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**What school-based strategies are most effective in
preventing obesity among primary school children in the
United Kingdom**

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Declaration

I, Katariya Jaydev Himatbhai, declare that this dissertation has been composed by myself and that the work presented herein is entirely my own, except where explicitly stated otherwise in the text. I confirm that this dissertation has not been submitted, in whole or in part, for any other degree or professional qualification at this or any other institution.

All sources of information have been appropriately acknowledged and referenced in accordance with academic conventions.

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Date: 07/01/2026

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Abstract

Background: Childhood obesity remains a significant public health challenge in the United Kingdom, with persistently high prevalence rates and marked socio-economic inequalities. Schools are increasingly positioned as key settings for obesity prevention due to their reach, structure, and potential to influence children's health behaviours at an early stage. However, evidence regarding the effectiveness of school-based childhood obesity prevention programmes remains mixed, and less is known about how contextual and implementation factors shape programme outcomes in practice. The aim of this study was to critically evaluate the effectiveness of school-based obesity prevention programmes for primary school children in the United Kingdom through a systematic literature review.

Methodology: A systematic search of relevant academic databases (PubMed, ScienceDirect, ProQuest, and PsycINFO) was conducted in accordance with PRISMA guidelines, and ten UK-based studies met the inclusion criteria. The studies were selected using the PICO (Population, Intervention, Comparison and Outcome) framework. The review predominantly synthesised qualitative evidence, alongside one mixed-methods study. Methodological quality was appraised using the Critical Appraisal Skills Programme (CASP) checklist for qualitative studies and the Mixed Methods Appraisal Tool (MMAT) for the mixed-methods study.

Results: A thematic synthesis approach, guided by Braun and Clarke's framework, was employed to analyse the findings. Four overarching themes were identified: (1) school capacity and resources, (2) stakeholder engagement and shared responsibility, (3) programme implementation, fidelity and adaptation, and (4) sensitivity, communication and weight stigma. The findings indicate that while school-based programmes can positively influence health-related behaviours, their effectiveness is strongly shaped by organisational capacity, leadership support, staff confidence, parental engagement, and the need for sensitive, non-stigmatising approaches.

Conclusion: The review concludes that school-based obesity prevention programmes are unlikely to achieve sustained impact in isolation. Greater structural support, curriculum integration, staff training, and collaborative approaches involving families and wider systems are required to enhance effectiveness, equity, and long-term sustainability.

Keywords: childhood obesity; school-based interventions; obesity prevention; primary schools; United Kingdom

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ABBREVIATIONS

AFLY5: Active for Life Year 5

BMI: Body Mass Index

CASP: Critical Appraisal Skills Programme

CPD: Continuing Professional Development

JB: Joanna Briggs Institute

MMAT: Mixed Methods Appraisal Tool

NHS: National Health Service

PA: Physical Activity

PE: Physical Education

PSHE: Personal, Social, Health and Economic Education

RCT: Randomised Controlled Trial

SLR: Systematic Literature Review

UK: United Kingdom

WHO: World Health Organization

PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses

PICO: Population, Intervention, Comparison, Outcome

NCMP: National Child Measurement Programme

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CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 Introduction

Childhood obesity is widely recognised as one of the most pressing public health challenges in the United Kingdom and internationally (Office for Health Improvement and Disparities, 2022). It is defined as the excessive accumulation of body fat in children, typically measured using age and sex specific body mass index (BMI) percentiles, which increases the risk of adverse health outcomes (World Health Organization, 2023). In England, childhood obesity has reached alarming levels, with approximately one in four children classified as overweight or obese by the time they enter primary school, rising to over one in three by the end of primary education (NHS Digital, 2023). These figures highlight the urgent need for effective prevention strategies implemented early in life.

Childhood obesity is associated with a range of physical, psychological and social consequences. In the short term, children with obesity are more likely to experience musculoskeletal problems, asthma and reduced physical fitness, as well as low self-esteem and social stigma (Puhl and Latner, 2007). In the long term, childhood obesity is strongly linked to adult obesity and increased risk of chronic conditions such as type 2 diabetes, cardiovascular disease and certain cancers (Simmonds et al., 2016). The economic burden is also substantial, placing long-term strain on the National Health Service (NHS) and wider society.

Schools have been increasingly positioned as key settings for obesity prevention due to their ability to reach large numbers of children across diverse socio-economic backgrounds. Children spend a significant proportion of their time in school, where behaviours related to diet, physical activity and sedentary lifestyles can be influenced through curriculum content, school policies and the broader school environment (Langford et al., 2015). As a result, school-based childhood obesity prevention programmes have become a central component of UK public health strategy.

The focus of this dissertation is on school-based prevention programmes and their effects on childhood obesity in the UK, with particular attention to how such programmes are implemented and experienced in practice. Rather than evaluating individual interventions in isolation, this study examines the broader organisational, contextual and relational factors that shape programme effectiveness. By synthesising existing evidence, this research contributes to ongoing debates regarding the role of schools in public health and the conditions required for school-based interventions to achieve meaningful and sustainable impact.

1.2 Background and Current Context

1.2.1 Childhood Obesity as a Public Health Problem in the UK

Childhood obesity is a complex, multifactorial condition influenced by biological, behavioural, social and environmental determinants. In the UK, prevalence rates have steadily increased over recent decades, with disproportionate impact on children from socio-economically deprived communities (Public Health England, 2021). Data from the National Child Measurement Programme consistently demonstrate a strong social gradient, with obesity rates in the most deprived areas more than double those in the least deprived (NHS Digital, 2023). This inequality underscores the importance of population-level prevention strategies that address structural determinants rather than focusing solely on individual behaviour.

The aetiology of childhood obesity extends beyond excessive calorie intake and insufficient physical activity. Broader determinants include food environments characterised by high availability of energy-dense foods, reduced opportunities for active play, increased screen time and socio-cultural norms that shape dietary behaviours (Swinburn et al., 2011). These factors interact within children's everyday environments, including homes, neighbourhoods and schools. Consequently, public health approaches increasingly emphasise ecological models that recognise the influence of multiple settings and systems on child health (Sallis et al., 2015).

From a policy perspective, the UK government has introduced a range of strategies aimed at reducing childhood obesity, including the Childhood Obesity Plan for England and restrictions on advertising unhealthy foods to children (Department of Health and Social Care, 2020). Despite these initiatives, progress has been limited, suggesting that implementation challenges and contextual barriers may undermine the effectiveness of prevention efforts. This has led to increased attention on the role of schools as accessible and potentially influential settings for early intervention.

1.2.2 The Role of Schools in Health Promotion

Schools are uniquely positioned to influence children's health behaviours due to their structured environment, existing infrastructure and access to children across developmental stages. Beyond their educational function, schools have long been recognised as important settings for health promotion, as reflected in the World Health Organization's Health Promoting Schools framework (WHO, 2018). This framework advocates a whole-school approach, integrating health into curriculum content, school policies, physical environments and partnerships with families and communities.

In the UK, schools contribute to health promotion through statutory curriculum areas such as physical education (PE) and personal, social, health and economic education (PSHE). They

also influence dietary behaviours through school food standards and physical activity through opportunities for structured and unstructured movement (Department for Education, 2022). As a result, school-based interventions often target multiple behaviours simultaneously, including physical activity, nutrition and sedentary behaviour.

However, the expanding public health role of schools has generated debate. Critics argue that schools are already under pressure to meet academic targets and may lack the capacity, expertise or resources to deliver effective health interventions (Morris et al., 2018). Others suggest that positioning schools as primary agents of obesity prevention risks shifting responsibility away from broader structural and policy-level determinants, such as food marketing and urban design (Cummins et al., 2014). These tensions highlight the importance of examining not only whether school-based programmes work, but also how they are implemented and experienced within real-world educational contexts.

1.2.3 School-Based Childhood Obesity Prevention Programmes

School-based childhood obesity prevention programmes typically aim to promote healthy eating, increase physical activity and reduce sedentary behaviours (Ho, Cheng and Lau, 2021). Interventions vary widely in design, intensity and theoretical underpinning, ranging from curriculum-based education programmes to whole-school environmental changes and family engagement initiatives (Waters et al., 2011). Some programmes focus on knowledge and skills development, while others seek to modify school environments to support healthier choices.

Evidence regarding the effectiveness of these programmes is mixed. Systematic reviews have reported modest improvements in health behaviours but inconsistent effects on BMI and obesity prevalence (Brown et al., 2019). This has prompted growing recognition that outcome-focused evaluations alone may fail to capture the complexity of school-based interventions. Process-related factors such as implementation fidelity, staff engagement and contextual fit are increasingly recognised as critical determinants of success (Durlak and DuPre, 2008).

In the UK context, several large-scale interventions have been evaluated, often alongside qualitative process evaluations. These studies highlight that schools frequently adapt programmes to fit their specific contexts, balancing fidelity with feasibility. While adaptation may enhance acceptability, it can also dilute intervention intensity, potentially limiting impact. Understanding these dynamics is essential for informing realistic and sustainable public health strategies.

1.2.4 Current Challenges and Evidence Gaps

Despite extensive policy attention and programme development, childhood obesity rates remain high, indicating that existing approaches may be insufficient. Research increasingly suggests that school-based interventions alone are unlikely to reverse obesity trends without

broader systemic support (Swinburn et al., 2019). Furthermore, much of the existing evidence focuses on short-term outcomes, with limited exploration of sustainability, equity and stakeholder perspectives.

Qualitative research has increasingly sought to address these evidence gaps by exploring how school-based obesity prevention initiatives are perceived and implemented by key stakeholders, including teachers, school leaders, parents and children. UK-based qualitative studies have highlighted common challenges such as limited curriculum time, competing academic priorities, staff confidence in delivering health-related content, and sensitivity surrounding discussions of child weight (Howard-Drake and Halliday, 2015; Clarke et al., 2015a; Coupe et al., 2022). These studies provide valuable insight into the contextual and relational factors that shape programme delivery but remain dispersed across individual evaluations rather than being synthesised systematically.

Given these challenges, there is a clear need for a systematic synthesis of UK-based evidence that integrates effectiveness, implementation and experiential perspectives. By examining how school-based obesity prevention programmes operate in practice, this dissertation seeks to contribute to a more nuanced understanding of the realistic role schools can play in addressing childhood obesity within the UK policy and educational context.

1.3 Rationale for the Research / Problem Statement

The rationale for this research is grounded in the persistent prevalence of childhood obesity in the UK and the limited effectiveness of existing prevention strategies. Despite sustained policy attention and the implementation of multiple school-based interventions, childhood obesity rates remain high, particularly among children from socio-economically disadvantaged backgrounds (Public Health England, 2021; NHS Digital, 2023). This indicates a disconnect between policy ambition, programme delivery and real-world outcomes, highlighting the need for deeper examination of how interventions function in practice.

Schools are frequently positioned as central agents in childhood obesity prevention due to their access to children and perceived capacity to influence health behaviours. However, evidence suggests that schools operate within significant structural constraints, including curriculum pressures, limited staff capacity and competing educational priorities (Morris et al., 2018). Furthermore, educators often report uncertainty regarding their professional role in addressing obesity, particularly given the sensitivity surrounding weight-related issues and concerns about stigma and parental relationships (Puhl and Latner, 2007; Coupe et al., 2022). These challenges raise questions about the feasibility and sustainability of school-based prevention initiatives as they are currently designed and implemented.

While numerous studies have evaluated individual school-based obesity prevention interventions, much of the existing literature prioritises short-term behavioural or anthropometric outcomes, such as physical activity levels or BMI change (Waters et al., 2011; Brown et al., 2019). However, there is comparatively less emphasis on understanding how these interventions are implemented within real-world school contexts, including the influence of organisational capacity, leadership support and stakeholder engagement. Where qualitative and process evaluations exist, findings are often reported in isolation and have not been comprehensively synthesised within the UK context (Durlak and DuPre, 2008; Day et al., 2019). This limits the ability of policymakers and practitioners to draw coherent conclusions regarding what works, for whom and under what conditions.

This dissertation addresses this gap by conducting a systematic literature review of UK-based school childhood obesity prevention programmes, with a particular focus on effectiveness, implementation and contextual factors. The scope of the study is deliberately bounded to primary school settings within the UK, enabling in-depth analysis of a specific policy and educational context. By synthesising qualitative and mixed-methods evidence, this research seeks to provide a nuanced understanding of the role schools can realistically play in obesity prevention and to inform more context-sensitive, equitable and sustainable approaches.

1.4 Research Question

What school-based strategies are most effective in preventing obesity among primary school children in the United Kingdom?

1.5 Research Aim

The aim of this study is to critically evaluate the effectiveness of school-based obesity prevention programmes for primary school children in the United Kingdom through a systematic literature review.

In addition to examining reported outcomes, the study aims to explore how such programmes are implemented in practice and to identify the organisational, contextual and stakeholder-related factors that influence their effectiveness. By synthesising existing UK-based evidence, this research seeks to contribute to a more nuanced understanding of the role of schools in childhood obesity prevention and to inform future policy, practice and research in this area.

1.6 Research Objectives

To achieve the stated research aim, the following objectives were developed:

- To systematically identify and review UK-based studies evaluating school-based obesity prevention strategies for primary school children.

- To assess the effectiveness of school-based interventions in influencing obesity-related outcomes, including dietary behaviours, physical activity levels and psychosocial wellbeing.
- To explore challenges and barriers associated with the effective implementation of school-based obesity prevention programmes.
- To investigate the influence of teachers, school leadership and family engagement on the delivery and effectiveness of childhood obesity prevention interventions.
- To develop evidence-informed recommendations for policy, practice and future research aimed at strengthening the accessibility, implementation and effectiveness of school-based obesity prevention initiatives in the United Kingdom.

1.7 Chapter Summary

This chapter has introduced the research topic and provided the background and contextual foundation for the study. Childhood obesity was established as a significant public health challenge in the UK, characterised by persistent prevalence, widening inequalities and complex social determinants. The chapter outlined the growing policy emphasis on schools as settings for obesity prevention, while critically acknowledging the debates and challenges associated with expanding schools' public health responsibilities.

The background section demonstrated that although school-based interventions are widely implemented, their effectiveness is variable and shaped by organisational capacity, stakeholder engagement and contextual constraints. The rationale for the research highlighted gaps in the existing literature, particularly the limited synthesis of UK-based qualitative and process-focused evidence.

The chapter concluded by presenting the research question, aim and objectives that underpin this systematic literature review. Together, these elements justify the focus and scope of the study and establish a clear direction for subsequent chapters.

Chapter 2 will build on this foundation by critically reviewing the existing academic literature on childhood obesity, school-based prevention programmes and their effectiveness, identifying key themes, theoretical perspectives and gaps that inform the methodological approach adopted in this dissertation.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter presents a critical review of the academic literature relating to childhood obesity and school-based obesity prevention strategies in the United Kingdom. The purpose of the literature review is to examine the extent, nature and quality of existing research in order to establish a clear evidence base for the systematic literature review undertaken in this dissertation. By synthesising and critically evaluating previous studies, this chapter identifies key themes, theoretical perspectives and gaps in the literature that justify the chosen research approach.

The chapter begins by exploring childhood obesity as a public health issue, with particular attention to prevalence, determinants and health inequalities in the UK. It then examines the theoretical and policy rationale for school-based obesity prevention, including the role of schools in health promotion and behaviour change. The review proceeds to evaluate the effectiveness of school-based interventions, drawing on evidence from systematic reviews and empirical studies. Implementation challenges, including school capacity, stakeholder engagement and contextual constraints, are also critically examined.

Throughout the chapter, strengths and limitations of existing research are highlighted, with particular attention to methodological approaches, outcome measures and contextual relevance. The chapter concludes by identifying gaps in the current evidence base, particularly in relation to UK-focused, process-oriented research, thereby providing a clear justification for the systematic literature review presented in subsequent chapters.

2.2 Literature Review

2.2.1 Childhood Obesity: Definition, Prevalence and Public Health Significance

Childhood obesity is commonly defined as an abnormal or excessive accumulation of body fat that presents a risk to health, typically assessed using age- and sex-specific body mass index (BMI) thresholds (World Health Organization, 2023). In the UK, childhood obesity is monitored primarily through the National Child Measurement Programme, which measures BMI at school entry (Reception) and exit (Year 6). Recent data indicate that approximately 23% of children aged 10–11 years are classified as obese, with a further proportion overweight (NHS Digital, 2023). These figures highlight the scale and persistence of the problem.

Childhood obesity is widely recognised as a significant public health concern due to its association with adverse short- and long-term outcomes (The Free Obesity eBook, 2025). In childhood, obesity is linked to physical health issues such as insulin resistance, musculoskeletal problems and reduced cardiorespiratory fitness, as well as psychological consequences including low self-esteem, anxiety and social stigma (Puhl and Latner, 2007).

Longitudinal studies demonstrate that children with obesity are more likely to remain obese into adulthood, increasing their risk of chronic conditions such as type 2 diabetes, cardiovascular disease and certain cancers (Simmonds et al., 2016). These outcomes contribute to substantial healthcare costs and lost productivity, reinforcing the need for effective prevention strategies.

Importantly, childhood obesity in the UK displays a strong social gradient. Children living in the most deprived areas are significantly more likely to be obese than those in affluent areas (Public Health England, 2021). This pattern reflects broader structural inequalities, including differential access to healthy food, safe spaces for physical activity and health-promoting environments (Agurs-Collins et al., 2024). As a result, public health approaches increasingly emphasise prevention strategies that operate at population and settings-based levels, rather than relying solely on individual behaviour change.

2.2.2 Determinants of Childhood Obesity

The development of childhood obesity is influenced by a complex interaction of biological, behavioural, social and environmental factors. While individual behaviours such as dietary intake and physical activity are important, they are shaped by broader environmental and socio-economic contexts (Swinburn et al., 2011). Children's food choices are influenced by food availability, marketing practices and family routines, while physical activity levels are affected by opportunities for active transport, play and structured exercise.

Socio-economic status plays a critical role in shaping these determinants. Families experiencing deprivation may face barriers such as food insecurity, limited access to recreational spaces and time constraints related to work and caregiving responsibilities (Giskes et al., 2011). These factors contribute to unequal exposure to obesity risk and help explain persistent health inequalities observed in childhood obesity prevalence.

Ecological models of health behaviour provide a useful framework for understanding these dynamics. Such models conceptualise obesity as the outcome of interactions across multiple levels, including individual, interpersonal, organisational, community and policy environments (Sallis et al., 2015). Within this framework, schools are positioned as key organisational settings that can influence children's behaviours through education, policy and environmental change. This theoretical perspective underpins much of the rationale for school-based obesity prevention interventions.

Several UK-based school obesity prevention programmes have been developed and evaluated within this ecological framework. Notable examples include the Active for Life Year 5 (AFLY5) programme, which focused on improving physical activity and dietary behaviours through curriculum-based lessons and parental engagement (Kipping et al., 2011; Campbell

et al., 2015), and the WAVES (West Midlands Active lifestyle and healthy Eating in School children) intervention, which combined classroom education with family involvement strategies (Griffin et al., 2014; Clarke et al., 2015b). In addition, initiatives such as the Manchester Healthy Schools Programme have adopted whole-school approaches to promoting healthy lifestyles, emphasising shared responsibility between schools, families and communities (Goldthorpe et al., 2020). These programmes form a key part of the UK evidence base examined in this dissertation.

2.2.3 Schools as Settings for Childhood Obesity Prevention

Schools are widely regarded as strategic settings for obesity prevention due to their reach, structure and potential to influence health behaviours during critical developmental periods (Prevention et al., 2012). Children spend a substantial proportion of their time in school, where they are exposed to food provision, physical activity opportunities and health-related education (Langford et al., 2015). Consequently, schools offer opportunities to promote healthy behaviours across diverse population groups, including those at increased risk of obesity.

The World Health Organization's Health Promoting Schools framework emphasises a whole-school approach to health promotion, integrating curriculum-based education with supportive school environments, policies and community partnerships (WHO, 2018). In the UK, this approach is reflected in initiatives such as school food standards, mandatory physical education requirements and inclusion of health topics within PSHE education.

However, the expanding role of schools in public health has been subject to debate. While proponents argue that schools are well placed to support early prevention, critics highlight that schools face increasing academic accountability pressures and may lack the resources or expertise required to deliver effective health interventions (Morris et al., 2018). This tension raises important questions regarding the feasibility and sustainability of school-based obesity prevention programmes, particularly in under-resourced settings.

2.2.4 Effectiveness of School-Based Obesity Prevention Interventions

A substantial body of research has examined the effectiveness of school-based interventions aimed at preventing childhood obesity in the United Kingdom (Nally et al., 2021). Evaluated programmes include AFLY5, WAVES, and locally implemented healthy lifestyle initiatives such as the Manchester Healthy Schools Programme (Kipping et al., 2011; Griffin et al., 2014; Campbell et al., 2015; Goldthorpe et al., 2020). Systematic reviews of school-based interventions have reported modest improvements in health behaviours, including increased physical activity and improved nutritional knowledge, but inconsistent effects on BMI and obesity prevalence (Waters et al., 2011; Brown et al., 2019). These findings suggest that while

schools can influence proximal health behaviours, translating these changes into sustained anthropometric outcomes remains challenging.

Several explanations have been proposed for these mixed results. First, many interventions are of limited duration or intensity, reducing their potential to produce sustained effects. Second, variability in implementation fidelity can weaken intervention impact. Third, broader environmental influences outside the school setting may offset gains achieved during school hours. These limitations have led researchers to argue that effectiveness should be assessed alongside implementation quality and contextual fit rather than through outcome measures alone (Durlak and DuPre, 2008).

2.2.5 Implementation Challenges in School-Based Obesity Prevention

While numerous school-based obesity prevention programmes have been developed and evaluated, implementation challenges are widely reported in the literature (Almutairi, Burns and Portsmouth, 2022). Research consistently indicates that the success of school-based interventions is highly dependent on contextual and organisational factors rather than programme design alone (Durlak and DuPre, 2008). Schools operate within complex systems characterised by competing priorities, limited resources and varying levels of institutional support, all of which can influence programme delivery.

One of the most frequently cited challenges is limited curriculum time. Studies have shown that academic accountability pressures often lead schools to prioritise core subjects such as mathematics and literacy, leaving limited space for health promotion activities (Morris et al., 2018). As a result, obesity prevention programmes may be delivered inconsistently, shortened or deprioritised altogether. This challenge is particularly evident in primary school settings, where teachers are responsible for delivering a broad curriculum within constrained timetables.

Staff capacity and training also present significant barriers. Teachers frequently report limited confidence in delivering nutrition education or physical activity interventions, particularly when content extends beyond their professional training (Vila et al., 2019). Without adequate professional development, interventions may be implemented with reduced fidelity or enthusiasm, potentially limiting their effectiveness. Leadership support has been identified as a critical facilitator, with schools demonstrating stronger implementation when senior leaders actively prioritise health promotion (Aarons et al., 2011). However, reliance on individual champions raises concerns about sustainability when leadership changes occur.

Resource constraints further exacerbate implementation difficulties. Schools in socio-economically disadvantaged areas often face greater challenges related to inadequate facilities, limited access to equipment and reduced opportunities for external partnerships

(Moore et al., 2018). These disparities highlight the risk that school-based interventions may unintentionally widen health inequalities if contextual differences are not adequately addressed.

2.2.6 The Role of Teachers, School Leadership and Families

The literature consistently highlights the importance of key stakeholders in shaping the effectiveness of school-based obesity prevention programmes (J et al., 2013). Teachers play a central role in programme delivery and act as intermediaries between intervention content and pupils' lived experiences. Their beliefs, confidence and perceived role legitimacy can significantly influence engagement and fidelity (Langford et al., 2015).

School leadership has been identified as a particularly influential factor. Headteachers and senior leaders control resource allocation, curriculum priorities and school culture, all of which affect whether health initiatives are embedded or marginalised (Morris et al., 2018). Studies suggest that when obesity prevention aligns with educational goals and is supported by leadership, programmes are more likely to be sustained. Conversely, lack of strategic support can result in fragmented or short-lived implementation.

Family engagement is widely recognised as essential for reinforcing school-based health messages. Evidence indicates that interventions involving parents are more likely to influence dietary behaviours and physical activity beyond the school environment (Van Lippevelde et al., 2012). However, engaging families presents challenges, particularly in contexts of socio-economic disadvantage. Time constraints, cultural beliefs and fear of blame or judgement can limit parental participation (Giskes et al., 2011). These findings suggest that family engagement strategies must be flexible, culturally sensitive and non-stigmatising.

2.2.7 Weight Stigma, Sensitivity and Ethical Considerations

An important but often underexplored aspect of childhood obesity prevention is the role of weight stigma. Research indicates that children with obesity frequently experience stigma and discrimination, which can negatively impact mental health and discourage engagement in physical activity and health-promoting behaviours (Puhl and Heuer, 2010). Within school settings, concerns about stigma have influenced how obesity prevention programmes are framed and delivered.

Several studies have cautioned against interventions that focus explicitly on weight or BMI, as such approaches may unintentionally reinforce negative stereotypes or cause emotional harm (Pont et al., 2017). As a result, many programmes adopt a wellbeing-focused or "healthy lifestyles" approach, emphasising physical activity, nutrition and overall wellbeing rather than weight loss. While this framing is generally viewed as more acceptable, it raises questions

about how effectiveness should be measured and whether obesity outcomes may be indirectly addressed (Casu, Gillespie and Nisbett, 2020).

Ethical considerations are particularly salient in school-based research involving children. Ensuring interventions are inclusive, respectful and supportive is essential for safeguarding children's wellbeing. The literature increasingly advocates for approaches that prioritise empowerment, positive body image and mental health alongside physical health outcomes (WHO, 2016). These considerations reinforce the need for careful evaluation of both intended and unintended effects of obesity prevention programmes.

2.2.8 Methodological Strengths and Limitations of Existing Research

The existing literature on school-based obesity prevention is characterised by considerable methodological diversity. Quantitative studies, including randomised controlled trials, provide valuable evidence on behavioural and anthropometric outcomes but often struggle to capture contextual complexity (Waters et al., 2011). Many trials report modest or null effects on BMI, leading to questions about intervention effectiveness.

Qualitative and mixed-methods studies offer complementary insights by exploring implementation processes, stakeholder experiences and contextual influences. These approaches are particularly valuable for understanding why interventions succeed or fail in real-world settings (Durlak and DuPre, 2008). However, qualitative studies are sometimes criticised for limited generalisability and reliance on self-reported data, which may be subject to bias.

Another limitation of the literature is the predominance of short-term evaluations, with few studies examining long-term sustainability or follow-up outcomes beyond the intervention period (Craig et al., 2008; Day et al., 2019).

2.2.9 Gaps in the Literature and Justification for the Present Study

Despite extensive research activity, several gaps remain in the literature. First, there is limited synthesis of UK-based qualitative and mixed-methods evidence examining implementation and stakeholder perspectives (Noyes et al., 2020). Second, many studies focus on outcomes without sufficient attention to context, fidelity and acceptability. Third, there is a lack of integrated analysis examining how organisational capacity, leadership, family engagement and sensitivity intersect to shape programme effectiveness.

These gaps highlight the need for a systematic literature review that brings together diverse forms of evidence to provide a comprehensive understanding of school-based obesity prevention in the UK. By synthesising findings across studies and methodologies, this

dissertation seeks to address these limitations and inform more realistic, context-sensitive and equitable approaches to childhood obesity prevention (Hassan et al., 2024).

2.3 Chapter Summary

This chapter has critically reviewed the academic literature relating to childhood obesity and school-based obesity prevention strategies within the UK context. Childhood obesity was established as a significant public health challenge characterised by complex determinants and persistent socio-economic inequalities. The literature highlighted schools as important settings for prevention, while also acknowledging debates regarding their capacity and role in addressing obesity.

Evidence regarding the effectiveness of school-based interventions was shown to be mixed, with modest behavioural improvements but inconsistent impacts on obesity outcomes. Implementation challenges, including limited time, resources and staff capacity, were consistently identified as key barriers. The role of teachers, school leadership and family engagement emerged as critical influences on programme delivery and sustainability, while ethical concerns around weight stigma underscored the importance of sensitive, wellbeing-focused approaches.

The review also identified methodological limitations within existing research, including short-term evaluations and limited synthesis of qualitative evidence. These gaps provided clear justification for the systematic literature review undertaken in this dissertation. Chapter 3 will now outline the research methodology, detailing the systematic review design, search strategy, inclusion criteria and analytical approach used to address the research question.

CHAPTER 3: METHODOLOGY

3.1 Introduction to Chapter

This chapter outlines the methodological framework used to undertake a systematic literature review (SLR) examining the effectiveness of school-based obesity prevention programmes for children in the United Kingdom (Nally et al., 2021b). The chapter provides a clear description of the SLR design, illustrating the structured, transparent and replicable procedures followed in accordance with PRISMA guidelines (Moher et al., 2009). The chapter begins by defining the SLR approach and justifying its relevance to the research aim. It then explains the development of the search strategy, including database selection, construction of search terms, and the use of the PICO framework to guide the formulation of the review question. This chapter also details the inclusion and exclusion criteria, screening process, and extraction of data from the final included studies. A PRISMA flow diagram illustrates the selection process, culminating in 10 included studies relevant to UK school-based obesity prevention programmes. Ethical considerations and a chapter summary are also provided.

3.2 Systematic Literature Review

3.2.1 Definition and Purpose of Systematic Literature Review

A systematic literature review (SLR) is a structured and transparent method used to identify, appraise and synthesise research evidence relevant to a predefined question (Greenhalgh et al., 2018). SLRs differ from traditional narrative reviews by following explicit, replicable, and organised procedures designed to minimise selection bias and improve reliability (Pae, 2015). The purpose of conducting an SLR in this dissertation is to rigorously examine empirical evidence on the effectiveness of UK school-based obesity prevention programmes for children (evidence.nihr.ac.uk, n.d.). Childhood obesity is a complex and persistent public health issue, and schools play a critical role in shaping children's health behaviours (Ali, Osamah Al-Ani and Faisal Al-Ani, 2024). An SLR enables the consolidation of diverse findings, providing evidence-based insights into intervention outcomes, contextual influences, and implementation challenges.

3.2.2 Steps in Conducting an SLR

The SLR was conducted according to PRISMA guidelines and involved a multi-step process:

1. Development of a protocol stating aims, scope, eligibility criteria and review procedures.
2. Formulation of a focused research question using the PICO framework.
3. Development of search terms including keywords, synonyms and Boolean operators.
4. Database searching across PubMed, ProQuest, ScienceDirect and PsycINFO

5. Screening of titles and abstracts, followed by full-text screening.
6. Application of inclusion and exclusion criteria.
7. Data extraction using a structured template.
8. Quality appraisal using CASP checklists.
9. Synthesis of findings to identify patterns, themes and impacts of interventions.

3.3 Search Strategy

3.3.1 Definition of Search Strategy

A search strategy is a systematic and transparent plan used to identify and retrieve literature relevant to a predefined research question. Within a systematic literature review, a clearly defined search strategy is essential to ensure comprehensive coverage, reproducibility, and methodological rigour, while reducing the risk of selection bias (Gale et al., 2013).

In this review, the search strategy was informed by the PICO framework, which supported the identification of key concepts relating to the population, intervention, outcomes, and context of the study. Relevant keywords and synonyms were systematically combined using Boolean operators, primarily AND and OR. The OR operator was used to group synonymous terms and broaden the search, while the AND operator was applied to link different concepts and restrict results to studies directly relevant to the research aim (Greenhalgh et al., 2018).

3.3.2 Process of Comprehensive Search and Date Limits

A comprehensive and systematic search was conducted across four electronic databases: PubMed, ScienceDirect, ProQuest, and PsycINFO. These databases were selected due to their strong coverage of public health, education, and behavioural science research relevant to school-based obesity prevention (Gale et al., 2013).

Searches were undertaken using structured Boolean search strings developed from the PICO framework. Synonyms within each concept were combined using the OR operator to maximise sensitivity, while different concepts were linked using the AND operator to improve the relevance and precision of retrieved studies (Salvador-Oliván, Marco-Cuenca and Arquero-Avilés, 2019). This approach ensured consistency and methodological rigour across all database searches (Greenhalgh et al., 2018).

Filters were applied to restrict results to peer-reviewed studies published in English, involving human participants, and conducted within school settings in the United Kingdom. All retrieved records were exported to reference management software, and duplicate studies were removed prior to the screening process.

3.4 Search Terms

3.4.1 Definition and Importance of Search Terms

Search terms are the words and phrases used to retrieve relevant literature during database searching. They represent core concepts of the research question and must be carefully chosen to ensure comprehensive coverage of the topic (Bramer et al., 2018). The importance of search terms lies in their ability to influence the quality and quantity of retrieved studies. Inaccurate or incomplete search terms may lead to retrieval bias, while well-constructed terms ensure the inclusion of all relevant evidence and increase the reliability of the review (Lavelle et al., 2012).

3.4.2 Importance of Using Synonyms

Synonyms broaden the search and help capture variations in terminology used by different authors. For example, “childhood obesity” may also appear as “paediatric obesity,” and “school-based programmes” may be referred to as “school interventions” or “healthy lifestyle programmes.” Using synonyms ensures that the review does not overlook studies due to semantic variations and is therefore an essential part of systematic searching.

3.4.3 Explanation of PICO Framework and Its Use in Search Development

The PICO framework guided the development of search terms. It provides a structured approach for translating a research question into searchable components. The PICO elements used in this study were:

Table 1. PICO Framework

Component	Description
Population (P)	School-aged children (5–16 years) in the UK
Intervention (I)	School-based obesity prevention programmes
Comparison (C)	Usual school practice or no intervention
Outcome (O)	BMI, diet, physical activity, psychosocial outcomes

PICO-Derived Search Question

What school-based strategies are most effective in preventing obesity among primary school children in the United Kingdom

Search Term Development

From the PICO categories, synonyms were identified and combined using Boolean operators.

Population (P):

- child
- school children
- pupils
- paediatric population

Intervention (I):

- school-based intervention
- obesity prevention programme
- healthy lifestyle programme
- nutrition education
- physical activity intervention

Context (UK):

- United Kingdom
- UK
- England
- Scotland
- Wales
- Northern Ireland

Outcomes (O):

- BMI OR body mass index
- diet OR dietary behaviour
- physical activity
- psychosocial wellbeing

An example of search string to find the articles is as following:

(child OR school children OR paediatric) AND (obesity OR overweight) AND (school-based intervention OR healthy lifestyle programme OR nutrition education OR physical activity programme) AND (United Kingdom OR UK OR England OR Scotland OR Wales OR Northern Ireland) AND (BMI OR body mass index OR diet OR physical activity)

3.5 Keywords

Keywords are essential terms that capture the main concepts of a research topic. They are used to index, retrieve and filter academic literature during database searches. Effective keyword selection ensures that searches remain focused, systematic and replicable (Greenhalgh et al., 2018). Keywords also support Boolean combinations and the development of search strings aligned with the PICO framework, enabling the retrieval of studies that directly relate to school-based childhood obesity prevention.

The primary keywords used were:

childhood obesity, school-based intervention, obesity prevention, nutrition education, physical activity, UK, BMI, healthy lifestyle programme, primary schools, dietary behaviour, physical activity promotion.

3.6 Databases

3.6.1 Process of Searching Information

To ensure comprehensive identification of relevant literature, four academic databases were systematically searched: PubMed, ScienceDirect, ProQuest, and PsycINFO. Each database was searched independently using Boolean search strings derived from the PICO framework. Filters were applied to restrict the search to peer-reviewed studies published between 2015 and 2025, conducted in the UK, involving school-aged children, and focusing on obesity prevention. All retrieved studies were imported into reference management software, where duplicates were removed before screening.

3.6.2 Importance of Using Multiple Databases

Using multiple databases enhances the comprehensiveness of the review, as no single database covers all relevant public health, educational and behavioural research. Moher et al. (2009) note that up to 40% of relevant literature may be missed when relying on a single database. Since childhood obesity prevention spans health science, psychology, behavioural economics and education, using several databases reduces the risk of retrieval bias and ensures robust evidence coverage.

3.6.3 Databases Searched

The following databases were used due to their relevance to the research topic:

- **PubMed:** biomedical and public health research.
- **ScienceDirect:** multidisciplinary health, behavioural and educational studies.
- **ProQuest:** education, social sciences and policy-focused literature.
- **PsycINFO:** behavioural, cognitive and psychosocial perspectives on childhood obesity and school engagement.

3.7 Inclusion and Exclusion Criteria

Eligibility criteria ensure that the review includes only studies directly relevant to the research question. Inclusion and exclusion criteria improve transparency, reduce bias and strengthen the reliability of the findings (CASP, 2018). Criteria were developed using the PICO framework to ensure alignment with the intervention context, population, setting and outcomes of interest. Application of these criteria occurred during both the title/abstract screening and full-text assessment phases. Only empirical UK-based studies investigating school-based obesity prevention interventions were included. Qualitative, and mixed-methods designs were eligible to allow for comprehensive evaluation of implementation, effectiveness and stakeholder experiences. Studies were excluded if they did not align with the school setting, intervention type or required outcomes.

3.7.1 Inclusion Criteria

Studies were included if they:

- Were conducted in the UK.
- Involved children aged 5–16 years.
- Evaluated school-based obesity prevention programmes, including nutrition, physical activity or whole-school interventions.
- Reported outcomes such as BMI, dietary behaviours, physical activity and/or psychosocial wellbeing.
- Were peer-reviewed primary research studies (qualitative or mixed-methods).
- Were published between 2015–2025 and in English.

3.7.2 Exclusion Criteria

Studies were excluded if they:

- Were conducted outside the UK.
- Focused on obesity treatment rather than prevention.
- Did not take place in a school setting.

- Did not report relevant health or behavioural outcomes.
- Were reviews, editorials, dissertations or non-peer-reviewed articles.
- Involved populations outside the 5–16 age range.

3.8 Search Results

The systematic search of the four electronic databases yielded a total of 1,864 records, comprising 540 records from PubMed, 680 from ScienceDirect, 425 from ProQuest, and 219 from PsycINFO. All records were exported into reference management software to support systematic screening and duplicate removal.

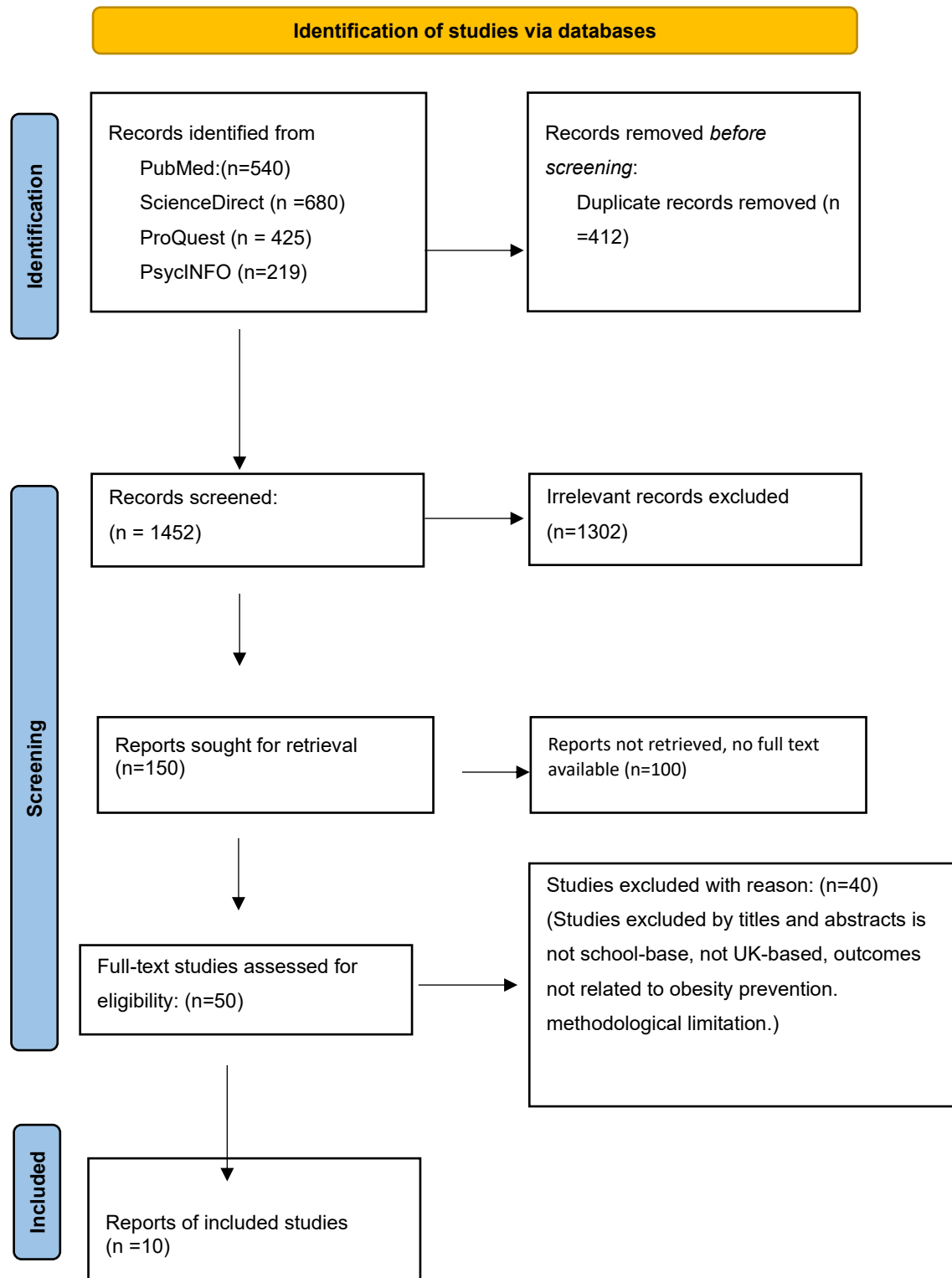
During the initial screening process, 412 duplicate records were identified and removed. This resulted in 1,452 unique records, which were subsequently screened based on their titles and abstracts. Following this stage, 1,302 records were excluded as they did not meet the predefined inclusion criteria. The most common reasons for exclusion included studies not conducted in the United Kingdom, interventions not delivered within school settings, a focus on obesity treatment rather than prevention, studies involving adult or pre-school populations, and outcomes not related to obesity prevention.

After title and abstract screening, 150 studies were considered potentially eligible and were sought for full-text retrieval. Of these, 110 full-text articles could not be retrieved, primarily due to lack of access or unavailable full texts. Consequently, 50 full-text articles were assessed for eligibility.

Following detailed full-text assessment, 40 studies were excluded. Reasons for exclusion at this stage included interventions not being school-based, studies conducted outside the UK, outcomes not relevant to obesity prevention, and methodological limitations that reduced the suitability of the studies for inclusion.

Ultimately, 10 studies met all inclusion criteria and were included in the final synthesis.

Figure 3.1: PRISMA 2020 flow diagram for new systematic reviews which included searches of databases



3.9 Ethical Considerations

Although this study was based exclusively on secondary data and did not involve direct interaction with human participants, ethical principles and research integrity were strictly upheld throughout the systematic literature review process. Conducting research involving children, even indirectly, requires careful ethical consideration, and therefore recognised ethical standards were applied at every stage (Greenhalgh et al., 2018).

Academic integrity was maintained by ensuring transparency in the review process, including clear documentation of search strategies, inclusion and exclusion criteria, and data synthesis methods. This enhanced the credibility and reproducibility of the review.

Plagiarism was rigorously avoided through accurate citation, paraphrasing, and referencing of all sources using an appropriate academic referencing style. All original authors were fully acknowledged to respect intellectual property rights (Clarke, 2019).

Bias was minimised by applying predefined eligibility criteria consistently, following PRISMA guidelines, and using structured data extraction and quality appraisal tools (Liberati et al., 2009). These steps reduced the risk of selection bias, confirmation bias, and misinterpretation of findings.

Presentation of findings was handled responsibly by accurately reporting results without exaggeration, distortion, or selective reporting. Findings were synthesised objectively to reflect the evidence presented in the included studies.

Only peer-reviewed studies were included, all of which were assumed to have obtained ethical approval from their respective institutional review boards, particularly given their involvement with children, a vulnerable population. As outlined in the approved research proposal, a PG2 ethical approval form was completed to confirm that this secondary research met university requirements for low-risk studies and adhered to principles of responsible scholarship.

3.10 Chapter Summary

This chapter has outlined the comprehensive methodological approach used to conduct a systematic literature review exploring the effectiveness of school-based obesity prevention programmes in the UK. It detailed the rationale for adopting an SLR, the development of the search strategy, and the use of the PICO framework to structure the research question and guide keyword selection. The chapter also described the database search process, inclusion and exclusion criteria, and screening procedures, culminating in 10 studies included in the final analysis. The PRISMA diagram illustrated the transparent study selection pathway, while ethical considerations ensured adherence to research integrity principles. Collectively, this methodology strengthens the reliability and validity of the review findings. The next chapter

(Chapter 4) presents the results and thematic synthesis derived from the 10 included studies, examining key patterns, intervention effectiveness, and contextual influences shaping obesity prevention outcomes in UK schools.

CHAPTER 4: DATA EXTRACTION AND EVALUATION

4.1 Introduction

This chapter presents the processes used to extract data and critically evaluate the quality of the studies included in this dissertation. Following the systematic identification and selection of relevant literature, rigorous data extraction and appraisal procedures were undertaken to ensure transparency, methodological robustness and credibility of the review findings. The chapter begins with an overview of data extraction and the development of a structured data extraction form. This is followed by an introduction to critical appraisal and paper quality assessment, including a discussion of appraisal tools and their relevance. The chapter then evaluates the methodological quality of the included studies using appropriate tools: the Critical Appraisal Skills Programme (CASP) checklist for qualitative studies and the Mixed Methods Appraisal Tool (MMAT) for the single mixed-methods study. A summary of strengths, limitations and overall study quality is provided, with signposting to the next chapter.

4.2 Data Extraction

Data extraction is a systematic process of identifying, collecting and recording relevant information from selected studies in a consistent and transparent manner (Higgins et al., 2022). The purpose of data extraction is to ensure that key characteristics of each study are captured accurately to support comparison, synthesis and interpretation of findings. For this dissertation, a predesigned data extraction form was developed to enhance consistency and reduce the risk of bias (Büchter, Weise and Pieper, 2020). The form captured information including author(s), year of publication, study aims, study design, setting, participant characteristics, data collection methods, analytical approach and key findings relevant to school-based childhood obesity prevention (see in appendix C). This structured approach ensured that all included studies were evaluated against the same criteria, facilitating robust synthesis across studies and supporting subsequent critical appraisal.

4.3 Introduction to Critical Appraisal and Paper Quality Assessment

Critical appraisal refers to the systematic evaluation of research studies to assess their methodological quality, credibility and relevance (Polit and Beck, 2021). It involves examining the trustworthiness of evidence, the appropriateness of research design and methods, and the extent to which findings are transferable to other contexts (Korstjens and Moser, 2018). Appraising research papers is essential to identify potential sources of bias, methodological weaknesses and strengths that may influence the interpretation of findings (Aveyard, Preston and Farquhar, 2023). In the context of a dissertation, critical appraisal ensures that conclusions are informed by high-quality evidence rather than being driven solely by study outcomes. It also enables the reviewer to weigh evidence appropriately and justify inclusion

or exclusion decisions. Without critical appraisal, there is a risk of overestimating the reliability of flawed studies, which could compromise the validity of the overall review.

4.4 Critical Appraisal Tools

A critical appraisal tool is a structured checklist or framework designed to guide the systematic evaluation of research studies (CEBM, 2021). These tools help reviewers assess key methodological components such as clarity of research aims, appropriateness of design, sampling strategy, data collection, data analysis, ethical considerations and the value of the research. Choosing the correct appraisal tool is essential, as different study designs require different evaluative criteria. For example, qualitative studies require appraisal of reflexivity and depth of analysis, whereas quantitative studies emphasise validity, reliability and statistical rigour. Using an inappropriate tool may result in incomplete or inaccurate assessment of study quality. Critical appraisal tools are therefore expected to evaluate methodological rigour, transparency, ethical standards and the credibility of findings, ensuring that included studies contribute meaningfully to the evidence base.

4.5 Evaluation of Qualitative Studies Using the CASP Tool

Nine of the ten studies included in this systematic review adopted qualitative methodologies. The Critical Appraisal Skills Programme (CASP) qualitative checklist was used to evaluate these studies because it is a well-established, UK-recognised appraisal tool widely used in public health, education and nursing research (CASP, 2024). CASP is particularly appropriate for this dissertation, given the review focus on stakeholder perspectives, experiences and contextual factors influencing school-based childhood obesity prevention programmes in the UK (CASP, 2024).

The CASP qualitative checklist consists of ten structured questions that assess: clarity of research aims, appropriateness of qualitative methodology, research design, recruitment strategy, data collection methods, researcher participant relationships (reflexivity), ethical considerations, rigour of data analysis, clarity of findings and overall research value. A key strength of CASP is that it promotes critical engagement with methodological quality rather than relying on numerical scoring. This aligns with qualitative epistemology, which values depth, transparency and contextual understanding. However, a limitation of CASP is the absence of a scoring system, which may reduce ease of comparison between studies. Alternative tools, such as the Joanna Briggs Institute (JBI) checklist, offer more prescriptive criteria, but CASP was deemed more suitable due to its flexibility and frequent use in UK-based systematic reviews.

Strengths and Weaknesses of the CASP Tool

The Critical Appraisal Skills Programme (CASP) qualitative checklist has several strengths that make it particularly suitable for appraising qualitative research within systematic reviews (Long, French and Brooks, 2020). A key strength is its structured yet flexible approach, which encourages critical engagement with methodological quality rather than reliance on numerical scoring (CASP, 2018). This is particularly appropriate for qualitative research, where concepts such as credibility, reflexivity and contextual depth are prioritised over quantification (Polit and Beck, 2021).

CASP systematically guides reviewers through core methodological components, including clarity of research aims, appropriateness of study design, recruitment strategy, data collection, ethical considerations and rigour of analysis (CASP, 2018). This structured approach enhances transparency and consistency across studies, thereby strengthening the credibility of the synthesis. Furthermore, CASP is widely recognised and frequently used in UK public health, education and nursing research, supporting alignment with national academic standards (Long et al., 2020).

However, CASP also has limitations. The absence of a formal scoring system can make direct comparison between studies more challenging and introduces an element of subjectivity into appraisal decisions (Hannes, 2011). In addition, CASP offers limited guidance on weighting individual criteria, meaning that studies with minor methodological weaknesses may appear comparable to more robust studies. Despite these limitations, when used alongside narrative justification, CASP provides a rigorous and appropriate framework for qualitative appraisal.

Justification for Use of CASP in This Systematic Review

The CASP qualitative checklist was particularly appropriate for this systematic review because the review predominantly synthesised qualitative studies exploring stakeholder perspectives, experiences and contextual factors influencing school-based childhood obesity prevention programmes in the UK (Carroll et al., 2022). Qualitative methods are well suited to examining complex social processes and institutional influences, and CASP aligns with this interpretive epistemological approach (Polit and Beck, 2021).

Additionally, CASP is commonly used in UK-based systematic reviews within public health and education, enhancing methodological credibility and comparability (Noyes et al., 2019). Given the diversity of qualitative designs included in this review such as semi-structured interviews, focus groups and phenomenological approaches CASP offered sufficient flexibility to appraise methodological quality consistently while remaining sensitive to contextual and design-specific nuances (Hamilton and Finley, 2019).

Each qualitative study was appraised independently against all CASP criteria, and no studies were excluded at this stage, as all demonstrated sufficient methodological quality to contribute meaningfully to the review. A summary of individual study appraisal is provided below, with full CASP tables presented in Appendix A.

Saleh et al. (2024) explored barriers and facilitators to school-based obesity prevention from headteachers' perspectives using a phenomenological approach. The methodology was well aligned with the study's aim of capturing lived experiences and contextual influences on prevention practices (Saleh et al., 2024). Data collection and analysis procedures were described in detail, enhancing transparency and rigour. Notably, this study explicitly addressed reflexivity, acknowledging the researchers' perspectives and potential influence on interpretation, which strengthened trustworthiness. Ethical approval and informed consent were clearly reported. Given its contemporary policy context and strong methodological alignment, this study was appraised as high quality and particularly relevant to current UK obesity prevention strategies.

Coupe et al. (2022) examined educators' experiences of discussing child weight with parents in primary school settings, focusing on communication challenges and emotional sensitivity. A qualitative design was appropriate for exploring this complex and potentially stigmatising topic (Coupe et al., 2022). Recruitment targeted educators with direct experience of weight-related conversations, enhancing relevance. Thematic analysis was conducted rigorously, and ethical sensitivity was evident throughout the study design and reporting. CASP appraisal identified strong credibility and depth of insight; however, limited discussion of data saturation was noted as a minor limitation. Overall, the study was assessed as high quality and provided valuable evidence on the relational and emotional dimensions of obesity prevention.

Goldthorpe et al. (2020) adopted a multi-stakeholder qualitative approach to explore perceptions of a healthy lifestyles intervention among children, parents and school staff. The inclusion of multiple perspectives enabled triangulation and enhanced credibility (Goldthorpe et al., 2020). Data collection methods were appropriate, and thematic analysis was conducted systematically. Ethical considerations were robust, particularly in relation to safeguarding child participants. CASP appraisal identified high methodological quality, although transferability may be limited to similar urban school contexts. Overall, the study contributed valuable insight into shared responsibility and acceptability of interventions.

Day et al. (2019) explored school staff experiences of implementing healthy lifestyle programmes, with a particular emphasis on implementation processes and sustainability. The study demonstrated strong methodological rigour, including a large qualitative sample and the use of an established implementation framework to guide analysis (Day et al., 2019). Data

collection and analysis procedures were clearly reported, and findings were analytically rich and well contextualised. Ethical approval and consent procedures were appropriately addressed. CASP appraisal identified this study as high quality, with particular strength in its depth of analysis and contribution to understanding implementation barriers and facilitators.

Howard-Drake and Halliday (2015) explored primary school headteachers' perspectives on barriers and facilitators to childhood obesity prevention within the English education system. The study clearly articulated its research aims, which focused on understanding leadership-level decision-making in relation to health promotion (Howard-Drake and Halliday, 2015). A qualitative design using semi-structured interviews was appropriately selected, allowing participants to reflect in depth on policy pressures, school responsibilities and perceived limitations. Purposive sampling ensured that participants occupied strategic leadership roles, thereby enhancing the relevance and credibility of the data. Data were analysed using thematic analysis, with themes clearly derived from participant accounts and supported by verbatim quotations. Ethical approval and informed consent procedures were explicitly reported. However, limited reflexive discussion was identified. Despite this, the study was assessed as high quality and provided important insights into institutional barriers.

Clarke et al. (2015a) examined headteacher perspectives on obesity prevention in English primary schools, with a specific focus on the perceived role of schools within broader public health agendas. The research aims were clearly stated, and the qualitative methodology was well justified for exploring complex organisational and policy-related issues (Clarke et al., 2015a). Semi-structured interviews facilitated exploration of competing educational priorities, accountability pressures and resource constraints. The use of framework analysis strengthened analytical transparency and enabled systematic comparison across participants. The inclusion of schools from varied socio-economic contexts enhanced transferability.

Clarke et al. (2015b) investigated parent and child perceptions of a school-based obesity prevention intervention, providing insight into acceptability and engagement at the family level. Focus groups were appropriately selected to capture shared experiences, social norms and interactions between participants (Clarke et al., 2015b). Recruitment procedures were clearly described, and ethical considerations were particularly robust, with careful attention given to informed consent and child assent. Data analysis followed a structured framework approach, and findings were supported by rich qualitative data. Potential social desirability bias was acknowledged.

Griffin et al. (2014) explored teachers' experiences of delivering the WAVES obesity prevention intervention in UK primary schools. A qualitative design using semi-structured interviews was appropriate for examining implementation processes and perceived barriers and facilitators.

Teachers who had directly delivered the intervention were purposively recruited, enhancing the relevance and credibility of the findings (Griffin et al., 2014).

Framework analysis was applied systematically, allowing both deductive and inductive theme development, with clear use of illustrative quotations to support transparency. Ethical approval and informed consent were clearly reported. A minor limitation was the potential for self-selection bias, as participating teachers may have been more motivated than non-participants, alongside limited reflexive discussion. Overall, the study was appraised as high quality and provided valuable insight into implementation fidelity and the need for flexibility in programme delivery (Griffin et al., 2014).

Kipping et al. (2011) formed part of the process evaluation of the Active for Life Year 5 (AFLY5) intervention, focusing on strategies to enhance parental involvement in school-based obesity prevention. Qualitative interviews and focus groups were appropriately used to capture parent, child and teacher perspectives on engagement mechanisms, including homework tasks and newsletters (Kipping et al., 2011).

The study showed clear alignment between aims, methods and findings, with rigorous thematic analysis supported by verbatim quotations. Ethical considerations, including parental consent and child assent, were carefully addressed. Although the sample was relatively small and potentially self-selecting, which may limit transferability, the study provided strong practical insight into feasible approaches to parental engagement. CASP appraisal identified the study as methodologically sound and highly relevant to understanding family involvement in school-based obesity prevention (Kipping et al., 2011).

Overall, CASP appraisal indicated that all nine qualitative studies were of moderate to high quality. Common strengths included clear aims, appropriate methodologies and rich contextual data. Recurring limitations included limited reflexivity and potential selection bias. Despite these limitations, the studies collectively provide a robust qualitative evidence base for understanding the effectiveness and implementation of school-based childhood obesity prevention programmes in the UK. Full CASP appraisal tables are presented in Appendix A.

4.6 Evaluation of Mixed Methods Studies Using the MMAT

One mixed-methods study met the inclusion criteria for this systematic review: Campbell et al. (2015). Mixed-methods research combines qualitative and quantitative approaches within a single study to provide a more comprehensive understanding of complex phenomena (Östlund et al., 2020). This approach is particularly relevant for school-based childhood obesity prevention programmes, where both implementation processes and measurable outcomes influence effectiveness.

The Mixed Methods Appraisal Tool (MMAT) was used to appraise this study. MMAT is specifically designed to evaluate qualitative, quantitative and mixed-methods studies within systematic reviews, allowing for a coherent and integrated assessment of methodological quality (Hong et al., 2018). Unlike appraisal approaches that require the use of multiple tools, MMAT enables simultaneous evaluation of all components of a mixed-methods design, including the quality of each methodological strand and the integration between them. This was particularly important for this review, given its focus on understanding not only whether interventions worked, but how and why they were implemented in practice.

MMAT assesses clarity of the research question, appropriateness of data collection methods, rigour of qualitative and quantitative components, and the extent to which findings from different methods are meaningfully integrated. Although MMAT applies relatively broad criteria, this flexibility is advantageous for appraising pragmatic public health research conducted in real-world school settings.

Campbell et al. (2015) evaluated intervention fidelity within the Active for Life Year 5 (AFLY5) programme using a mixed-methods process evaluation embedded within a randomised controlled trial. Quantitative data assessed lesson delivery, reach and adherence, while qualitative interviews explored teacher and parent experiences of implementation. The research questions were clearly stated, and the mixed-methods design was well justified.

MMAT appraisal indicated that the quantitative component used appropriate descriptive statistical methods with high data completeness, while the qualitative component employed rigorous thematic analysis with transparent reporting. Importantly, integration of qualitative and quantitative findings was coherent, with qualitative data used to contextualise quantitative fidelity outcomes. A minor limitation was limited discussion of discrepancies between data strands. Overall, the study was appraised as high quality and made a valuable contribution to understanding implementation fidelity in UK school-based obesity prevention programmes. The full MMAT appraisal is presented in Appendix B.

4.7 Chapter Summary

This chapter described the processes of data extraction and critical appraisal undertaken for the studies included in this systematic review titled *School-Based Prevention Programmes' Effect on Childhood Obesity in the UK: A Systematic Review*. A structured data extraction approach ensured consistency and transparency across all included studies. Methodological quality was assessed using appropriate appraisal tools aligned with study design: the CASP checklist for nine qualitative studies and the MMAT for one mixed-methods study.

Overall, the appraisal demonstrated that the included studies were of moderate to high quality, with strong alignment between research aims, methods and findings. Common

methodological limitations included limited reflexivity and potential selection bias, but these did not significantly undermine study credibility. The next chapter will present a thematic synthesis of findings, integrating evidence across studies to evaluate the effectiveness and implementation of school-based childhood obesity prevention programmes in the UK.

CHAPTER 5: DATA ANALYSIS AND SYNTHESIS

5.1 Introduction

This chapter presents the analysis and synthesis of findings from the ten studies included in this systematic review, which examined the effectiveness and implementation of school-based childhood obesity prevention programmes in the United Kingdom. Following the data extraction and quality appraisal processes outlined in Chapter 4, a thematic synthesis approach was employed to integrate evidence across studies and address the review objectives.

Given the predominance of qualitative evidence and the inclusion of one mixed-methods study, thematic synthesis was considered the most appropriate analytical approach to capture shared patterns, contextual influences and stakeholder perspectives across diverse school settings. This approach enabled findings from different participant groups, including headteachers, teachers, parents and children, to be systematically compared and interpreted.

The chapter begins with an overview of the characteristics of the included studies, followed by a detailed presentation of the emerging themes. Four overarching themes were identified through iterative coding and theme development: (1) school capacity and resources; (2) stakeholder engagement and shared responsibility; (3) programme implementation, fidelity and adaptation; and (4) sensitivity, communication and weight stigma. Each theme comprises multiple sub-themes and sub-sub-themes, reflecting the complexity of implementing obesity prevention initiatives in primary schools.

By synthesising findings across studies, this chapter moves beyond individual programme descriptions to provide an integrated understanding of the organisational, relational and contextual factors that shape the success of school-based childhood obesity prevention programmes in the UK.

5.2 Thematic Analysis

Thematic analysis is a qualitative analytic method used to identify, analyse and interpret patterns of meaning (themes) within data (Braun and Clarke, 2006). It is widely used in health and social research because of its flexibility and suitability for analysing diverse data sources, including interview transcripts, focus group data and qualitative findings reported in published studies (Renjith et al., 2021). Thematic analysis allows researchers to move beyond surface-level description and to generate interpretive insights into shared experiences, perceptions and contextual influences.

When thematic analysis is applied to secondary data within a systematic literature review, it is commonly referred to as thematic synthesis (Thomas and Harden, 2008). Thematic synthesis

involves systematically coding findings from included studies, organising codes into descriptive themes and then developing higher-order analytical themes that transcend individual studies. This approach is particularly appropriate for reviews of complex interventions, such as school-based obesity prevention programmes, where outcomes are influenced by multiple interacting factors.

Although thematic analysis is traditionally associated with qualitative research, it can also be applied to quantitative and mixed-methods studies by analysing narrative data reported in results and discussion sections (Popay et al., 2006). In this review, thematic synthesis enabled integration of qualitative findings with process-related insights from the mixed-methods study, facilitating a comprehensive understanding of both effectiveness and implementation.

5.3 Data Analysis Tool

The thematic synthesis in this review was guided by the six-phase framework developed by Braun and Clarke (2006). This framework provides a systematic yet flexible approach to thematic analysis and is widely endorsed in health research. The six phases include: (1) familiarisation with the data, (2) generation of initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report (see below figure 5.1)

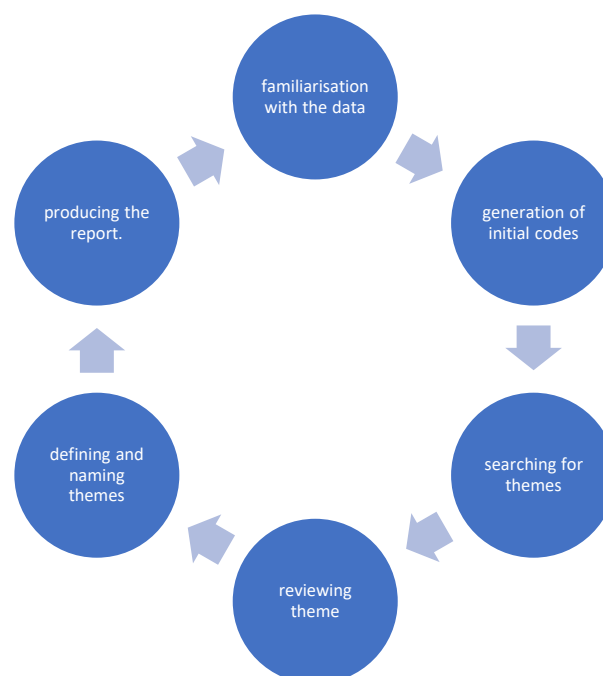


Figure 5.1: Six phases of Bruan and Clarke

In the context of this systematic review, familiarisation involved repeated reading of the extracted findings from each included study. Initial coding focused on recurring concepts related to programme effectiveness, implementation, barriers, facilitators and stakeholder experiences. Codes were then grouped into candidate themes and reviewed iteratively to ensure internal coherence and distinction between themes. Defining and naming themes involved refining their scope and identifying relationships between main themes, sub-themes and sub-sub-themes.

Table 5.1: Explaining Braun and Clarke thematic analysis

Phase	Explanation
1. Familiarisation with the data	Repeated reading of extracted findings from all included studies to gain an overall understanding of the data
2. Generating initial codes	Systematic coding of meaningful features related to programme effectiveness, implementation, barriers and facilitators
3. Searching for themes	Grouping related codes into candidate themes and sub-themes
4. Reviewing themes	Refining themes to ensure internal coherence and distinction between themes
5. Defining and naming themes	Clearly defining the scope and focus of each theme and sub-theme
6. Producing the report	Integrating themes into a coherent narrative supported by evidence from included studies

The Braun and Clarke framework was selected because it allows for transparency, reflexivity and analytical depth, while remaining adaptable to secondary data synthesis. Its structured approach enhances methodological rigour and supports clear presentation of findings, which is essential for systematic reviews intended to inform policy and practice (see table 5.1) (Nowell et al., 2017).

5.4 Characteristics of the Identified Studies

All ten studies included in this systematic review were conducted in the United Kingdom, reflecting the review's focus on UK school-based childhood obesity prevention programmes. The studies were predominantly situated within primary school settings across England, including urban and socio-economically diverse regions such as the West Midlands, West Yorkshire and Greater Manchester.

Of the ten included studies, nine employed qualitative designs, using semi-structured interviews and focus groups to explore the perspectives of key stakeholders, including headteachers, teachers, parents and children (Howard-Drake and Halliday, 2015; Clarke et al., 2015a; Clarke et al., 2015b; Saleh et al., 2024; Coupe et al., 2022; Kipping et al., 2011; Day et al., 2019; Goldthorpe et al., 2020; Griffin et al., 2014). One study used a mixed-methods design, combining quantitative assessment of intervention fidelity with qualitative exploration of implementation experiences (Campbell et al., 2015).

This methodological profile highlights the emphasis placed on understanding contextual and experiential factors influencing programme effectiveness. Further details of study characteristics are provided in the data extraction table in Appendix C. (See below table 5.2)

Table 5.2: Main themes and subthemes

Main Theme	Sub-Theme (Numbered)	Expanded Sub-Sub-Themes / Codes	Supporting Studies
1. School Capacity and Resources	1.1 Staffing, time and workload	Limited staff availability; competing academic priorities; curriculum pressure; lack of protected time for health initiatives; staff role overload	Saleh et al. (2024); Day et al. (2019); Clarke et al. (2015a); Griffin et al. (2014); Howard-Drake & Halliday (2015)
	1.2 Staff training, skills and confidence	Limited nutrition and PA knowledge; lack of confidence delivering health content; uncertainty about professional role; need for CPD	Saleh et al. (2024); Day et al. (2019); Howard-Drake & Halliday (2015); Coupe et al. (2022)

Main Theme	Sub-Theme (Numbered)	Expanded Sub-Sub-Themes / Codes	Supporting Studies
	1.3 Physical and financial resources	Inadequate facilities; limited space for PA; lack of cooking resources; reliance on external funding and partnerships	Saleh et al. (2024); Day et al. (2019); Clarke et al. (2015a)
2. Stakeholder Engagement and Shared Responsibility	2.1 Parental involvement as a facilitator	Reinforcement of school messages at home; homework activities; newsletters; modelling healthy behaviours	Clarke et al. (2015b); Kipping et al. (2011); Goldthorpe et al. (2020)
	2.2 Barriers to parental engagement	Time constraints; socio-economic pressures; cultural beliefs; sensitivity around child weight; fear of blame	Saleh et al. (2024); Coupe et al. (2022); Clarke et al. (2015b)
	2.3 School leadership and gatekeeping	Leadership prioritisation; strategic decision-making; policy interpretation; sustainability	Saleh et al. (2024); Day et al. (2019); Clarke et al. (2015a); Howard-Drake & Halliday (2015)
3 Programme Implementation, Fidelity, Adaptation and Behavioural and Psychosocial Outcomes	3.1 Implementation fidelity	Partial delivery; selective lesson prioritisation; delegation to untrained staff	Campbell et al. (2015); Day et al. (2019); Griffin et al. (2014)
	3.2 Programme adaptation and flexibility	Contextual tailoring; differentiation for pupils; balance between fidelity and feasibility	Campbell et al. (2015); Griffin et al. (2014); Clarke et al. (2015a)

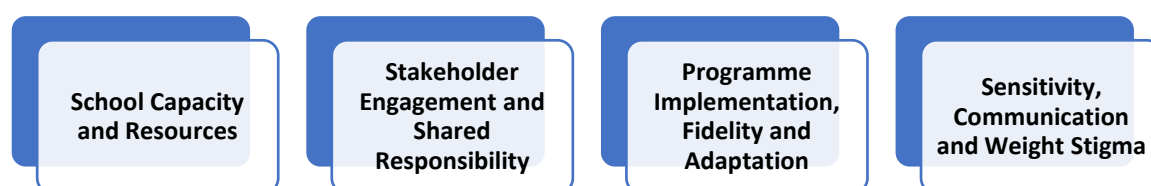
Main Theme	Sub-Theme (Numbered)	Expanded Sub-Sub-Themes / Codes	Supporting Studies
	3.3 Curriculum integration	Embedding within curriculum; alignment with learning outcomes; long-term sustainability	Day et al. (2019); Clarke et al. (2015a)
	3.4 Behavioural and Psychosocial Outcomes of School-Based Interventions	Improvements in dietary knowledge and awareness; child-led influence on family food choices; increased willingness to try healthy foods; enhanced participation in physical activity; enjoyment of inclusive and non-competitive activities; improved confidence and engagement; wellbeing- focused framing; avoidance of weight stigma; protection of self-esteem and body image; limited or inconsistent impact on BMI	Kipping et al. (2011); Griffin et al. (2014); Campbell et al. (2015); Day et al. (2019); Goldthorpe et al. (2020); Coupe et al. (2022)
4. Sensitivity, Communication and Weight Stigma	4.1 Weight sensitivity and stigma	Fear of labelling children; concern about emotional harm; stigma associated with obesity	Coupe et al. (2022); Goldthorpe et al. (2020)
	4.2 Communication strategies and trust	Relationship-building; wellbeing-focused language; consistency between home and school	Clarke et al. (2015b); Saleh et al. (2024); Goldthorpe et al. (2020)

5.5 Emerging Themes from Included Studies (Analysis and Synthesis of Findings)

The thematic synthesis of the ten included studies identified four overarching themes that collectively explain how school-based prevention programmes influence childhood obesity outcomes in the UK (Chisholm et al., 2022). These themes reflect not only programme effectiveness but, crucially, the contextual and organisational factors that shape implementation and sustainability. Each theme is discussed in depth below, with explicit synthesis across studies and reference to supporting evidence.

Emerging Themes from Included Studies Analysis and synthesis of the included studies identified four overarching themes, each comprising several sub-themes and sub-sub-themes. These themes capture the key factors influencing the effectiveness and implementation of school-based childhood obesity prevention programmes in the UK (see below figure 5.3)

Figure 5.3: Main themes



Theme 1: School Capacity and Resources

This theme captures the structural and organisational conditions within which obesity prevention programmes are delivered. Across studies, capacity was conceptualised as encompassing staff time, workload, training, confidence, physical infrastructure and access to financial or external support.

Sub-theme 1.1: Staffing, Time and Competing Curriculum Demands

A consistent finding across the evidence base was that limited staff time and competing curricular priorities constrained programme delivery. Headteachers and teachers frequently

reported that academic accountability pressures reduced the priority given to health promotion activities (Howard-Drake and Halliday, 2015; Clarke et al., 2015a; Griffin et al., 2014).

Day et al. (2019) found that although schools often delivered multiple healthy lifestyle initiatives, overcrowded curricula and limited staff availability hindered sustained implementation. Similarly, Griffin et al. (2014) reported that while teachers valued obesity prevention, time constraints made it difficult to deliver all programme components as intended.

These findings were echoed in the mixed methods process evaluation of AFLY5, where Campbell et al. (2015) reported high reach but partial delivery, with teachers completing an average of 77% of planned lessons. Time pressures frequently necessitated lesson adaptation or prioritisation of selected components.

Collectively, these studies indicate that even well-designed interventions may be compromised when they compete with core academic demands, highlighting a structural tension between educational priorities and health promotion.

Sub-theme 1.2: Staff Training, Skills and Confidence

Beyond time constraints, staff confidence and training emerged as critical determinants of programme effectiveness. Several studies reported that teachers felt insufficiently trained to deliver nutrition education or physical activity interventions, particularly when content extended beyond their perceived professional expertise (Howard-Drake and Halliday, 2015; Day et al., 2019).

Saleh et al. (2024) found that headteachers' beliefs and awareness strongly influenced whether obesity prevention was prioritised within schools. Where staff lacked confidence or specialist knowledge, interventions were more likely to be limited or inconsistently delivered. Similarly, Coupe et al. (2022) highlighted educators' uncertainty around their professional role in discussing child weight with parents, which often resulted in avoidance of potentially beneficial conversations. This lack of confidence was not attributed to lack of motivation, but rather to fear of causing harm or overstepping professional boundaries.

These findings suggest that staff capability is a key mediator between programme availability and effective delivery. Without adequate training and role clarity, programmes risk being underutilised or delivered superficially.

Sub-theme 1.3: Physical Resources, Facilities and Funding

Material resources also shaped programme feasibility. Clarke et al. (2015a) and Day et al. (2019) reported that limited physical space, inadequate facilities for physical activity and

insufficient cooking infrastructure restricted delivery options. Schools serving more deprived communities were particularly affected.

Saleh et al. (2024) emphasised that access to external funding and partnerships influenced the scope of obesity prevention activities. Schools with stronger links to public health teams or local authorities were better able to supplement internal capacity.

Overall, the findings across these sub-themes demonstrate that school capacity fundamentally shapes the feasibility and sustainability of childhood obesity prevention programmes. Headteachers and teachers consistently highlighted that limited time, insufficient training and inadequate resources constrained their ability to prioritise health initiatives alongside academic demands. While motivation to support child health was evident, particularly among school leaders, structural and systemic limitations restricted consistent delivery. These findings suggest that without protected curriculum time, targeted staff training and adequate resourcing, school-based obesity prevention efforts are unlikely to achieve sustained impact, particularly in more deprived school contexts.

Theme 2: Stakeholder Engagement and Shared Responsibility

The second theme relates to how responsibility for childhood obesity prevention is negotiated between schools, parents and wider systems. Across studies, obesity prevention was consistently framed as a shared responsibility, though interpretations of this responsibility varied.

Sub-theme 2.1: Parental Involvement as a Facilitator

Parental engagement was widely viewed as essential for reinforcing health messages beyond the school environment. Clarke et al. (2015b) and Kipping et al. (2011) demonstrated that homework activities and newsletters facilitated parental involvement and increased awareness of healthy behaviours.

Goldthorpe et al. (2020) found that when parents and schools shared common understandings of health and responsibility, interventions were more likely to be accepted and supported. Similarly, Clarke et al. (2015b) reported that parental involvement empowered families to initiate behaviour changes at home.

These findings highlight that school-based programmes are most effective when they extend into the home environment through collaborative strategies.

Sub-theme 2.2: Barriers to Parental Engagement

Across the included studies, parental engagement was shaped by both the strategies used by schools and the practical circumstances of families. Common engagement methods included

homework activities, newsletters and informal communication; however, participation was often limited.

Kipping et al. (2011) found that practical, child-led homework tasks were more effective in engaging parents than written information or school meetings, which many parents were unable to attend due to work and childcare commitments. From a leadership perspective, Saleh et al. (2024) reported that headteachers viewed socio-economic pressures, limited time and cultural beliefs as key factors restricting parental involvement, particularly in more deprived communities.

Teachers' accounts in Coupe et al. (2022) further indicated that fear of causing offence or damaging relationships led educators to avoid initiating weight-related discussions, resulting in minimal proactive engagement. Parent-focused evidence from Clarke et al. (2015b) showed that engagement was higher when messages focused on general wellbeing rather than child weight.

Sub-theme 2.3: School Leadership and Gatekeeping

School leadership emerged as a pivotal factor in determining whether obesity prevention was prioritised. Howard-Drake and Halliday (2015) and Clarke et al. (2015a) described headteachers as gatekeepers who controlled resource allocation and strategic direction.

Day et al. (2019) similarly found that leadership commitment influenced sustainability, with programmes more likely to be embedded when actively championed by senior staff. However, reliance on individual leaders created vulnerability when leadership priorities shifted.

Taken together, the sub-themes within this category highlight the complex and negotiated nature of responsibility for childhood obesity prevention. While parents were widely viewed by headteachers and teachers as holding primary responsibility for children's health behaviours, schools were simultaneously recognised as important facilitators of awareness, consistency and support. Parental engagement enhanced programme effectiveness when collaboration was strong; however, socio-economic pressures, cultural sensitivities and concerns about blame frequently limited meaningful involvement. Leadership played a critical role in navigating these tensions, yet reliance on individual school leaders without wider systemic support created vulnerability in programme sustainability.

Theme 3: Programme Implementation, Fidelity, Adaptation and Behavioural and Psychosocial Outcomes

This theme addresses how interventions are delivered in practice and the balance between adherence, flexibility and behavioural, psychological and physical

Sub-theme 3.1: Implementation Fidelity

Implementation fidelity refers to the extent to which school-based obesity prevention programmes were delivered as intended. Evidence across the included studies indicates that full implementation fidelity was rarely achieved, largely due to practical constraints within school settings rather than lack of staff commitment (Campbell et al., 2015; Griffin et al., 2014; Day et al., 2019).

The mixed-methods process evaluation by Campbell et al. (2015) found high programme reach but partial delivery, with teachers delivering approximately 77% of planned lessons. Using lesson logs, observations and interviews, the study showed that time pressures often led teachers to prioritise certain components while adapting or omitting others. Similarly, qualitative interviews with teachers in Griffin et al. (2014) and Day et al. (2019) revealed that competing curriculum demands and limited staffing frequently resulted in selective delivery.

Sub-theme 3.2: Programme Adaptation and Flexibility

Programme adaptation emerged as a common and often necessary response to the contextual realities of primary school settings. Teachers frequently reported modifying lesson content, delivery methods or scheduling to accommodate pupil needs, curriculum pressures and available resources (Griffin et al., 2014; Campbell et al., 2015). Such adaptations were viewed positively in terms of improving pupil engagement and feasibility.

However, concerns were raised regarding the potential dilution of intervention impact when adaptations deviated substantially from original programme design. Clarke et al. (2015a) cautioned that excessive flexibility risked undermining theoretical integrity and consistency across schools. These findings highlight an ongoing tension between maintaining fidelity and ensuring contextual fit, suggesting that future interventions should provide clearer guidance on acceptable adaptation boundaries.

Sub-theme 3.3: Curriculum Integration

Curriculum integration was identified as an important factor influencing the feasibility and sustainability of school-based obesity prevention programmes. Teachers and headteachers consistently reported that programmes embedded within existing curriculum subjects were easier to deliver and maintain than stand-alone initiatives.

Day et al. (2019), based on interviews with school staff, found that alignment with subjects such as physical education and PSHE reduced timetable pressures and improved consistency of delivery. Similarly, interviews with headteachers in Clarke et al. (2015a) showed that programmes linked to educational outcomes were more likely to be prioritised. Evidence from Campbell et al. (2015) further indicated that curriculum-aligned components were delivered more consistently than non-integrated elements.

Overall, this theme illustrates that programme effectiveness is closely linked to how interventions are implemented in real-world school settings. Teachers frequently adapted programmes to manage time constraints, pupil needs and contextual factors, resulting in variable fidelity. While flexibility enhanced feasibility and engagement, excessive adaptation risked weakening intervention integrity. Embedding programmes within the curriculum emerged as a key strategy for improving sustainability, reinforcing the importance of aligning obesity prevention with educational priorities rather than positioning it as an additional responsibility.

Sub-theme 3.4: Behavioural and Psychosocial Outcomes of School-Based Interventions

This sub-theme explicitly examines the effectiveness of school-based obesity prevention programmes in influencing dietary behaviours, physical activity levels and psychosocial wellbeing, thereby directly addressing Objective 2 of this systematic review.

Across the included studies, evidence of effectiveness was more consistently reported for behavioural and psychosocial outcomes than for anthropometric outcomes such as BMI. Teachers, parents and pupils frequently described positive changes in children's knowledge, attitudes and engagement with healthy behaviours, even where measurable changes in weight status were limited.

Dietary behaviours

Several studies reported perceived improvements in children's dietary awareness and food-related behaviours following participation in school-based interventions. Teachers and parents involved in programmes such as AFLY5 and WAVES described children demonstrating increased knowledge about healthy foods and actively encouraging healthier eating practices at home (Kipping et al., 2011; Griffin et al., 2014). Homework-based activities and curriculum-linked nutrition lessons were reported to facilitate parent-child discussions about food, although sustained dietary change was often constrained by home food environments and socio-economic factors beyond school control.

Physical activity

In relation to physical activity, school-based programmes were widely perceived to increase opportunities for movement and participation during the school day. Staff reported that structured physical activity sessions embedded within the curriculum enhanced children's enjoyment and engagement, particularly when activities were inclusive and non-competitive (Day et al., 2019; Goldthorpe et al., 2020). However, the extent of impact varied between schools, with limitations relating to facilities, timetable pressures and staff capacity influencing

delivery. As a result, while short-term increases in activity were commonly reported, maintaining these changes beyond intervention periods remained challenging.

Psychosocial wellbeing

Psychosocial wellbeing emerged as a significant outcome across the qualitative evidence. Interventions framed around healthy lifestyles and wellbeing, rather than weight or BMI, were perceived to support children's confidence, participation and emotional safety. Goldthorpe et al. (2020) reported that children valued programmes that focused on enjoyment, inclusion and general health, while educators highlighted that such approaches reduced the risk of stigma and disengagement. Conversely, studies examining weight-related communication identified concerns that poorly framed interventions could negatively affect self-esteem and body image, reinforcing the importance of sensitive and non-stigmatising delivery (Coupe et al., 2022).

Overall, the findings indicate that school-based obesity prevention programmes demonstrate modest but meaningful effectiveness in improving dietary behaviours, physical activity engagement and psychosocial wellbeing, even when impacts on BMI are limited. These outcomes were strongly mediated by implementation quality, school capacity and contextual factors, suggesting that programme effectiveness is better understood through behavioural and wellbeing outcomes rather than weight-based measures alone.

Theme 4: Sensitivity, Communication and Weight Stigma

This theme reflects the emotionally sensitive nature of childhood obesity and the challenges associated with communicating about weight-related issues within primary school settings. Across studies, concerns about stigma, emotional harm and relationship damage shaped how obesity prevention was approached by educators, parents and children.

Sub-theme 4.1: Weight Sensitivity and Stigma

Coupe et al. (2022), using semi-structured interviews with 23 primary school educators, found that teachers often experienced discomfort and anxiety when discussing child weight with parents. These concerns were driven by fears of labelling children, causing emotional distress and damaging parent–teacher relationships. Educators perceived obesity as a sensitive and potentially stigmatising issue, leading many to avoid direct conversations unless weight concerns were raised by parents themselves.

Goldthorpe et al. (2020), through focus groups with children and interviews with parents and school staff, similarly identified concerns around judgement and labelling. Parents and staff expressed apprehension that weight-focused language could negatively affect children's self-esteem and body image. Children's accounts further indicated awareness of stigma associated with body size, reinforcing the need for careful framing of health messages.

Sub-theme 4.2: Communication Strategies and Trust

Effective communication strategies were consistently described as those that prioritised trust, relational continuity and a holistic focus on wellbeing rather than weight alone. Clarke et al. (2015b), drawing on focus groups with parents and children, demonstrated that health messages were more acceptable when framed around general healthy lifestyles rather than obesity prevention explicitly. Parents valued non-judgemental communication and consistency between school and home messaging.

Saleh et al. (2024) reported that headteachers emphasised the importance of trust-based relationships with families, particularly in socio-economically diverse communities. Goldthorpe et al. (2020) further highlighted that congruent messaging between parents, teachers and children increased acceptance of school-based interventions and reduced resistance.

Overall, this theme underscores that poorly framed or weight-focused interventions risk reinforcing stigma and disengagement. Across stakeholder groups, approaches that emphasised wellbeing, inclusivity and shared responsibility were more positively received, suggesting that sensitivity and communication are central to the ethical and effective implementation of school-based obesity prevention programmes.

5.6 Chapter Summary

This chapter presented a thematic synthesis of findings from ten UK-based studies examining school-based prevention programmes and their effects on childhood obesity. Guided by Braun and Clarke's (2006) framework, four overarching themes were identified: school capacity and resources; stakeholder engagement and shared responsibility; programme implementation and adaptation; and sensitivity and communication. Together, these themes demonstrate that programme effectiveness is shaped by contextual, organisational and relational factors rather than intervention content alone. The findings provide a foundation for the discussion in the next chapter, which will consider implications for policy, practice and future research. This chapter presented the analysis and synthesis of findings from the ten studies included in this systematic review using a thematic synthesis approach. Guided by the Braun and Clarke framework, the analysis identified key themes relating to school capacity, stakeholder engagement, programme implementation and communication challenges. The findings highlight that the effectiveness of school-based childhood obesity prevention programmes is shaped not only by programme content, but also by contextual, organisational and relational factors. The next chapter will discuss these findings in relation to existing literature and policy implications.

CHAPTER 6: DISCUSSION

6.1 Introduction

This chapter presents a critical discussion of the findings from this systematic literature review, which examined the effects and implementation of school-based childhood obesity prevention programmes in the United Kingdom. Building on the thematic synthesis presented in Chapter 5, the discussion interprets the findings in relation to existing empirical evidence, theoretical perspectives and current public health and educational policy contexts. The purpose of this chapter is not to restate the results, but to critically analyse their meaning, consistency and significance within the wider evidence base.

The discussion is structured around the four overarching themes identified through thematic synthesis: school capacity and resources; stakeholder engagement and shared responsibility; programme implementation, fidelity and adaptation; and sensitivity, communication and weight stigma. Each theme is examined in turn, with explicit comparison to previous research and established practices in school-based health promotion. Areas of convergence and divergence with existing literature are highlighted, alongside discussion of novel or underexplored findings.

In addition, this chapter provides a critical reflection on the review methodology, including consideration of the strength of the evidence base and limitations inherent within the included studies and the review process itself. This critical appraisal supports transparency and enables appropriate interpretation of the findings. The chapter concludes by setting the foundation for Chapter 7, which focuses on implications, recommendations and overall conclusions arising from this review.

6.2 Discussion of Key Findings

6.2.1 Key findings School Capacity and Resources

A central finding of this review is that *school capacity and resources* play a decisive role in shaping the feasibility, quality and sustainability of childhood obesity prevention programmes. Across the included studies, limited staff time, competing curriculum demands, insufficient training and constrained physical and financial resources were consistently reported as barriers to effective implementation. These findings strongly align with wider literature suggesting that schools operate within complex organisational environments where health promotion competes with academic accountability pressures (Langford et al., 2015; Bonell et al., 2014).

The evidence from this review indicates that time constraints are a pervasive challenge. Headteachers and teachers described overloaded curricula and prioritisation of core academic

subjects as limiting opportunities to deliver health-related content (Howard-Drake and Halliday, 2015; Clarke et al., 2015a; Day et al., 2019). This is consistent with findings from previous UK-based research, which has shown that schools often perceive health promotion as an additional responsibility rather than a core function, particularly in policy contexts dominated by performance metrics and inspections (Morris et al., 2018). The mixed-methods evaluation by Campbell et al. (2015) further supports this, demonstrating that although programme reach was high, full delivery was rarely achieved due to time pressures.

Staff training, skills and confidence also emerged as critical mediators between programme availability and effectiveness. Teachers frequently reported limited knowledge of nutrition and physical activity guidance and uncertainty regarding their professional role in addressing obesity (Howard-Drake and Halliday, 2015; Coupe et al., 2022). This mirrors findings from international literature, which suggests that educators often feel ill-equipped to deliver health interventions without specialist training, leading to reduced confidence and inconsistent delivery (Vila et al., 2019). Importantly, the findings suggest that lack of confidence was not driven by lack of motivation, but by fear of causing harm or breaching professional boundaries, particularly when addressing sensitive weight-related issues.

Physical infrastructure and funding constraints further shaped implementation. Schools reported limited access to appropriate spaces for physical activity and insufficient facilities for practical nutrition education (Clarke et al., 2015a; Day et al., 2019). These barriers were more pronounced in schools serving socio-economically disadvantaged communities, reinforcing concerns that health inequalities may be inadvertently widened when interventions rely on school-level resources (Moore et al., 2018). Saleh et al. (2024) highlighted that access to external partnerships and funding streams enhanced schools' capacity to deliver obesity prevention initiatives, suggesting that intersectoral collaboration may be essential for addressing structural limitations.

Overall, this theme reinforces the view that school-based obesity prevention cannot be effective without adequate structural support. While schools demonstrated willingness to engage in health promotion, the findings suggest that without protected curriculum time, targeted staff training and sufficient resourcing, programmes are unlikely to be delivered with the intensity or consistency required to influence obesity outcomes. This aligns with socio-ecological models of health, which emphasise the importance of organisational and systemic factors in shaping individual behaviour change (Sallis et al., 2015).

6.2.2 Key findings Stakeholder Engagement and Shared Responsibility

The second key findings highlights *the complex negotiation of responsibility for childhood obesity prevention between schools, parents and wider systems*. Across the included studies,

obesity prevention was consistently framed as a shared responsibility, yet there was ambiguity and tension surrounding the extent of schools' roles versus parental accountability. This finding reflects long-standing debates within public health literature regarding the appropriate locus of responsibility for child health behaviours (Rosenkranz and Dziewaltowski, 2008).

Parental engagement was widely identified as a key facilitator of programme effectiveness. Evidence from this review demonstrates that when parents reinforced health messages at home, children were more likely to engage with behaviour change (Clarke et al., 2015b; Kipping et al., 2011; Goldthorpe et al., 2020). These findings align with previous research indicating that school-based interventions are more effective when combined with family involvement, as children's dietary and physical activity behaviours are strongly shaped by home environments (Van Lippevelde et al., 2012).

However, parental engagement was often limited by practical and socio-economic constraints. Parents' work commitments, time pressures and competing priorities reduced participation in school-led initiatives (Kipping et al., 2011; Saleh et al., 2024). This reflects broader evidence that structural inequalities influence families' capacity to engage with health interventions, highlighting the risk of differential uptake across socio-economic groups (Giskes et al., 2011). Importantly, the review found that engagement strategies perceived as low-burden and child-led, such as interactive homework activities, were more successful than passive information-sharing methods.

Concerns about blame and stigma further complicated parental engagement. Educators frequently reported reluctance to initiate conversations about child weight due to fear of offending parents or damaging relationships (Coupe et al., 2022). This finding is consistent with existing literature, which has identified weight-related discussions as emotionally charged and socially sensitive, particularly within school contexts where trust is central to effective partnership working (Puhl and Heuer, 2010). Clarke et al. (2015b) demonstrated that parents were more receptive to messages framed around general wellbeing rather than obesity prevention, suggesting that language and framing play a crucial role in facilitating engagement.

School leadership emerged as a pivotal factor in mediating shared responsibility. Headteachers acted as gatekeepers, influencing whether obesity prevention was prioritised and embedded within school culture (Howard-Drake and Halliday, 2015; Day et al., 2019). This finding aligns with organisational change literature, which highlights the role of leadership in driving implementation and sustainability of school-based interventions (Aarons et al., 2011). However, reliance on individual leaders created vulnerability, as changes in leadership priorities could undermine continuity.

Collectively, this theme suggests that while shared responsibility is widely endorsed in principle, its operationalisation is challenging. Schools occupy a delicate position, expected to support child health without overstepping parental authority. The findings underscore the need for clear role definition, supportive policy frameworks and collaborative approaches that acknowledge families lived realities rather than attributing responsibility solely to individual behaviour change.

6.2.3 Key findings Programme Implementation, Fidelity and Adaptation and Behavioural and Psychosocial Outcomes

This theme addresses the tension between *implementation fidelity and contextual adaptation*, a well-documented challenge in complex public health interventions. Evidence from this review indicates that full fidelity to programme design was rarely achieved, with teachers frequently adapting content to accommodate time constraints, pupil needs and school contexts (Campbell et al., 2015; Griffin et al., 2014).

The mixed-methods study by Campbell et al. (2015) provides particularly valuable insight, demonstrating that although intervention reach was high, only around three-quarters of planned lessons were delivered. Qualitative data revealed that adaptations were often pragmatic responses to structural constraints rather than deliberate deviations from programme theory. This finding is consistent with implementation science literature, which recognises that adaptation is often necessary for feasibility, particularly in real-world school settings (Durlak and DuPre, 2008).

Behavioural and psychosocial outcomes, although under-reported quantitatively, emerged as important indicators of programme impact. Across studies, interventions were associated with improvements in dietary knowledge, willingness to try healthy foods, increased engagement in physical activity and enhanced confidence and enjoyment among children (Kipping et al., 2011; Griffin et al., 2014; Goldthorpe et al., 2020). Wellbeing-focused framing supported positive self-esteem and protected against weight stigma.

However, the findings also suggest that excessive or unstructured adaptation may compromise intervention integrity. Clarke et al. (2015a) cautioned that selective delivery risks diluting key mechanisms of change, potentially explaining the modest effects on BMI outcomes observed in some trials. This reflects broader evidence that while adaptation can enhance contextual fit, it must be balanced with fidelity to core components to maintain effectiveness (Hawe et al., 2009).

Curriculum integration emerged as a critical strategy for improving feasibility and sustainability. Programmes embedded within existing subjects such as physical education and PSHE were more consistently delivered than stand-alone initiatives (Day et al., 2019; Clarke

et al., 2015a). This aligns with WHO guidance, which advocates for whole-school approaches that integrate health promotion into everyday school practices rather than treating it as an add-on (WHO, 2018).

Overall, this key findings highlights that programme effectiveness cannot be understood solely in terms of content or theoretical design. Instead, outcomes are shaped by how interventions are enacted within organisational constraints. The findings support calls for flexible, context-sensitive intervention designs accompanied by clear guidance on core components, enabling schools to adapt delivery without undermining effectiveness.

6.2.4 Key findings Sensitivity, Communication and Weight Stigma

The final underscores *the ethical and relational challenges inherent in addressing childhood obesity within school settings*. Across studies, educators, parents and children expressed concerns about stigma, emotional harm and labelling associated with weight-focused interventions (Coupe et al., 2022; Goldthorpe et al., 2020). These concerns significantly influenced communication practices and programme delivery.

Educators' reluctance to engage in weight-related discussions reflects wider societal stigma surrounding obesity. Existing literature has demonstrated that weight stigma can negatively impact children's mental health, self-esteem and engagement with health behaviours (Puhl and Latner, 2007). The findings of this review suggest that awareness of these risks led schools to adopt cautious approaches, often avoiding explicit reference to obesity altogether.

Communication strategies that prioritised holistic wellbeing and inclusivity were consistently viewed as more acceptable. Parents and children responded more positively to messages framed around healthy lifestyles rather than weight reduction (Clarke et al., 2015b; Goldthorpe et al., 2020). This aligns with public health recommendations advocating for non-stigmatising, strengths-based approaches to obesity prevention (WHO, 2016).

Trust-based relationships emerged as central to effective communication. Saleh et al. (2024) highlighted that strong relationships between schools and families facilitated engagement, particularly in diverse communities. Consistent messaging across school and home environments further enhanced acceptability, reinforcing the importance of coordinated approaches.

Overall, this theme highlights that sensitivity and communication are not peripheral considerations but central determinants of programme success. Interventions that fail to address stigma risk disengagement and unintended harm, whereas those that emphasise wellbeing, respect and shared responsibility are more likely to be ethically and practically effective.

6.3 Gaps and Future Research

This review identifies several gaps in the UK evidence base on school-based childhood obesity prevention. Most included studies focused on short-term implementation and stakeholder experiences, with limited longitudinal follow-up, restricting understanding of sustained behavioural or obesity-related outcomes (Day et al., 2019; Campbell et al., 2015). The predominance of qualitative designs provides valuable contextual insight but limits robust assessment of effectiveness, particularly regarding BMI and health inequalities (Griffin et al., 2014; Goldthorpe et al., 2020).

Additionally, few studies explicitly examined differential impacts across socio-economic contexts, despite consistent evidence that school capacity and resources vary substantially (Howard-Drake and Halliday, 2015; Saleh et al., 2024). There was also limited theoretical integration, with many interventions lacking clear behavioural or implementation frameworks to explain mechanisms of impact. Finally, although concerns around weight stigma were widely acknowledged, few studies systematically evaluated psychosocial or emotional outcomes for children (Coupe et al., 2022).

Future research should prioritise theory-informed, mixed-methods and longitudinal studies that address sustainability, equity and non-stigmatising outcomes.

6.4 Strengths and Limitations

This systematic literature review (SLR) has several notable strengths that enhance the credibility and usefulness of its findings. A key strength lies in the use of a rigorous and transparent systematic methodology, including clearly defined inclusion and exclusion criteria, structured data extraction and formal critical appraisal of study quality. The application of recognised appraisal tools CASP for qualitative studies and MMAT for the mixed-methods study ensured that methodological rigour, credibility and relevance were consistently evaluated across included studies. This strengthened confidence in the synthesis and reduced the risk of drawing conclusions from weak or poorly designed research.

Another strength of this review is its focus on qualitative and mixed-methods evidence, which is particularly appropriate given the complex, contextual and socially embedded nature of school-based childhood obesity prevention. By synthesising stakeholder perspectives from headteachers, teachers, parents and children, the review provides rich insight into implementation processes, barriers and facilitators that are often overlooked in outcome-focused quantitative research. The thematic synthesis approach enabled integration of findings across diverse studies, allowing patterns and relationships to be identified beyond individual programme evaluations.

The exclusive focus on UK-based studies is also a strength, as it enhances contextual relevance and transferability to UK education and public health systems. Given the distinctive policy environment, curriculum structures and accountability frameworks within the UK, limiting the review to national evidence avoids inappropriate generalisation from international contexts with differing systems.

Despite these strengths, several limitations must be acknowledged. The evidence base was dominated by qualitative studies, with only one mixed-methods study and limited quantitative outcome data. This restricts the ability to draw firm conclusions about the effectiveness of school-based programmes in reducing obesity-related outcomes such as BMI. However, this reflects wider gaps in the literature rather than weaknesses in the review itself. As noted by Cottrell (2014), limited empirical support may indicate methodological challenges or ethical sensitivities inherent in researching complex public health interventions in school settings.

Additionally, most studies relied on self-reported perceptions, which may be subject to social desirability and recall bias. Limited reflexivity in some studies may further affect interpretation of findings. Finally, although a comprehensive search strategy was employed, the possibility of publication bias cannot be entirely excluded, as unpublished or grey literature was not included.

6.5 Chapter Summary

This chapter critically discussed findings from the systematic literature review on school-based childhood obesity prevention in the UK. The analysis demonstrated that programme effectiveness is shaped less by intervention content alone and more by contextual and organisational factors, including school capacity, leadership support, staff confidence and stakeholder engagement. While interventions showed positive influences on dietary behaviours, physical activity and psychosocial wellbeing, impacts on BMI were limited and inconsistent. The findings also highlighted the importance of sensitive, non-stigmatising communication and curriculum integration. Overall, the chapter emphasised that sustainable obesity prevention requires coordinated, whole-school approaches supported by wider structural and policy-level interventions.

CHAPTER 7: RECOMMENDATIONS AND CONCLUSION

7.1 Introduction

This chapter presents the implications, recommendations and overall conclusion arising from this systematic literature review, which examined the effects and implementation of school-based childhood obesity prevention programmes in the United Kingdom. Building directly on the discussion presented in Chapter 6, the chapter translates the review findings into practical and research-oriented recommendations, while maintaining alignment with the aims and research question of the study.

The preceding chapters demonstrated that the effectiveness of school-based obesity prevention programmes is shaped by a complex interplay of organisational capacity, stakeholder engagement, implementation processes and sensitivity around weight-related communication. Rather than programme content alone, contextual and relational factors were shown to influence whether interventions are delivered consistently, accepted by stakeholders and sustained over time. These findings have important implications for schools, policymakers, public health practitioners and researchers seeking to address childhood obesity through educational settings.

This chapter is structured into five sections. First, the implications of the findings for the field of school-based childhood obesity prevention are outlined, highlighting how the evidence contributes to current understanding and practice. This is followed by detailed recommendations for practice, focusing on schools, education systems and public health partnerships. Recommendations for future research are then presented, addressing identified gaps and methodological limitations within the existing evidence base. Finally, the chapter concludes by summarising the overall contribution of the study, restating the research topic and question, and reflecting on the significance of the findings. In line with academic guidance, no new evidence or arguments are introduced in the conclusion; instead, it consolidates the key outcomes of the review and reinforces their relevance for policy, practice and research.

7.2 Implications of the Findings

The findings of this systematic literature review have several important implications for school-based childhood obesity prevention within the UK. First, the evidence highlights that schools are frequently expected to address childhood obesity without sufficient structural support (Ijaz et al., 2021). This has implications for policy, as it suggests that reliance on schools alone to deliver obesity prevention initiatives is unlikely to produce sustained or equitable outcomes. Without protected curriculum time, adequate staff training and access to appropriate resources, schools' capacity to prioritise health promotion remains constrained (Day et al., 2019; Clarke et al., 2015a).

Second, the findings emphasise that obesity prevention in schools must be understood as a shared responsibility rather than an isolated educational task. While schools play a critical role in shaping health knowledge and behaviours, parental engagement and broader socio-environmental factors strongly influence outcomes (Kipping et al., 2011; Goldthorpe et al., 2020). This implies that interventions designed without meaningful consideration of families' lived realities and socio-economic constraints may have limited reach and risk exacerbating health inequalities.

Third, the review highlights the need to reconsider how effectiveness is conceptualised and evaluated. The dominance of qualitative evidence reflects the challenges of measuring obesity outcomes within school settings, but also underscores the importance of implementation quality, acceptability and sustainability as meaningful indicators of success (Campbell et al., 2015). This suggests that policymakers and commissioners should value process outcomes alongside anthropometric measures when assessing programme impact.

Finally, the findings have ethical implications, particularly in relation to weight stigma and communication. The evidence indicates that poorly framed, weight-focused interventions risk disengagement and potential emotional harm (Coupe et al., 2022). This reinforces the importance of wellbeing-focused, inclusive approaches that prioritise trust, sensitivity and relationship-building. Collectively, these implications suggest that addressing childhood obesity through schools requires coordinated, system-level strategies rather than isolated interventions.

Table 7.1: Linking With Objectives

Research Objective	Themes Addressing the Objective	Key Findings (from Chapter 6)	How This Was Achieved
Objective 1: To systematically identify and review UK-based studies evaluating school-based obesity prevention strategies for primary school children	All four main themes informed this objective	Ten UK-based qualitative and mixed-methods studies were identified, including Evaluations of programmes such as AFLY5, WAVES and Healthy Schools initiatives. The studies provided insight into	Achieved through a systematic literature review of ten UK studies using predefined inclusion and exclusion criteria, structured database searches, PRISMA-guided study selection and

Research Objective	Themes Addressing the Objective	Key Findings (from Chapter 6)	How This Was Achieved
		implementation processes, stakeholder perspectives and contextual influences rather than focusing solely on outcomes.	critical appraisal using CASP and MMAT tools.
Objective 2: To assess the effectiveness of school-based interventions in influencing obesity-related outcomes, including dietary behaviours, physical activity levels and psychosocial wellbeing	Theme 3: Programme Implementation, Fidelity, Adaptation and Behavioural and Psychosocial Outcomes Theme 4: Sensitivity, Communication and Weight Stigma	Interventions demonstrated positive effects on dietary knowledge, willingness to try healthy foods, engagement in physical activity and psychosocial outcomes such as confidence and enjoyment. However, effects on BMI were limited or inconsistent, highlighting the complexity of translating behavioural change into anthropometric outcomes.	Achieved through thematic synthesis of reported outcomes across ten studies, including qualitative accounts and one mixed-methods evaluation (AFLY5), focusing on behavioural, psychosocial and BMI-related findings.
Objective 3: To explore challenges and barriers associated with the effective implementation of school-based obesity	Theme 1: School Capacity and Resources; Theme Theme 3: Programme Implementation, Fidelity, Adaptation and Behavioural	Key barriers included limited curriculum time, staff workload, lack of training, inadequate facilities and competing academic priorities. Partial delivery and selective lesson	Achieved through in-depth thematic analysis of qualitative findings from teachers and school leaders across the included studies, examining reported

Research Objective	Themes Addressing the Objective	Key Findings (from Chapter 6)	How This Was Achieved
prevention programmes	and Psychosocial Outcomes	implementation were common, reducing intervention intensity and consistency.	implementation barriers and contextual constraints.
Objective 4: To investigate the influence of teachers, school leadership and family engagement on the delivery and effectiveness of childhood obesity prevention interventions	Theme 2: Stakeholder Engagement and Shared Responsibility; Theme 4: Sensitivity, Communication and Weight Stigma	Parental involvement enhanced effectiveness when school messages were reinforced at home, but engagement was constrained by socio-economic pressures and weight sensitivity. School leadership acted as a gatekeeper, influencing prioritisation, sustainability and resource allocation.	Achieved through synthesis of multi-stakeholder perspectives (teachers, headteachers, parents and children) across qualitative and mixed-methods studies, focusing on roles, relationships and engagement processes.
Objective 5: To develop evidence-informed recommendations for policy, practice and future research	All four themes informed this objective	Findings indicate that school-based programmes require structural support, curriculum integration, staff training, collaborative family engagement and non-stigmatising approaches to enhance effectiveness, equity and sustainability.	Achieved through integrative interpretation of all themes and findings, linking evidence from Chapter 6 to public health theory, policy context and implementation science principles.

7.3 Recommendations for Practice

Based on the findings of this review, several recommendations for practice are proposed to enhance the effectiveness and sustainability of school-based childhood obesity prevention programmes.

- First, obesity prevention initiatives should be more effectively integrated within the school curriculum rather than delivered as stand-alone programmes. Embedding health promotion within existing subjects such as physical education, PSHE and science can reduce curriculum pressure and improve consistency of delivery (Day et al., 2019). Curriculum integration also increases the likelihood that programmes will be sustained beyond short-term funding cycles.
- Second, targeted training and professional development should be provided for school staff. Teachers and school leaders require support to develop confidence, skills and role clarity in delivering health-related content and engaging with families around sensitive issues (Howard-Drake and Halliday, 2015; Coupe et al., 2022). Training should emphasise non-stigmatising communication, wellbeing-focused framing and practical strategies for inclusive engagement.
- Third, stronger collaboration between schools and public health services is recommended. Access to external expertise, funding and partnerships was shown to enhance school capacity, particularly in resource-constrained settings (Saleh et al., 2024). Local authorities and health agencies should work with schools to co-design interventions that align with both educational priorities and public health objectives.
- Fourth, parental engagement strategies should be flexible, inclusive and sensitive to socio-economic constraints. Practical, child-led activities that extend learning into the home were more effective than passive information-sharing approaches (Kipping et al., 2011). Schools should prioritise trust-building and avoid language that risks blame or stigma.
- Finally, leadership support is essential. School leaders should be supported at policy level to prioritise health promotion without compromising academic accountability. Clear national guidance recognising schools' role in child health could strengthen leadership commitment and reduce reliance on individual champions.

7.4 Recommendations for Future Research

This review identified several gaps in the existing evidence base that warrant further research.

- First, there is a need for more robust mixed-methods and longitudinal studies examining the long-term impact of school-based obesity prevention programmes.

While qualitative evidence provides valuable insight into implementation processes, limited quantitative outcome data restricts conclusions regarding sustained effects on obesity-related outcomes such as BMI (Campbell et al., 2015).

- Second, future research should explore how programme effectiveness varies across socio-economic and cultural contexts. Many included studies highlighted that schools serving more disadvantaged communities faced greater capacity constraints. Research examining differential impacts could inform more equitable intervention design and reduce the risk of widening health inequalities.
- Third, greater attention should be given to the role of school leadership and organisational culture. While leadership emerged as a key facilitator, it remains underexplored in intervention research. Studies examining how leadership styles, policy interpretation and institutional priorities influence implementation could enhance understanding of sustainability.
- Fourth, further research is needed to develop and evaluate non-stigmatising communication strategies. Given the sensitivity surrounding childhood obesity, interventions that prioritise wellbeing, inclusivity and mental health outcomes alongside physical health warrant greater empirical attention (Puhl and Heuer, 2010).
- Finally, future systematic reviews could expand inclusion criteria to incorporate grey literature and programme evaluations conducted outside academic settings. This may provide a more comprehensive understanding of real-world practice and innovation. Collectively, addressing these research gaps would strengthen the evidence base and support more effective, context-sensitive approaches to school-based childhood obesity prevention.

7.5 Conclusion

This systematic literature review set out to examine what school-based strategies are most effective in preventing obesity among primary school children in the United Kingdom, with particular attention to implementation processes, contextual influences and stakeholder experiences. By synthesising evidence from ten UK-based qualitative and mixed-methods studies, the review provides a nuanced understanding of both the potential and the limitations of school-based childhood obesity prevention initiatives.

The findings demonstrate that school-based programmes can contribute meaningfully to positive behavioural and psychosocial outcomes, including improved dietary awareness, increased engagement in physical activity, enhanced confidence and greater child-led influence on family health practices. However, the review also highlights that evidence of sustained impact on BMI remains limited and inconsistent, indicating that changes in knowledge and behaviour do not necessarily translate into measurable anthropometric

outcomes. This underscores the complexity of childhood obesity as a public health issue and the limitations of relying on schools as the sole setting for prevention.

A central conclusion of this review is that programme effectiveness is shaped less by intervention content alone and more by the organisational, relational and ethical contexts in which programmes are delivered. Structural constraints within schools, including limited curriculum time, staff workload pressures, insufficient training and inadequate resources, frequently restricted implementation fidelity and sustainability. These findings reinforce existing evidence that schools operate within competing educational priorities that can limit their capacity to prioritise health promotion.

The review further demonstrates that stakeholder engagement and shared responsibility are critical to programme success. Parental involvement enhanced intervention impact when school messages were reinforced at home, yet engagement was often constrained by socio-economic pressures and sensitivity surrounding child weight. School leadership emerged as a key gatekeeping influence, shaping whether obesity prevention initiatives were prioritised, embedded and sustained. These findings highlight the importance of collaborative, system-level approaches that recognise the interdependence of schools, families and wider socio-environmental factors.

Ethical considerations surrounding weight stigma and communication were also central to the review's conclusions. Educators' concerns about labelling children and causing emotional harm led many schools to adopt wellbeing-focused, non-stigmatising approaches. Interventions that prioritised inclusive language, trust-based relationships and holistic wellbeing were more acceptable to both parents and children, reinforcing the need for sensitive and ethically informed practice in school-based obesity prevention.

Taken together, the findings indicate that school-based obesity prevention programmes are unlikely to achieve sustained and equitable impact in isolation. Their effectiveness depends on broader structural support, curriculum integration, staff training, leadership commitment, parental engagement and coordinated public health partnerships. This review contributes to the existing literature by synthesising UK-based qualitative and mixed-methods evidence, highlighting the importance of implementation quality, acceptability and sustainability alongside traditional outcome measures.

In conclusion, while schools remain an important setting for promoting healthy behaviours, they should be viewed as one component of a wider, systems-based response to childhood obesity. Strengthening the alignment between education policy, public health strategy and community support is essential if school-based interventions are to contribute meaningfully to reducing childhood obesity and associated health inequalities in the United Kingdom.

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Appendix A: CASP Qualitative Appraisal Matrix (All Qualitative Studies)

CASP Qualitative Checklist (CASP, 2024)

Key: Y = Yes | N = No | CT = Can't Tell

CASP Question	Howard-Drake & Halliday (2015)	Clarke et al. (2015a)	Clarke et al. (2015b)	Saleh et al. (2024)	Coupe et al. (2022)	Kipping et al. (2011)	Day et al. (2019)	Goldthorpe et al. (2020)	Griffin et al. (2014)
Clear statement of aims	Y	Y	Y	Y	Y	Y	Y	Y	Y
Qualitative methodology appropriate	Y	Y	Y	Y	Y	Y	Y	Y	Y
Research design appropriate	Y	Y	Y	Y	Y	Y	Y	Y	Y
Recruitment strategy appropriate	Y	Y	Y	Y	Y	Y	Y	Y	Y
Data collected appropriately	Y	Y	Y	Y	Y	Y	Y	Y	Y
Researcher-participant	CT	CT	CT	Y	CT	CT	CT	Y	CT

t relationsh ip considere d									
Ethical issues considere d	Y	Y	Y	Y	Y	Y	Y	Y	Y
Data analysis sufficientl y rigorous	Y	Y	Y	Y	Y	Y	Y	Y	Y
Clear statement of findings	Y	Y	Y	Y	Y	Y	Y	Y	Y
Research value	Y	Y	Y	Y	Y	Y	Y	Y	Y
Total Yes (/10)	9	9	9	10	9	9	9	10	9
Overall Quality	High	High	High	High	High	High	High	High	High

Appendix B: MMAT Appraisal of Campbell et al. (2015)

MMAT Criterion	Appraisal Judgment
1. Is there a clear research question?	✓ Yes
2. Do the collected data allow addressing the research question?	✓ Yes
3. Is the mixed-methods design relevant to address the research question?	✓ Yes
4. Are the qualitative components appropriate to answer the research question?	✓ Yes
5. Are the quantitative components appropriate to answer the research question?	✓ Yes
6. Are the qualitative and quantitative data adequately integrated?	✓ Yes
7. Are the outputs of the integration adequately interpreted?	⦿ Partially
8. Are divergences and inconsistencies adequately addressed?	⦿ Partially
9. Are the limitations of integration discussed?	⦿ Partially

APPENDIX C: Data extraction of selected studies

Author(s) & Year	Study Design	Setting (UK)	Participants	Aim of Study	Intervention / Focus	Key Outcomes / Findings
Saleh et al. (2024)	Qualitative (phenomenological)	Primary schools, West Yorkshire	32 headteachers	To explore barriers and facilitators of school-based obesity prevention	School policies, curriculum, parental engagement, resources	Identified seven key themes influencing obesity prevention including staff perceptions, parental involvement, and school capacity
Coupe et al. (2022)	Qualitative (semi-structured interviews)	UK primary schools	23 educators	To explore educators' experiences of child weight discussions with parents	Informal weight-related conversations	Conversations viewed as necessary but challenging due to sensitivity, role ambiguity, and fear of stigma
Kipping et al. (2011)	Qualitative + Process evaluation	UK primary schools	Parents, children, teachers	To explore methods for involving	Homework and newsletters	Parental involvement was feasible

				parents in obesity prevention	linked to AFLY5	and acceptable ; homework increased engagement and awareness
Day et al. (2019)	Qualitative	Primary schools, North England	65 school staff	To identify factors affecting implementation of healthy lifestyle programmes	Implementation and sustainability of programmes	Time, training, resources, and leadership were critical for effective delivery
Campbell et al. (2015)	Mixed-methods (RCT + process evaluation)	UK primary schools	Teachers, parents, pupils	To assess fidelity of AFLY5 intervention	Diet and physical activity curriculum	High reach but variable fidelity; limited effect on BMI outcomes
Goldthorpe et al. (2020)	Qualitative (multi-stakeholder)	Manchester primary schools	Children, parents, staff	To explore views on a healthy lifestyles intervention	Manchester Healthy Schools programme	Shared responsibility and consistent messaging improved acceptability

Griffin et al. (2014)	Qualitative	West Midlands primary schools	14 teachers	To explore teacher experience s delivering WAVES intervention	Obesity prevention programme delivery	Flexibility aided delivery; time and parental support were barriers
Howard-Drake & Halliday (2015)	Qualitative	Yorkshire & Humber	14 headteachers	To explore headteachers' views on obesity prevention	Barriers and facilitators in schools	Lack of confidence , skills, and external support limited impact
Clarke et al. (2015a)	Qualitative	West Midlands	22 headteachers	To examine school role in obesity prevention	School responsibility vs parental responsibility	Schools motivated by learning outcomes rather than obesity prevention
Clarke et al. (2015b)	Qualitative	West Midlands	Parents & children	To explore perceptions of WAVES intervention	School-based obesity prevention	Parental involvement and teacher influence were key mechanisms

