

BMJ Open How and why do financial incentives contribute to helping people stop smoking? A realist review protocol

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ABSTRACT

Introduction Smoking is harmful to human health and programmes to help people stop smoking are key public health efforts that improve individual and population health outcomes. Research shows that financial incentives improve the success of stop smoking programmes. However, a better understanding of how they work is needed to better inform policy and to support building capability for implementation.

The aims of this study: (1) To review the international literature to understand: How, why, in what circumstances and for whom financial incentives improve the success of stop smoking interventions among general population groups and among pregnant women. (2) To provide recommendations for how to best use financial incentives in efforts to promote smoking cessation.

Methods and analysis A realist review of published international literature will be undertaken to understand how, why, for whom and in which circumstances financial incentives contribute to success in stopping smoking for general population groups and among pregnant women. Systematic searches were undertaken on 16 February 2022 of five academic databases: MEDLINE (ovid), Embase.com, CINAHL, Scopus and PsycINFO. Iterative searching using citation tracking and of grey literature will be undertaken as needed. Using Pawson and Tilley's iterative realist review approach, data collected will be screened, selected, coded, analysed and synthesised into a set of explanatory theoretical findings.

Ethics and dissemination Ethical approval is not required for this review as data sources to be included are previously published. The study will provide important findings for policy-makers and health system leaders to guide the development of stop smoking services which use incentives, for example, as part of the Health Service Executive's Tobacco Free Programme in Ireland. Understanding how contextual factors impact implementation and programmatic success is key to developing a more effective public health approach to stop smoking. Our dissemination strategy will be developed with our stakeholders.

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INTRODUCTION

The detrimental effect of smoking on health is well documented; yet evidence suggests that the earlier an individual stops smoking,

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ To our knowledge, this is the first realist review of financial incentives as a tool in stopping smoking.
- ⇒ A key strength of this study is that it will explain the causal mechanisms that explain how, why, for whom and to what extent financial incentives impact on individual smokers' efforts to stop smoking.
- ⇒ A further strength of the study is that it will examine the complex contexts in which various causal mechanisms are and are not activated.
- ⇒ Like all reviews, a potential limitation of the study is that it relies on the published literature meaning that the findings will be based on the availability of relevant useful published data.

the less likely they are to develop smoking-related diseases that can lead to long-term health problems or death.¹ Additionally, research shows that smoking behaviours are unequally distributed among different population groups, with higher smoking prevalence among those with low socioeconomic status. Such populations are also more likely to suffer harms from smoking and have more difficulties quitting than other populations.²⁻⁴

The evidence base for effective stop smoking care is well established and shows that a combination of pharmacotherapy and behavioural supports is more effective than attempting to quit without supports.⁵ However, too few people who smoke are offered access to services and therapies.^{6,7}

Among behavioural supports, financial or monetary incentives have been found to effectively increase stop smoking rates in the general population of smokers⁸ and among pregnant women, specifically.^{9,10} Financial incentives here refer specifically to cash payments or vouchers provided to individual smokers who are undertaking a quit attempt. A randomised controlled trial published in December 2021 in the British Medical Journal found that an intervention providing a financial incentive equivalent to €20 was

associated with a higher rate of abstinence in pregnant smokers than no financial incentive. The study found financial incentives dependent on smoking abstinence to be ‘a safe and effective intervention to help pregnant smokers quit smoking’.¹¹

Similarly, a recent Cochrane review found high-certainty evidence that incentives improve stop smoking outcomes at long-term follow-up in mixed or general populations of smokers and that the effectiveness of incentives appears to be sustained following withdrawal; there was also moderate-certainty evidence that interventions oriented towards pregnant smokers improve quitting rates, both at the end of pregnancy and post partum.⁵

A growing number of incentive-based programmes have been developed and targeted towards pregnant women in India,¹² Nepal,¹³ the UK¹⁴ and the USA.¹⁵ Despite evidence of effectiveness, the lack of widespread adoption of these programmes points to potential unresolved questions for policy-makers and service planners. More evidence is needed to understand how incentives work for specific population groups and in specific contexts. Such information can be used to assist in implementing what are complex interventions in complex settings.

Concerns have been raised about the acceptability, funding and possible harms of incentives schemes to promote smoking-related behaviour change.^{5 16 17} Moreover, it is unclear via which mechanisms (ie, individual level, community level, service/programme level)—and the interactions between them—that financial incentives actually work to influence smoking cessation.^{8 9 17–19} For instance, it has been suggested that financial incentives are effective since they provide individuals with an attainable goal or reward to work towards in the near future,²⁰ which is perhaps supported by the fact that no notable differences have been recorded among trials offering smaller and larger monetary amounts.⁵ It has also been argued that financial incentives may facilitate a form of ‘operant conditioning’ that can lead to voluntary changes in habitual behaviour, though the long-term efficacy of this intrinsic motivation may be weakened once the incentives are removed.²¹

Apart from enhancing an individual’s motivation to quit smoking, research has indicated that financial incentives may help improve smoking cessation service or treatment engagement which, in turn, increases effectiveness.^{19 22–24} Other studies have found that the use of financial incentives can be complementary to other stop smoking interventions. A secondary analysis of a cluster randomised trial (n=604) in the Netherlands, for example, found that financial incentives can influence smoking cessation in indirect ways by increasing self-efficacy and medication use, suggesting that incentive-based interventions may best be combined with other smoking cessation methods.²⁵ Moreover, the authors reported an association between positive programme evaluations and a number of psychosocial factors, including ‘higher self-efficacy, more social influence to quit and more positive attitudes about quitting’.²⁵

As Gneezy²¹ point out, it is clear that ‘incentives do matter, but in various and sometimes unexpected ways’. Indeed, a growing body of evidence suggests that their effects are mediated, to some extent, by how such interventions are designed and delivered; how they interact with intrinsic and social motivations; and what happens after they are withdrawn. Moreover, incentive-based interventions can have mixed results in different populations and implementation ‘may not be transferable from one country to another’ due to differing cultural norms and attitudes towards the use of monetary rewards to change health behaviours.¹⁶ Notably, at least one study has reported that the effect of financial incentives did not depend on an individual’s responsiveness to rewards.²⁵

A more advanced understanding of why and how financial incentives ‘work’ or do not among particular groups, under certain conditions and in differing contexts, can help to design effective interventions to reduce smoking prevalence. This is because it can provide insight into not only how financial incentives should be designed and operationalised, but also how they should ‘fit’ within a broader smoking cessation programme to improve outcomes. A core purpose of the HSE Tobacco Free Ireland Programme (HSE TFIP) 2018–2021²⁶ plan is to support the delivery of, and monitor and continuously improve HSE stop smoking services (SSS). For this reason, a realist review of introducing financial incentives as part of the broader SSS scheme is a valuable next step that can build on existing research evidence and provide a bridge to best-practice implementation in the Irish context. In doing so, the findings would have the potential to support decisions around the design and delivery of effective incentive-based interventions that could assist HSE TFIP to progress their vision of a Tobacco Free Ireland by 2025.

OBJECTIVES

The aims of this study are as follows:

1. To review the international literature to understand:
 - How, why, in what circumstances and for whom financial incentives improve the success of stop smoking interventions among general population groups.
 - How, why, in what circumstances and for whom financial incentives improve the success of stop smoking interventions among pregnant women.
2. To provide recommendations for how to best use financial incentives in efforts to promote smoking cessation.

METHODS AND ANALYSIS

This study will use the realist review approach in the school of Pawson and Tilley.^{27–29} Realist research is a theory-driven logic of inquiry particularly well suited to understanding how complex social programmes and phenomena work. According to Pawson, realist review (and realist evaluation, the realist approach to primary research) is a ‘methodological orientation, or a broad

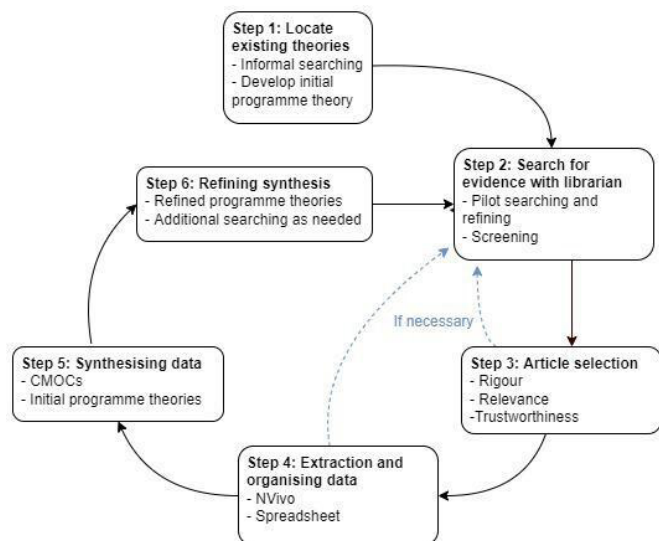


Figure 1 Stages of a realist review. CMOCs, context +mechanism=outcome construction.

logic of inquiry that is grounded in the philosophy of science and social science²⁷ and a ‘general logic of social science...a tool for understanding how social programmes work and...a framework for understanding their complexity’.²⁷

In this study, realist review is well suited to the topic at hand because smoking is a complex social behaviour and programmes that attempt to help people stop smoking are complex social interventions. To make sense of how they work, studies can try to control for the complexity inherent in the behaviour and interventions to change it, or they can embrace and attempt to explain the complexity. This study is focused on the latter.

The study will follow Pawson’s five iterative stages of a realist review: (1) locating existing theories, (2) searching for evidence, (3) selecting articles, (4) extracting and

organising data and (5) synthesising the evidence and drawing conclusions²⁷ (see figure 1). The review will also adhere to the RAMESES publication guidelines in presenting the findings in the final write up.³⁰

The following sections will provide more detail for each step in the review.

Initial programme theory

An initial programme theory has been developed to explain our early conceptualisation of how financial incentives work to promote efforts to stop smoking among individual smokers. It is shown in figure 2.

This initial programme theory, based on informal reading of relevant literature and expert opinion, proposes that financial incentives improve the motivation of smokers in particular contexts. These contexts include the following: when people on a low income are looking to improve their finances, when certain people respond particularly well to rewards, and when smokers are keen to stop smoking but are looking for extra drivers to support their goals and subsequent actions to meet these goals.

In these contexts, smokers take part in stop smoking programmes through: an increased sense of commitment; the anticipation of a reward; a focus on the future; a feeling that the financial incentive lends legitimacy to their effort especially in some communities where it may not look good to follow public health advice but doing so for cash payments may be more acceptable; or a wish for financial empowerment in cases where people may anticipate a change in their finances based on savings from stopping smoking plus incentive payments. The same motivational factors may also improve the ongoing success of smoking cessation interventions once completed.

This initial programme theory in its nature is based on an incomplete understanding of the literature and as such it is not likely to explain the full extent of what works, for whom and why when financial incentives

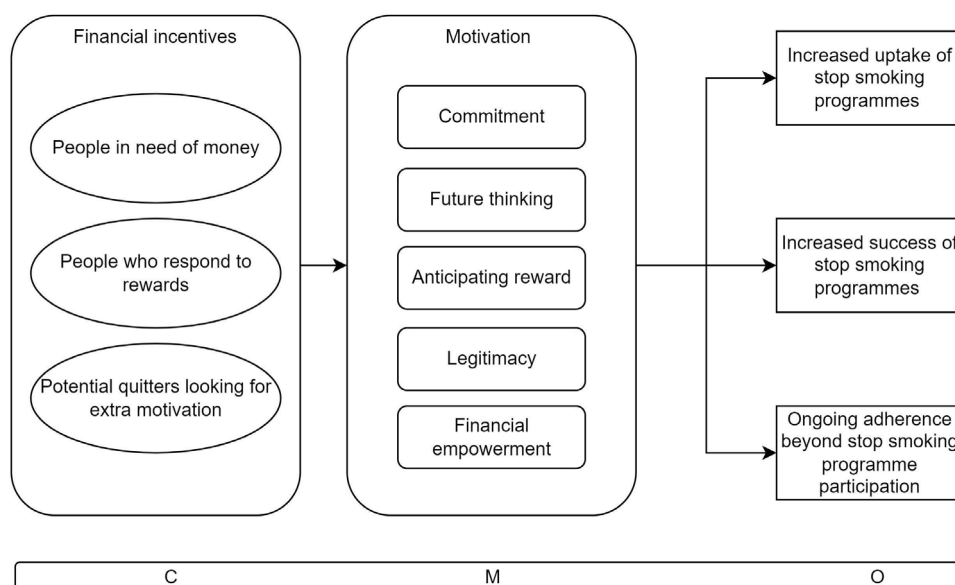


Figure 2 Initial programme theory.

are provided to people attempting to give up smoking. However, it is a serviceable jumping off point for the study as a whole which has been employed in constructing the search strategy and will be used in the coding and further theorising stages of the review.

Data collection

Data will be collected via iterative literature searching of peer-reviewed literature and other literatures as needed. Systematic searches were undertaken on 16 February 2022 in the following academic databases: MEDLINE (ovid), Embase.com, CIHAHL, Scopus and PsycINFO.

Search strings were developed and agreed on among the research team with input from a subject librarian from Trinity College Dublin. These used a version of the following terms, as appropriate in the given database: (Smoking cessation (MeSH type term) OR Smoking cessation (keyword) OR stop* adj3 smok* OR quit* adj3 smok*) AND (financial adj3 incentive* OR economic adj3 incentive* OR money adj3 incentive* OR monetary adj3 incentive* OR cash adj3 incentive* OR pay* adj3 incentive* OR award* OR token* OR prize* OR voucher*)

Searching to identify key grey literature sources will take place once full text screening of the data collected from the systematic search has been completed. Further iterative searching of grey literature will take place throughout the review process as needed with the aim of filling gaps where they may appear. Further academic literature searching will also take place as needed with the same aim.

All data resulting from the first systematic search in February 2022 were extracted into Endnote V.20³¹ where automatic and manual deduplication took place. Screening is ongoing.

As screening and article selection continues, studies examining interventions to help people stop smoking using financial incentives, of any type of design including qualitative, quantitative and mixed methods have been and will continue to be included. The outcome of interest is people stopping tobacco smoking and studies focusing on vaping or other nicotine delivery mechanisms are not included. Neither are studies focusing on reducing the amount a person smokes without fully stopping nor interventions to promote stopping smoking not using financial incentives. Articles that meet inclusion criteria will have their full text screened and the full text will be further evaluated for using inclusion and exclusion criteria as well as determinations about the rigour, relevance and trustworthiness of the article.

Inclusion criteria

- ▶ Studies of stop smoking interventions using financial incentives among smokers who attempt to quit.
- ▶ Studies using any study design.
- ▶ Studies of interventions with the goal of helping participants to stop smoking.

Exclusion criteria

- ▶ Studies of interventions to stop vaping or consumption by other nicotine delivery mechanism.
- ▶ Studies of interventions to reduce smoking.
- ▶ Studies of interventions to promote the stopping of smoking not using financial incentives.

Article selection

When conducting a realist review the quality of articles to potentially include is assessed not using a quality and/or bias appraisal tool such as is the case for other review methodologies, for example, systematic review. Rather realist reviews evaluate the rigour of a given study based on how well the study adhered to its own particular methodology and following on from that, how trustworthy the findings of the given study are.³² Typically studies which are conducted rigorously are more likely to yield trustworthy results. Furthermore, and particular to realist research, articles are also evaluated for their relevance to the review question at hand. Articles which are not rigorously performed can at times contain important and useful information that can substantially contribute to findings in a realist review such as details about the context of an intervention, how it was implemented, what worked for certain populations groups, etc. Basing inclusion on both rigour and relevance ensures that included sources are particularly useful for studies using a realist approach where the aim is to explain what works for whom and why rather than to judge whether or not something works.³³

Data extraction

Data extraction and the organisation of the data will be undertaken by post-doc researcher RS. A random 10% sample of the included documents will be independently checked by post-doc researcher SP for quality control. SP will also undertake full text review and assessment for rigour and relevance of a random 10% sample of the articles included at that stage of the review. Potential disagreements will be solved by discussion between RS and SP and the full team if necessary.

Data analysis

Realist data analysis uses a theory-driven approach to identify patterns of causality in data about complex social interventions or phenomena. The starting point is the initial programme theory where the research team formulate an early understanding of how the intervention under study works. The analysis then moves from this early theory to build a more complete theory based on the data collected. The starting and ending point of inquiry is theory.

Inductive, deductive and retroductive³⁴ coding will be undertaken in NVivo³⁵ starting with high level conceptual coding and moving on iteratively to assign causal labels of 'context' 'mechanism' and 'outcome' to data as possible, keeping in mind that the same piece of data can contribute to each of those categories in different

causal constructions depending on the particular explanatory focus. Retroductive coding is the process of creating codes that begin to highlight the hidden causal processes being uncovered in a realist study. Coding will follow the approach described by Papoutsis *et al*³⁶ and Tierney *et al*.³⁷

Synthesis

Typically realist theory is built using the heuristic 'context +mechanism=outcome construction' also often written as 'C+M=O' or just 'CMO construction' or 'CMOC'. A CMO construction is an explanatory device which shows how an outcome is produced when a particular hidden, latent power (mechanism) is triggered in a given context. According to Pawson, a CMOC 'is a hypothesis that the programme works (O) because of the action of some underlying mechanism (M), which only comes into operation in particular contexts (C)'.²⁸

CMOCs are constructed close to the data and use specific pieces of data directly from the sources included in a review. Crucially data have to be configured into explanatory statements explaining the causal relationship of a given context, mechanism and outcome to explain the unseen causal action which the theory posits is happening in the data.^{28 38} They are then brought to a higher level of abstraction and are often combined into programme theory/theories which explain patterns of causation removed from the specific data to explain causality in more general terms.²⁷

Patient and public involvement

Patient and public representatives will be involved in the research process at several stages as part of formal expert consultation and deliberation workshops, and through informal consultation as needed.

ETHICS AND DISSEMINATION

As the study undertaken here is a review of published data, no ethics will be required nor sought.

The review is being carried out with the aim of informing the Irish Health Service Executive practice and as such dissemination will focus on producing useful lessons for policy-makers and health system leaders in Ireland and internationally. The research carried out will build confidence and capability for the Health Service Executive's Tobacco Free Ireland Programme and support their goal to design and implement programmes that efficiently deliver financial incentives for Irish smokers seeking to quit, building on evidence to best meet participants' needs and produce the desired outcome of assisting people to stop smoking. Additionally, at least one peer-reviewed article will be published to distribute findings to the research community.

Study status

The study began in late November 2021. The research team has undertaken informal reading and have built initial programme theory (see figure 2) to guide the

literature searching phase which was undertaken in February 2022. Screening is currently ongoing.

DISCUSSION

To our knowledge, this will be the first realist review examining the causal effects of introducing financial incentives into complex stop smoking interventions. Greenhalgh *et al* undertook a realist review of pharmacist-led smoking cessation interventions in 2016.³⁹ A strength of this study is its novelty in examining how, why, for whom and to what extent direct financial incentives contribute to the successful cessation of smoking. It is also timely given the accumulating evidence of the effectiveness of such incentives in helping people stop smoking. However, there is an implementation gap between current evidence and practice which this review will seek to help bridging by providing actionable evidence for how an intervention to provide financial incentives to smokers who wish to quit should best be designed.

A potential limitation of this study is that, as all literature reviews, it relies on the published literature for its data collection. This means that findings made and conclusions drawn are limited to what other researchers have published and it may limit the ability to fully understand and explain the causal mechanisms at play. Our initial scoping of the literature suggests that there is a large number of trials published on this topic which examine the efficacy of financial incentives but fewer studies providing the kind of rich data examining how, why, for whom and to what extent financial incentives impact behaviour, which are needed to build theory. We will seek to address this possible risk by undertaking comprehensive and iterative expert-guided searching of diverse sources.

This study is focused particularly on how and why direct financial incentives impact on the success of stop smoking efforts among individual smokers. A future realist piece of work examining how indirect financial incentives such as fiscal policy in the form of taxation impacts smoking behaviour could potentially be useful for policy-makers seeking to understand the full scope of how smokers may be influenced by a variety of financial incentives. However, this consideration is outside of the remit of the current study.

With the burden of smoking still impacting populations across the world negatively, especially among deprived populations, this study has the prospect to inform policy-makers and programme designers with a potentially powerful tool for helping people to stop smoking in the form of financial incentives globally.

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Contributors SB and PK conceived the study. All authors (RS, SP, SB, PK and JAF) codeveloped the initial programme theory as well as the approach for the selection, appraisal, extraction and synthesis. RS wrote the initial draft of the protocol after full team discussions. All authors critically reviewed and edited the manuscript, and all have approved the final manuscript (RS, SP, SB, PK and JAF)

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

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