Supplementary Materials: Economic Evaluation of Obesity Prevention in Early Childhood: Methods, Limitations and Recommendations

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Table S1. General characteristics of studies.

Authors	Year	Country	Design	Setting	Target Population	*N* (Analytical Sample)	Intervention Component	Under-Lying Theory	Mode of Delivery	Parents Included	Comparator	Primary Outcome	Effectiveness
Moodie et al. [1]	2008	Australia	RCT/CEA	Primary care	5–9 years, overweight, mildly obese	34 GPs and 163 children	Training of GP (3 times 2.5 h) 4 consultations over a 12-week period	Not reported	GP	Yes	Current practice	BMI	Not significant BMI mean difference = 0.25 (95% CI: −0.62, 0.12)
Wake et al. [2]	2008	Australia	RCT/CCA	Primary care	5–9 years, overweight, mildly obese	163 parents with children	Training of GP (3 times 2.5 h) 4 consultations over a 12-week period	Not reported	GP	Yes	Assumed current practice	BMI	Not significant BMI mean difference = −0.0 (−0.5, 0.5)
Ma and Frick [3]	2011	USA	Cohort study	n.a.	0–6 years	30,000,000	n.a.	Not reported	n.a.	No	n.a.	BMI	n.a.
Moodie et al. [4]	2013	Australia	Quasi-experimental/CEA	Community setting	4–12 years	2184 children	Promoting healthy eating, physical activity and healthy weight gain with community drive and context-specific decision making	Not reported	Community service	Yes	A stratified random selection of preschools (*n* = 4) and primary schools (*n* = 12)	BMI	Not significant BMI mean difference = −0.28 (95% CI: −0.7, 0.15)
Hayes et al. [5]	2014	Australia	RCT/CEA	Home	Newborns	324 parents with infants	8 one-to-one consultations with age-appropriate education and advice on feeding, nutrition and physical activity	Not reported	Nurse	Yes	Care as usual, plus home safety information sent by mail	BMI	Not significant BMI mean difference = 0.33 (95% CI: −0.043, 0.662)

| Pil et al. [6] | 2014 | Belgium Bulgaria, Germany, Greece, Poland, Spain | RCT/Met hods for CEA | Kindergarten | 4–6 years | Simulation results are presented per 1000 | 3 training sessions for teachers | Not reported | Kinder-garten teacher | Yes | Not reported | Weight status | Not reported |

Notes: n.a. = not applicable; RCT = randomised controlled trial; CCA = cost-consequence analysis; CEA = cost-effectiveness analysis; CI = confidence interval; GP = general practitioner; BMI = body mass index.

Table S2 (A). Main characteristics and primary outcomes of the economic evaluation.

Authors	Type	Model Specification	Study Perspective	Time Horizon	Cost Categories	Excluded Costs	Discount Rate	Year of Costing	Costs Per Child
Moodie et al. [1]	CEA	Cohort simulations Lifetime costs associated with obesity (ACE-approach)	Societal	Lifetime	Programme delivery costs Direct medical costs Indirect costs	Establishment costs	Costs: 3% Effects: 3%	2001	650 AUD [a]
Wake et al. [2]	CCA	n.a.	Reported: Health care Assumed: Societal	Short (1 year)	Programme delivery costs Direct medical costs Direct non-medical costs Indirect costs	Establishment costs	n.a.	2003	705 AUD/48 047 AUD [b]
Ma and Frick [3]		econometric analysis/simulation Lifetime costs associated with obesity	Not reported Assumed: Health care	Lifetime	n.a.	n.a.	Costs: 3% Effects: not reported	2006	Up to 339 USD [c]
Moodie et al. [4]	CEA	Cohort simulations Lifetime costs associated with obesity (ACE-approach)	Societal	Lifetime	Programme delivery costs Direct non-medical costs Other costs	Student time, spin-off activities, cost associated with changes in the physical activity and eating patterns of participating families	Costs: 3% Effects: 3%	2006	344 AUD
Hayes et al. [5]	CEA	n.a.	Health care	Short (2 years)	Programme delivery costs Direct medical costs Indirect costs	Costs associated with birth, evaluation or administration of the clinical trial	n.a.	2012	1 309 AUD

Pil et al. [6]	CEA/ Design	Probabilistic Markov Model based on disease states	Societal	Lifetime	Programme delivery costs Direct medical costs Indirect costs	Establishment costs	Costs: 3% Effects: 1.5%	2012	Belgium: 11.24 EUR Bulgaria: 6.07 EUR Germany: 28.84 EUR Poland: 5.25 EUR Spain: 8.94 EUR [d]

Notes: n.a. = not applicable; BMI = body mass index; CCA = cost-consequence analysis; CEA = cost-effectiveness analysis; DALY = disability adjusted life year; GP = general practitioner; BMI = body mass index; PSA = probabilistic sensitivity analysis. [a] Based on own calculation: the article presents total costs: 6,300,000 AUD, 9685 children assumed to be reached. [b] Two different numbers are mentioned. 705 AUD refers to the costs per child for the health care sector, 48,047 AUD refers to the total cost per child including productivity losses and direct non-medical costs (i.e., expenditure due to changed physical activity and eating habits). [c] Based on simulation analysis, maximum amount that could be spent per child for 1 BMI unit reduction for the age group 0–6 in a population-based approach. [d] Based on own calculation, the article presents an estimation of costs for 1000 pre-schoolers.

Table S2 (B). Main characteristics and primary outcomes of the economic evaluation.

ICER	Uncertainly Analysis	Sensitivity Analysis	Cost-Effective
4680 AUD/DALY	PSA	Full maintenance of BMI effects into adulthood/vs. half maintenance, Recruitment rates, Family attendance Delivery of intervention, Outlier removal	Yes
n.a.	-	Value of parents' time Unit cost of GP Economies of scale combinations	No
n.a.	-	Excluding obesity-related medical costs after certain ages	n.a.
29,798 AUD/DALY	PSA		Yes
4320 AUD/BMI	-	Adjustments in travel time	Yes
n.a.	(PSA)		n.a.

Table S3. Quality assessment.

Item		Moodie et al. (2008) [1]	Wake et al. (2008) [2]	Ma and Frick (2011) [3]	Moodie et al. (2013) [4]	Hayes et al. (2014) [5]	Pil et al. (2014) [6]
Study design							
1	Research question	✓	✓	✓	✓	✓	✓
2	Economic importance	✓	✓	✓	✓	✓	✓
3	Viewpoint	✓	✓	✓	✓	✓	✓
4	Rationale for choice of comparator	✓		n.a.	✓	✓	
5	Description of comparator	✓		n.a.	✓	✓	
6	Form of economic evaluation	✓	✓		✓	✓	✓
7	Justification of form	✓	✓		✓	✓	✓
Data collection							
8	Sources of effectiveness estimates	✓	✓	✓	✓	✓	n.a.
9	Design and results of effectiveness study	✓	✓	✓	✓	✓	n.a.
10	Details and results of meta-analysis	n.a.	n.a.	✓	n.a.	n.a.	n.a.
11	Primary outcome	✓	✓	✓	✓	✓	✓
12	Methods to value health states	✓	n.a.	n.a.	✓	n.a.	✓
13	Subjects who valued the health states	✓	n.a.	n.a.	✓	n.a.	✓
14	Productivity changes	✓	n.a.	n.a.	✓	n.a.	✓
15	Relevance of productivity changes		n.a.	n.a.	✓	n.a.	✓
16	Separate reporting of costs	✓ *	✓ *	n.a.	✓ *	✓ *	✓ *
17	Methods of estimation of costs	✓	✓	✓	✓	✓	✓
18	Currency and price data	✓	✓	✓	✓	✓	✓
19	Price adjustment for inflation	✓	n.a.	✓	✓	✓	✓
20	Model details	✓			✓	✓	✓
21	Justification of model choice			✓	✓		✓
Analysis and interpretation of results							
22	Time horizon	✓	✓	✓	✓	✓	✓
23	Discount rate	✓	n.a.	✓	✓	✓	✓
24	Justification of choice	✓	n.a.		✓	✓	✓
25	Explanation for absence of discount rate	n.a.	n.a.		✓	n.a.	n.a.
26	Details for statistical tests (incl. CI)	✓			✓	✓	
27	Sensitivity analysis	✓	✓	✓	✓	✓	✓
28	Justification for sensitivity analysis	✓	✓	✓	✓	✓	✓
29	Parameter ranges	✓			✓	✓	

30	Relevant comparison	✓	✓	n.a.	✓	✓	
31	Incremental analysis	✓			✓	✓	
32	Disaggregated and aggregated	✓	n.a.	✓	✓	✓	
33	Answer to study question	✓	✓	✓	✓	✓	✓
34	Conclusion	✓	✓	✓	✓	✓	✓
35	Caveats around conclusion	✓	✓	✓	✓	✓	✓
36	Generalisability		✓		✓	✓	✓

Notes: CI = confidence interval. Quality assessment based on Jo Akers, Raquel Aguiar-Ibáñez, Ali Baba-Akbari Sari, Susanne Beyon, Alison Booth, Jane Burch, Duncan Chambers et al. CRD's Guidance for Undertaking Reviews in Health Care. York (UK): Centre for Reviews and Dissemination (CRD). 2009. Detailed information about the assessment of quality indicators can be received upon author request. * categorized reporting of cost. Quantities not reported separately from cost.

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