Table 2. Included studies.

Study	Design	Participants	Nature of mobile health	Outcomes measured	Behavior change theory
Bauer et al, 2010 [42]	Feasibility study	7-12-year-olds with overweight or obesity (n=40)	SMS	BMI-SDS[a] and adherence[b]	Self-monitoring [75]
Kornman et al, 2010 [63]	RCT[c]	13-16-year-olds with overweight or obesity (n=49)	SMS	Engagement with SMS (responses)	Social Cognitive Theory
Woolford et al, 2010 [43]	Feasibility study	12-18-year-olds with overweight or obesity (≥95th percentile) (n=20)	SMS	Technology performance and acceptability[d]	Message framing for motivation [76], varying messages [77]
Cushing et al, 2011 [35]	Mixed method	14-18-year-old females with overweight or obesity (≥85th percentile) (n=3)	Personal electronic device (iPod touch)	Adherence and usability[e]	Self-monitoring
Woolford et al, 2011 [33]	Qualitative	11-19-year-olds with overweight or obesity (≥98th percentile) (n=24)	SMS	Acceptability of SMS message content	Social Determination Theory and Elaboration Likelihood

					Model for motivational interviewing
de Niet et al, 2012 [58]	RCT	7-12-year-olds with overweight or obesity (n=141)	SMS	Dropout, adherence to SMS, and BMI-SDS	Self-monitoring
de Niet et al, 2012 [57]	RCT	7-12-year-olds with overweight or obesity (n=141)	SMS	BMI-SDS, eating behavior, and psychological well-being (competence, self-esteem, and quality of life)	Self-monitoring
Nguyen et al, 2012 [65]	RCT	13-16-year-olds with overweight or obesity (BMI z-score: 1.0–2.5) (n=151)	SMS	BMI z-score, eating behavior (FFQ[f]), psychosocial well-being, and anthropometric and metabolic measures	Social Cognitive Theory

Woolford et al, 2012 [34]	Qualitative	13-19-year-olds with overweight or obesity (≥96th percentile) (n=23)	Picture messaging (Photovoice)	Acceptability	Not specified
Fortune et al, 2012 [56]	Pilot study	12 - 18-year-olds with BMI>85th centile (n=165)	SMS	Adherence (responses and engagement) and feasibility	Goal setting
Nguyen et al, 2013 [64]	RCT	13-16-year-olds with overweight or obesity (BMI z-score: 1.0–2.5) (n=151)	SMS	BMI z-score, eating behavior, psychosocial well-being, and anthropometric and metabolic measures	Social Cognitive Theory
Oliver et al, 2013 [46]	Feasibility study	9-15-year-olds with overweight or obesity, seeking obesity treatment (n=30)	Personal digital assistant	Acceptability and usability	Self-monitoring

Patrick et al, 2013 [61]	RCT	12-16-year-olds with overweight or obesity (≥85th percentile) + two risk factors for T2DM[g] (n=101)	SMS	BMI z-score, health-related quality of life, and self-esteem	Transtheoretical model
Sharifi et al, 2013 [37]	Qualitative	Parents (n=38) of children aged 6-12 years with overweight or obesity	SMS	Acceptability and preferences	None specified
Kim et al, 2014 [38]	Mixed method	13-29-year-olds (n=6 user testing, n=24 for pilot) with BMI ≥85th percentile	App (iPod touch)	Acceptability and usability	Motivational interviewing
O'Malley et al, 2014 [40]	Usability study	12-17-year-olds with overweight or obesity (≥98th centile) (n=10)	App	Usability (technical efficiency, effect, helpfulness, controllability, and learnability)	Social Cognitive Theory, the Theory of Planned Behavior, and the Capability, Opportunity,

					Motivation, Behavior (COM-B)Model
Smith et al, 2014 [36]	Qualitative	12-16-year-olds with overweight or obesity (n=12) and their parents (n=12)	SMS	Acceptability	Self-determination theory and goal-setting theory
Straker et al, 2014 [59]	Waitlist controlled trial	12-16-year-olds with overweight or obesity (n=69) and their parents	SMS	Physical activity, diet, and BMI z-scores	Self-determination theory and goal setting
Xu et al, 2014 [48]	Pilot study	Children aged 11-14 years (n=6) with overweight or obesity (BMI ≥90th percentile)	App	Adherence and acceptability	Feedback loops
Buchter et al, 2015 [53]	Pilot study	Children (n=6) with severe obesity (BMI≥99.5, median BMI z-score 3.0, age	Mobile health information system for tablet	BMI-SDS	Not specified

		13.2 years, SD 2.3 years)			
Davis et al, 2015 [55]	Pilot study	Families (n=12) participating in a family-based behavioral group program for obesity	App (tablet)	Physical activity, diet, and BMI z-score (children) or BMI (parents)	Not specified
Durrer et al, 2015 [73]	Longitudinal field study	13–17-year-olds with overweight or obesity (≥97th percentile) (n=6)	Apps (tablet) and wearable technology (FitBit)	Well-being, mental health, mood, eating disorders, body weight and BMI-SDS, blood pressure, speed, of eating, physical activity, and degree of relaxation	Not specified
Lalleman d et al, 2015 [54]	Pilot study	13-17-year-olds with severe obesity (n=6)	App	Eating disorders, physical and mental health, well-being, motivation, and parenting	Not specified

Nguyen et al, 2015 [74]	RCT process evaluation	13-16-year-olds with overweight or obesity (BMI z-score: 1.0–2.5) (n=151)	SMS	Facilitator adherence and delivery dose, participant involvement and interaction, and acceptability	Social Cognitive Theory
O'Malley et al, 2015 [66]	RCT	12-17-year-olds with overweight or obesity (≥98th centile) (n=134)	App	BMI-SDS, anthropometric and clinical biomarkers, and health-related quality of life	Social Cognitive Theory, the Theory of Planned Behavior, and the Capability, Opportunity, Motivation, Behavior (COM-B)Model
Pretlow et al, 2015 [49]	Pilot study	10-21-year-olds with overweight or obesity (≥85th percentile) (n=43)	App and SMS	BMI, self-esteem, control over food, stress eating, addiction guilt, stress, control, self-esteem,	Addiction treatment approach

				and acceptability	
Price et al 2015 [60]	RCT	Parents (n=160) of children aged 6-12 years with a BMI ≥95th percentile	SMS	Engagement with SMS	Social Cognitive Theory
Ptomey et al, 2015 [47]	Pilot study	11-18-year-olds with overweight or obesity (≥85th percentile) and mild intellectual or developmental disabilities (n=20)	Apps (iPad) and FitBit	BMI, physical activity, diet, adherence, and acceptability	Not specified
Herget et al, 2016 [68]	RCT	13-18-year-olds with overweight or obesity (BMI ≥90th percentile according to German reference values) (n=28)	SMS	Program attendance, BMI-SDS, anthropometric and metabolic measures, physical exercise or sedentary behavior,	Social Cognitive Theory

				health-related quality of life, self-efficacy, internalization of stigmatization, perceived social support, and outcome expectations over physical activity, and acceptability	
Jensen et al, 2016 [51]	Pilot study	13-17-year-olds with overweight or obesity (BMI percentile ≥85%) (n=16) and their parent or guardian	App and SMS	BMI z-scores and anthropometrics, adherence to self-monitoring, and acceptability	Not specified
Kulendran et al, 2016 [50]	Pilot study	14-year-olds attending a weight-loss camp (n=27)	SMS	BMI (maintenance)	Commitment devices [86]
Mameli et al, 2016 [62]	RCT	10-17-year-olds with overweight or obesity	App, wearable technology, and SMS	BMI-SDS, diet, level of commitment to the	Not specified

		(BMI≥95th percentile) (n=43)		intervention, acceptability, awareness on the importance of lifestyle changes, and change of habits using the intervention	
Ptomey et al, 2016 [39]	Qualitative	Parents (n=18) of 11-18-year-olds, with overweight or obesity and mild intellectual or developmental disabilities	Apps (iPad) and FitBit	Acceptability	Not specified
Chen et al, 2017 [52]	Pilot study	Chinese American 13-18-year-olds (n=40) with overweight or obesity (BMI≥85th percentile)	SMS, wearable technology, and apps	BMI percentile, diet, physical or sedentary activity, quality of life, physical activity self-efficacy and healthy eating self-efficacy,	Social Cognitive Theory

				and acceptability	
Gabrielli et al, 2017 [45]	Feasibility study	7-12-year-olds (n=6), classified as overweight (BMI 85th-94th percentile)	App	Usability and acceptability	Transtheoretical model
Kowatsch et al, 2017 [41]	Usability study	Children presenting for obesity treatment (n=11)	App	Usability and acceptability	Not specified
Kowatsch et al, 2017 [71]	RCT	Children presenting for obesity treatment (n=15)	App	Adherence, emotional and social relationship between patient and technology	Not specified
Tripicchio et al, 2017 [67]	Pre-post study	2-18-year-olds with overweight or obesity (≥85th percentile) (n=64)	App (tablet)	BMI z-scores, attendance, engagement, acceptability, and open-ended feedback	Goal setting and personalized feedback

Armstrong et al, 2018 [70]	RCT	5-12-year-olds (n=101) with overweight or obesity (BMI ≥95th percentile) and their parents	SMS	BMI z-scores, child health behaviors, cardiovascular fitness, parent BMI and self-efficacy for change, and adherence to clinic visits	Motivational interviewing
Chen et al, 2018 [69]	RCT	Chinese American 13-18-year-olds with overweight or obesity (BMI≥85th percentile) (n=40)	SMS, wearable technology, and apps	BMI percentile, diet, physical activity, sedentary activity, quality of life, and physical activity self-efficacy and healthy eating self-efficacy	Social Cognitive Theory
Heldt et al 2018 [72]	RCT	11-17-year-olds with overweight or obesity (BMI-SDS 2.56, SD 1.7-3.5) (n=22)	App	Engagement (use of the app)	Not specified
Saez et al, 2018 [44]	Feasibility study	13-18-year-olds with overweight or	SMS	Reach and acceptability	The Reader-to-Leader Framework

		obesity (n=262)			

[a]BMI-SDS: body mass index standard deviation score.

[b]Level of adherence to the intended intervention components by participants.

[c]RCT: randomized controlled trial.

[d]Level to which the intervention is acceptable to the intended end user.

[e]Technical effectiveness, efficiency, and/or satisfaction with the intervention by the intended end user.

[f]FFQ: Food Frequency Questionnaire.

[g]T2DM: type II diabetes mellitus.