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Protocol for a systematic review of reviews evaluating effectiveness of mass media interventions for prevention and control of non-communicable diseases

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ABSTRACT

Introduction Timely interventions are required in order to change unhealthy lifestyles because if continued for a prolonged period of time, these become risk factors for non-communicable diseases (NCDs). Education through mass media is an important factor in bringing out the behavioural change which may get missed in community-based interventions due to their limited reach. Many countries engage in mass media interventions, however, the nature of interventions and their effectiveness differs. We, therefore, describe the protocol of a systematic review to evaluate the effectiveness of the mass media interventions to reduce the risk of NCDs in the general population and compare the differences in effectiveness estimates across low/middle-income countries and developed countries.

Methods and analysis We will search The Cochrane Library, Database of Abstracts of Reviews of Effectiveness, PubMed, Excerpta Medica Database limited to publications since 2000 to October 2019. Specific terms for the search strategy will be piloted as database-controlled vocabulary in the databases searched. The searches will include variations of the following terms: mass media, mass communication, campaign, publicity and terms for types of media, that is, print media, mobile, digital media, social media and broadcast. Study designs to be included will be systematic reviews followed by grey literature and other good quality reviews identified. The primary outcome of effectiveness will be the percentage change in population having different behavioural risk factors. In addition, mean overall change in levels of several physical or biochemical parameters will be studied as secondary outcomes.

Ethics and dissemination The review is being done under the doctoral research which has been approved by the Institute Ethics Committee of the Post Graduate Institute of Medical Education and Research Dissemination will be done by submitting scientific articles to academic peer-reviewed journals. We will present the results at relevant conferences and meetings.

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Strengths and limitations of this study

- This will be the first of its kind review comparing evidence on mass media interventions across different settings for non-communicable diseases.
- The synthesis of evidence can probably act as an advocacy tool to get the programmes and policies redesigned with better funding for health promotion component.
- Possibilities for quantitative synthesis will be explored, but that appropriate data may not be available in which case narrative synthesis will be done.
- Considering time and resource constraints, only English language reviews will be included.

BACKGROUND

The morbidity and mortality burden of non-communicable diseases (NCDs) among developed as well as low/middle-income countries has been widely reported.[1 2] NCDs have emerged as a major concern globally, contributing to nearly three-fifths of morbidity and mortality. The disease pattern is changing from infectious to chronic NCDs.[3] As of 2015, NCDs accounted for almost 71% of the total deaths worldwide.[4] Out of these an estimated 80% of the deaths were due to the four major NCDs and the maximum burden was due to the cardiovascular diseases, that is, 17.9 million deaths annually.[5]

The paramount factors that contribute to NCD's prevalence are: tobacco use, excessive use of alcohol, insufficient physical activity and unhealthy diet/obesity. These are also known as modifiable risk factors and can be targeted in order to combat NCDs.[6] To target the NCDs, a comprehensive approach is required which is a blend of focusing on the prevention of risk factors and disease management using population-level interventions as well as individual clinical interventions. Among population-based interventions, the mass media interventions are increasingly becoming popular as a strategy for delivering preventive health messages. WHO's report on NCDs described the mass media interventions

as one of the 'best buy' for physical activity and reduction of tobacco use.[7]

Mass media interventions intend to communicate with a large number of people without using face-to-face contact. Mass media includes newspapers and other printed materials, radio, television, billboards and social media. It has an important role in information delivery to a vast majority of the population.[8] It is aimed at accomplishing changes in lifestyle, improving knowledge and leveraging attitudes towards healthy behaviour.[9] In the context of population-level NCD control interventions, addressing the modifiable risk factors becomes crucial. It is important to target the risk factors through these interventions in order to bring about the behavioural change. Education is an important factor, and mass media presents an opportunity to provide uniform messages across the general population as well as hidden groups which may get missed in community-based interventions.[9] Many countries across the world engage in mass media interventions; however, the nature of interventions and their effectiveness differs. Information dissemination in the form of electronic, print or social media is the basis of mass media campaigns. The main objective of mass media campaigns is spreading a word, which can percolate to the grass root level of the society.

Two likely explanations for the effectiveness of mass media interventions lie in their ability to activate a complex process of change in social norms or possibility of a direct impact on individual's behaviour.[9] The ability to bring about a change increases with multicomponent nature of these interventions and population coverage. With the availability of high end technology, the mass media interventions have developed the potential to reach the majority of the masses in a cost-effective manner.[10] Combined with other population-level interventions and clinical interventions, strengthened health promotional activities of a programme may help to ease the burden of morbidity and mortality due to common NCDs.

The effectiveness and cost-effectiveness of mass media approaches for various risk factors and diseases has already been proven in the developed countries.[10–14] There is evidence from certain studies that mass media campaigns play a significant role in improving the awareness regarding conditions such as stroke but a clear interpretation is still lacking and needs to be worked on.[15] Studies have concluded that despite their limitations, mass media campaigns have an important role in influencing the utilisation of healthcare interventions.[16] Our focus is to synthesise the evidence available across the world and compare the volume of evidence between developed and developing settings. In case of limited evidence from developing settings, we will assess whether the evidence from the developed world holds good for the low/middle-income countries too. We also intend to integrate the results of the reviews done for four common NCDs, that is, cardiovascular diseases, diabetes, cancer, chronic respiratory diseases with their main risk factors (tobacco, alcohol, physical activity, diet). This systematic review focuses on published reviews, which synthesise primary evidence, providing a rich source for mapping the broad range of topics with revealing areas of evidence deficits.

The promising role of mass media interventions is well established in the areas of road safety,[12] child survival,[17] reproductive health[18] and smoking cessation[11 19] in low/middle-income countries as well as developed countries with mixed results for behavioural change for early diagnosis and management of emergencies like myocardial infarction, stroke.[20 21] A preliminary search of PROSPERO, Cochrane Library pointed towards scattered and limited evidence for effectiveness of mass media interventions in preventing NCDs. Therefore, in order to prove effectiveness of mass media campaigns in varied fields an integrated and in depth review is required. Keeping this in mind, we aim to explore what is the extent and direction of evidence on use of mass media interventions for prevention and control of NCDs. In this paper, we outline our methodology to systematically analyse published review articles specific to NCDs or their risk factors over the last two decades. Additionally, we would see the quality of established evidence to guide future development of such approaches in developing nations. Specific objectives of the review are:

1. To systematically synthesise already established evidence on the effectiveness of mass media interventions for adults/ children from developed as well as low/middle-income countries .
2. To examine the differences in volume, quality and direction of evidence between developed and low/middle-income countries.

METHODS

In reporting the protocol for this review Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols checklist has been adhered to.[22] The checklist has been given in online supplementary file 1. Details of methodology are described below in different sections.

Systematic reviews and meta-analyses published between 2000 and 2019 (reviews published before this time are likely to be out of date) will be included. The time period is limited to include recently synthesised evidence. Considering time and resource constraints, only English language reviews will be included. However, included English language reviews may contain primary studies in languages other than English. Cochrane reviews and systematic reviews in Database of Abstracts of Reviews of Effects (DARE), which encompass the reviews gathered from searching a wide range of OVID databases, will be included. Good qualityreviews, that is, those having low risk of bias published as part of annual or technical reports, dissertation and thesis, books, meeting papers will be identified through review of potential grey literature from Google Scholar, Open Grey, ProQuest Dissertation and Thesis and websites synthesising and updating reviews of public health importance (health evidence,

PROSPERO). Less robust systematic reviews from areas where no other evidence exists will also be included in the review. Specific terms for the search strategy will be piloted as database-controlled vocabulary in the databases searched. The searches will include variations of the following terms: communication, mass media, mass communication, campaign, publicity and terms for types of media, that is, print media, mobile, digital media, social media and broadcast. The search strategy with search terms have been given in online supplementary file 2. The reviews will be included if they are based on mass media interventions. Considering our objectives, the reviews on four common NCDs and their risk factors will be taken into consideration. Studies will be excluded if the review does not adequately describe the interventions to determine if it was a review of mass media interventions . Secondly, reviews will be excluded if effects are not described sufficiently to attribute the use of mass media interventions.

PICO framework which stands for Patients/Population/Participants problem, Intervention, Comparison, Outcome was used to formulate the question and facilitation in framing the search strategy.[23]

Participants

As we will include the reviews without restriction to countries, population/ participants may belong to developing or developed countries.

Types of interventions

Mass media interventions focusing on health promotion (life style modification advice) for diabetes, cancer, cardiovascular diseases and stroke prevention will be reviewed. Following health topics will be included: healthy diet, physical activity/ regular exercise, tobacco consumption/ promotion of smoking cessation, alcohol consumption, management of type 2 diabetes/hypertension, cancer prevention/vaccination.

Comparator

Only reviews comparing mass media interventions with routine care/enhanced usual care will be included.

Outcomes

We will classify outcomes according to the expected pattern of appearance of changes in an individual. Behavioural outcomes such as changes in knowledge, attitude, practice and self-efficacy will be the primary outcomes; these changes may give rise to intermediate outcomes (such as changes in physical/biochemical parameters or awareness of services and health services utilisation), which will be assessed as secondary outcomes. Finally, changes in morbidity and mortality in absolute numbers, years of life gained which highlight overall impact of interventions will also be reported if synthesised under the reviews.

Patient and public involvement

This study will not have any patient and public involvement as it is a systematic review of the reviews. Only the published reviews would be included to evaluate the effectiveness of mass media interventions for prevention and control of NCDs.

Search methods for identification of reviews

Electronic searches

Due to the diversity of interventions and health topics covered, large size of population, study types and their outcomes, a multistage search strategy has been developed to identify relevant publications. Searches of published literature on mass media interventions for NCD prevention and control will be done in the following biomedical, and general reference electronic databases, with restriction to publication year (2000–2019) as well as English language:

The Cochrane Library (2000-2019).
DARE (2000-2019).
Excerpta Medica Database (2000–2019).
PubMed (2000–2019).

In addition, reference lists of articles identified through database searches will be examined to identify further relevant studies. Bibliographies of systematic and non-systematic review articles will also be examined to identify relevant studies. Reviewers will be contacted for further information, if any query pertaining to methodology, study outcomes and data abstraction will arise. Abstracts and full text of identified manuscripts will be reviewed. Reviews examining effectiveness and those evaluating cost-effectiveness will be studied separately.

Searching other resources

Reference lists of previous systematic reviews and included studies will be screened and citation tracking will be undertaken wherever feasible. The results of the searches will be entered into the reference management software, Endnote. Multiple publications of the same review will be identified, grouped together and represented by a single reference.

Data collection and analysis

Selection of reviews

Search results will be imported into bibliographic citation management software to aggregate relevant review articles and to exclude the duplicate references. Two reviewers will independently screen the titles and abstracts identified by the electronic searches for relevancy (GJ and RN). Titles and abstracts of all reviews identified through the electronic searches will be imported into EndNote (EndNote X7, Thomson Reuters, New York, USA) and duplicates would be removed. Each abstract and title will be assessed by two reviewers. Full-text articles will be retrieved when both reviewers answer ‘yes’ or ‘unclear’ to all the selection criteria. The full text will not be retrieved if both reviewers agree that at least one selection criteria was not met. The full text will be retrieved for the remaining articles where all selection criteria assessed as ‘no’ by one reviewer were assessed as ‘yes’ or ‘unclear’ by the other reviewer. Disagreements during both stages

will be resolved by discussion or if necessary taken to a third reviewer (JST).

Data extraction and management

Data will be extracted using electronic data abstraction form developed as an adaptation from the Cochrane Public Health Group. Data Extraction and Assessment template will collect information on all the aspects deemed necessary as per Methodological Expectations of Cochrane Intervention Reviews (MECIR) standards.[24] The data abstraction form will be piloted on a random sample of 5 included articles, and modified as required, based on the feedback from the team. Full data abstraction will be started only after sufficient agreement (ie, per cent agreement >90 %). Each included study will be abstracted by one team member (GJ), and verified by a second reviewer (RN and DS). As an additional data cleaning step, a third reviewer (JST/MS/SP) will then verify all the changes made by the second reviewer, to ensure data accuracy. Data extraction for review studies will include aim, study characteristics (eg, first author, year of publication), search strategy (terms provided or not), terminology used to describe the review, settings and time frame (in months) for completing the review. The review type will be categorised as scoping, impact (examines the impact of mass media interventions) or comparison (compares the results) reviews. We will abstract the outcomes of the review, including accuracy of results, comprehensiveness, potential for risk of bias, timeliness, cost-effectiveness and feasibility as reported by the publication authors.

Inter-rater reliability coefficients for exclusion as well as quality rating of the reviews will be reported.[25] Two authors (GJ and RN) will conduct the risk of bias assessment using ROBIS Risk of Bias assessment tool and a third author will arbitrate any disagreements (JST, SP and MS).[26] The data abstraction using ROBIS will be completed in three phases and data will be entered in Microsoft Access.[26] Further the reviews will be assessed by A Measurement Tool to Assess Systematic Reviews (AMSTAR), which is an 11-item questionnaire that can be used to assess the methodological quality of systematic reviews. It takes into account several parameters like duplication, included/excluded studies, characteristics of included studies, publication bias, conflict of interest.[27]

Data synthesis

Given the heterogeneity between settings and type of mass media interventions, structured comparative analysis will be undertaken first rather than the statistical synthesis. Still, we will examine the possibility of undertaking statistical synthesis—possibly in subsets of reviews—and undertake these where possible, utilising moderator analysis and network meta-analysis. Subgroup analyses will be performed by the type of media, settings of the reviews and duration of intervention. Sensitivity analysis will be performed by quality of reviews. We will include a summary of findings table for the primary outcomes of this review. It will include the number of participants and studies for each outcome, a summary of the effect and a measure of the quality of evidence for different outcomes according to Grading of Recommendations, Assessment, Development and Evaluations (GRADE) considerations.[28]

Ethics and dissemination

The review is being done under the doctoral research which has been approved by the Institute Ethics Committee of the Post Graduate Institute of Medical Education and Research.

Dissemination will be done by submitting scientific articles to academic peer-reviewed journals. We will present the results at relevant conferences and meetings.

DISCUSSION

In this manuscript, methodology for systematically conducting a review of published review articles specific to different NCDs and their risk factors using mass media interventions has been presented. The overview of reviews approach has been used to synthesise as well as compare the research literature in developing as well as developed world to guide the direction of future research. In conducting this research, we identified 'review of reviews' as a preferred method as it will provide unique insights concerning the extent and scope of NCD prevention and control synthesised evidence useful for researchers and end-user communities. Against the backdrop of two decades of implementation of NCD control strategies, we will identify potential gaps specific to the domain of mass media interventions, especially for low/middle-income countries. The focus of the study is on primary prevention and effectiveness of mass media campaigns targeting risk factors, including alcohol, tobacco, physical inactivity, dietary behaviour. As we are not including mass media interventions directly, we will address this issue at the stage of data abstraction for quality of evidence included in the review. For this, we will abstract data on how many reviews had mass media interventions with multi component nature. Percentage of such studies in review and analytical methods used by reviewers to address the issue will be listed. The review can be seen as assessment of the mass media's potential to be used as an effective tool for NCD prevention and control.

Contributors Concept and design of study: JST, GJ, SP and MS.Refining the methodology and data abstraction tools: GJ, RN, DS and PD. Drafting the manuscript: GJ, RN and DS. Revising manuscript critically for important intellectual content: MS, SP and JST. Final approval of the version to be published: JST, SP and MS

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REFERENCES

1 Thakur JS, Jeet G. *Burden of non communicable diseases: mortality, morbidity and trends*. Wolters Kluwer: Public Health Approaches to Non- Communicable Diseases, 2015.
2 Jain V, Basak S, Bhandari S, *et al*. Burden of complicated malaria in a densely forested Bastar region of Chhattisgarh state (central India). *PLoS One* 2014;9:e115266.
3 GBD 2015 Mortality and Causes of Death Collaborators. Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980-2015: a systematic analysis for the global burden of disease study 2015. *Lancet* 2016;388:1459–544.
4 World Health Organisation. *Global health estimates 2016: deaths by cause, age, sex, by country and by region, 2000-2016*. Geneva: World Health Organisation, 2018.
5 GBD 2015 Risk Factors Collaborators. Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990-2015: a systematic analysis for the global burden of disease study 2015. *Lancet* 2016;388:1659–724.
6 Lim SS, Vos T, Flaxman AD, *et al*. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: a systematic analysis for the global burden of disease study 2010. *Lancet* 2012;380:2224–60.
7 World Health Organisation. *Reducing risks and preventing disease: population-wide interventions. global status report on non communicable diseases*. Geneva: WHO, 2010.
8 World Health Organisation. Mass-media campaigns (including counter-advertising), 2016. Available: http://www.who.int/tobacco/training/success_stories/media/en/
10 Macdowall W, Head R, Wellings K. Mass Media Campaigns. In: Macdowall W, Bonnell C, Davies M, eds. *Health promotion practice: understanding public health series*. 1st ed. UK: McGraw-Hill Education, 2006: 112–24.
10 Brown J, Kotz D, Michie S, *et al*. How effective and cost-effective was the national mass media smoking cessation campaign 'Stoptober'? *Drug Alcohol Depend* 2014;135:52–8.
11 Niederdeppe J, Kuang X, Crock B, *et al*. Media campaigns to promote smoking cessation among socioeconomically disadvantaged populations: what do we know, what do we need to learn, and what should we do now? *Soc Sci Med* 2008;67:1343–55.
12 Hoekstra T, Wegman F. Improving the effectiveness of road safety campaigns: current and new practices. *IATSS Research* 2011;34:80–6.
13 Yadav R-P, Kobayashi M. A systematic review: effectiveness of mass media campaigns for reducing alcohol-impaired driving and alcohol-related crashes. *BMC Public Health* 2015;15:857.
14 Ratcliffe J, Cairns J, Platt S. Cost effectiveness of a mass media-led anti-smoking campaign in Scotland. *Tob Control* 1997;6:104–10.
15 Lecouturier J, Rodgers H, Murtagh MJ, *et al*. Systematic review of mass media interventions designed to improve public recognition of stroke symptoms, emergency response and early treatment. *BMC Public Health* 2010;10:784.
16 Grilli R, Ramsay C, Minozzi S. Mass media interventions: effects on health services utilisation. *Cochrane Database Syst Rev* 2002;1:Cd000389.
17 Naugle DA, Hornik RC. Systematic review of the effectiveness of mass media interventions for child survival in low- and middle-income countries. *J Health Commun* 2014;19 Suppl 1:190–215.
18 Valente TW, Saba WP. Mass media and interpersonal influence in a reproductive health communication campaign in Bolivia. *Communic Res* 1998;25:96–124.
19 Bala M, Strzeszynski L, Cahill K. Mass media interventions for smoking cessation in adults. *Cochrane Database Syst Rev* 2008;1:Cd004704.
20 Caldwell MA, Miaskowski C. Mass media interventions to reduce help-seeking delay in people with symptoms of acute myocardial infarction: time for a new approach? *Patient Educ Couns* 2002;46:1–9.
21 Kainth A, Hewitt A, Sowden A, *et al*. Systematic review of interventions to reduce delay in patients with suspected heart attack. *Emerg Med J* 2004;21:506–8.
22 Moher D, Shamseer L, Clarke M, *et al*. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev* 2015;4:1–9.
23 Richardson WS, Wilson MC, Nishikawa J, *et al*. The well-built clinical question: a key to evidence-based decisions. *ACP J Club* 1995;123:A12–13.
24 Chandler J, Churchill R, Higgins J, *et al*. *Methodological standards for the conduct of new Cochrane intervention reviews*. version 2.3. cochrane editorial unit, 2013.
25 McHugh ML. Interrater reliability: the kappa statistic. *Biochem Med* 2012;22:276–82.
26 Whiting P, Savović J, Higgins JPT, *et al*. ROBIS: a new tool to assess risk of bias in systematic reviews was developed. *J Clin Epidemiol* 2016;69:225–34.
27 Shea BJ, Hamel C, Wells GA, *et al*. AMSTAR is a reliable and valid measurement tool to assess the methodological quality of systematic reviews. *J Clin Epidemiol* 2009;62:1013–20.
28 Schünemann H, Brożek J, Guyatt G, *et al*. Grade Handbook for grading quality of evidence and strength of recommendation, 2009. Available: http://training.cochrane.org/resource/grade-handbook