

Determinants and correlates of sugar-sweetened beverage consumption in preschool children: Systematic review of quantitative evidence

Veena Mazarello Paes¹, Ken Ong², Kathryn Hesketh², Claire O'Malley³, Helen Moore³, Simon Griffin^{1,2}, Carolyn Summerbell³, Esther van Sluijs², Rajalakshmi Lakshman²

¹ Institute of Public Health, University of Cambridge
² MRC Epidemiology Unit & UKCRC Centre for Diet and Activity Research (CEDAR), University of Cambridge
³ Obesity Related Behaviours Research Group, Durham University

Introduction

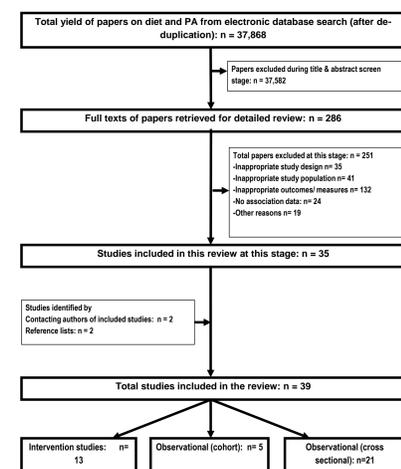
- Over 1 in 5 children in England are overweight/obese by 5 years¹ and early intervention is needed.
- Sugar-sweetened beverage (SSB) intake is associated with adverse health outcomes².
- Identification of determinants and correlates of SSB intake in young children is important to inform intervention development.

Aims

To systematically review quantitative (intervention & observational) evidence on the determinants and correlates of sugar-sweetened beverage intake in young children (0-6 years).

Methods

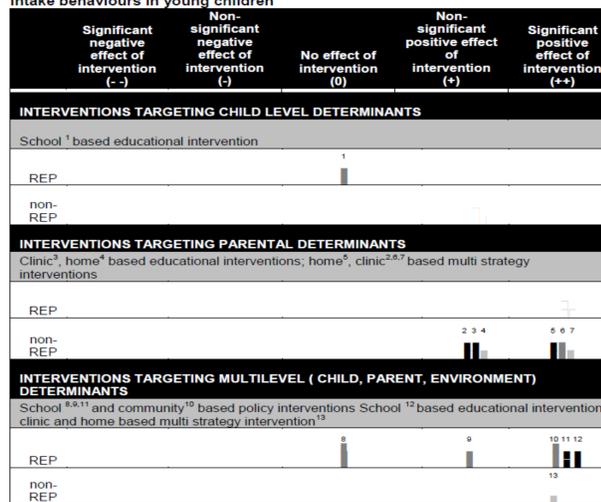
- Literature searched in eight electronic databases: Medline, Embase, Cinhal, BNI, Psycinfo, Web of Knowledge, ASSIA and Sociological abstracts.
- Additional literature identified by hand-searching, citation tracking and contacting authors of included papers.
- Studies meeting the inclusion criteria were quality assessed³ and evidence summarised using Harvest plots⁴.
- Study protocol published⁵ and registered (PROSPERO: CRD42012002881).



Results: Interventional evidence

- Thirteen interventions (four each in USA, Australia and Europe and one in Asia) showed no (n=2) or positive effects (n=11) immediately post-intervention.
- Six interventions targeted multi-level determinants and were effective in reducing SSB consumption in preschool children.
- Six interventions effectively targeted parental determinants but were in non-representative populations.
- One intervention targeted child determinants and was ineffective in reducing child's SSB intake.
- The settings (home, clinic, school/ community) for delivery of interventions had no influence on intervention effectiveness.
- Sustainability and long-term effects of these interventions are unknown.

Effectiveness of interventions targeting determinants of sugar sweetened beverage intake behaviours in young children



SSB: sugar sweetened beverage; REP: representative; non-REP: non representative
1: Llargues 2011; 2: Taveras 2011; 3: Whaley 2010; 4: Jones 2011; 5: Watt 2008 and Scheiwe 2010; 6: Campbell 2013; 7: Klohe Lehman 2007; 8: De Coen 2012; 9: Vereecken 2009; 10: DeSilva 2010; 11: Korwanich 2008; 12: Hardy 2010; 13: Stark 2011.

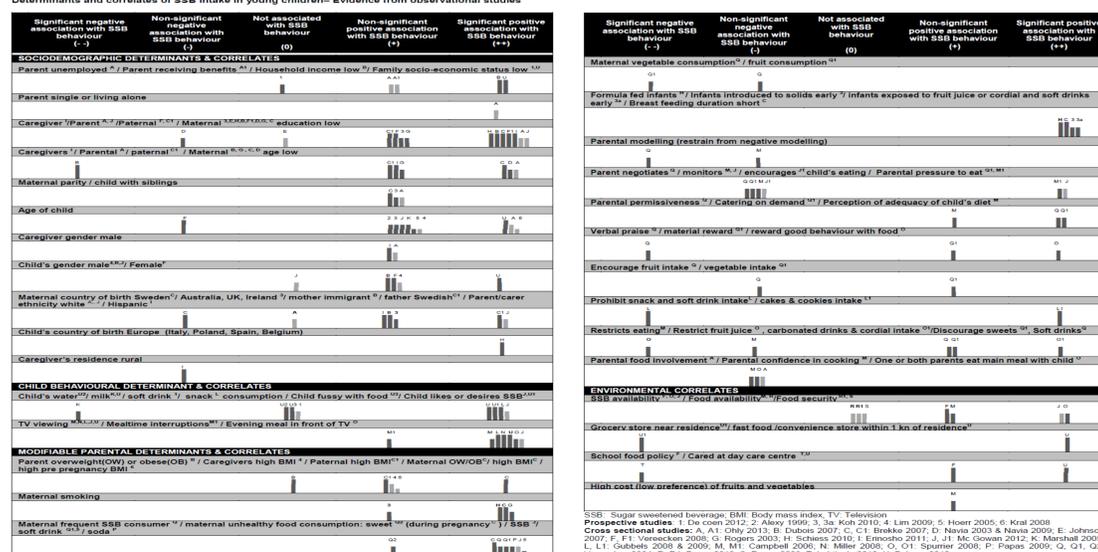
Code used in Harvest plots to present intervention and observational evidence:

- Position of bar based on direction and strength of association i.e. ++, +, 0, -, --
- Height of bar represents size of study.
- Colour of bar representing quality: black, dark grey and light grey with darker bars representing higher quality studies.
- REP = Representative of general population, non-REP = not representative of general population.
- Study ID on top of bar.

Results: Observational (cohort and cross sectional) evidence

- Six prospective cohort studies (four in non-representative populations) identified fourteen determinants of SSB behaviour.
- Socio-demographic determinants (low maternal education, family size, age & gender of child) and parental determinants (smoking, SSB consumption, high BMI, not breastfeeding/early weaning & early introduction of SSBs) were associated with higher SSB consumption in young children.
- Cross sectional studies identified evidence on seventy-nine correlates of SSB intake in young children.
- Correlates (low maternal age, education, income; maternal ethnicity; child's age, obesogenic food consumption, TV viewing and SSB availability) were extensively studied and associated with higher SSB consumption in preschool children.

Determinants and correlates of SSB intake in young children- Evidence from observational studies



Conclusions

- Multi-level interventions targeting identified parental and environmental determinants/correlates and introduced before infants are exposed to SSBs, could potentially reduce SSB intake in young children.
- Future interventions should consider long-term effectiveness and sustainability.

References

¹National Child Measurement Programme 2012/13.
²Ambrosini, G.L.et al., American Journal of Clinical Nutrition, 2013.
³Evidence for Policy and Practice (EPPI) Centre Methods for Systematic Reviews. March 2007.
⁴Ogilvie, D.et al., BMC Med. Research Method. 2008.
⁵Lakshman et al, Systematic Reviews 2013.