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Review

Economic evaluations of alcohol prevention interventions: Is the evidence sufficient? A review of methodological challenges

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ABSTRACT

Public health interventions have unique characteristics compared to health technologies, which present additional challenges for economic evaluation (EE). High quality EEs that are able to address the particular methodological challenges are important for public health decision-makers. In England, they are even more pertinent given the transition of public health responsibilities in 2013 from the National Health Service to local government authorities where new agents are shaping policy decisions.

Addressing alcohol misuse is a globally prioritised public health issue. This article provides a systematic review of EE and priority-setting studies for interventions to prevent and reduce alcohol misuse published internationally over the past decade (2006–2016). This review appraises the EE and priority-setting evidence to establish whether it is sufficient to meet the informational needs of public health decision-makers.

619 studies were identified via database searches. 7 additional studies were identified via hand searching journals, grey literature and reference lists. 27 met inclusion criteria. Methods identified included cost-utility analysis (18), cost-effectiveness analysis (6), cost-benefit analysis (CBA) (1), cost-consequence analysis (CCA) (1) and return-on-investment (1). The review identified a lack of consideration of methodological challenges associated with evaluating public health interventions and limited use of methods such as CBA and CCA which have been recommended as potentially useful for EE in public health. No studies using other specific priority-setting tools were identified.

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1. Introduction

An increasing need for high quality economic evaluations of public health interventions is recognised and has been documented by academics and other commentators [1–4]. Characteristics unique to public health, compared to healthcare technologies, present additional challenges to the evaluation of public health interventions. The reach of public health intervention consequences is much broader than healthcare technologies where commonly an individual beneficiary can be identified and the outcome of interest is health maximisation. The time lag between intervention and effect can also be considerably longer in public health, compared to a health technology, where the aim is often to prevent future morbidity; this poses evaluative challenges in the form of discounting future costs and benefits and modelling of longer-term effects. Costs incurred and benefits experienced in the present are generally valued greater than those in the future, therefore when modelling interventions with long-term costs and benefits a discount rate should be applied to reflect the reduced value of future costs and benefits to a decision-maker today; the discount rate applied may affect the outcome of an economic evaluation, therefore must be chosen carefully.

The reported paucity of high quality economic evaluations in public health may in part be due to a lack of consensual method-

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ological guidance on the conduct of economic evaluations in this area [5–7]. The unique challenges for evaluating public health perhaps make the use of common evaluative methods, for which guidelines exist for their conduct and reporting [8–10], such as cost-utility analysis, insufficient for the task. Consequently, alternative methods for which there is less established guidance in health care may need to be used resulting in public health economists using a heterogeneity of evaluative methods [11]. The lack of guidance may also be behind the poor quality of many evaluations that have been published [12] since a lack of consensus over the methods to use and the costs and consequences to include [13,14] could contribute to results of varying quality. This lack of methodological consensus prevents easy comparison between different public health interventions by decision-makers and is unhelpful for researchers conducting such evaluations.

Several reviews have been conducted looking at methods of economic evaluation in public health [2,3,5]. Edwards et al. [5] conducted a comprehensive review of guidance documents to identify potential gaps in instruction for public health evaluations, however this review did not look at how evaluations are actually being conducted in practice. Owen et al. [2] focussed on the cost-effectiveness of published National Institute of Health and Care Excellence (NICE) public health guidance which limited the review to consider only evaluations that have been used by NICE. Weatherly et al. [3] identified evaluative challenges via a review of evaluations that have been conducted on a range of public health interventions. Whilst this review was comprehensive, it is limited to evaluations published between the years 2000–2005 thus will not have captured evaluations that have been conducted since recent guidance on public health economics has been released. For example, the majority of the guidance documents identified by Edwards et al. [5] was published after 2005.

In the UK, English public health responsibilities were transferred to local authorities in 2013. The result of this move is that policy decisions are being shaped and influenced by new agents, such as locally elected politicians. How prioritization decisions will be made, using which approaches, in this new context merits scrutiny [15]. Alongside this shift in the public health context in England and to address the lack of methodological guidance, NICE published updated guidance on the evaluation of public health interventions [16]. It recommended that the wider societal and environmental costs and benefits of public health interventions should be considered via greater use of methods such as cost-benefit analysis (CBA) and cost-consequence analysis (CCA) (see NICE glossary [17] p.216 for definitions of CBA and CCA).

This study will build on the evidence provided by existing reviews and look at economic evaluations of public health interventions around alcohol prevention, a globally prioritised issue [18–20]. The review will identify evaluations from 2006 to 2016 to capture evidence that has been published since Weatherly et al. [3] conducted their study and since recent recommendations for methods of evaluating public health interventions have been published [5]. This review will also look at methods of priority-setting, such as option appraisal, (social) return-on-investment (ROI/SROI), programme budgeting and marginal analysis (PBMA) and multi-criteria decision analysis (MCDA), to help meet the needs of new public health decision-makers [15,21].

PBMA and MCDA are both systematic processes to aid resource prioritization decisions which involve assessing the available options against a set of criteria (see [22,23] for detailed explanations). SROI studies demonstrate the return on an investment considering a wider remit than standard ROI as the benefits to society are also included. Public Health England [24] recently recommended this tool for use by commissioners in drug and alcohol treatment areas, however it may also prove beneficial for investment decisions around non-treatment related alcohol prevention interventions.

1.1. Aims and objectives

This review aims to identify the methods of evaluation being used to appraise interventions to prevent excessive alcohol consumption and establish whether published studies provide sufficient information to meet the requirements of public health decision-makers. Particular focus will be given to CBA and CCA, as recommended by NICE, as well as prioritization tools such as PBMA and MCDA. Specific elements of evaluation, inspired by the work of Weatherly et al. [3] and guidance on methods of public health appraisal [25], will provide a focus for the literature search; guidance specific to the United States has also been published [26] although this review will be focusing on the more recent guidance produced by NICE. Such elements include: measurement of outcomes, especially long-term outcomes; study perspectives; apportioning inter-sectoral costs and consequences; and health-equity considerations.

2. Methods

A systematic literature review was carried out by one researcher with assistance from an information specialist and two other researchers who co-screened records and verified data extraction.

Details of the protocol for this systematic review were registered on PROSPERO and can be accessed at www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42016039063.

2.1. Literature search

A literature search (see Table 1 for main search terms) was carried out in the NHS Economic Evaluation Database (NHS EED) and Scopus for the time period January 2006 – May 2016. NHS EED is a database of economic evaluations which have been identified through a systematic search of the literature by the Centre for Research and Dissemination (CRD) in York. Since methods of priority-setting are not included in the search strategy used by the CRD, an additional search was conducted in Scopus, limited to the health and social sciences sector, to capture additional priority-setting studies.

The NHS EED database ceased to be updated from 31st December 2014, therefore a further search was conducted on the databases searched by CRD (Medline, Embase, psychINFO and Cinahl) using a strategy based on that used by CRD in order to capture economic evaluations published between January 2015 and May 2016 (Full search strategies for each database can be viewed in Appendix A of the supplementary material). A hand search of relevant health economics and economics journals was also conducted alongside reference and citation searches of included items.

Grey literature, in the form of public health/health economic conference abstracts, OpenGrey, governmental departments and voluntary organisations' websites and dissertation and thesis abstracts via ProQuest, was also searched for additional records.

2.2. Eligibility criteria

Economic evaluations, defined as the comparative analysis of alternatives with respect to their associated costs and health consequences, or a method of priority-setting defined as a systematic method of deciding where investments (and disinvestments) should be made to best meet the needs of communities, were included for review. Studies were included if they evaluated a public health intervention focussed on preventing alcohol misuse or reducing excessive alcohol consumption. Interventions to prevent

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