plausible causal inference to guide action, while accepting and adapting to the reality of the public health landscape rather than wishing it were otherwise. The traditional art of dry stone walling can serve as a metaphor for the more ‘holistic sense-making’ we propose.

**EVALUATIONS OF PUBLIC HEALTH INTERVENTIONS USING NATURAL EXPERIMENT EVALUATION DESIGNS AND THE ‘TARGET TRIAL’ FRAMEWORK**

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**Background** Natural or quasi experiments are appealing because they enable the evaluation of events or interventions that are difficult or impossible to manipulate experimentally, which is especially relevant for public health research in which the evaluation of policy and health system reforms is an important focus. There remains ambiguity about their definition and how they differ from randomized controlled experiments and from other observational designs. We conceptualise natural experiments in the context of public health evaluations and align the study design to the Target Trial Framework.

**Methods** A literature search was conducted, and key methodological papers were used to develop this work. Peer-reviewed papers were supplemented by grey literature.

**Results** Natural experiment studies (NES) combine features of experiments and non-experiments. They differ from planned experiments, such as randomized controlled trials, in that the assignment of exposure is not controlled by researchers. They differ from other observational designs in that they evaluate the impact of events or processes that resulting from changes in exposure. As a result they are, in theory, less susceptible to bias than other observational study designs. Importantly, causal inference relies heavily on the assumption of ‘as-if randomisation’ of exposure allocation. The target trial framework provides a systematic basis for evaluating this assumption and the other design elements that underpin the causal claims that can be made from NES.

**Conclusion** Although there will always remain some ambiguity about the strength of causal claims from natural experiment evaluations, there are clear benefits to harnessing these rather than relying purely on observational studies. This includes the fact that NES can be based on routinely available data and that timely evidence of real-world relevance can be generated. Aligning NES to the Target Trial framework will guard against conceptual stretching of these evaluations and ensure that the causal claims about whether public health interventions ‘work’ can inform public health action within a ‘practice-based evidence’ framework.

**A SYSTEMATIC REVIEW OF INEQUALITIES IN THE UPTAKE OF, ADHERENCE TO, AND EFFECTIVENESS OF BEHAVIOURAL WEIGHT MANAGEMENT INTERVENTIONS IN ADULTS**

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**Background** Health inequalities are a public health priority. The extent to which behavioural weight management interventions impact health inequalities is uncertain. As is the extent...
to which trials of these interventions consider inequalities. We conducted a systematic review synthesising evidence on how different measures of inequality impact the uptake of adherence to and effectiveness of behavioural weight management interventions in adults with overweight and obesity.

**Methods** We updated a systematic review from the US Preventive Services Taskforce to identify (cluster-) randomised controlled trials of primary care applicable behavioural weight management interventions in adults with overweight and obesity published prior to 5th March 2020. Two investigators independently screened articles for eligibility and conducted risk of bias assessment. We curated publication families for each trial. The PROGRESS-Plus framework (place of residence, race/ethnicity, occupation, gender, religion, education, socioeconomic status, social capital, plus other discriminating factors) was used to consider a comprehensive range of health inequalities. Data on trial uptake, intervention adherence or attendance, and weight change outcomes by PROGRESS-Plus criteria were extracted. Data were synthesised narratively, and Harvest plots were produced to summarise the impact of each criterion on uptake, adherence, and effectiveness.

**Results** One hundred and three studies (89 from previous review; 14 from updated search) were identified. The majority (n=91) are trials of behavioural weight loss interventions; 12 are trials of behavioural weight maintenance interventions. At baseline, all studies reported age (n=103) and 101 (98%) reported gender/sex; 67 (65%) studies reported race/ethnicity and 57 (53%) education. The least reported criteria were place of residence (n=3, 2%) and religion (n=1, 1%). Ten studies (10%) examined the impact of at least one PROGRESS-Plus criteria on uptake, 10 (10%) on intervention adherence or attendance, 31 (30%) on trial attrition, and 30 (29%) on weight change. Due to heterogeneity in intervention type and measures used to assess PROGRESS-Plus criteria, a meta-analysis was not conducted. Further results will be synthesised by August 2021, including Harvest plots summarising inequalities at each stage by different PROGRESS-Plus criteria.

**Conclusion** We identified a lack of consideration of inequalities in trials of behavioural weight management interventions for adults, especially in relation to trial uptake and adherence, and substantial heterogeneity in measures used to assess PROGRESS-Plus criteria. Current evidence does not align with public health policy which prioritises health inequalities. Researchers should consider health inequities in the design, conduct and targeting of interventions to best inform policy decisions and practice.