Reporting and synthesis practices in barriers and facilitators reviews: a methodological systematic review

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Abstract

Background: An increasing number of systematic reviews published in high-ranking journals set out to identify and synthesise research on ‘barriers’ to and ‘facilitators’ of the achievement of various outcomes. Yet, this type of review has been criticised for relying on aggregative synthesis approaches (such as ‘vote counting’), and for generating overly simplistic representations of complex social phenomena. While proponents have argued that barriers and facilitators reviews have both explanatory value and the potential to support policy and practice, critics have recommended retiring this genre of review altogether. No review has systematically examined the synthesis practices used in barriers and facilitators reviews, and consequently the factual basis of arguments both for and against these reviews is unclear. We therefore sought to describe and appraise the reporting and synthesis practices used in recently published health-related barriers and facilitators reviews. **Methods:** We conducted a methodological systematic review of reviews in accordance with the PRISMA guidelines. A protocol for this review was prospectively registered in PROSPERO (CRD4201811236). **Results:** One hundred reviews published over a thirteen-month period were identified. The findings indicate that (1) barriers and facilitators reviews are frequently published, (2) there is a high degree of variation in the synthesis and categorisation practices applied in these reviews, and (3) most reviews neither critically engage with, nor provide a rationale for using, the concepts of barrier and facilitator. While in most cases the barriers and facilitators approach was used without justification or critical discussion by review authors, we identified several common issues across the minority of reviews that included explicit discussion of the approach. These issues tended to be either conceptual/definitional (e.g. ideas about the interrelationships and overlap between factors) or methodological/practical (e.g. challenges related to the aggregation of heterogeneous research). **Conclusion:** This review provides a systematic snapshot of the synthesis and reporting practices used in barriers and facilitators reviews. Going forward, we suggest that such reviews would benefit from (1) clearly defining their constructs of analysis, (2) explicitly describing how factors are extracted and subsequently synthesised, and (3) providing critical reflection on the contextual variability and reliability of identified factors.

Background

An increasing number of systematic reviews published in health journals set out to identify and synthesise research on barriers to and facilitators of the achievement of various outcomes. This type of review appeals to researchers and practitioners, in that it enables an overview of factors related to, for example, intervention uptake and implementation, patient recruitment, treatment, and access to care. Further, conceptualising factors as barriers and facilitators to such desirable outcomes implies that efforts can be made to *overcome* identified barriers and to *promote* facilitating factors – an attractive prospect for policy audiences.

The concepts ‘barrier’ and ‘facilitator’ have been invoked in health systems and public health research in attempts to study, for example, the uptake by health professionals of complex social interventions (e.g. [1]), factors influencing various health-promoting behaviours (e.g. [2]), and predictors of adherence to

prescribed treatment regimens (e.g. [3]). Barriers and facilitators reviews are often highly cited and published in high ranking health and medical journals (e.g. [4–6]). However, despite its apparent popularity, this type of review has been subjected to much criticism.

Barriers and facilitators reviews are often criticised for relying on descriptive and aggregative synthesis approaches (such as ‘vote counting’), which are generally considered the least rigorous and often most biased forms of synthesis [7, 8]. Aggregative “syntheses” are accused, among other things, of failing to account for the methodological quality of included studies in forming their interpretations, of ignoring the role of context and contingency in constructing synthetic findings, and of incorrectly conflating the frequency with which findings (e.g. barriers) appear in primary studies with the importance of those findings.

More fundamentally, both the academic validity and practical utility of the barriers concept itself have recently been called into question. In a recent commentary on a barriers review in the climate adaptation literature, it was argued that, while perhaps a useful heuristic, the barriers concept is underpinned by functionalist assumptions, long discredited in sociology and political science [5]. The same authors have previously argued that ‘barriers analysis’ is reductionist in that *“[c]ategorising any factor or process as a ‘barrier’ reduces complex and highly dynamic decision-making processes into simplified, static and metaphorical statements about why current outcomes are ‘incorrect’ ”* (p. 493) [9]. In a reply by the review authors to the commentary [10], they argue that *“barriers analysis contributes to improved understanding of features or factors that affect transformation and change processes, and it helps in explaining why a system is (or is not) responding to a particular driver of change”* (p. 1249) [10].

Further critiques have focused on whether barriers (and, by extension, facilitators), as reported in primary research, represent “real” obstructive (and enabling) factors that actually exist in policy and practice settings, or whether they are simplified constructs standing in for more complex underlying social realities. In a study of community mental health nurses struggling to implement evidence-based practice, Crawford et al. argued that the barriers reported by their informants are not ‘neutral accounts’ of obstructions in their work environments, but are social constructions deployed to serve a number of strategic functions; they are rhetorical devices that permit practitioners to construct a coherent narrative of how their professional milieu functions, and to resolve contradictions related to their role within it [11]. These findings were echoed by Checkland et al., who interpreted the implementation barriers reported in general medical practice as strategic framings through which practitioners rationalize and make sense of challenging organisational realities [12]. They argued that *“the ‘barriers’ reported as preventing implementation are less important than the context and underlying social relations that have given rise to them”* (p. 100) and that *“the linear and simplistic language of ‘removing barriers’ inhibits understanding how change happens”* (p. 100).

Setting aside the question of the ontological status of barriers and facilitators, a final debate concerns the extent to which the comprehensive catalogues of barriers and facilitators that tend to constitute the principal final product of these reviews are useful tools for supporting policy and practice. The main

selling point of these lists seems to be that they ostensibly provide a 'menu' of the most important barriers and facilitators, which interventions can be designed to overcome or amplify, respectively. For Brennan et al., this rationale is simplistic, ignores the interdependence of the various factors operating within complex social systems, and fails to consider the potential unintended consequences of intervening in this way [13]: “[s]olving barrier A may exacerbate barrier B, solving barrier C might create unintended consequence D, introducing facilitator E might be crushed by impediment F” (p. 5) and consequently “barriers are not [things] to be ticked off and torn down one at a time” (p. 5). Still, proponents of the barriers concept swear by its usefulness as a tool to inform decision-making and to facilitate the exchange of knowledge between different stakeholder groups. Eisenack et al. [14] insist that “barriers serve as a ‘boundary object’, intuitively and widely understood by both practitioners and scholars from different disciplines” and that the concept is therefore “an important device for fruitful interaction” (p. 495).

It is not our intention in this paper to propose resolutions to these or any other debates on the merits of the barrier and facilitator concepts, nor on reviews that use them. However, the above debates often fail to discuss the reporting and synthesis practices applied in barriers and facilitators reviews, and the factual basis of arguments both for and against these reviews is therefore unclear. Thus, we hope to inform future debates on barriers and facilitators reviews by providing a systematic snapshot of the synthesis and reporting practices used in such reviews, and by examining how and to what extent the concepts of ‘barrier’ and ‘facilitator’ are defined, critiqued, defended, and otherwise critically engaged with in the text of these review papers.

Review objective

To date there has been no systematic attempt to review existing practices in barriers and facilitators reviews. To inform the ongoing debate on the conduct of this type of review, this methodological systematic review aims to characterise existing synthesis practices undertaken by such reviews by identifying, appraising, and reviewing recent systematic reviews (SRs) that investigated factors operating as barriers and facilitators in the context of health services. The focus of this review is to describe and critically appraise the reporting and synthesis methods applied in recently published (November 1st 2017 to November 30th 2018) barriers and facilitators SRs.

Methods

To meet this objective, we conducted a systematic review of reviews in accordance with the PRISMA guidelines [15] (see PRISMA checklist in additional file 1). A protocol for this review was prospectively registered in PROSPERO (CRD4201811236).

Search strategy

The following databases were searched: ABI/INFORM Global, Applied Social Sciences Index & Abstracts (ASSIA), International Bibliography of the Social Sciences (IBSS), PAIS Index, Social Science Database and Sociology Database via ProQuest; Embase, Global Health, Medline, and PsycInfo via Ovid; and CINAHL via EBSCOhost.

There are multiple ways of denoting “barriers”, “facilitators”, and “systematic reviews”. We designed the search string to include an exhaustive list of synonyms for these terms (the search strategy can be found in additional file 2). As our focus is on recent synthesis and reporting practices, we restricted our search results to reviews from the thirteen months preceding the searches (November 1st 2017–November 30th 2018). All studies that were available in full text format during this period were eligible, meaning that “fast-track” and “online first” publications were also included.

Selection criteria

There were no restrictions regarding the field of study or the type of phenomenon being investigated as long as the reviews related to health services. There were also no restrictions on the types of participants included by the reviews’ included studies. All published peer-reviewed systematic reviews that synthesised either primary or secondary research on barriers and facilitators in a health-related context were eligible for inclusion. This includes, but is not limited to, barriers to and facilitators of the implementation of a social or medical intervention, or obstructors and enablers of the receipt of treatment by certain patient groups. We defined a systematic review as *“an overview of primary studies which contains a statement of objectives, sources and methods [and] has been conducted in a way that is explicit, transparent and reproducible”* [16]. Thus, studies need not proclaim to be a systematic review to be eligible for inclusion, as long as they identify and synthesise research on barriers and facilitators using explicit and transparent methods.

Data extraction

We designed a data extraction tool including both structured and free-text domains. Both authors independently piloted the data extraction framework on a sample of five included studies before converging to critically discuss the clarity and usefulness of the tool and to consider possible changes. Following finalisation of the tool, ABM extracted data from the remaining included studies and BV reviewed a random sample of 20% of the studies in the final extraction sheet. A high degree of agreement was achieved between the two reviewers. Two of the included studies were authored by ABM [17, 18] and the data extraction and quality assessment of those SRs were therefore done by BV. The following information was extracted from the included studies:

- Title, publication year, and authors
- Focus of the review (e.g. research questions, objectives, etc.)
- Description of how the problem and/or intervention area is conceptualised
- Rationale provided (if any) for using a barriers/facilitators approach
- Stated assumptions and limitations (if any) of a barriers/facilitators approach
- Any other discussion of barriers and facilitators approach
- Inclusion criteria
- Methods (e.g. extraction, quality appraisal, and synthesis)
- Presentation of results and reporting methods
- Recommendation(s) for practice and/or research

Transparency assessment

Drawing on existing systematic review reporting tools (e.g. AMSTAR-2 [19]), we constructed a list of domains designed to assess the transparency of the reporting of included systematic reviews, with particular focus on their methodological features. This was done with consideration to the caveat that assessing the transparency and quality of research involves a degree of subjective judgement and, if applied in isolation, may be unhelpful for assessing the value of research. We also recognized the common pitfall – particularly within qualitative syntheses [20] – of conflating poor reporting with poor study quality, and therefore, while forming our interpretations, endeavoured to avoid treating detailed reporting as a proxy for rigor. However, the tool allowed us to provide a straightforward assessment of the reporting transparency of our included studies, itself an important feature of well-conducted systematic reviews.

Data synthesis

To analyse the included studies, the review drew on the guidelines outlined by Smith et al. (2011) [21] and Lunny et al. (2017) [22], and from methods employed by published examples of overviews of systematic reviews [23]. To analyse the data, we first used the data extraction sheet to generate tabular and narrative summaries of the descriptive features of included reviews (e.g. type of study, conceptualisation of barriers/facilitators, inclusion criteria, etc.). Following the descriptive summary of our findings, we thematically analysed all content within included papers that related to their barriers and facilitators approach and their conceptualization of these concepts. Specifically, we inductively coded all text fragments in included SRs related to the barriers and facilitators approach, and categorised them thematically.

Results

3,924 records were retrieved by the database searches, of which 2,177 remained after removal of duplicates. These 2,177 records were then independently double-screened by both authors, 2,037 of which were excluded based on an assessment of their titles and abstracts. The full-text versions of 140 studies were then retrieved and read by both authors, with 40 studies being excluded due to the reasons outlined in Figure 1. One hundred SRs were included in the final review (a full list of these can be found in additional file 3).

Characteristics of included reviews

The main characteristics of the included SRs are provided in Table 1. All reviews were published (or available as “online first” publications) in peer-reviewed journals during the period November 2017 to November 2018. Most studies (n=43) focused on factors influencing implementation, followed by studies investigating factors affecting provision and access to social and health care (n=19), factors related to treatment (e.g. adherence and uptake) (n=10), and testing/screening (n=9). Ten reviews investigated factors affecting various health-related behaviours (e.g. physical exercise). Further areas of focus can be found in Table 1.

The majority of included SRs (n=61) did not exclude studies based on the methods used, whereas 31 SRs included only qualitative research, and 4 SRs considered only quantitative studies. Further to this, three studies did not clearly specify their inclusion criteria and one study only considered systematic reviews [24]. Most of the research included by the SRs was qualitative.

Most studies self-identified as systematic reviews (81%), although certain studies used their synthesis method to define their review type (e.g. [25–29]). Further, one study self-identified as a rapid realist review [30], and others as meta-ethnographies [31, 32]. However, despite not being traditional ‘systematic reviews’, we found these to also fall under the earlier specified definition of SRs, in that they followed transparent and explicit procedures to identify and synthesise research on barriers and facilitators.

Reporting practice and transparency

A summary of our transparency appraisal of included SRs is displayed in Table 2 and the full assessment can be found in additional file 4. Overall, in our assessment, 29 SRs were rated to be highly transparent, 58 to be moderately transparent, and 13 SRs were assigned a low transparency rating. Notably, most SRs (n=68) did not refer to an accessible protocol in their manuscript, a striking figure considering that an increasing number of peer-reviewed journals require reviews to be registered prospectively in databases

such as PROSPERO. This may be partially explained by the fact that barriers and facilitators reviews often do not explicitly include a 'health outcome', which is one of the stated requirements for registering with PROSPERO.

Most included reviews provided sufficient detail regarding their searching and screening methods, and description of included studies, although 26 did not clearly specify how the synthesis was conducted. A substantial proportion of the SRs (n=61) used an appropriate form of quality appraisal to assess included studies. However, only 39 of these drew on their quality assessments when discussing and/or interpreting their results. Seventy-three SRs discussed how their results might (or might not) generalise to other settings.

Barriers and facilitators: conceptualisation and extraction

Table 3 displays whether and how included SRs defined, operationalised and identified factors operating as barriers and facilitators. Ninety-five of the 100 included reviews explicitly used the term 'barriers' to describe their factors of interest. Most of these (n=61) sought to identify both 'barriers and facilitators', whereas eight used the terms 'barriers and enablers'. The remaining studies used a variety of other synonyms (see Table 3). Twenty-three studies focused exclusively on 'barriers' (i.e. they did not investigate facilitating factors), while only two exclusively investigated facilitating factors (one using the term 'facilitators', and the other 'enablers').

Of the full sample, only 26 studies explicitly defined their factors of investigation, although we noted that in many cases it was possible to infer an implicit definition. Only two SRs explicitly discussed assumptions associated with applying a barriers and facilitators approach [33, 34]. Over two-thirds of the included studies (n=72) provided no information about how barriers and facilitators were identified and extracted. Only one study explicitly described how they extracted factors [34], although in 27 SRs some aspects of the extraction methods could be inferred.

Categorisation and synthesis

The synthesis methods and strategies used to categorise barriers and facilitators in included reviews are summarised in Table 4. The majority of included SRs conducted a narrative synthesis (n=26), generic thematic analysis (n=27), or thematic synthesis (n=12). We made a distinction between thematic 'synthesis' and 'analysis', in which studies citing Thomas and Harden's [35] approach to thematic synthesis were classified as the former, and studies using any other types of thematic analysis the latter. Five SRs were referred to as meta-ethnographies, whereas five used framework synthesis. In twelve cases the synthesis practices used were unclear.

The most common way that findings were categorised was according to the themes identified by the narrative and thematic synthesis/analysis (n=46). A large proportion of included studies applied pre-existing frameworks to organise their findings. The most commonly applied framework was the social ecological framework (e.g. organised according to personal, interpersonal, community, and institutional levels), which was applied or adapted by 21 SRs. There was a range of other frameworks applied by the SRs (e.g. consolidated framework for implementation research; see Table 4).

Only eight reviews undertook a sensitivity or robustness analysis of the identified themes. Although there are no established guidelines on how to investigate the reliability of identified factors relating to barriers and facilitators, two studies applied the method suggested by Rees et al [36], in which the robustness of identified themes is tested by, for example, removing studies of poor quality or by investigating whether certain types of research (e.g. qualitative and quantitative) are overrepresented in certain thematic categories versus others [17, 18]. Last, only 37 studies discussed their barriers and facilitators approach (discussed in greater detail below).

Discussion themes

We thematically analysed and categorised text fragments from the 37 SRs that discussed aspects of their barriers and facilitators approach. Two overall categories of themes emerged in the analysis: Methodological and practical issues in conducting barrier and facilitator reviews (Table 5), and definitional and conceptual issues related to barriers and facilitators (Table 6). These are displayed in Tables 5 and 6 alongside representative quotes underlying the individual themes.

Methodological issues in conducting barrier and facilitator reviews

Multiple studies reflected on how to determine the relative importance of identified factors. Notably, most studies applied language such as 'key' or 'central' factors without explicitly specifying how they determined the relative importance of some factors over others. To address this issue, certain studies (e.g. [38, 41, 53]) attempted to assess the importance of factors by identifying the frequency with which factors were reported. For example, Wandell et al. 2018 only reported factors which had been identified by three or more studies, whereas Herber et al. 2018 constructed a 'frequency effect size' measure, which captured the relative frequency with which certain factors were reported. The underlying assumption of this sort of 'vote counting' is that the frequency of the reporting of certain factors is indicative of their importance, which may entail important flaws. These will be addressed in the discussion section.

Relatedly, some papers critically reflected on the origin of the factors reported in their included studies, with particular focus on the reduction process through which participant data are condensed into the

barriers and facilitators that are reported in individual studies. Several of these reviews (e.g. [48]) suggested that field notes might hold important insights not captured by study reports, the contents of which are obviously determined by the interpretation of researchers. In one review this issue was addressed by comparing factors influencing the use of HIV pre-exposure prophylaxis among men who have sex with men reported in peer-reviewed literature with those found in online blog and social media posts to find a large range of themes from the online material that was not identified from reviewing the academic literature [50].

Further, many SRs had broad inclusion criteria and thus had to synthesise highly heterogeneous research, which was frequently mentioned as a limitation. Several reviews reported that the struggle to synthesise included research was driven by the fact that many included studies did not explicitly investigate barriers and facilitators, which compelled reviewers to indirectly infer the presence of barriers and facilitators from research not designed to investigate these factors. Although it could be argued that this challenge is grounded in overly broad inclusion criteria, several studies considered such inclusiveness a strength, emphasising the added value of including research that did not explicitly investigate barriers and facilitators [17, 24]. Conversely, several studies reported the lack of explicit focus on barriers and facilitators within the primary literature as a limitation to their synthesis [53–55].

Last, a number of SRs whose analyses were driven by a pre-identified set of domains (e.g. the social ecological model) reported this approach as a limitation to the synthesis, in that it restricted the types of factors that the synthesis could identify. In fact, two SRs [42, 56] abandoned using a pre-specified framework following the rationale that it constrained their ability to inductively identify emergent barriers and facilitators that were not anticipated by the categories of their framework.

Definitional issues related to the barrier and facilitator concepts

One of the main recurring themes related to the overlap of identified barriers and facilitators. For example, there were often similarities among identified factors, which made categorising factors under overarching themes important (e.g. lack of training and lack of resources might relate to the same overarching concept), but, as discussed above, this also presented challenges for reviewers who based their analysis on an existing framework. In fact, many reviews struggled to categorise their barriers and facilitators consistently and to clearly define the features of the identified factors.

Related to this issue, it was often unclear to what extent, if at all, identified factors influenced one another, although it was commonly suggested that it was important not to consider factors in isolation, but in relation to each other. Yet, multiple studies reported uncertainty about whether a factor should be defined as a barrier or a facilitator, in that some studies would identify factors as barriers, whereas other would classify the same factors as facilitators. While this might be addressed by considering the context-

dependence of identified factors, few reviews incorporated contextual considerations as formal parts of their analysis. Relatedly, many reviews recognised that it was not clear whether the 'main' identified factors influence different entities differently. That is, can the most commonly reported factors be thought to be equally important to different groups, organisations, and populations? Some reviews tried to address these issues by theorising a model on how factors were interrelated (e.g. [67]). However, these attempts relied primarily on conjecture, and the real-world applicability of those models was thus unclear.

Last, a small number of SRs reflected on how barriers and facilitators may change over time. Most reviews did not discuss the potential influence of time on the identified barriers and facilitators, which were primarily reported as static concepts. Only one SR addressed this issued by considering the consistency with which factors were reported by studies over time [66].

Discussion

Summary of results

Although this methodological review was, in part, motivated by some of the criticism voiced against the concept of barriers and facilitators and the implications of this debate for reviews that use these concepts, it was not our ambition to defend or justify the application of this type of review, nor to demonstrate its weaknesses. Rather, we sought to inform the debate by systematically identifying, appraising, and synthesising recent SRs investigating barriers and facilitators to clarify how this type of review is conducted in practice. The findings demonstrate that (1) barriers and facilitators reviews are frequently published, (2) there is a high degree of variation in the synthesis and categorisation practices applied by these reviews, and (3) most reviews neither critically engage with, nor provide a rationale for using, the concepts of barrier and facilitator. These findings suggest, among other things, that improved clarity around the conceptualisation of investigated factors would be helpful for future reviews of this type.

Additionally, the findings of this review echo some of the critiques that have been levelled against this type of review [68], including, for instance, concerns associated with the process of reducing potentially complex phenomena into simplified, discrete factors. Further, few included studies critically investigated the potential dynamic features of and interrelationships between identified factors and their contextual variability. Although a number of review papers contained reflections on the complex nature of barriers and facilitators, this was usually discussed rather than systematically analysed.

The sections below discuss how the findings can inform the future conduct and interpretation of barriers and facilitators reviews.

Operationalising 'barriers' and 'facilitators'

Most papers included in this review did not provide definitions for the terms barrier and facilitator, despite these being the core focus of these reviews. There appears to be a general lack of clarity in this literature about what these concepts specifically refer to, which has important implications for how factors are identified and extracted from included studies, and how the subsequent results of these reviews should be interpreted. An interesting contradiction emerged in that many reviews that criticised their included studies for failing to provide an explicit definition of barriers and facilitators themselves also failed to do so. Moreover, most of the reviews that did explicitly define barriers and facilitators simply described them as ‘factors that promote/facilitate/enable or prevent/obstruct a given phenomenon’ without specifying, for example, the context or conditions under which these factors were thought to operate, and what ‘facilitating’ and ‘obstructing’ specifically entails. To clarify the conceptualisation of barriers and facilitators, it may be beneficial to develop more sophisticated definitions, such as the framework of barriers developed by Eisenack et al (2014) [69].

While more definitional clarity would not resolve the more fundamental debates about the scientific legitimacy of the barrier and facilitator constructs and, by extension, the validity of barriers and facilitators reviews, we believe that more explicit conceptual work on the part of reviewers would go a long way to maximising the usefulness of these reviews. We contend that, at minimum, reviewers should provide clear definitions for ‘barrier’ and/or ‘facilitator’ and describe how these are thought to operate in relation to focus of the review and/or within context(s) of interest. Are these factors to be understood as “real” material phenomena at work in, for example, policy and practice settings, as metaphorical heuristics co-constructed by researchers and informants, or as something different altogether? What implications, if any, does the reviewers’ conceptualization have for how review findings should be appraised and interpreted by readers? Based on our reading of 100 recently published barriers and facilitators reviews, we believe that greater clarity on these conceptual “starting points” would increase the likelihood that reviews of this type are comprehensible and useful, both for other researchers and for those with a practical interest in the issue being studied.

Additionally, more specific and explicit advance definitional and conceptual work – in which aspects relating to context, actors, and conditions are conceptualised as part of the protocol – may improve the transparency of data extraction and synthesis procedures. Although many reviews did recognise nuances in factors across different contexts and among different actors or stakeholders, this was typically done in the discussion section of papers, rather than constituting a formal part of the synthesis or analysis process. Further, none of the included reviews specifically addressed the potential interrelationships between different factors as part of the protocol or eligibility criteria.

Synthesising ‘barriers’ and ‘facilitators’

A common methodological challenge raised in barriers and facilitators reviews is the struggle to determine the relative importance of the identified factors. Many of the included reviews reported the inability to conduct a quantitative meta-analysis as a limitation to the synthesis (e.g. [34, 51, 61, 70–73]),

despite the fact that they posed questions that were qualitative in nature. Notably, most included research by the reviews was qualitative and a third of the SRs (31%) only sought qualitative studies; however, many review papers adopted a quantitatively oriented language suggesting that the most frequently reported factors were, in fact, the most important. The 'frequency equals importance' assumption ignores other plausible and even likely explanations for the recurrence of certain themes within a set of included studies. Given that it is standard practice to orient research questions and objectives in relation to the findings of previous research, it should come as no surprise that certain concepts recur from study to study as a body of literature accumulates. Similarly, the accounts of individual primary study participants do not exist in a vacuum, and are no doubt influenced by popular sentiment, the views of peers and colleagues and, quite simply, those ideas (e.g. barriers and facilitators) that are 'top of mind', seem plausible, and are easy to articulate in, for example, the context of an interview. In short, while the frequency with which certain barriers and facilitators appear in the literature *may* be suggestive of their significance, this is by no means a guarantee.

It may be worth questioning whether establishing which barriers and facilitators are most (or least) important is really the most useful product of this type of review. Aggregative syntheses can generate inventories of the most commonly reported barriers and facilitators, and information on whether a certain category of factor tends to be reported more often as either a barrier or a facilitator. However, for the reasons discussed above, it is not obvious that such findings furnish accurate (or even approximate) assessments of relative importance, nor is it clear that such findings are of much use in decision-making. Indeed, such reviews may well be misleading to those in a position to act on their findings. Conversely, more interpretive review techniques (for example, meta-ethnography or realist review) tend to eschew this frequentist logic, prioritising instead the generation of synthetic interpretations using methods that incorporate the richness and complexity of qualitative research. The contribution of barriers and facilitators reviews of this sort may be, for example, to propose explanations about how and in what contexts certain factors influence outcomes of interest, and why these factors manifest as they do. The focus of such reviews thus revolves not around identifying the most 'important' factors, but rather around attempting to generate novel theoretical explanations or conceptual understandings of the dynamics underlying barriers and facilitators and their interactions.

Last, the process through which barriers and facilitators were identified and extracted from the included studies was often unclear. Importantly, synthesis practices – especially those dealing with qualitative data – can vary considerably in the degree to which data (i.e. primary study findings) are interpretively manipulated. While some methods entail faithfully describing and summarising (and eventually aggregating) findings from primary studies, others involve a much more interpretive process of data transformation in which novel synthetic findings are constructed that 'go beyond' those findings that are locatable within individual studies. In other words, there is a distinction between the faithful extraction of barriers and facilitators as they are identified within included studies, and the interpretive construction of these by reviewers. We take no position on whether one approach is favourable to the other, but we do argue that, absent clearer reporting on data extraction practices, barriers and facilitators reviews are unnecessarily challenging for readers to critically appraise.

Recommendations on the conduct of barriers and facilitators reviews

Important questions remain as to whether and how the constructs ‘barrier’ and ‘facilitator’ can be deployed as a useful heuristic for summarising and communicating knowledge while resisting the inclination to revert to excessively aggregative synthesis practices that risk distorting the complexity of social phenomena and stripping context from their explanation. While our findings do not provide firm answers to these questions, they suggest some basic minimum measures that could be taken in future reviews of this type to ensure that they are conducted with a measure of transparency, critical conceptual reflection, and attention to complexity. Our recommendations can be summarised by the following points.

First, barriers and facilitators reviews would benefit from explicitly defining their factors of interest. This includes clarifying the presumed traits of barriers and facilitators and how these might relate to contexts of interest. It is often implicitly assumed or explicitly stated that barriers can be overcome and facilitators promoted, which enables these reviews to make powerful (and perhaps exaggerated) inferences about how to improve policy and practice. Yet, for any recommendation to be helpful, it is pivotal that the outcome of interest (barriers/facilitators) is clearly specified, which was rarely done in these reviews.

Second, review authors should clearly specify how factors were identified and extracted from included studies and, if relevant, how these procedures varied according to study type. For example, the findings from survey studies are likely to be restricted to the barriers and facilitators pre-identified in the instruments used, whereas qualitative research may be more likely to identify novel factors not considered prior to the investigation. However, despite this distinction, most reviews that included both quantitative and qualitative research (a clear majority of our included reviews) did not address whether or how their extraction and synthesis operations varied according to research type. It is therefore important that procedures for identifying, extracting and coding barriers and facilitators are transparently reported.

Third, reviews would benefit from assessing the robustness of identified factors and/or themes, and providing appraisals of the level of certainty in their findings, which were rarely done in our sample of SRs. For barriers and facilitators reviews, it is challenging to make universal claims about the relevance of identified factors and many reviews struggle to make inferences about how identified factors can be said to apply to different contexts. Indeed, when it comes to complex health concerns in complex social systems, virtually no barrier or facilitator is likely to be universally applicable. However, by explicitly examining how factors tend to differentially manifest according to the presence or absence of study-level contextual features, these reviews can generate hypotheses about the contingency of barriers and facilitators. For reviews in which the methodological rigor of (some) included studies is also a concern, sensitivity analysis – in which the influence on the review findings of included studies assessed to be of ‘lower’ quality is explored – can shed light on the robustness of the synthesis findings. Reviewers can also attempt to build on and combine these assessments of relevance and rigor to generate approximations of the ‘confidence’ or ‘certainty’ of the evidence underlying individual review findings (e.g. barriers and facilitators), using tools such as GRADE-CERQual, [74].

Limitations of this review

This review is subject to the following limitations. First, the review was limited to just over one calendar year. However, the purpose of this review was to investigate *recent reporting practices* in barriers and facilitators reviews, which motivated this restriction. Also, we identified 100 SRs eligible for inclusion, which we believe sufficient to paint a comprehensive picture of the current state of affairs. Second, the review was inclusive in terms of the type of reviews that it considered, which resulted in some non-traditional systematic reviews being included (e.g. rapid realist reviews). This was a conscious choice based on the rationale that to best inform current review practices, it is essential to investigate the full spectrum of reviews attempting to identify barriers and facilitators. Last, our focus on SRs relating to health services may restrict the generalisability of our findings, as it is possible that synthesis and reporting practices of barriers and facilitators reviews differ in other fields and topic areas.

Conclusions

A large volume of barriers and facilitators SRs are published every year in high impact journals, despite the fact that there is little guidance on how to conduct reviews of this type. We identified and synthesised 100 reviews relating to health services published during a thirteen month period. We found that many reviews of this genre fail to explicitly define barriers and facilitators and to explain how the identified factors were extracted from the included studies. However, many included SRs provided important reflections on some of the limitations associated with this type of review. Building on those reflections, we have proposed a number of suggestions on how to improve current practices in reviews of this kind. Chief among these is the recommendation that reviewers begin to engage more critically with the concepts underlying their analysis. This will be achieved, in part, through the thoughtful development of more detailed definitions of the concepts being investigated, the lack of which has hitherto operated as a *barrier* to these reviews being scientifically informative and practically useful. We humbly hope that this paper can help to *facilitate* improved practice in barriers and facilitators reviews.

Declarations

Ethics approval and consent to participate: Not applicable.

Consent for publication: Both authors read and approved the final manuscript.

Availability of data and material: The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests: The authors declare that they have no competing interests.

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Authors' contributions: The research objectives and research design were developed by both ABM and BV. Studies were double screened by both authors. ABM extracted data from the full sample of studies, with BV double-extracting a 20% random sample of included studies. The synthesis was conducted by ABM in consultation with BV. Both authors contributed to all aspects of drafting the manuscript.

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Tables

Table 1: Characteristics of included studies

Focus of study	Number of citations
Implementation	43
Provision of/access to care	19
Uptake of/adherence to treatment	10
Testing/screening	9
<i>Health promoting behaviours</i>	
Vaccination	3
Exercise	3
Self-care	2
Prevention	2
<i>Other</i>	
Patient involvement/empowerment	2
Describing of medication	1
Health care performance	1
Dying at home	1
Communication	1
Healthy transition (to long-term care)	1
Career progression	1
Evaluation	1
Inclusion criteria	
Both quantitative and qualitative studies	61
Qualitative studies only	31
Quantitative studies only	4
Systematic reviews	1
Unclear	3
Type of review as described by authors	
Systematic review	81
Qualitative synthesis	5
Qualitative meta-synthesis	3
Meta-ethnography	2
Scoping review	2
Narrative review	2
Narrative meta-synthesis	1
Qualitative meta-summary	1
Literature review	1
Rapid realist review	1

Table 2: Transparency of included studies: domains and overall transparency

Domains	No	Yes
Was the research design clearly described and justified?	0	100
Were the research question and inclusion/ exclusion criteria clearly specified?	0	100
Did the manuscript reference an accessible protocol that enabled the reader to investigate potential deviations?	68	32
Did the review authors use a transparent literature search strategy?	2	98
Did the review authors transparently describe the screening and data extraction process?	8	92
Did the review authors justify exclusions done at the full text review stage in the main manuscript or PRISMA diagram?	21	79
Did the review authors describe the included studies in adequate detail?	16	84
Did the authors clearly describe how the synthesis of included studies was conducted?	26	74
Did the review authors use a satisfactory technique for assessing the quality and transparency of individual studies that were included in the review?	39	61
Did the review authors account for the methodological quality of individual studies when interpreting/ discussing the results of the review?	61	39
Did the review authors provide a satisfactory explanation for, and discussion of, the generalisability and/or heterogeneity of the results?	27	73
Overall transparency		
Low 13	Medium 57	High 30

Table 3: Operationalisation of barriers and facilitators

Definition of barriers and facilitators	Number of citations
No explicit definition	74
Explicit definition	26
What terms were used to describe factors operating as barriers and facilitators?	
Barriers and facilitators	61
Barriers	23
Barriers and enablers	8
Facilitators and inhibitors	1
Factors that promote or inhibit	1
Challenges and facilitators	1
Challenges and barriers	1
Motivations and barriers	1
Correlates and barriers	1
Facilitators	1
Enablers	1
Stated assumptions behind approach	
No	98
Yes	2
How were the factors extracted?	
Indirect description	27
Explicit description (as identified in text)	1
Unclear	72

Table 4: Synthesis and categorisation practices of included SRs

Types of synthesis	Number of citations
Generic thematic analysis	28
Narrative synthesis	27
Thematic synthesis (Thomas & Harden, 2008)	12
Meta-ethnography	5
Framework synthesis	5
Qualitative meta-summary	2
Meta-synthesis	2
Content analysis	2
Critical Interpretive Synthesis	1
Integrative review	1
Thematic qualitative framework	1
Rapid realist review	1
Meta-analysis	1
<i>Unclear</i>	12
How were findings primarily categorised?*	
According to identified themes	46
According to client groups (e.g. patients and providers)	5
According to individual factors	3
Study type/focus	3
By proximity to patient	1
According to earlier review (double check)	1
By study	1
By country	1
<i>Organised according to pre-existing frameworks</i>	
Social ecological framework	21
Consolidated framework for implementation research	2
Social cognitive framework	2
Policy, healthcare organisation and community (ICC framework)	1
RE-AIM	1
International Classification of Functioning	1
Three phase delay model	1
CDS' five rights	1
Sundaresan's framework	1
SMART framework	1
5 A's of access	1
Capability, opportunity, and motivation, and behaviour model	1
Meleis transition framework	1
Trauma registry assessment tool	1
Theoretical domain framework	1
<i>Unclear</i>	2
Did the study test for the robustness of identified themes/factors?	
No sensitivity analysis	92
Sensitivity/robustness analysis undertaken	8
Discussion of approach	
No	62
Yes	38

***Note:** Some studies categorised their findings according to multiple levels and this table displays the highest level of categorisation.

Table 5: Methodological and practical issues in conducting barriers and facilitators reviews

Theme	Citations	Representative quotes
Grading and weighting of factors	[31, 33, 34, 37–43]	<p>“If a barrier of facilitator is frequently reported, the likelihood of it being true is greater, which is why we also report those reported in three or more studies.” [38]</p> <p>“[T]he frequency that each theme is cited may not reflect their importance to people living with HIV; however, the knowledge-user team involved in the study, including people with lived experience, endorsed their importance in accessing healthcare.” [39]</p>
Issues regarding factor identification (e.g. publication bias and context of study)	[34, 39, 44–50]	<p>“[T]he results of the studies included in our review are already likely to be condensed. Other barriers may have been identified but not reported if the investigators did not feel that they were significant findings.” [45]</p> <p>“Published, peer-reviewed research articles might be qualitatively different from those studies that remain unpublished, and researcher interest in certain barriers might bias their methodology to specifically solicit report of these barriers. Participants may also be biased toward discussing those barriers they feel most intensely and may not report other “minor” barriers.” [34]</p>
Issues regarding aggregation of heterogenous research	[37, 38, 41]	<p>“The studies that we included in this review were very heterogeneous as well as the outcome measure ‘barriers and facilitators’. We ended up with a broad range of results which were difficult to quantify, count or summarise.” [41]</p>
Restrictiveness of a barriers and facilitators approach	[17, 24]	<p>“...the synthesis of findings utilised a facilitators and barriers framework, which could mean other factors were excluded. However, to minimise this risk the search terms did not include ‘facilitators and barriers’ and issues were extracted irrespective of the specific terminology used.” [24]</p>
Issues regarding applying factors to pre-defined framework	[33, 42, 47, 51, 52]	<p>“[I]t was challenging to decide where specific barriers from the studies we reviewed would best fit with pre-defined framework domains. For example, due to the limited information provided in some studies, it was unclear at times where a barrier would fit within the [Consolidated Framework for Implementation Research] sub-domains; this applied in trying to determine the role of an individual involved in engagement, as studies did not always provide sufficient detail to code this barrier into an “opinion leader” versus a formally appointed “champion.” This type of fine grained differentiation may be of most relevance in situations where nuanced distinctions might influence the selection of implementation strategies at the development stage.” [42]</p> <p>“Our analyses demonstrate that despite being categorised by the three phases of the delay model, barriers and facilitators were found not to be limited to one phase. More specifically, barriers— limited finances, limited education and aware- ness, and location of services— were also found to be interlinked.” [52]</p>

Table 6: Definitional and conceptual issues related to ‘barriers’ and ‘facilitators’

Theme	Citations	Representative quotes
Overlap of factors	[17, 18, 34, 42, 51, 57-59]	<p>“Some articles presented findings related to multiple barriers and perspectives, and these were categorized under multiple themes. The categories, <i>while not necessarily mutually exclusive</i> [emphasis added], provide an analytical framework from which to consider immigrant women’s barriers to cervical cancer screening.” [57]</p> <p>“Some facilitators and inhibitors were not exclusive to one theme, for example, continuity of older people’s values, beliefs and personal identity, and factors related to organisational culture.”[58]</p>
Interrelationship among identified factors	[26, 49, 51, 52, 54]	<p>“Our findings also suggest that many, if not, most barriers must be understood through their interrelationships versus conceiving them as singular, independent entities. [...] The notion of barriers as constellations – as composed of interconnected, evolving, and contextualized impediments to adherence – could be helpful for further reflection. Indeed, without understanding their context, barriers like “forgetting,” among the most frequently reported, offer little clear direction for intervention.”[26]</p>
Differential impact of factors (including variable direction of effect)	[17, 18, 61-65, 28, 34, 46, 48, 50, 53, 59, 60]	<p>“[W]hat appear to be barriers to [voluntary medical male circumcision] uptake for some men were facilitators for others in the same contexts. While this may seem counterintuitive, the finding points to the differences by age and region within the same country as well as differences across countries likely based on level of VMMC uptake and on the normativity of VMMC in the regions. These differences indicate the importance of contextualised approaches addressing barriers and facilitators for various sub-groups and priority populations. Indeed, strategies to enhance VMMC uptake are likely to be more effective if designed for different profiles of youth and men who face different barriers and facilitators.”[59]</p> <p>“The factors are far from binary, in that a given factor can act as either a motivator or deterrent to uptake and use depending on the individual context.”[48]</p> <p>“Subsequently, barriers and helpful factors might not be generalizable to all specialties operating in hospital. Furthermore, studies from different countries, with different healthcare systems were included, which potentially makes study results incomparable.” [28]</p>
Change of factors over time	[59, 66]	<p>“Most types of barriers were reported consistently across the 10-year time period analyzed, suggesting that the same barriers have remained over time. However, the relatively small number of studies, combined with the fact that most studies (n = 9) were published in the first half of the time range analyzed may have precluded the identification of any changes to barriers over time.”[66]</p> <p>“[T]he most salient barriers and facilitators in each context are likely to change periodically as male circumcision prevalence increases and late adopters who face significant barriers (or simply are not willing to undergo circumcision) remain uncircumcised. [...] Thus, periodic formative research will be needed to ensure the demand creation strategies in place and the messages disseminated address the most salient barriers and facilitators as these change over time.”[59]</p>

Figures

Figure 1

PRISMA diagram

Supplementary Files

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