co-morbidities, there has been less focus on considerations related to effective interventions. Interventions aimed at childhood obesity include prevention and treatment. Both prevention and treatment need improvement to be useful in the clinical setting. Few investigators have demonstrated that treatment is effective. **The aim of this review is to examine the effectiveness of family-based interventions in obese pediatric subjects and to explore what specific components of family-based programs are of particular significance when treating obese children.** A literature search was performed and relevant studies are presented. A majority of the studies support the use of family-based treatment. Furthermore, to develop a fully interactive model, more focus is needed on the specific techniques used in evidence-based programs. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)

O'Brien A. **"Web-based weight management programs for children and adolescents: a systematic review of randomized controlled trial studies"** by An, Hayman, Park, Dusaj, and Ayres (July-September 2009, Vol 32, No 3, pp 222-240). ANS 2010;Advances in nursing science. 33(1):2-Mar.

Ref ID: 229

Ohkawara K, Tanaka S, Miyachi M, Ishikawa-Takata K, Tabata I. A dose-response relation between **aerobic exercise and visceral fat reduction**: systematic review of clinical trials. Int J Obes 2007;31(12):1786-97.

Ref ID: 770

Abstract: OBJECTIVE: It has been suggested that exercise has preferential effects on visceral fat reduction. However, the dose-response effect remains unclear because of limited evidence from individual studies. **The purpose of this study was to systematically review the current literature to establish whether reduction of visceral fat by aerobic exercise has a dose-response relationship.** METHODS: A database search was performed (PubMed, 1966-2006) with appropriate keywords to identify studies exploring the effects of aerobic exercise as a weight loss intervention on visceral fat reduction. Visceral fat reduction was expressed as the percentage of visceral fat change per week (%DeltaVF/w). The energy expenditure by aerobic exercise was expressed as Sigma (metabolic equivalents x h per week (METs x h/w)). RESULTS: Nine randomized control trials and seven non-randomized control trials were selected. In most of the studies, the subjects performed aerobic exercise generating 10 METs x h/w or more. Among all the selected groups (582 subjects), visceral fat decreased significantly ($P < 0.05$) in 17 groups during the intervention, but not in the other 4 groups. There was no significant relationship between METs x h/w from aerobic exercise and %DeltaVF/w in all the selected groups. However, when subjects with metabolic-related disorders were not included (425 subjects), METs x h/w from aerobic exercise had a significant relationship with %DeltaVF/w ($r = -0.75$).

Moreover, visceral fat reduction was significantly related to weight reduction during aerobic exercise intervention, although a significant visceral fat reduction may occur without significant weight loss. CONCLUSION: These results suggest that at least 10 METs x h/w in aerobic exercise, such as brisk walking, light jogging or stationary ergometer usage, is required for visceral fat reduction, and that there is a dose-response relationship between aerobic exercise and visceral fat reduction in obese subjects without metabolic-related disorders. [References: 50]

Onakpoya IJ, Posadzki PP, Watson LK, Davies LA, Ernst E. **The efficacy of long-term conjugated linoleic acid (CLA) supplementation on body composition in overweight and obese individuals**: A systematic review and meta-analysis of randomized clinical trials. *Eur J Nutr* 2012;51(2):127-34.

Ref ID: 10

Abstract: Introduction: Numerous supplements containing conjugated linoleic acid (CLA) are presently being promoted for body weight reduction. **The aim of this systematic review is to evaluate the evidence for or against the long-term efficacy of CLA.** Methods: Electronic searches were conducted to identify relevant randomized clinical trials (RCTs). No restrictions in age, time, or language were imposed. Studies had to be at least 6 months in duration. Three reviewers independently determined the eligibility of studies. Two reviewers independently extracted data and assessed the reporting quality of all RCTs. Results: Fifteen RCTs were identified, and seven were included. Four of the included RCTs had serious flaws in the reporting of their methodology. A meta-analysis revealed a statistically significant difference in weight loss favouring CLA over placebo (mean difference: -0.70 kg; 95% confidence interval: -1.09, -0.32). Our meta-analysis also revealed a small significant difference in fat loss favouring CLA over placebo (MD: -1.33 kg; 95% CI: -1.79, -0.86; $I^2 = 54\%$). The magnitude of these effects is small, and the clinical relevance is uncertain. Adverse events included constipation, diarrhea, and soft stools. Conclusion The evidence from RCTs does not convincingly show that CLA intake generates any clinically relevant effects on body composition on the long term. Springer-Verlag 2011

Oude LH, Baur L, Jansen H, Shrewsbury VA, O'Malley C, Stolk RP, et al. **Interventions for treating obesity in children**. *Cochrane Database of Systematic Reviews* 2009;(1):CD001872.

Ref ID: 723

Abstract: BACKGROUND: Child and adolescent obesity is increasingly prevalent, and can be associated with significant short- and long-term health consequences. OBJECTIVES: **To assess the efficacy of lifestyle, drug and surgical interventions for treating obesity in childhood.** SEARCH STRATEGY: We searched CENTRAL on The Cochrane Library Issue 2 2008, MEDLINE, EMBASE, CINAHL, PsycINFO, ISI Web of Science, DARE and NHS EED. Searches were undertaken from 1985 to May 2008. References were checked. No language restrictions were applied. SELECTION CRITERIA: We selected randomised controlled trials (RCTs) of lifestyle (i.e. dietary, physical activity and/or behavioural therapy), drug and surgical interventions for treating obesity in children (mean age under 18 years) with or without the support of family members, with a minimum of six months follow up (three months for actual drug therapy). Interventions that specifically dealt with the treatment of eating disorders or type 2 diabetes, or included participants with a secondary or syndromic cause of obesity were excluded. DATA COLLECTION AND ANALYSIS: Two reviewers independently assessed trial quality and extracted data following the Cochrane Handbook. Where necessary authors were contacted for additional information. MAIN RESULTS: We included 64 RCTs (5230 participants). Lifestyle interventions focused on physical activity and sedentary behaviour in 12 studies, diet in 6 studies, and 36 concentrated on behaviorally orientated treatment programs. Three types of drug interventions (metformin, orlistat and sibutramine) were found in 10 studies. No surgical intervention was eligible for inclusion. The studies included varied greatly in intervention design, outcome measurements and methodological quality. Meta-analyses indicated a reduction in overweight at 6 and 12 months follow up in: i) lifestyle interventions involving children; and ii) lifestyle interventions in adolescents with or without the addition of orlistat or sibutramine. A range of adverse ef-

fects was noted in drug RCTs. **AUTHORS' CONCLUSIONS:** While there is limited quality data to recommend one treatment program to be favoured over another, this review shows that combined behavioural lifestyle interventions compared to standard care or self-help can produce a significant and clinically meaningful reduction in overweight in children and adolescents. In obese adolescents, consideration should be given to the use of either orlistat or sibutramine, as an adjunct to lifestyle interventions, although this approach needs to be carefully weighed up against the potential for adverse effects. Furthermore, high quality research that considers psychosocial determinants for behaviour change, strategies to improve clinician-family interaction, and cost-effective programs for primary and community care is required. [References: 273]

Perez-Escamilla R, Obbagy J, Altman J, Essery E, McGrane M, Wong Y, et al. **Dietary Energy Density and Body Weight in Adults and Children:** A Systematic Review. *Journal of the Academy of Nutrition & Dietetics* 2012;112(5):671-84. Ref ID: 2162

Abstract: Energy density is a relatively new concept that has been identified as an important factor in body weight control in adults and in children and adolescents. The Dietary Guidelines for Americans 2010 encourages consumption of an eating pattern low in energy density to manage body weight. **This article describes the systematic evidence-based review conducted by the 2010 Dietary Guidelines Advisory Committee (DGAC), with support from the US Department of Agriculture's Nutrition Evidence Library, which resulted in this recommendation. An update to the committee's review was prepared for this article.** PubMed was searched for English-language publications from January 1980 to May 2011. The literature review included 17 studies (seven randomized controlled trials, one nonrandomized controlled trial, and nine cohort studies) in adults and six cohort studies in children and adolescents. Based on this evidence, the 2010 Dietary Guidelines Advisory Committee concluded that strong and consistent evidence in adults indicates that dietary patterns relatively low in energy density improve weight loss and weight maintenance. In addition, the committee concluded that there was moderately strong evidence from methodologically rigorous longitudinal cohort studies in children and adolescents to suggest that there is a positive association between dietary energy density and increased adiposity. This review supports a relationship between energy density and body weight in adults and in children and adolescents such that consuming diets lower in energy density may be an effective strategy for managing body weight

Padwal R, Klarenbach S, Wiebe N, Hazel M, Birch D, Karmali S, et al. **Bariatric surgery:** A systematic review of the clinical and economic evidence. *J Gen Intern Med* 2011;26(10):1183-94. Ref ID: 129

Abstract: Context: Use of bariatric surgery for severe obesity has increased dramatically. Objective: **To systematically review 1. the clinical efficacy and safety, 2. cost-effectiveness of bariatric surgery, and 3. the association between number of surgeries performed (surgical volume) and outcomes.** Data sources: MEDLINE (from 1950), EMBASE (from 1980), CENTRAL, EconLit, EURON EED, Harvard Center for Risk Analysis, trial registries and HTA websites were searched to January 2011. Study selection: 1. Randomized controlled trials (RCTs) and 2. cost-utility and cost-minimisation studies comparing a contemporary bariatric surgery (i.e., adjustable gastric banding, Roux-en-Y gastric bypass, sleeve gastrectomy) to another contemporary surgical comparator or a non-surgical treatment or 3. Any study reporting the association between surgical volume and outcome. Data extraction: Outcomes included changes in weight and obesity-related comorbidity, quality of life and mortality, surgical complications, resource utilization, and incremental cost-utility. Results: RCT data evaluating mortality and obesity-related comorbidity endpoints were lacking. A small RCT of 16 patients reported that adjustable gastric banding reduced weight by 27% ($p < 0.01$) compared to diet-treated controls over 40 weeks. Six small RCTs reported comparisons of commonly used, contemporary procedures. Gastric banding reduced weight to a lower extent than gastric bypass and sleeve gastrectomy and resulted in shorter operating times, fewer serious complications, lower weight loss efficacy, and more frequent reoperations compared to gastric by-

pass. Sleeve gastrectomy and gastric bypass reduced weight to a similar extent. A 2-year RCT in 50 adolescents reported that gastric banding substantially reduced weight compared to lifestyle modification (35 kg vs. 3 kg; $p < 0.001$). Based on findings of 14 observational studies, higher volume centers and surgeons had lower mortality and complication rates. Surgery resulted in long-term incremental cost-utility ratios of \$ <1,000-\$40,000 (2009 USD) per quality-adjusted-life-year compared with non-surgical treatment. Conclusions: Contemporary bariatric surgery appears to result in sustained weight reduction with acceptable costs but rigorous, longer-term (≥ 5 year) data are needed and a paucity of RCT data on mortality and obesity related comorbidity is evident. Procedure-specific variations in efficacy and risks exist and require further study to clarify the specific indications for and advantages of different procedures. 2011 Society of General Internal Medicine

Park MH, Morgan A, Kinra S. **Pharmacotherapy for the treatment of obesity in children and adolescents**: A systematic review. *Obesity Reviews* 2010; Conference: 11th International Congress on Obesity, ICO 2010 Stockholm Sweden. Conference Start: 20100711 Conference End: 20100715. Conference Publication:(var.pagings):231. Ref ID: 314

Abstract: Introduction: Anti-obesity drug (AOD) prescribing among children and adolescents has increased dramatically in recent years. AODs have been shown to be of benefit for weight loss and slowing disease progression in obese adults, but evidence for their effects in young people is not well established. **This systematic review and meta-analysis of randomized trials investigated the efficacy and safety of AOD use in children.** Methods: We carried out electronic searches of Ovid MEDLINE (1950 - May 2009); EMBASE (1980 - May 2009); the Cochrane Register of Controlled Trials; and the metaRegister of Controlled Trials. Inclusion criteria: double-blind, randomized placebo-controlled trials of orlistat, sibutramine or rimonabant; duration ≥ 6 months. Subjects: obese children (aged ≤ 19 years). Outcomes: change in body mass index (BMI kg/m^2); indicators of cardio-metabolic risk; side effects. Data were double extracted. Results: Seven trials met inclusion criteria. Treatment with orlistat over 12 months ($n = 533$) reduced BMI by 0.86 kg/m^2 (95% CI 0.46 - 1.26) more than placebo. Sibutramine treatment over 6 months ($n = 715$) reduced BMI by 1.66 kg/m^2 (0.76 - 2.55) more than placebo. Sibutramine was associated with improvements in lipids and insulin resistance, but increased pulse rate and systolic blood pressure (+2.1 mm Hg; 95% CI 0.7 - 3.6). Drop-out rates were similar in treatment and control groups. Conclusion: Orlistat and sibutramine appear to be efficacious in the short-term management of childhood obesity, and side effects are well tolerated. However, long-term effects of their use are unknown. Large, long-term studies are needed to establish the role of pharmacotherapy in the treatment of childhood obesity

Pelone F, Specchia ML, Veneziano MA, Capizzi S, Bucci S, Mancuso A, et al. **Economic impact of childhood obesity on health systems**: a systematic review. *Obesity Reviews* 2012;13(5):431-40. Ref ID: 571

Abstract: **The primary purpose of this study is to analyse the costs related to childhood obesity (CO) with reference to different models of healthcare systems.** A systematic review of the economic impact of CO on healthcare systems was conducted by searching the main electronic scientific databases. Cost-of-illness (COI) analyses of children aged under 18 years who had been diagnosed as overweight or obese published up to July 2010 were considered. Short- and long-term consequences of CO were taken into account. In order to appraise the quality of the included studies, the British Medical Journal referees' checklist was used. About 3,844 COI analyses were initially found and 10 were finally considered in the current review: two studies referred to Beveridge and eight referred to Voluntary health insurance models. No studies have been conducted within a Bismarck model. Six studies considered inpatient costs, four studies estimated outpatient and primary care costs and seven studies considered pharmaceutical costs. The average quality of the included analyses was medium. The analysis confirmed the significance of CO related costs and the heterogeneity among available studies, which made it impossible to compare the

Pereira G, Machado M, Meura P, Menezes C, Chica D, Vasconcelos F. **Interventions in the school environment in order to reduce obesity**: A systematic review of the Bank of Thesis from the Higher Education Personnel Improvement Coordination (CAPES). Ann Nutr Metab 2011;Conference: 11th European Nutrition Conference, FENS 2011 Madrid Spain. Conference Start: 20111026 Conference End: 20111029. Conference Publication:(var.pagings):313.

Ref ID: 12

Abstract: Introduction: Objectives: **A systematic review of literature on studies about interventions in schools environment in Brazil aiming the reduction of obesity and life changes habits in schools was done.** Method/Design: Thesis and dissertations published in the Higher Education Personnel Improvement Coordination (CAPES) from 1987 to 2010 were investigated. The studies were selected based on the reading and analysis of their titles and summaries. to perform a quality analysis based on the Downs & Black (1998) protocol. Results: From the 107 thesis and dissertations selected. 48 duplicated studies and 53 that did not fit the criteria of selection were excluded. The analysis of the 6 remaining studies demonstrated that the intervention period varied from 4 months to 3 years. It was also observed in 4 out of the 6 studies the applied intervention was on nutritional education. The 2 others investigated the encouragement of physical activity and the increase of milk consumption. Positive results regarding the nutritional education in schools were found in 2 studies. whereas the others found no significant changes after intervention. suggesting the need of longer run interventions. It was not possible to combine studies in a meta-analysis due to methodological diversity of the same. Conclusions: We concluded that there are few intervention studies conducted in Brazil within the Graduate Programs and CAPES and there is the need to expand interest in the subject. given the importance of the topic. Lasting longer interventions and the monitoring of outcomes are necessary to evaluate the effectiveness of these actions. It is also suggested the relocation of the CAPES Thesis Database searching system. combining key words in between and guiding institutions to provide the studies in order to facilitate access to information

Perez-Morales ME, Bacardi-Gascon M, Jimenez-Cruz A, Armendariz-Anguiano A.

Randomized controlled **school based interventions to prevent childhood obesity**: Systematic review from 2006 to 2009. Arch Latinoam Nutr 2009;59(3):253-9.

Ref ID: 323

Abstract: The prevalence of overweight and obesity in children has increased to epidemic levels. Several authors have suggested that school is the best place for effective prevention programs. **The purpose of this systematic review was to assess the evidence of randomized controlled trials concerning long-term (equal to or more than 9 months) observations at schools and published in the database of MEDLINE/Pubmed from January 1st of 2006 to February 28 of 2009.** Ten studies were analyzed. Overall, regarding the design, the intervention components, target population age, intervention periods, educational techniques, cultural characteristics of the population, and outcome measures were heterogeneous. The results were modest. The outcomes showed a positive impact on lifestyle as intakes of fruits and vegetables increased, consumption of sugar-sweetened carbonated beverages decreased, and sedentary behaviors and adiposity were reduced. Generally, there were no significant reductions for BMI. These results warrant more strategies to achieve parental involvement, reduction of dropouts, and additional studies assessing different educational systems and cultural environments, including those in Latin America. Longer follow-up periods are also required

Picot J, Jones J, Colquitt JL, Gospodarevskaya E, Loveman E, Baxter L, et al. The clinical effectiveness and cost-effectiveness of **bariatric (weight loss) surgery for obesity**: A systematic review and economic evaluation. Health Technol Assess 2009;13(41):ix-214.

Ref ID: 346

Abstract: Objectives: **To assess the clinical effectiveness and cost-effectiveness of**

bariatric surgery for obesity. Data sources: Seventeen electronic databases were searched [MEDLINE; EMBASE; PreMedline In-Process & Other Non-Indexed Citations; The Cochrane Library including the Cochrane Systematic Reviews Database, Cochrane Controlled Trials Register, DARE, NHS EED and HTA databases; Web of Knowledge Science Citation Index (SCI); Web of Knowledge ISI Proceedings; PsycInfo; CRD databases; BIOSIS; and databases listing ongoing clinical trials] from inception to August 2008. Bibliographies of related papers were assessed and experts were contacted to identify additional published and unpublished references. Review methods: Two reviewers independently screened titles and abstracts for eligibility. Inclusion criteria were applied to the full text using a standard form. Interventions investigated were open and laparoscopic bariatric surgical procedures in widespread current use compared with one another and with non-surgical interventions. Population comprised adult patients with body mass index (BMI) ≥ 30 and young obese people. Main outcomes were at least one of the following after at least 12 months follow-up: measures of weight change; quality of life (QoL); perioperative and postoperative mortality and morbidity; change in obesity-related comorbidities; cost-effectiveness. Studies eligible for inclusion in the systematic review for comparisons of Surgery versus Surgery were RCTs. For comparisons of Surgery versus Non-surgical procedures eligible studies were RCTs, controlled clinical trials and prospective cohort studies (with a control cohort). Studies eligible for inclusion in the systematic review of cost-effectiveness were full cost-effectiveness analyses, cost-utility analyses, cost-benefit analyses and cost-consequence analyses. One reviewer performed data extraction, which was checked by two reviewers independently. Two reviewers independently applied quality assessment criteria and differences in opinion were resolved at each stage. Studies were synthesised through a narrative review with full tabulation of the results of all included studies. In the economic model the analysis was developed for three patient populations, those with BMI ≥ 40 ; BMI ≥ 30 and < 40 with Type 2 diabetes at baseline; and BMI ≥ 30 and < 35 . Models were applied with assumptions on costs and comorbidity. Results: A total of 5386 references were identified of which 26 were included in the clinical effectiveness review: three randomised controlled trials (RCTs) and three cohort studies compared surgery with nonsurgical interventions and 20 RCTs compared different surgical procedures. Bariatric surgery was a more effective intervention for weight loss than non-surgical options. In one large cohort study weight loss was still apparent 10 years after surgery, whereas patients receiving conventional treatment had gained weight. Some measures of QoL improved after surgery, but not others. After surgery statistically fewer people had metabolic syndrome and there was higher remission of Type 2 diabetes than in non-surgical groups. In one large cohort study the incidence of three out of six comorbidities assessed 10 years after surgery was significantly reduced compared with conventional therapy. Gastric bypass (GBP) was more effective for weight loss than vertical banded gastroplasty (VBG) and adjustable gastric banding (AGB). Laparoscopic isolated sleeve gastrectomy (LISG) was more effective than AGB in one study. GBP and banded GBP led to similar weight loss and results for GBP versus LISG and VBG versus AGB were equivocal. All comparisons of open versus laparoscopic surgeries found similar weight losses in each group. Comorbidities after surgery improved in all groups, but with no significant differences between different surgical interventions. Adverse event reporting varied; mortality ranged from none to 10%. Adverse events from conventional therapy included intolerance to medication, acute cholecystitis and gastrointestinal problems. Major adverse events following surgery, some necessitating reoperation, included anastomosis leakage, pneumonia, pulmonary embolism, band slippage and band erosion. Bariatric surgery was cost-effective in comparison to non-surgical treatment in the reviewed published estimates of cost-effectiveness. However, these estimates are likely to be unreliable and not generalisable because of methodological shortcomings and the modelling assumptions made. Therefore a new economic model was developed. Surgical management was more costly than non-surgical management in each of the three patient populations analysed, but gave improved outcomes. For morbid obesity, incremental cost-effectiveness ratios (ICERs) (base case) ranged between 2000 and 4000 per QALY gained. They remained within the range regarded as cost-effective from an NHS decision-making perspective when assumptions for deterministic sensitivity analysis were changed. For BMI ≥ 30 and < 40 , ICERs

were 18,930 at two years and 1397 at 20 years, and for BMI ≥ 30 and <35 , ICERs were 60,754 at two years and 12,763 at 20 years. Deterministic and probabilistic sensitivity analyses produced ICERs which were generally within the range considered cost-effective, particularly at the long twenty year time horizons, although for the BMI 30-35 group some ICERs were above the acceptable range. Conclusions: Bariatric surgery appears to be a clinically effective and cost-effective intervention for moderately to severely obese people compared with non-surgical interventions. Uncertainties remain and further research is required to provide detailed data on patient QoL; impact of surgeon experience on outcome; late complications leading to reoperation; duration of comorbidity remission; resource use. Good-quality RCTs will provide evidence on bariatric surgery for young people and for adults with class I or class II obesity. New research must report on the resolution and/or development of comorbidities such as Type 2 diabetes and hypertension so that the potential benefits of early intervention can be assessed. 2009 Queen's Printer and Controller of HMSO. All rights reserved

Pocock M, Trivedi D, Wills W, Bunn F, Magnusson J. Parental perceptions regarding healthy behaviours for preventing overweight and obesity in young children: A systematic review of qualitative studies. *Obesity Reviews* 2010;11(5):338-53.

Ref ID: 267

Abstract: Evidence is increasingly pointing towards the importance of early life strategies to prevent childhood overweight and obesity. This systematic review synthesizes qualitative research concerning parental perceptions regarding behaviours for preventing overweight and obesity in young children. During May and June 2008, a range of electronic databases were searched and together with lateral searching techniques 21 studies were identified for review. Data extraction and synthesis using thematic content analysis revealed six organizing and 32 finer level themes. These related to child factors, family dynamics, parenting, knowledge and beliefs, extra-familial influences and resources and environment. Themes were mapped to a socioecological model which illustrated how factors at individual, interpersonal, community, organizational and societal levels interact in complex ways to impact on parental perceptions about healthy behaviours for preventing child overweight. Although parents suggested several ideas to promote healthy child weight-related behaviours, many of their views concerned perceived barriers, some of which may be amenable to practical intervention. Furthermore, intergenerational influences on parental health beliefs and knowledge suggest that health promotion strategies may be more effective if directed at the wider family, rather than parents alone. Significantly, many parents believed strategies to promote healthy weight should start early in a child's life. 2009 International Association for the Study of Obesity

Pratt JS, Lenders CM, Dionne EA, Hoppin AG, Hsu GL, Inge TH, et al. Best practice updates for pediatric/adolescent weight loss surgery. *Obesity* 2009;17(5):901-10.

Ref ID: 710

Abstract: The objective of this study is to update evidence-based best practice guidelines for pediatric/adolescent weight loss surgery (WLS). We performed a systematic search of English-language literature on WLS and pediatric, adolescent, gastric bypass, laparoscopic gastric banding, and extreme obesity published between April 2004 and May 2007 in PubMed, MEDLINE, and the Cochrane Library. Keywords were used to narrow the search for a selective review of abstracts, retrieval of full articles, and grading of evidence according to systems used in established evidence-based models. In light of evidence on the natural history of obesity and on outcomes of WLS in adolescents, guidelines for surgical treatment of obesity in this age group need to be updated. We recommend modification of selection criteria to include adolescents with BMI ≥ 35 and specific obesity-related comorbidities for which there is clear evidence of important short-term morbidity (i.e., type 2 diabetes, severe steatohepatitis, pseudotumor cerebri, and moderate-to-severe obstructive sleep apnea). In addition, WLS should be considered for adolescents with extreme obesity (BMI ≥ 40) and other comorbidities associated with long-term risks. We identified >1,085 papers; 186 of the most relevant were reviewed in detail. Regular updates of evidence-based recommendations for best practices in pediatric/adolescent WLS are required to address advances in technology and the growing

evidence base in pediatric WLS. Key considerations in patient safety include carefully designed criteria for patient selection, multidisciplinary evaluation, choice of appropriate procedure, thorough screening and management of comorbidities, optimization of long-term compliance, and age-appropriate fully informed consent. [References: 83]

Pyle SA. A meta-analysis of **treatments for childhood and adolescent obesity**. Dissertation Abstracts International: Section B: The Sciences and Engineering Vol 67(7-B),2007, pp 4093 2007;(7-B):2007, pp.

Ref ID: 2358

Abstract: The prevalence of childhood obesity has been rising at an astounding rate in the United States over the last three decades. Obesity among children and adolescents can have a profoundly negative impact on both immediate and long-term physical, psychological and social wellbeing. Qualitative reviews of available treatments for this health concern abound, but few studies that synthesize the results quantitatively exist. Haddock and colleagues (1994) published a meta-analysis of treatment studies performed prior to 1990 (Review 1). **The current study is an update of the original meta-analysis examining the weight loss trials conducted with children and adolescents published during the 15 year period from 1990 to 2004** (Review 2). Results indicate that, compared to a minimal treatment or no treatment control group, treatments have a significant effect for change in obesity status in both fixed and random effects models ($d=0.61$, 95% CI=0.46--0.75, $p<.001$ and $d=0.95$, 95% CI=0.48--1.42, $p<.001$ respectively). Comprehensive treatments (fixed effects $d=0.88$, 95% CI=0.67--1.09, $p<.001$; random effects $d=1.14$, 95% CI=0.49--1.80, $p=0.001$) and diets that focused on decreasing fat intake (fixed effects $d=1.35$, 95% CI=1.05--1.65, $p<.001$; random effects $d=1.34$, 95% CI=0.41--2.28, $p=0.005$) produced the largest treatment/control effect sizes. In treatment/treatment comparisons, only the use of pharmacotherapy consistently produced significant effects in both fixed ($d=0.45$, 95% CI=0.15--0.76, $p=0.004$) and random effects ($d=0.42$, 95% CI=0.03--0.82, $p=0.037$) models. Comparisons between Review 1 and Review 2 indicated similar findings in relation to effect sizes of overall treatment/control comparisons, comprehensive treatments, and school-based treatments between the two meta-analyses. Findings highlight the limited innovations in treatment efficacy that have occurred over the past 15 years. (PsycINFO Database Record (c) 2012 APA, all rights reserved)

Reinehr T. **Effectiveness of lifestyle intervention in overweight children**. Proc Nutr Soc 2011;70(4):494-505.

Ref ID: 2173

Abstract: Therapy of choice in obese children and adolescents is lifestyle intervention based on nutrition education, behavioural treatment and exercise treatment. Its efficacy even after the end of intervention has been proven by several randomised-controlled trials and meta-analyses including a recent Cochrane review. However, randomised-controlled trials are likely to overestimate the effectiveness. Studies under normal day-to-day circumstances demonstrated only a very moderate effect on weight loss (<10% success rate 2 years after the onset of intervention). A reduction of >0.5 SDS-BMI (which means a stable weight over 1 year in growing children) is associated with an improvement of cardiovascular risk factors, while improvements of quality of life seem independent of the degree of weight loss. Younger children and less overweight children particularly profit from lifestyle interventions in contrast to extremely obese adolescents. Recent studies demonstrated that involving parents is crucial for success, suggesting that parents and children and not children alone should be the primary target of interventions. Failures in weight reduction are attributed not only to a lack of motivation but also to other aspects particular to the genetic background. The techniques, more than the contents, of an intervention influence the treatment outcome. Besides behavioural therapy, systemic and solution-focused treatments are important. Future longitudinal research should focus on the identification of which children and adolescents profit from which kind of intervention, in order to be able to tailor specific treatment approaches. Studies under normal day-to-day circumstances are necessary to prove the benefit of this kind of intervention

Saavedra JM, Escalante Y, Garcia-Hermoso A. **Improvement of aerobic fitness in obese children:** A meta-analysis. *International Journal of Pediatric Obesity* 2011;6(3-4):169-77.

Ref ID: 103

Abstract: **The purpose of this meta-analysis was to assess the effectiveness of diverse interventions in aerobic fitness adjusted for weight in obese children.** A computerized search of seven databases was carried out using keywords. Effect sizes and 95% confidence intervals were calculated, and the heterogeneity of the studies was assessed using Cochran's Q statistic applied to the effect size means. Nine studies were selected for review as satisfying the inclusion criteria (n patients = 311). The conclusions of the meta-analysis were: (i) the programs based on aerobic exercise have a moderate positive effect on aerobic fitness; (ii) the programs based on aerobic exercise lasting more than 12 weeks (3000 minutes total exercise time) in three sessions per week (more than 60 min per session) obtain better results; (iii) overall, combined programs fail to achieve improvements in aerobic fitness; and (iv) few randomized clinical trials have been conducted. 2011 Informa Healthcare

Safron M, Cislak A, Gaspar T, Luszczynska A. **Effects of School-based Interventions Targeting Obesity-Related Behaviors and Body Weight Change:** A Systematic Umbrella Review. *Behav Med* 2011;37(1):15-25.

Ref ID: 2179

Abstract: **This umbrella review analyzed the effectiveness of school-based interventions, applying body weight or behavioral outcomes.** Twelve systematic reviews and five meta-analyses (examining 196 trials) were included. Results indicated that the effectiveness was usually referred to body weight or BMI change, with 1/3 of trials (per review) indicating significant changes in BMI or obesity prevalence. Meta-analyses yielded mixed effects (three showed significant changes in weight, BMI, or obesity). Interventions were more effective if they aimed at a reduction of sedentary behaviors, incorporated moderate-to-vigorous physical activity, and parental involvement. The inclusion of a nutrition component moderated the long-term effects of interventions. More efficient interventions lasted at least 3 months, did not aim solely at environmental changes, and were implemented in general population. Female and younger participants may benefit more from the interventions. The role of psychological theories and behavioral or cognitive mediators was rarely investigated

Sahota P, Wordley J, Woodward J. **Effective behavioural components in child and adolescent weight management programmes.** *Obesity Reviews* 2011;Conference: 18th European Congress on Obesity, ECO 2011 Istanbul Turkey. Conference Start: 20110525 Conference End: 20110528. Conference Publication:(var.pagings):57-8.

Ref ID: 184

Abstract: Introduction: Despite clinical guidance recommending the inclusion of behavioural components in child weight management programmes, there is little evidence on the effectiveness of specific techniques and strategies. Methods: A literature review was undertaken using a series of stages based on systematic review methodology and included evidence from studies undertaken in all settings, involving children 5-18 years, parents and family. Primary outcomes of studies included weight/bmi-related measures and diet, physical activity and psychological wellbeing as secondary outcomes. The evidence summarises the results from 74 papers consisting of 12 reviews, 7 qualitative studies and 55 interventions. Results: The application of behavioural components was hindered due to a lack of standardisation in the definition of behavioural therapy (self-monitoring, stimulus control, goal-setting, use of rewards and problem-solving) and cognitive behavioural therapy (addressing faulty cognitive restructuring, self-instructional training techniques) within programmes. Behavioural components were often poorly described and not evaluated. For interventions aimed at children under 12 years it is more effective to teach behavioural techniques such as monitoring of diet and physical activity, identification of problem behaviours, goal-setting, use of praise, contracting and rewards, role modelling, positive social reinforcement and coping strategies to parents. Adolescents benefited from coping skills training and structured programmes including parental behavioural components such as coping strategies, role modelling, stimulus control and use of rewards. Conclusion: Behavioural Therapy techniques are commonly

used as a 'package' in effective programmes however specific techniques are poorly evaluated. Few studies utilise CBT and the lack of description and evaluation prevents conclusions on effectiveness to be drawn

Sargent GM, Pilotto LS, Baur LA. **Components of primary care interventions to treat childhood overweight and obesity**: A systematic review of effect. *Obesity Reviews* 2011;12(501):e219-e235.

Ref ID: 145

Abstract: The primary care setting presents an opportunity for intervention of overweight and obese children but is in need of a feasible model-of-care with demonstrated effectiveness. The aims were to (i) identify controlled interventions that treated childhood overweight or obesity in either a primary care setting or with the involvement of a primary healthcare professional and (ii) examine components of those interventions associated with effective outcomes in order to inform future intervention trials in primary care settings. Major health and medicine databases were searched: MEDLINE, CINAHL, EMBASE, Cochrane Reviews, CENTRAL, DARE, PsychINFO and ERIC. Articles were excluded if they described primary prevention interventions, involved surgical or pharmacological treatment, were published before 1990 or not published in English. Twenty-two papers describing 17 studies were included. Twelve studies reported at least one significant intervention effect. Comparison of these 12 interventions provides evidence for: training for health professionals before intervention delivery; behaviour change options (including healthy diet, activity and sedentary behaviour); effecting behaviour change via a combination of counselling, education, written resources, support and motivation; and tailoring intensity according to whether behavioural, anthropometric or metabolic changes are the priority. These components are practicable to future intervention studies in primary care. 2010 The Authors. *obesity reviews* 2010 International Association for the Study of Obesity

Sbruzzi G, Eibel B, Cesa CC, Ribeiro RA, Barbiero SM, Petkowicz R, et al. **Educational and behavioral interventions in childhood obesity**: A systematic review with meta-analysis of randomized clinical trials. *Eur Heart J* 2011;Conference: European Society of Cardiology, ESC Congress 2011 Paris France. Conference Start: 20110827 Conference End: 20110831. Conference Publication:(var.pagings):502-3.

Ref ID: 196

Abstract: Purpose: Obesity in childhood is increasing worldwide. Many obesity prevention strategies to attain changes in behaviors for nutrition and physical activity were reported in children, but their results in anthropometric indexes, blood pressure and metabolic parameters are divergent. Thus, the aim of this study was to assess the effectiveness of educational and behavioral interventions to prevent or treat childhood obesity by a systematic review and meta-analysis of randomized clinical trials (RCTs). Methods: A comprehensive search of databases (PubMed, EMBASE and Cochrane CENTRAL) and references from studies and reviews included (from inception until March 2010) was conducted, without language restriction. Eligible studies were RCTs enrolling children 6- 12 years-old which assessed the impact of educational and behavioral interventions longer than 6 months on body mass index (BMI), waist circumference, blood pressure, total cholesterol (TC) and high-density lipoprotein cholesterol (HDL). Two reviewers independently carried out data extraction and quality assessment. Calculations were performed using a random-effect model. Pooled-effect estimates were obtained using the final values. Results: Of 18,014 articles retrieved, 24 RCTs (22,444 patients) were included. Educational and behavioral interventions vs. no intervention altered: A) waist circumference (3 comparisons; n:535) by -3.33cm (95%CI -6.19, -0.47; I² 58%), B) BMI (17 comparisons; n:17,285) by -0.11kg/m²(95%CI -0.34, 0.12; I² 89%), C) systolic blood pressure (5 comparisons; n:6065) by -1.01mmHg (95%CI -2.47, 0.46; I² 79%), D) diastolic blood pressure by -1.10mmHg (95% CI -3.36, 1.16; I² 93%), E) TC (4 comparisons; n:6763) by -1.4mg/dL (95%CI -5.7, 2.9; I² 85%) and F) HDL by 1.06mg/dL (95%CI -0.48, 2.6; I² 78%). Conclusion: Educational and behavioral interventions programs longer than 6 months caused significant effect on waist circumference, but no significant effect on BMI, blood pressure, TC and HDL compared with control. New

approaches, including trials with more comprehensive strategies are needed to improve these results

Seo D-C, Sa J. A Meta-Analysis of **Obesity Interventions** Among U.S. Minority Children. *J Adolesc Health* 2010;46(4):309-23.

Ref ID: 281

Abstract: Purpose: **To quantitatively evaluate the efficacy of interventions designed to prevent or treat obesity among U.S. minority children using meta-analytic techniques.** Methods: A total of 40 intervention trials involving 10,725 children aged 6-19 years were examined. Results: Interventions with more components showed a higher mean effect size than those with fewer components: among 32 controlled trials, $d = .07$ for one-component ($n = 6$); $d = .08$ for two-component ($n = 15$); $d = .33$ for three-component ($n = 10$); and $d = .71$ for four-component ($n = 1$) interventions. Interventions with parental involvement ($n = 22$, $d = .21$) and lifestyle interventions ($n = 14$, $d = .34$) showed a greater mean effect size than those without parental involvement ($n = 10$, $d = .05$) or lifestyle interventions ($n = 18$, $d = .04$), despite the fact that their 90% confidence intervals overlapped. Among uncontrolled trials ($n = 8$), two-component interventions ($n = 5$) yielded $d = .86$ and three-component interventions ($n = 3$) yielded $d = .96$. Conclusions: Evidence indicates that, among U.S. minority children, obesity interventions with three or more components might be more efficacious than those using fewer components. Parental involvement, lifestyle change, culturally-based adaptation, and interactive computer programs seem to show promise in the reduction of obese minority children. 2010 Society for Adolescent Medicine

Shaya FT, Flores D, Gbarayor CM, Wang J. **School-based obesity interventions**: a literature review. *J Sch Health* 2008;78(4):189-96.

Ref ID: 754

Abstract: BACKGROUND: Childhood obesity is an impending epidemic. **This article is an overview of different interventions conducted in school settings so as to guide efforts for an effective management of obesity in children, thus minimizing the risk of adult obesity and related cardiovascular risk.** METHODS: PubMed and OVID Medline databases were searched for school-based obesity interventions with anthropometric measures in children and adolescents between the ages of 7 and 19 years from June 1986 to June 2006. Studies were reviewed by duration, type of intervention, and defined qualitative and quantitative measures, resulting in a yield of 51 intervention studies. RESULTS: The interventions ranged from 4 weeks in length to as long as 8 continuing years. In total, 15 of the intervention studies exclusively utilized physical activity programs, 16 studies exclusively utilized educational models and behavior modification strategies, and 20 studies utilized both. In addition, 31 studies utilized exclusively quantitative variables like body mass indices and waist-to-hip ratios to measure the efficacy of the intervention programs, and another 20 studies utilized a combination of quantitative and qualitative measures that included self-reported physical activity and attitude toward physical activity and the tested knowledge of nutrition, cardiovascular health, and physical fitness. A total of 40 studies achieved positive statistically significant results between the baseline and the follow-up quantitative measurements. CONCLUSIONS: No persistence of positive results in reducing obesity in school-age children has been observed. Studies employing long-term follow-up of quantitative and qualitative measurements of short-term interventions in particular are warranted. [References: 68]

Shrewsbury VA, Steinbeck KS, Torvaldsen S, Baur LA. **The role of parents in pre-adolescent and adolescent overweight and obesity treatment**: A systematic review of clinical recommendations. *Obesity Reviews* 2011;12(10):759-69.

Ref ID: 131

Abstract: **The study aims to describe clinical recommendations (i) on the role of parents in both pre-adolescent and adolescent overweight and obesity treatment; (ii) to health professionals on how to involve parents in paediatric overweight and obesity treatment and (iii) to identify deficiencies in the associated literature.** A systematic literature review was conducted in March 2010 to identify clinical practice guidelines, position or consensus statements on clinical management of paediatric overweight or obesity, developed by a national or international health professional association or

government agency, and endorsed for current use. Relevant clinical recommendations in these documents were identified via a screen for the words 'parent', 'family' and synonyms. Twenty documents were included. Most documents emphasized the importance of involving parents or the family in paediatric overweight and obesity treatment with approximately a third of documents providing separate recommendations on the role of parents/family for pre-adolescents and adolescents. The documents varied markedly with regard to the presence of recommendations on parent/family involvement in the various components of lifestyle interventions or bariatric surgery. Almost half of the documents contained recommendations to health professionals regarding interactions with parents. High-quality research is needed on age-specific techniques to optimize the involvement of parents and family members in paediatric overweight and obesity treatment. 2011 The Authors. obesity reviews 2011 International Association for the Study of Obesity

Silveira JAC, Taddei JAAC, Guerra PH, Nobre MRC. **Effectiveness of school-based nutrition education interventions to prevent and reduce excessive weight gain in children and adolescents**: A systematic review. *J Pediatr (Rio J)* 2011;87(5):382-92. Ref ID: 88

Abstract: Objective: To evaluate the effectiveness of school-based nutrition education in reducing or preventing overweight and obesity in children and adolescents.
Sources: Systematic search in 14 databases and five systematic reviews for randomized controlled trials conducted in schools to reduce or prevent overweight in children and adolescents. Body mass index and fruit and vegetable intake were used as primary and secondary measures of outcome, respectively. There was no restriction by date of publication or language, except for languages with structured logograms. We excluded studies on specific populations presenting eating disorders, dyslipidemia, diabetes, and physical or mental disabilities, as well as studies that used drugs or food supplements as components of the intervention. The assessment by title and abstract and the quality assessment were performed independently by two researchers. We used the Centre for Reviews and Dissemination's guidance for undertaking reviews in health care and the software EPPI-Reviewer 3. **Summary of the findings:** From the initially retrieved 4,809 references, 24 articles met the inclusion criteria. The extracted data show that there is evidence of positive effects on anthropometry and of increase in fruit and vegetable consumption. **Characteristics of the interventions that demonstrated effectiveness are:** duration > 1 year, introduction into the regular activities of the school, parental involvement, introduction of nutrition education into the regular curriculum, and provision of fruits and vegetables by school food services. **Conclusion:** Interventions in schools to reduce overweight and obesity, as well as to increase fruits and vegetable consumption, have demonstrated effectiveness in the best-conducted studies. Copyright 2011 by Sociedade Brasileira de Pediatria

Skouteris H, McCabe M, Swinburn B, Newgreen V, Sacher P, Chadwick P. **Parental influence and obesity prevention in pre-schoolers**: A systematic review of interventions. *Obesity Reviews* 2011;12(5):315-28. Ref ID: 151

Abstract: Obesity is difficult to reverse in older children and adults and calls have been made to implement obesity prevention strategies during the formative pre-school years. Childhood obesity experts suggest that prevention of overweight in the pre-school years should focus on parents, because parental beliefs, attitudes, perceptions and behaviours appear to contribute to children's development of excessive weight gain. While evidence suggests that parental variables may be instrumental in the development of obesity, there has been no systematic evaluation of whether intervening to change such variables will positively influence the development of excess adiposity during the pre-school years. **This paper is a conceptual and methodological review of the literature on the parental variables targeted in interventions designed to modify risk factors for obesity by promoting healthy eating and/or physical activity and/or reducing sedentary behaviours in families of children aged 2-6 years.** There were significant methodological limitations of existing studies and the scientific study of this area is in its infancy. However, the results suggest that the modification of parental variables known to be associated with obesity-promoting behaviours in

pre-school children may show promise as an obesity prevention strategy; further research is needed. 2010 The Authors. obesity reviews 2010 International Association for the Study of Obesity

Small L, Anderson D, Melnyk BM. **Prevention and early treatment of overweight and obesity in young children:** a critical review and appraisal of the evidence. *Pediatr Nurs* 2007;33(2):149-52, 155.

Ref ID: 1830

Abstract: XST: This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn

XAO: **To identify effective early treatment or prevention programmes for use in primary care for young children who are overweight or obese, or who are at risk of obesity**

XSI: Studies that compared prevention or early treatment programmes with a control or comparison programme were eligible for inclusion. Most of the included prevention studies were school-based; other studies were based in the community or an out-patient department. All treatment intervention studies were clinic-based. The studies compared a variety of interventions (e.g. information, types of dietary advice, physical activity, cognitive therapy, behaviour therapy, problem-solving skills, parental management and parenting skills) with each other or usual care. Some programmes involved parents. The duration of the interventions ranged from 2 weeks to 12 months for prevention studies and from 4 weeks to 12 months for treatment intervention studies. The studies were conducted in a variety of countries including Italy, Thailand, Britain, Germany, Israel, Austria, Australia and the USA

XPA: Studies that included young children (aged 4 to 7 years) who were overweight, obese, or at risk of obesity, were eligible for inclusion. The included studies were in children aged from 3 to 18.8 years. Treatment intervention studies recruited children through the media, schools or through referral

XOA: Studies that assessed healthy weight maintenance or weight loss were eligible for inclusion in the review

XSD: It appears from the search strategy that completed randomised controlled trials (RCTs), systematic reviews and meta-analyses were eligible for inclusion in the review. However, not all of the included studies were RCTs

XSS: MEDLINE, PsycINFO and CINAHL were searched; the search terms were reported, but the search dates were not

XVC: The authors did not explicitly state in the "Methods" section that validity was formally assessed. However, aspects of study quality including the following were assessed and reported in tables: sample size; attrition; randomisation; theoretical framework; reporting of effect size; methods used to assess the outcomes; reproducibility of the intervention; duration of follow-up; sample size estimation; and use of relevant control group. The authors did not state how the validity assessment was performed

XDC: The authors did not state how the papers were selected for the review, or how many reviewers performed the selection

XDE: The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction

XCS: The studies were grouped by intervention type (prevention or treatment) and combined in a narrative, with the focus on describing study characteristics. The results were reported as text only in tables and were not summarised in the review; no results data were reported. The authors stated it was not possible to compare the results across interventions because of differences between the studies

XDS: Differences between the studies were described in the text and other differences were apparent from the tables

XRR: Twelve studies were included: six evaluated prevention programmes (n=3,982) and six evaluated treatment programmes (n=221). All studies were classified as RCTs in the tables, but in one study the data were randomly selected from a longitudinal cohort study and the quality assessment of a second study suggested it might not have been an RCT. None of the prevention studies reported a theoretical basis to the intervention. In only one study was the duration of follow-up greater than

3 months. The studies relied upon self-reported measures of nutrition and activity. Other methodological problems include a lack of generalisability. None of the studies were set in primary care. Methodological flaws in the intervention studies included lack of reproducibility of the interventions, small sample sizes, lack of sample size calculations, lack of treatment effect size calculations and wide age range in samples

XCL: The authors'™ conclusion appears to be that there is a paucity of good-quality research evaluating interventions for overweight or at-risk young children; further research is required

XCM: The review question was defined in terms of the participants, intervention and outcomes. The inclusion criterion for study design appeared to be RCT, but not all of the included studies were RCTs. In addition, it appeared that the review wished to focus on studies set in the USA although this was not explicitly stated in the inclusion criteria. Several relevant sources were searched, but there were no attempts to minimise publication bias and it was unclear whether any language restrictions had been applied. Validity was assessed using specified criteria, although these were not explicitly described in the 'Methods'™ section of the review, and the results of this assessment tabulated. Since the methods used to select studies, assess validity and extract the data were not described, it is not known whether any efforts were made to reduce reviewer error and bias. The information about the included studies was adequate. The narrative synthesis was appropriate given the differences between the studies. There were limitations to this review, including lack of reporting of review methods and lack of precision about the inclusion criteria, but, overall, the conclusion appears to reflect the limited evidence

XIM: Practice: The authors did not state any implications for practice. Research: The authors stated that further good-quality research (such as RCTs) is required to evaluate theory-based reproducible primary care interventions for overweight or at-risk young children and their parents

Souza EA, Barbosa Filho VC, Nogueira JA, Azevedo Junior MR. **Physical activity and healthy eating in Brazilian students**: a review of intervention programs. *Cad Saude Publica* 2011;27(8):1459-71.

Ref ID: 589

Abstract: **This article provides a systematic literature review on physical activity and/or healthy eating interventions among Brazilian students.** Complete articles published from 2004 to 2009 were searched in the SciELO, MEDLINE, and CAPES electronic databases, in the articles' references, and through contacts with authors. Six studies covered nutritional interventions, another six analyzed nutrition and physical activity, and one discussed changes in body composition. Interventions produced different results according to their objectives: increase in weekly physical activity; improvement in eating habits and knowledge on nutrition; and decrease in overweight and obesity. School health promotion programs are essential for raising awareness on the relevance of health promotion and the adoption of healthy habits. However, further longitudinal studies are needed to produce evidence on sustainability of programs and healthy habits

Spurrier MB. **Preventing childhood obesity**: the effects of nutritional education on increasing fruit and vegetable consumption in preschoolers University of South Carolina; 2008.

Ref ID: 2192

Abstract: Childhood obesity is a major health problem with significant medical and psychosocial effects. Obesity is currently recognized as a national and international health care concern on multiple fronts. Prevention of obesity needs to incorporate changes in schools, communities, families, and industry. Child care and preschool settings should be a focus for environmental intervention efforts as they provide a large forum for nutritional education programs. Additionally, preschoolers are at an optimal age for positive influence of healthy eating habits as many food and nutrition-related attitudes and behavior patterns are developed during the preschool years. To increase the efficiency and effectiveness of prevention efforts, it is imperative to identify and incorporate successful preschool nutritional education programs. Although systematic reviews of interventions to prevent or treat overweight among

children exist, to date, there are no systematic reviews of interventions for nutritional education specific to preschool-aged children

The purpose of this paper was to determine the effects, through a systematic review of the literature, of nutritional education on increasing fruit and vegetable consumption in preschool-aged children. A systematic review of the literature was conducted to a sample of 13 articles. The framework of classification used was Melnyk and Fineout-Overholt's (2005) Hierarchy of Evidence. Based on this Hierarchy of Evidence, this review indicated three Level II studies, one Level III study, two Level IV studies, one level VI study, and six Level VII studies. Duration of nutrition education did not seem to be a direct factor in outcome success, although the majority of the nutritional education programs were 20 minutes per session with repetition. This review failed to support the historical belief that nutritional education must be guided by behavioral theoretical frameworks and that parental involvement is necessary for success

Further research is needed to develop programs that guide and advise providers on how children develop patterns of intake, and how to foster children's preferences and acceptance of healthful food, specifically fruit and vegetable consumption. This review highlights the need to evaluate more programs and further examine the impact of factors such as parental involvement, duration of intervention, and programming based on theoretical frameworks. Public and professional emphasis must be placed on preschool-aged promotion of wellness to decrease the prevalence and significance of childhood obesity

Steeves JA, Thompson DL, Bassett DR, Fitzhugh EC, Raynor HA. A review of different behavior modification strategies designed to reduce sedentary screen behaviors in children. *Journal of Obesity* 2012;2012:379215.

Ref ID: 563

Abstract: Previous research suggests that reducing sedentary screen behaviors may be a strategy for preventing and treating obesity in children. This systematic review describes strategies used in interventions designed to either solely target sedentary screen behaviors or multiple health behaviors, including sedentary screen behaviors. Eighteen studies were included in this paper; eight targeting sedentary screen behaviors only, and ten targeting multiple health behaviors. All studies used behavior modification strategies for reducing sedentary screen behaviors in children (aged 1-12[THIN SPACE]years). Nine studies only used behavior modification strategies, and nine studies supplemented behavior modification strategies with an electronic device to enhance sedentary screen behaviors reductions. Many interventions (50%) significantly reduced sedentary screen behaviors; however the magnitude of the significant reductions varied greatly (-0.44 to -3.1[THIN SPACE]h/day) and may have been influenced by the primary focus of the intervention, number of behavior modification strategies used, and other tools used to limit sedentary screen behaviors

Stevens CJ. Obesity prevention interventions for middle school-age children of ethnic minority: A review of the literature. *Journal for Specialists in Pediatric Nursing* 2010;15(3):233-43.

Ref ID: 224

Abstract: Purpose: The purpose of this study was to describe the current literature on interventions to reduce obesity in middle school-age children of ethnic minority. Design And Methods: A systematic review of the literature was conducted. Results: A total of eight studies matched the inclusion criteria. Findings support personal, behavioral, and environmental factors that contribute to obesity in children, yet results for ethnic minorities were inconclusive. Practice Implications: Obesity research suggests that there is merit in addressing specific factors. This review highlights the absence of prevention interventions for middle school-age children, particularly of ethnic decent. 2010, Wiley Periodicals, Inc

Summerbell CD, Moore HJ, Vogeles C, Kreichauf S, Wildgruber A, Manios Y, et al. Evidence-based recommendations for the development of obesity prevention programs targeted at preschool children. *Obesity Reviews* 2012;13(SUPPL. 1):129-32.

Ref ID: 45

Abstract: The ToyBox intervention was developed using an evidence-based ap-

proach, using the findings of four reviews. These reviews included three critical and narrative reviews of educational strategies and psychological approaches explaining young children's acquisition and formation of energy-balance related behaviours, and the management of these behaviours, and also a systematic review of behavioural models underpinning school-based interventions in preschool and school settings for the prevention of obesity in children aged 4-6 years. This paper summarises and translates the findings from these reviews into practical evidence based recommendations for researchers and policy-makers to consider when developing and implementing interventions for the prevention of overweight and obesity in young (aged 4-6 years) children. The recommendations focus on two behaviours, physical activity and sedentary behaviour, and healthy eating, and include general recommendations, intervention approaches, interventions content, and simple messages. The review also briefly examines the role that the commercial sector plays in hindering or facilitating attempts to create healthy food environments for children. This paper also recognises that childhood obesity is not an issue for the education sector alone; it needs to be tackled at a multi sectoral level, recognizing the particularly important role of local governments, nongovernment organizations and the media. 2012 The Authors. obesity reviews 2012 International Association for the Study of Obesity

Swidnicka-Siergiejko A, Wroblewski E, Andrzej D. Endoscopic treatment of obesity. Can J Gastroenterol 2011;25(11):627-33.

Ref ID: 591

Abstract: BACKGROUND: The increasing incidence of obesity and overweight among children and adolescents will be reflected by the imminent increase in the number of obese patients who require more definitive methods of treatment. There is great interest in new, safe, simple, nonsurgical procedures for weight loss. OBJECTIVE: To provide an overview of new endoscopic methods for the treatment of obesity. METHODS: An English-language literature search on endoscopic interventions, endoscopically placed devices and patient safety was performed in the MEDLINE and Cochrane Library databases. RESULTS: The literature search yielded the following weight loss methods: space-occupying devices (widely used), gastric capacity reduction, modifying gastric motor function and malabsorptive procedures. A commercially available intragastric balloon was the most commonly used device for weight loss. In specific subgroups of patients, it improved quality of life, decreased comorbidities and served as a bridge to surgery. More evidence regarding the potential benefits and safety of other commercially available intragastric balloons is needed to clarify whether they are superior to the most commonly used one. Moreover, early experiences with transoral gastroplasty, the duodenal-jejunal bypass sleeve and an adjustable, totally implantable intragastric prosthesis, indicate that they may be viable options for obesity treatment. Other agents, such as botulinum toxin and a device known as the 'butterfly', are currently at the experimental stage. CONCLUSION: New endoscopic methods for weight loss may be valuable in the treatment of obesity; however, more clinical experience and technical improvements are necessary before implementing their widespread use

Treadwell JR, Sun F, Schoelles K. Systematic review and meta-analysis of bariatric surgery for pediatric obesity. Ann Surg 2008;248(5):763-76.

Ref ID: 413

Abstract: OBJECTIVE: The prevalence of morbid obesity has risen sharply in recent years, even among pediatric patients. Bariatric surgery is used increasingly in an effort to induce weight loss, improve medical comorbidities, enhance quality of life, and extend survival. We performed a systematic review and meta-analysis of all published evidence pertaining specifically to bariatric surgery in pediatric patients. METHODS: We systematically searched MEDLINE, EMBASE, 13 other databases, and article bibliographies to identify relevant evidence. Included studies must have reported outcome data for > or =3 patients aged < or =21, representing > or =50% of pediatric patients enrolled at that center. We only included English language articles on currently performed procedures when data were separated by procedure, and there was a minimum 1-year follow-up for weight and body mass index (BMI). RESULTS: Eight studies of laparoscopic adjustable gastric banding (LAGB) reported data on 352 patients (mean BMI 45.8); 6 studies of Roux-en-Y gastric bypass

(RYGB) included 131 patients (mean BMI 51.8); 5 studies of other surgical procedures included 158 patients (mean BMI 48.8). Average patient age was 16.8 years (range, 9-21). Meta-analyses of BMI reductions at longest follow-up indicated sustained and clinically significant BMI reductions for both LAGB and RYGB. Comorbidity resolution was sparsely reported, but surgery did appear to resolve some medical conditions including diabetes and hypertension. For LAGB, band slippage and micronutrient deficiency were the most frequently reported complications, with sporadic cases of band erosion, port/tube dysfunction, hiatal hernia, wound infection, and pouch dilation. For RYGB, more severe complications have been documented, such as pulmonary embolism, shock, intestinal obstruction, postoperative bleeding, staple line leak, and severe malnutrition. CONCLUSIONS: Bariatric surgery in pediatric patients results in sustained and clinically significant weight loss, but also has the potential for serious complications

Tziomalos K, Krassas GE, Tzotzas T. The use of **sibutramine in the management of obesity and related disorders**: an update. *Vascular Health and Risk Management* 2009;5(1):441-52.

Ref ID: 706

Abstract: AIMS: **To review the major trials that evaluated the efficacy and safety of the use of sibutramine for weight loss and the impact of this agent on obesity-related disorders.** METHODS AND RESULTS: The most important articles on sibutramine up to January 2009 were located by a PubMed and Medline search. Sibutramine reduces food intake and body weight more than placebo and has positive effects on the lipid profile (mainly triglycerides and high density lipoprotein cholesterol), glycaemic control and inflammatory markers in studies for up to one year. Preliminary studies showed that sibutramine may also improve other obesity-associated disorders such as polycystic ovary syndrome, left ventricular hypertrophy, binge eating disorder and adolescent obesity. The high discontinuation rates and some safety issues mainly due to the increase in blood pressure and pulse rate have to be considered. Additionally, it has not yet been established that treatment with sibutramine will reduce cardiovascular events and total mortality. CONCLUSIONS: Sibutramine, in conjunction with lifestyle measures, is a useful drug for reducing body weight and improving associated cardiometabolic risk factors and obesity-related disorders. Studies of longer duration are required to determine the precise indications of the drug, to evaluate safety issues and to assess its efficacy on cardiovascular mortality. [References: 163]

Van Cauwenberghe E., Maes L, Spittaels H, van Lenthe FJ, Brug J, Oppert JM, et al. **Effectiveness of school-based interventions** in Europe to promote healthy nutrition in children and adolescents: systematic review of published and 'grey' literature. *The British journal of nutrition* 2010;103(6):781-97.

Ref ID: 230

Abstract: **The objective of the present review was to summarise the existing European published and 'grey' literature on the effectiveness of school-based interventions to promote a healthy diet in children (6-12 years old) and adolescents (13-18 years old).** Eight electronic databases, websites and contents of key journals were systematically searched, reference lists were screened, and authors and experts in the field were contacted for studies evaluating school-based interventions promoting a healthy diet and aiming at primary prevention of obesity. The studies were included if they were published between 1 January 1990 and 31 December 2007 and reported effects on dietary behaviour or on anthropometrics. Finally, forty-two studies met the inclusion criteria: twenty-nine in children and thirteen in adolescents. In children, strong evidence of effect was found for multicomponent interventions on fruit and vegetable intakes. Limited evidence of effect was found for educational interventions on behaviour, and for environmental interventions on fruit and vegetable intakes. Interventions that specifically targeted children from lower socio-economic status groups showed limited evidence of effect on behaviour. In adolescents, moderate evidence of effect was found for educational interventions on behaviour and limited evidence of effect for multicomponent programmes on behaviour. In children and adolescents, effects on anthropometrics were often not measured, and therefore evidence was lacking or delivered inconclusive evidence. To conclude, evidence was

found for the effectiveness of especially multicomponent interventions promoting a healthy diet in school-aged children in European Union countries on self-reported dietary behaviour. Evidence for effectiveness on anthropometrical obesity-related measures is lacking

Van Stralen MM, Yildirim M, Te Velde SJ, Brug J, Van MW, Chinapaw MJ, et al. What works in school-based energy balance behaviour interventions and what does not? A systematic review of mediating mechanisms. *Int J Obes* 2011;35(10):1251-65. Ref ID: 602

Abstract: OBJECTIVE: Obesity prevention requires effective interventions targeting the so-called energy balance-related behaviours (that is, physical activity, sedentary and dietary behaviours). To improve (cost-)effectiveness of these interventions, one needs to know the working mechanisms underlying behavioural change. Mediation analyses evaluates whether an intervention works via hypothesised working mechanisms. Identifying mediators can prompt intervention developers to strengthen effective intervention components and remove/adapt ineffective components. This systematic review aims to identify psychosocial and environmental mediators of energy balance-related behaviours interventions for youth. METHOD: Studies were identified by a systematic search of electronic databases (PubMed, Embase, PsycINFO, ERIC and SPORTDiscus). Studies were included if they (1) were school-based randomised controlled or quasi-experimental studies; (2) targeted energy balance behaviours; (3) conducted among children and adolescents (4-18 years of age); (4) written in English; and (5) conducted mediation analyses. RESULTS: A total of 24 studies were included. We found strong evidence for self-efficacy and moderate evidence for intention as mediators of physical activity interventions. Indications were found for attitude, knowledge and habit strength to be mediators of dietary behaviour interventions. The few sedentary behaviour interventions reporting on mediating effects prevented us from forming strong conclusions regarding mediators of sedentary behaviour interventions. The majority of interventions failed to significantly change hypothesised mediators because of ineffective intervention strategies, low power and/or use of insensitive measures. CONCLUSION: Despite its importance, few studies published results of mediation analysis, and more high-quality research into relevant mediators is necessary. On the basis of the limited number of published studies, self-efficacy and intention appear to be relevant mediators for physical activity interventions. Future intervention developers are advised to provide information on the theoretical base of their intervention including the strategies applied to provide insight into which strategies are effective in changing relevant mediators. In addition, future research is advised to focus on the development, validity, reliability and sensitivity of mediator measures

Van Wijnen LG, Wendel-Vos GC, Wammes BM, Bemelmans WJ. The impact of school-based prevention of overweight on psychosocial well-being of children. *Obesity Reviews* 2009;10(3):298-312. Ref ID: 1159

Abstract: XST: This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn

XAO: To assess which psychosocial effects of school-based obesity prevention programmes had been studied, summarise the methods used and determine their effects on the psychosocial well-being of children. This abstract summarises the effectiveness data

XSS: MEDLINE, EMBASE, BIOSIS Previews, SciSearch and PsycINFO were searched from January 2005 to February 2008; further details of the search strategy were available from the authors. Reference lists of published systematic reviews and meta-analyses identified through a Pubmed search from 2005 to 2006 were searched for further studies. Only studies published in English from 1990 onwards were eligible for inclusion in the review

XVC: Study quality was assessed according to the following six components, as reported in the Cochrane Collaboration Handbook: adequate sequence generation; allocation concealment; blinding; reporting of loss to follow-up; absence of selective

reporting; and absence of other biases. The authors did not state how the validity assessment was performed

XDE: The authors stated neither how data were extracted for the review nor how many reviewers performed the data extraction. The main study findings were reported. Where available, means and standard deviations were extracted for continuous outcomes and event rates for dichotomous outcomes. Where possible, standardised mean differences or odds ratios with 95% confidence intervals were calculated. Data for within-group and/or between-group differences were reported. Study authors were contacted for additional information

XRR: Seven studies were included in the review (n=1,953): five randomised controlled trials (RCTs), one controlled trial and one cohort study. Most of the studies showed a high or unclear risk of bias based on concealment, blinding and the way in which loss to follow-up was addressed in the analysis. Sample sizes ranged from 30 to 634. Follow-up duration ranged from eight months to three years. Four studies reported no statistically significant differences (net effect or change within intervention group). Five studies reported a net effect between study groups for psychosocial variables. Two out of seven studies reported a statistically significant net effect in favour of the intervention group. Psychosocial variables that were found to be influenced positively by the interventions were unhealthy weight control behaviours such as purging and using pills (one RCT of teenage girls), and peer-rated aggression and observed verbal aggression (one RCT of girls and boys with a mean age of 8.9 years)

XCL: There was insufficient evidence to assess the effects of school-based obesity prevention programmes on the psychosocial well-being of children; however, interventions integrated into the standard school curriculum appeared to show most promise

XCM: This review answered a clearly defined research question using broad inclusion criteria for study designs, interventions and outcomes. However, relevant data may have been missed and the review may have been at risk of both publication and language biases due to the inclusion of only published English-language studies. There was a potential risk of reviewer error and bias, as only one reviewer was primarily involved in the selection of studies for inclusion. The number of reviewers involved in the quality assessment of studies and extraction of data was unclear. The validity of the studies was assessed using published criteria for randomised controlled trials (although not all of the studies used this type of design); all of the studies showed some risk of bias. The studies varied considerably with respect to interventions, populations and outcome measures, which suggested that use of a narrative synthesis was justified. Overall, based on the quality and quantity of the data, and despite limitations in the review methods, the authors' cautious conclusions appear valid

XIM: Practice: The authors did not state any implications for practice. Research: The authors stated that further studies should investigate the effects of school-based obesity prevention programmes through assessment of a wide range of psychosocial variables. Both internalising and externalising problem behaviours should be assessed, including self-concept, eating disturbances and social problems. And standardised measurement instruments should be developed and validated for use in future studies

Viner RM, Hsia Y, Tomsic T, Wong IC. **Efficacy and safety of anti-obesity drugs** in children and adolescents: systematic review and meta-analysis. *Obesity Reviews* 2010;11(8):593-602.

Ref ID: 656

Abstract: We undertook a meta-analysis of randomized controlled trials to summarize the efficacy of anti-obesity drugs in reducing BMI and improving health in children and adolescents. Data sources included Medline, Embase, the Cochrane controlled trials register and other registers of controlled trials, together with reference lists of identified articles. All data sources were searched from January 1996 to July 2008. We searched for double blind randomized placebo controlled trials of approved anti-obesity drugs used in children and adolescents (age < 20) with primary obesity for > or = 6 months. Six trials, 4 of sibutramine (total patients = 686) and 2 of orlistat (n = 573) met inclusion criteria. No trials of rimonabant were identified. Com-

pared with placebo, sibutramine together with behavioural support reduced BMI by 2.20 kg/m² (95% CI: 1.57 to 2.83) and orlistat together with behavioural support reduced BMI by 0.83 kg/m² (95% CI 0.47 to 1.19). Sibutramine improved waist circumference, triglycerides and high density lipoprotein (HDL)-cholesterol, but raised systolic and diastolic blood pressure and pulse. Orlistat increased rates of gastrointestinal side-effects. We conclude that sibutramine in adolescents produces clinically meaningful reductions in BMI and waist circumference of approximately 0.63 SD, with improvements in cardiometabolic risk. Orlistat modestly reduces BMI (effect size approximately 0.24 SD) with a high prevalence of gastrointestinal adverse effects. [References: 35]

Wahi G, Parkin PC, Beyene J, Uleryk EM, Birken CS. **Effectiveness of interventions aimed at reducing screen time in children:** A systematic review and meta-analysis of randomized controlled trials. Arch Pediatr Adolesc Med 2011;165(11):979-86.

Ref ID: 85

Abstract: Objective: **To evaluate the impact of interventions focused on reducing screen time.** Data Sources: Medline, Embase, Cochrane Central Register of Controlled Trials, PsycINFO, ERIC, and CINAHL through April 21, 2011. Study Selection: Included studies were randomized controlled trials of children aged 18 years or younger with interventions that focused on reducing screen time. Intervention: Efforts to reduce screen time. Main Outcome Measures: The primary outcome was body mass index (BMI); the secondary outcome was screen time (hours per week). Results: A total of 1120 citations were screened, and 13 studies were included in the systematic review. Study samples ranged in age (3.9-11.7 years) and size (21- 1295 participants). Interventions ranged in length (1-24 months) and recruitment location (5 in schools, 2 in medical clinics, 1 in a community center, and 5 from the community). For the primary outcome, the meta-analysis included 6 studies, and the difference in mean change in BMI in the intervention group compared with the control group was -0.10 (95% confidence interval [CI], -0.28 to 0.09) (P=.32). The secondary outcome included 9 studies, and the difference in mean change from baseline in the intervention group compared with the control group was -0.90 h/wk (95% CI, -3.47 to 1.66 h/wk) (P=.49). A subgroup analysis of preschool children showed a difference in mean change in screen time of -3.72 h/wk (95% CI, -7.23 to -0.20 h/wk) (P=.04). Conclusions: Our systematic review and meta-analysis did not demonstrate evidence of effectiveness of interventions aimed at reducing screen time in children for reducing BMI and screen time. However, interventions in the preschool age group hold promise. 2011 American Medical Association. All rights reserved

Wake M, Gold L, McCallum Z, Gerner B, Waters E. **Economic evaluation of a primary care trial to reduce weight gain in overweight/obese children:** the LEAP trial. Ambulatory Pediatrics 2008;8(5):336-41.

Ref ID: 1267

Abstract: XST: This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn

XFU: Funded by the National Health and Medical Research Council

XOP: McCallum Z, Wake M, Gerner B, Harris C, Gibbons K, Gunn J, Waters E, Baur LA. Can Australian general practitioners tackle childhood overweight/obesity? Methods and processes from the LEAP (Live, Eat and Play) randomised controlled trial. Journal of Paediatrics and Child Health 2005; 41(9-10): 488-494

CO1: Australia

Wake M, Baur LA, Gerner B, Gibbons K, Gold L, Gunn J, et al. **Outcomes and costs of primary care surveillance and intervention for overweight or obese children:** the LEAP 2 randomised controlled trial. BMJ 2009;339:b3308.

Ref ID: 1276

Abstract: XST: This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn

XFU: Funded by the Australian National Health and Medical Research Council
CO1: Australia

Wang LY, Gutin B, Barbeau P, Moore JB, Hanes J, Johnson MH, et al. **Cost-effectiveness of a school-based obesity prevention program**. J Sch Health 2008;78(12):619-24.

Ref ID: 1668

Abstract: XST: This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn

XFU: Supported by the National Institute of Health

XOP: National Center for Education Statistics. Participation of kindergartners through third-graders in before- and after-school care. Washington, DC, USA: US Department of Education, Institute of Educational Sciences. Report number; NCES 1999013. 1999

CO1: United States

Waters E, de Silva-Sanigorski A, Hall BJ, Brown T, Campbell KJ, Gao Y, et al. **Interventions for preventing obesity in children**. Cochrane Database of Systematic Reviews 2011;12:CD001871.

Ref ID: 594

Abstract: BACKGROUND: Prevention of childhood obesity is an international public health priority given the significant impact of obesity on acute and chronic diseases, general health, development and well-being. The international evidence base for strategies that governments, communities and families can implement to prevent obesity, and promote health, has been accumulating but remains unclear. OBJECTIVES: **This review primarily aims to update the previous Cochrane review of childhood obesity prevention research and determine the effectiveness of evaluated interventions intended to prevent obesity in children, assessed by change in Body Mass Index (BMI). Secondary aims were to examine the characteristics of the programs and strategies to answer the questions "What works for whom, why and for what cost?"** SEARCH METHODS: The searches were re-run in CENTRAL, MEDLINE, EMBASE, PsychINFO and CINAHL in March 2010 and searched relevant websites. Non-English language papers were included and experts were contacted. SELECTION CRITERIA: The review includes data from childhood obesity prevention studies that used a controlled study design (with or without randomisation). Studies were included if they evaluated interventions, policies or programs in place for twelve weeks or more. If studies were randomised at a cluster level, 6 clusters were required. DATA COLLECTION AND ANALYSIS: Two review authors independently extracted data and assessed the risk of bias of included studies.[NON-BREAKING SPACE] Data was extracted on intervention implementation, cost, equity and outcomes. Outcome measures were grouped according to whether they measured adiposity, physical activity (PA)-related behaviours or diet-related behaviours.[NON-BREAKING SPACE] Adverse outcomes were recorded.[NON-BREAKING SPACE]A meta-analysis was conducted using available BMI or standardised BMI (zBMI) score data with subgroup analysis by age group (0-5, 6-12, 13-18 years, corresponding to stages of developmental and childhood settings). MAIN RESULTS: This review includes 55 studies (an additional 36 studies found for this update). The majority of studies targeted children aged 6-12 years.[NON-BREAKING SPACE] The meta-analysis included 37 studies of 27,946 children and demonstrated that programmes were effective at reducing adiposity, although not all individual interventions were effective, and there was a high level of observed heterogeneity ($I^2=82\%$).[NON-BREAKING SPACE] Overall, children in the intervention group had a standardised mean difference in adiposity (measured as BMI or zBMI) of -0.15kg/m^2 (95% confidence interval (CI): -0.21 to -0.09).[NON-BREAKING SPACE] Intervention effects by age subgroups were -0.26kg/m^2 (95% CI: -0.53 to 0.00) (0-5 years), -0.15kg/m^2 (95% CI -0.23 to -0.08) (6-12 years), and -0.09kg/m^2 (95% CI -0.20 to 0.03) (13-18 years). Heterogeneity was apparent in all three age groups and could not explained by randomisation status or the type, duration or setting of the intervention. [NON-BREAKING SPACE]Only eight studies re-

ported on adverse effects and no evidence of adverse outcomes such as unhealthy dieting practices, increased prevalence of underweight or body image sensitivities was found. Interventions did not appear to increase health inequalities although this was examined in fewer studies. AUTHORS' CONCLUSIONS: We found strong evidence to support beneficial effects of child obesity prevention programmes on BMI, particularly for programmes targeted to children aged six to 12 years. However, given the unexplained heterogeneity and the likelihood of small study bias, these findings must be interpreted cautiously. A broad range of programme components were used in these studies and whilst it is not possible to distinguish which of these components contributed most to the beneficial effects observed, our synthesis indicates the following to be promising policies and strategies: school curriculum that includes healthy eating, physical activity and body image. increased sessions for physical activity and the development of fundamental movement skills throughout the school week. improvements in nutritional quality of the food supply in schools. environments and cultural practices that support children eating healthier foods and being active throughout each day. support for teachers and other staff to implement health promotion strategies and activities (e.g. professional development, capacity building activities). parent support and home activities that encourage children to be more active, eat more nutritious foods and spend less time in screen based activities. However, study and evaluation designs need to be strengthened, and reporting extended to capture process and implementation factors, outcomes in relation to measures of equity, longer term outcomes, potential harms and costs. Childhood obesity prevention research must now move towards identifying how effective intervention components can be embedded within health, education and care systems and achieve long term sustainable impacts.

Weker H, Baranska M. **Models of safe nutrition of children and adolescents as a basis for prevention of obesity.** *Medycyna Wieku Rozwojowego* 2011;15(3):288-97.

Ref ID: 580

Abstract: AIM: **The aim of the study was to present up-to-date nutrition models for children and adolescents in Poland on the basis of current research on obesity prevention.** MATERIAL AND METHODS: Up-to-date results of research on the link between nutritional factor and the nutritional status of children and adolescents, nutritional standards and recommendations of expert teams on healthy diet were analysed, based on the review of literature (Medline database) from the years 2005-2010. RESULTS: The main components of the model of safe nutrition for children and adolescents, which according to the current views should be combined with obesity prevention, include the frequency of meals, selection of products in a daily diet and observance of norms concerning energy and nutritional value of the diets. Other factors include family and environmental determinants, including dietary habits and behaviour, knowledge about nutrition and physical activity. CONCLUSIONS: The models of safe nutrition for children and adolescents in Poland are compliant with the current nutritional recommendations of the WHO and EU standards. The

developed models of safe nutrition for children and adolescents must not only be popularised but also their efficiency needs to be increased by adjusting them to various groups of recipients

Whitlock EA, O'Connor EP, Williams SB, Beil TL, Lutz KW. **Effectiveness of weight management programs in children and adolescents.** Evidence Report/Technology Assessment 2008;(170):1-308.

Ref ID: 726

Abstract: OBJECTIVES: **To examine available behavioral, pharmacological, and surgical weight management interventions for overweight (defined as BMI > 85th to 94th percentile of age and sex-specific norms) and/or obese (BMI > 95th percentile) children and adolescents in clinical and nonclinical community settings.** DATA

SOURCES: We identified two good quality recent systematic reviews that addressed our research questions. We searched Ovid MEDLINE, PsycINFO, Database of Abstracts of Reviews of Effects, the Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, and Education Resources Information Center from 2005 (2003 for pharmacological studies) to December 11, 2007, to identify literature that was published after the search dates of prior relevant systematic reviews; we also examined reference lists of five other good-quality systematic reviews and of included trials, and considered experts' recommendations. We identified two good quality systematic reviews and 2,355 abstracts from which we identified 45 primary studies and trials that addressed our research questions. REVIEW METHODS: After review by two investigators against pre-determined inclusion/exclusion criteria, we included existing good-quality systematic reviews, fair-to-good quality trials, and case series (for bariatric surgeries only) to evaluate the effects of treatment on weight and weight-related co-morbidities; we would have included large comparative cohort studies to evaluate longer term followup and harms of behavioral and pharmaceutical treatment and noncomparative cohort studies for surgical treatments if they had been available. Investigators abstracted data into standard evidence tables with abstraction checked by a second investigator. Studies were quality-rated by two investigators using established criteria. RESULTS: Available research primarily enrolled obese (but not overweight) children and adolescents aged 5 to 18 years and no studies targeted those less than 5 years of age. Behavioral interventions in schools or specialty health care settings can result in small to moderate short-term improvements. Absolute or relative weight change associated with behavioral interventions in these settings is generally modest and varies by treatment intensity and setting. More limited evidence suggests that these improvements can be maintained completely (or somewhat) over the 12 months following the end of treatments and that there are few harms with behavioral interventions. Two medications (sibutramine, orlistat) combined with behavioral interventions can result in small to moderate short-term weight loss in obese adolescents with potential side effects that range in severity. Among highly selected morbidly obese adolescents, very limited data from case series suggest bariatric surgical interventions can lead to moderate to substantial weight loss in the short term and to some immediate health benefits through resolution of comorbidities, such as sleep apnea or asthma. Harms vary by procedure. Short-term severe complications are reported in about 5 percent and less severe short-term complications occur in 10 to 39 percent. Very few cases provide data to determine either beneficial or harmful consequences more than 12 months after surgery. CONCLUSIONS: The research evaluating the treatment of obese children and adolescents has improved in terms of quality and quantity in the past several years. While there are still significant gaps in our understanding of obesity treatment in children and adolescents, the current body of research points the way to further improvements needed to inform robust policy development. Publication of additional research and policy activities by others, including the U.S. Preventive Services Task Force, is expected in the near future. And, in considering this important public health issue, policymakers should not ignore the importance of obesity prevention efforts as well as treatment. [References: 21]

Whitlock EP, O'Connor EA, Williams SB, Beil TL, Lutz KW. **Effectiveness of primary care interventions for weight management in children and adolescents:** an updated, targeted systematic review for the USPSTF. 2010. Tilgjengelig fra:

<http://www.ncbi.nlm.nih.gov/books/NBK36416/>.

Ref ID: 1071

Abstract: XST: This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn

XAO: To assess the benefits and harms of weight-management interventions for overweight and obese children and adolescents

XSS: MEDLINE, DARE, PsycINFO, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials (CENTRAL), NICE and ERIC were searched for studies published in English from 2005 to June 2008. Studies on pharmacological treatments were searched from 2003 to June 2008. Search terms were reported. Reference lists of retrieved papers were reviewed. Experts were contacted for unpublished studies. This was an update of a previous review

XVC: Study quality was assessed with United States Preventive Services Task Force (USPSTF) criteria and the National Institute for Health and Clinical Excellence (NICE) methodology checklist. Two reviewers independently assessed quality and resolved discrepancies by consensus or consultation with a third reviewer

XDE: Data on change in BMI and overweight between the pre- and post-intervention periods were extracted to enable calculation of standardised mean differences (SMDs) and 95% confidence intervals (CI). Where possible, BMI and standard deviation score (SDS) or change in percentage overweight was used as the outcome measure. Weight outcome were categorised as short-term (six to 12 months from beginning treatment) or maintenance (between one and four years after beginning treatment and at least 12 months after ending active treatment). For behavioural trials, hours of contact were calculated as proxy for treatment intensity. One reviewer extracted data that was verified by a second reviewer

XRR: Twenty-five randomised controlled trials (n=3,600) published in 30 articles and rated as fair or high quality were included in the analysis. Behavioural interventions showed short-term benefits in terms of BMI. Comprehensive medium-to-high-intensity behavioural interventions showed the most improvements (SMD -1.01, 95% CI -1.24 to -0.78; three studies, n=425). Comprehensive very low intensity interventions showed moderate but statistically significant benefit (SMD -0.39, 95% CI -0.66 to -0.11; three studies, n=208). Comprehensive low intensity or focused interventions did not show any improvement. Data on maintenance phase of behavioural interventions were limited, but available evidence suggested improvement of these interventions could be maintained more than 12 months after the end of the intervention. Two studies that assessed medication (sibutramine or orlistat) combined with behavioural interventions demonstrated small-to-moderate short-term weight loss. There was a mean BMI reduction of 2.9kg/m² for sibutramine compared with 0.3kg/m² in the control group (one study, n=498) and 0.55kg/m² versus 0.3kg/m² for orlistat versus control (one study, n=539). No study followed weight changes after medication had stopped. Adverse events were reported only for the pharmacological intervention. No serious events were reported. Sensitivity analysis did not change the results

XCL: The research suggested that behavioural interventions can be effective in managing weight in obese children and adolescents; combined behavioural-pharmacological interventions may be useful in very obese adolescents

XCM: The review addressed a well-defined question in terms of participants, interventions and outcomes. The search included a range of electronic databases. The restriction to studies published in English meant that language bias could not be ruled out. Two reviewers independently selected studies, abstracted data and assessed quality of the included studies to minimise errors and bias in the review. Study quality was assessed with standard tools. Characteristics of individual studies were presented. Heterogeneity between studies was explored and reported. Methods used in summarising data that involved both narrative synthesis and a meta-analysis were appropriate given the clinical variation in the included studies. Although sensitivity analysis did not change these results, but potential for language bias and methodological weaknesses in the included studies mean that caution is required when judging the reliability of the authors' conclusions

XIM: Practice: The authors stated that the implications for practice were unclear. The

authors highlighted that culturally relevant interventions to combine diet or healthy eating and exercise, and incorporate lay facilitators and social support should be promoted. Research: The authors stated that culturally relevant interventions and some internet-based programmes should be explored further. Future studies should: emphasise programme development and evaluation; explore long-term follow-up to determine programme effects over time; attempt to gather relevant long-term data from non-completers; identify and explore population level interventions; and explore applicability and transferability of successful programmes

Whitlock EP, O'Connor EA, Williams SB, Beil TL, Lutz KW. **Effectiveness of weight management interventions in children**: A targeted systematic review for the USPSTF. *Pediatrics* 2010;125(2):e396-e418.

Ref ID: 273

Abstract: CONTEXT: Targeted systematic review to support the updated US Preventive Services Task Force (USPSTF) recommendation on screening for obesity in children and adolescents. OBJECTIVES: **To examine the benefits and harms of behavioral and pharmacologic weight-management interventions for overweight and obese children and adolescents.** METHODS: Our data sources were Ovid Medline, PsycINFO, the Education Resources Information Center, the Database of Abstracts of Reviews of Effects, the Cochrane databases, reference lists of other reviews and trials, and expert recommendations. After 2 investigators reviewed 2786 abstracts and 369 articles against inclusion/exclusion criteria, we included 15 fair- to good-quality trials in which the effects of treatment on weight, weight-related comorbidities, and harms were evaluated. Studies were quality rated by 2 investigators using established criteria. Investigators abstracted data into standard evidence tables. RESULTS: In the available research, obese (or overweight) children and adolescents aged 4 to 18 years were enrolled, and no studies targeted those younger than 4 years. Comprehensive behavioral interventions of medium-to-high intensity were the most effective behavioral approach with 1.9 to 3.3 kg/m² difference favoring intervention groups at 12 months. More limited evidence suggests that these improvements can be maintained over the 12 months after the end of treatments and that there are few harms with behavioral interventions. Two medications combined with behavioral interventions resulted in small (0.85 kg/m² for orlistat) or moderate (2.6 kg/m² for sibutramine) BMI reduction in obese adolescents on active medication; however, no studies followed weight changes after medication use ended. Potential adverse effects were greater than for behavioral interventions alone and varied in severity. Only 1 medication (orlistat) has been approved by the US Food and Drug Administration for prescription use in those aged ≥ 12 years. CONCLUSIONS: Over the past several years, research into weight management in obese children and adolescents has improved in quality and quantity. Despite important gaps, available research supports at least short-term benefits of comprehensive medium- to high-intensity behavioral interventions in obese children and adolescents. Copyright 2010 by the American Academy of Pediatrics

Wilfley DE, Tibbs TL, Van Buren DJ, Reach KP, Walker MS, Epstein LH. **Lifestyle Interventions in the Treatment of Childhood Overweight**: A Meta-Analytic Review of Randomized Controlled Trials. *Health Psychol* 2007;26(5):521-32.

Ref ID: 505

Abstract: Context: Evaluating the efficacy of pediatric weight loss treatments is critical. Objective: **This is the first meta-analysis of the efficacy of RCTs comparing pediatric lifestyle interventions to no-treatment or information/education-only controls.** Data Sources: Medline, PsycINFO, and Cochrane Controlled Trials Register. Study Selection: Fourteen RCTs targeting change in weight status were eligible, yielding 19 effect sizes. Data Extraction: Standardized coding was used to extract information on design, participant characteristics, interventions, and results. Data Synthesis: For trials with no-treatment controls, the mean effect size was 0.75 (k = 9, 95% confidence interval [CI] = 0.52-0.98) at end of treatment and 0.60 (k = 4, CI = 0.27-0.94) at follow-up. For trials with information/education-only controls, the mean ES was 0.48 (k = 4, CI = 0.13-0.82) at end of treatment and 0.91 (k = 2, CI = 0.32-1.50) at follow-up. No moderator effects were identified. Conclusions: Lifestyle inter-

ventions for pediatric overweight are efficacious in the short term with some evidence for extended persistence. Future research is required to identify moderators and mediators and to determine the optimal length and intensity of treatment required to produce enduring changes in weight status. 2007 American Psychological Association

Wilks DC, Besson H, Lindroos AK, Ekelund U. Objectively measured physical activity and obesity prevention in children, adolescents and adults: A systematic review of prospective studies. *Obesity Reviews* 2011;12(501):e119-e129.

Ref ID: 149

Abstract: This study aimed at synthesizing the prospective associations between measured physical activity (PA) and change in adiposity in children, adolescents and adults following from two previous reviews. Search terms were adapted and a systematic literature search was conducted (January 2000-September 2008) and later updated (up to October 2009), considering observational and intervention studies of weight gain that measured both PA and body composition. Sixteen observational studies (six comprising adults) and five trials (one comprising adults) were eligible. For consistency, whenever possible either baseline PA energy expenditure or accelerometer output (counts min⁻¹) and change in per cent body fat were the extracted exposure and outcome measures. Results of observational studies suggest that PA is not strongly prospectively related with adiposity: five studies on children and three on adults reported no association between baseline PA and change in adiposity, one study found a weak positive association and the other studies observed a weak negative association. Negative associations were more frequently observed in studies that analysed the association between change in the exposure and outcome. Intervention studies show generally no effect on either PA or adiposity. In conclusion, despite the well-established health benefits of PA, it may not be a key determinant of excessive gain in adiposity. 2010 The Authors. *obesity reviews* 2010 International Association for the Study of Obesity

Winzenberg T, Shaw K, Fryer J, Jones G. Calcium supplements in healthy children do not affect weight gain, height, or body composition. *Obesity* 2007;15(7):1789-98.

Ref ID: 485

Abstract: Objective: Calcium intake is a potential factor influencing weight gain and may reduce body weight, but the evidence for this in children is conflicting. The aim of this study was to use data from randomized controlled trials to determine whether calcium supplementation in healthy children affects weight or body composition. Research Methods and Procedures: This study is a systematic review. We identified potential studies by searching the following electronic bibliographic databases: CENTRAL, MEDLINE, EMBASE, CINAHL, AMED, MANTIS, ISI Web of Science, Food Science and Technology Abstracts, and Human Nutrition up until April 1, 2005 and hand-searched relevant conference abstracts. Studies were included if they were placebo-controlled randomized controlled trials of calcium supplementation, with at least 3 months of supplementation, in healthy children and with outcome measures including weight. Meta-analyses were performed using fixed effects models and weighted mean differences for weight and height and standardized mean differences (SMDs) for body composition measures. Results: There were no statistically significant effects of calcium supplementation on weight [+0.14 kg; 95% confidence interval (CI), -0.28, +0.57 kg], height (+0.22 cm; 95% CI, -0.30, +0.74 cm), body fat (SMD, +0.04; 95% CI, -0.08, +0.15), or lean mass (SMD, +0.14; 95% CI, -0.03, +0.31). Discussion: There is no evidence to support the use of calcium supplementation as a public health intervention to reduce weight gain or body fat in healthy children. Although our results do not rule out an effect of dietary supplementation with dairy products on weight gain or body composition, there is little evidence to support this hypothesis. Copyright 2007 NAASO

Wofford LG. Systematic Review of Childhood Obesity Prevention. *J Pediatr Nurs* 2008;23(1):5-19.

Ref ID: 430

Abstract: This systematic review identified the current state of the evidence related to the prevention of obesity in young children. The results indicate five areas of em-

phasis in the literature: prevalence of the problem; prevention as the best option; preschool population as the target; crucial parental involvement; and numerous guidelines. Because the gap between clear articulation of the problem as well as population and the best strategies to impact the prevention of the problem is evident, health care practitioners must be involved in well-constructed implementation and evaluation studies that build on the limited base of current evidence. 2007

Young KM, Northern JJ, Lister KM, Drummond JA, O'Brien WH. A meta-analysis of family-behavioral weight-loss treatments for children. Clin Psychol Rev 2007;27(2):240-9.

Ref ID: 532

Abstract: Childhood obesity is a major concern in the United States. Because children's diets can be significantly influenced by parental behavior (e.g., food purchases, meal preparation), researchers have included family intervention components in some childhood weight-loss programs. The relative benefits of adding the family component have not been well-established. This meta-analysis compared the mean effect sizes of family-behavioral, other treatment, and control weight-loss groups for children. A comprehensive literature review identified 16 studies with a total of 44 treatment groups. Results indicated that interventions containing a family-behavioral component produced larger effect sizes than the alternative treatment groups. This demonstrates that the inclusion of a family component may be advantageous to a child's weight-loss treatment. 2006 Elsevier Ltd. All rights reserved

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