Relationship between perception of resource inequality and children's and adolescents' resource allocation decision: a protocol for systematic review and narrative synthesis

Relação entre percepção de desigualdade de recursos e decisão de alocação de recurso de crianças e adolescentes: um protocolo de revisão sistemática e síntese narrativa

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ABSTRACT

Social inequalities are worsened by the decision about how resources are to be allocated. Considering that children and adolescents are likely to become future leaders and decision-makers, understanding which principles they follow regarding resource allocation in situations of inequality is crucial. This paper aims at presenting a protocol for systematic review of the relationship between perception of resource inequality and allocation decisions made by children and adolescents. Method: A systematic search will be conducted in the PsycINFO, PsycArticles, Web of Science (Core Collections), Scopus, ERIC and LILACS databases. The paper will also include empirical studies from the authors' personal files, studies obtained through contact with the main authors of the articles included, and through backward and forward snowballing. The studies' quality will be assessed using the Quality Assessment with Diverse Studies (QuADS). Finally, a narrative synthesis will be conducted to review and synthesize data. This protocol was outlined following the PRISMA-P guidelines. The protocol is registered at the Open Science Framework (OSF) under the code DOI: https://doi.org/10.17605/OSF.IO/D96MY. The systematic review will follow the Joanna Briggs Institute guidelines, and will be reported according to the PRISMA 2020 reporting guidelines. Discussion: The results of this review will be relevant to policy makers, decision-makers, educators, and researchers.

Keywords: resource allocation, inequality, moral development, systematic review protocol, narrative synthesis

RESUMO

As desigualdades sociais são agravadas pela decisão de como alocar recursos. Tendo em vista que crianças e adolescentes podem ser futuros líderes e tomadores de decisão, é crucial que entendamos quais princípios eles seguem em condições de alocação de recursos em situações de desigualdade. Este artigo tem o objetivo de apresentar um protocolo de revisão sistemática sobre a relação entre a percepção de desigualdade de recursos e a decisão de alocação de crianças e adolescentes. Método: Uma busca sistemática será realizada nas bases de dados PsycINFO, PsycArticles, Web of Science (Core Collections), Scopus, ERIC e LILACS. Serão incluídos também estudos empíricos do arquivo pessoal das autoras, estudos obtidos a partir de contato com os autores principais dos artigos incluídos e por meio de backward e forward snowballing. A avaliação da qualidade dos estudos será feita usando o Quality Assessment with Diverse Studies (QuADS). Por fim, uma síntese narrativa será conduzida para análise e síntese dos dados. A elaboração deste protocolo foi guiada pelo PRISMA-P guidelines. O protocolo está registrado na Open Science Framework (OSF) sob o código DOI: https://doi.org/10.17605/OSF.IO/D96MY. A revisão sistemática será conduzida de acordo com as diretrizes do Joanna Briggs Institute e relatada de acordo com as diretrizes de relato PRISMA 2020. Discussão: Os resultados desta revisão serão relevantes para formuladores de políticas, tomadores de decisão, educadores e pesquisadores.

Palavras-chave: alocação de recurso, desigualdade, desenvolvimento moral, protocolo de revisão sistemática, síntese narrativa.

1 INTRODUCTION

The structure and organization of societies are impacted by the decisions about how resources should be distributed (Rizzo *et al.,* 2020). As uneven availability of resources and opportunities to some specific social groups is a pre-condition for social inequality (Elenbaas *et al.*, 2016), concerns are growing about how society's resources are distributed all over the world (Arsenio, 2015).

Recently, some psychologists have expressed their concern about the long-term harm and injustice related to how economic and educational resources are distributed. In the same line, researchers challenge the negative outcomes and moral character of these growing inequalities around the world (Arsenio, 2015). Nonetheless, many people still believe in equality of opportunity, neglecting and downplaying the structural conditions that shape social inequalities (Elenbaas *et al.*, 2020). These inequalities remain placing those at the margins of society at high risk of negative emotional, health, and learning consequences (Arsenio; Willems, 2017; Wilkinson; Pickett, 2009).

The concept of fair resources allocation is central and increasingly investigated by moral psychology. It is also crucial for investigations in other social science disciplines and areas related to the topic, such as moral philosophy (Arsenio, 2015; Rutland; Killen, 2017). According to developmental psychology studies, the fair exchange of resources is vital to the development of morality (Rutland; Killen, 2017). The decision on how resources are distributed will affect development both in the short and the long terms (Rizzo *et al.*, 2020).

Developmental science has found evidence that individuals become aware of social inequalities in their childhood (Elenbaas *et al.*, 2020). Children, however, are both victims and perpetrators of inequalities (Rizzo *et al.*, 2019). In this sense, we are urged to understand the role of contact with inequality in the resource allocation condition, since the way children act with others from specific groups may sharpen the inequalities present in our society (Elenbaas, 2019).

The perception and systematic understanding that adolescents build about justice inherent to many aspects of society is likely to influence them into adulthood regarding their civic engagement, political participation, and trust in social institutions (Arsenio, 2015). Considering that adolescents are expected to become the next leaders, assessing their perceptions of inequality and how these relate to their understanding of equity and justice is an important move to understand potential issues for intervention (Kornbluh *et al.*, 2019).

Looking through the prism of development, we should ask what principles people of different age groups follow when they need to distribute resources in a fair way (Kienbaum; Wilkening, 2009). Developmental scientists have pioneered the efforts to understand how children and adolescents develop awareness of social inequalities (Elenbaas *et al.*, 2020). Developmental science holds a unique position in shedding light on factors that lead children, adolescents, and adults to disregard, stress or challenge social inequalities in their everyday relationships and interactions (Elenbaas *et al.*, 2020).

This review aims to address the following research question: What is the relationship between perception of resource inequality and children's and adolescents' resource allocation decision? According to our research, to date there is no systematic review gathering all the empirical evidence about changes throughout the development of influence of the perception of inequality in resource allocation among children and adolescents. In order to address this need, the main objective of the review is to identify, synthesize, and critically review the empirical evidence of links between perception of resource inequality and children's and adolescents' decisions about allocation. Articles that also investigated children's and adolescents' justifications have as secondary objective investigating children's and adolescents' reasons for their allocations.

The information gathered through this review may be used to identify the perceptions and harmful behaviors of children and adolescents in relation to perpetuating social inequalities, exclusion and prejudice in the poor (Elenbaas *et al.*, 2020). The review may also assist building the required knowledge to promote greater youth activism for justice and solidarity (McLoyd, 2019), assist the design of educational programs that seek to reduce social inequality and promote social justice (An *et al.*, 2020); and finally, foster public policies aimed at building a more equitable society (Elenbaas *et al.*, 2020).

2 METHOD

2.1 PROTOCOL AND REGISTRATION

This protocol for systematic review and narrative synthesis was outlined according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols 2015 (PRISMA-P) checklist (Moher *et al.*, 2015) (Supplementary File 1). This protocol has been

registered at the Open Science Framework (https://doi.org/10.17605/OSF.IO/D96MY). Major changes to this protocol will be reported and published along with the review results.

Prior to the outlining of this protocol, a search in the Cochrane Library, PROSPERO, OSF, and the Joanna Briggs Institute was conducted to ensure that no reviews on this topic were underway. The final review will follow the Joanna Briggs Institute guidelines (Tufanaru *et al.*, 2020), and will be reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 reporting guidelines (Page *et al.*, 2021).

2.2 ELIGIBILITY CRITERIA

This review will use the PICo (Patient, Intervention/Phenomenon of Interest, Context) strategy to identify the specific inclusion and exclusion criteria (Table 1).

Table 1. Elements of the research question according to the PICo strategy

Element	Abbreviation	Description
Participants	P	Children and Adolescents
Phenomenon of Interest	I	Perception of Resource Inequality
Context	Co	Allocation Decision

Source: Authors (2024)

Articles resulting from empirical studies addressing the relationship between perception of resource inequality and children's and adolescents' allocation strategy are included in the review. We are considering as perception of inequality any contact with inequality as long as the child and/or adolescent is aware of such inequality. Languages will be limited to those understood by the review team: English, Spanish, and Portuguese. There will be no limitation on the date of publication or geographic location.

The review will exclude literature review or theoretical articles; articles that do not belong to the field of Psychology, Social Sciences or Humanities; articles that evaluated resource allocation in contexts of hidden inequality; articles that reviewed the evaluation of third-party resource allocation; articles that evaluated only the perception of inequality other than resource inequality, such as those of race/ethnicity, gender, household task allocation, cleaning task allocation, degree of dedication in a task (meritocracy), unequal treatment of others; and, gray literature (e.g., unpublished studies, dissertations and theses, conference abstracts and proceedings, book chapters, government and agency reports).

2.3 DATA SOURCES AND SEARCH STRATEGY

We will search the following electronic databases to identify potentially eligible studies: PsycINFO, PsycArticles, Web of Science (Core Collections), Scopus, ERIC and LILACS. These databases were selected because the specific literature in them is suitable to the topic of this review (Lefebvre *et al.*, 2019), and because they were deemed suitable for systematic reviews as they meet all the performance requirements crucial to evidence synthesis (Gusenbauer; Haddaway, 2018). Relevant articles from the authors' personal file will also be included. Likewise, the lead or corresponding authors of all studies included will be contacted via email to identify published studies left aside in our search. Additionally, following Wohlin's guidelines (2014), backward and forward snowballing will be conducted until no relevant articles are found.

In order to maximize the search strategy sensitivity, a pilot search was first conducted to test the preliminary strategy and identify relevant keywords (Aromataris; Riitano, 2014; Lefebvre *et al.*, 2019; Tufanaru *et al.*, 2020). Secondly, we will include controlled vocabularies, free-text words, synonyms, antonyms, spelling variants, and truncation according to the specifics of each database (Aromataris; Riitano, 2014; Song et al, 2010). The terms in the search strategy will be combined using Boolean operators (Table 2). The search will also comprise terms in Brazilian Portuguese and Spanish.

Table 2. Search strategies for each database

Database	Search Strategy
PsycINFO **PsycArticles** **Scopus** **Web of Science** **LILACS**	((child* OR adolescent* OR teen OR teenager OR young OR youth OR preschooler* OR preadolescent* OR childhood OR adolescence) AND (perception OR perceive OR understand* OR comprehen* OR recogni* OR identif* OR conscious* OR aware* OR conception OR conceive OR view OR know* OR contact OR belie* OR concern OR explanation OR explain OR witness*) AND (inequalit* OR fair* OR unfair* OR injustice* OR just OR justice* OR inequit* OR wealth OR interwealth OR need OR equalit* OR equit* OR poverty OR poor OR rich OR low-status OR high-status OR income* OR low-income OR middle-income OR "low-and middle-income" OR resource* OR disparit* OR disadvantage* OR advantage* OR marginalized OR "social class" OR access* OR "social status" OR stratification OR "wealth status" OR "social identity" OR "socioeconomic status" OR "class identity" OR opportunit* OR "class identification" OR distribution OR "socioeconomic factors" OR "social issues") AND (distribut* OR allocat* OR division OR divide* OR rectif* OR perpetuat* OR equal* OR attenuat* OR adjust* OR decision OR decide* OR act* OR reject* OR respon* OR change* OR modif* OR correct* OR repair* OR challenge* OR minimize* OR minimise* OR reduce* OR reduction OR behavior OR behaviour OR share* OR favor* OR favour* OR attitude*))
ERIC	((child OR children OR adolescent OR teen OR teenager OR young OR youth OR preschooler OR preadolescent OR childhood OR adolescence) AND (perception OR perceive OR understand OR comprehension OR comprehend OR recognize OR recognition OR identify OR identification OR consciousness OR conscious OR aware OR awareness OR conception OR conceive OR view OR knowledge OR know OR contact OR belief OR believe OR

concern OR explain OR explanation OR witness) AND (inequality OR fair OR fairness OR unfair OR unfairness OR justice OR injustice OR just OR inequity OR wealth OR interwealth OR need OR equality OR equity OR poverty OR poor OR rich OR low-status OR high-status OR income OR low-income OR middle-income OR "low-and middle-income" OR resource OR disparity OR disadvantage OR advantage OR marginalized OR "social class" OR access OR "social status" OR stratification OR "wealth status" OR "social identity" OR "socioeconomic status" OR "class identity" OR opportunity OR "class identification" OR distribution OR "socioeconomic factors" OR "social issues") AND (distribute OR distribution OR allocate OR allocation OR division OR divide OR rectify OR rectified OR rectification OR perpetuate OR perpetuation OR equalize OR equalise OR attenuate OR adjust OR decision OR decide OR act OR action OR reject OR rejection OR respond OR response OR change OR modify OR modified OR modification OR correct OR correction OR repair OR repairment OR challenge OR minimize OR minimise OR reduce OR decrease OR reduction OR behavior OR behaviour OR share OR favor OR favour OR attitude))

Source: Authors (2024)

2.4 SCREENING AND SELECTION OF STUDIES

One reviewer (L.A.M.A.) will conduct the initial literature search in the databases, and import the identified studies into the Rayyan systematic review software developed by Qatar Computing Research Institute (Ouzzani *et al.*, 2016), which will be used to rule out duplicates and for screening titles, abstracts, and full texts. The screening process will be performed by two reviewers (L.A.M.A. and G. B.M.) in an independent and blind way. Studies included will be exported to the Mendeley Reference Manager Software (Elsevier). We will use Kappa statistics to assess agreement between reviewers, and we have established beforehand that an acceptable level of agreement will be 61% or greater (Landis; Koch, 1977). Articles that are not eligible will be excluded, and the reason for exclusion will be reported to enhance transparency of the selection process. Any disagreements will be settled through discussion. If disagreements are not settled, a third reviewer (L.M.C.) will be consulted. The process of screening and selecting studies will be shown using the PRISMA 2020 flowchart (Figure 1).

Figure 1. PRISMA flow chart
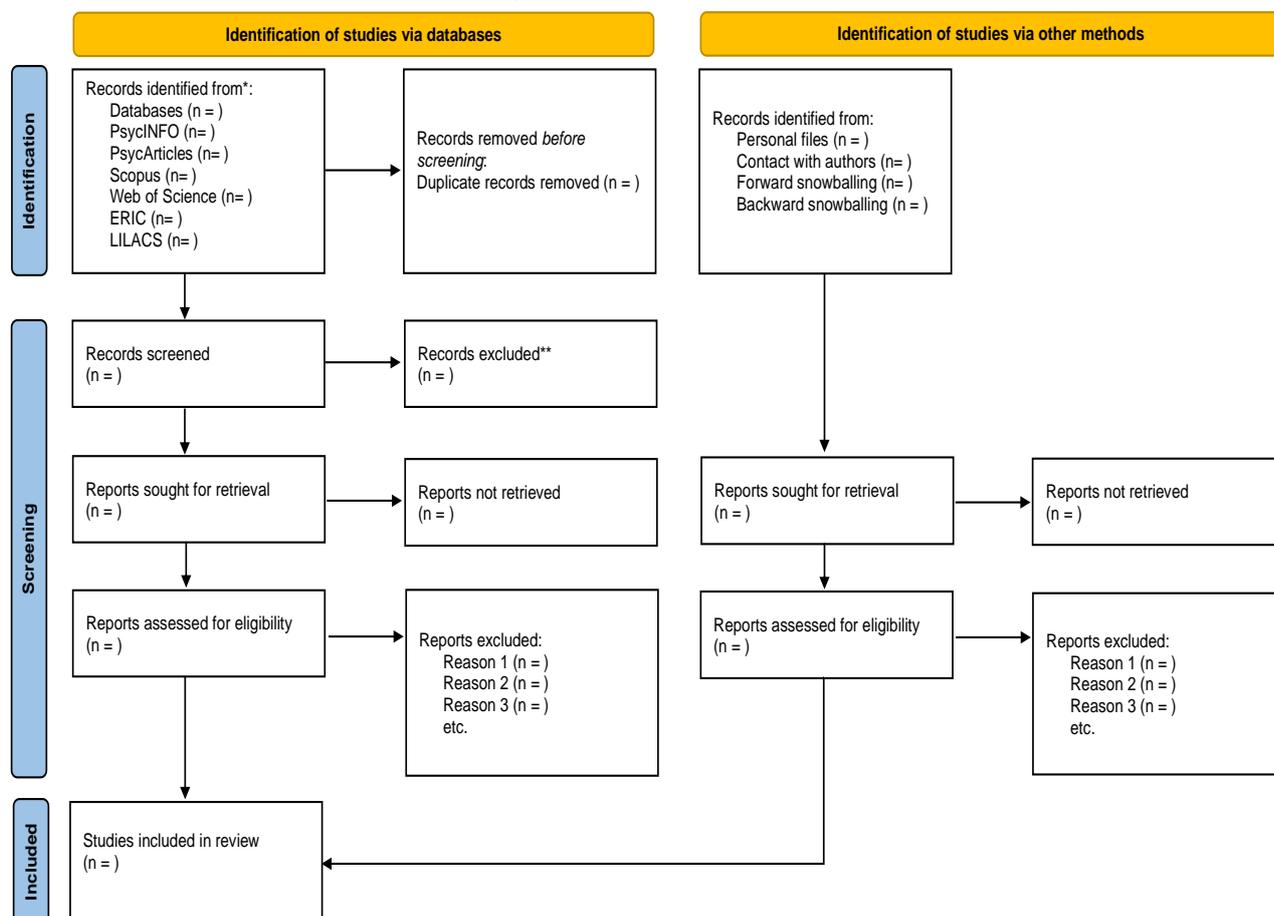
Source: Page *et al.* (2021)

2.5 ASSESSMENT OF METHODOLOGICAL QUALITY

Studies will be critically assessed using the Quality Assessment with Diverse Studies (QuADS). We elected this tool because it has demonstrated strong reliability (K= 0.66) and validity for application in reviews with studies of different designs (Harrison *et al.*, 2021). In addition, it is an updated version of the QATSDD, which was originally created for Psychology (Sirriyeh *et al.*, 2011), the main area of relevance for this review. The QuADS has 13 criteria that are rated according to a 4-point Likert scale (0 = no mention at all; 1 = very slightly; 2 = moderately; 3 = complete), showing to which degree each criterion is met. The tool will be piloted by two reviewers (L.A.M.A. and S.O.R.) with 10% of the sample. The quality assessment of each study included will be done independently by these same reviewers, and then the assessment will be discussed to reach a common denominator. Any disagreement will be settled through discussion or consultation with a third reviewer (L.M.C.). Following the QuADS guidelines,

articles will not be considered of low or high quality, as this is not the aim of the tool. For this reason, no articles will be excluded at this stage of the review. A table will be prepared disclosing the evaluation score, quality score achieved, and percentage of the maximum possible score achieved. In articles comprising more than one study, studies will be assessed individually and then an overall average will be calculated. The results will be discussed in narrative form considering the criteria met or not met by the studies.

2.6 DATA EXTRACTION

For data extraction, we will use two standardized forms adapted from the JBI quantitative data extraction tool (Lockwood *et al.*, 2011; Pearson *et al.*, 2007) (Supplementary File 2) to extract data related to: (A) study characteristics and (B) quantitative data. Data extraction forms will be piloted on 5 randomly selected studies and, if needed, reviews will be performed. Data will be extracted in two stages. In the first stage, two reviewers (L.A.M.A. and G.B.M.) will independently extract data related to the characteristics of the articles. Following are the data to be extracted from each study included: authors, year of publication, language of the article, journal, country of study, age range of the target population, sample size, setting, type of resource allocated, target group, and comparison groups. Based on our prior knowledge of literature, we expect to find only quantitative studies. In the second stage two additional reviewers (L.A.M.A. and S.O.R.) will extract quantitative data, also in an independent way. Any disagreement between the reviewers, either in the first or second stage, will be settled through discussion or by consulting a third reviewer (L.M.C.).

2.7 DATA ANALYSIS AND SYNTHESIS

No meta-analysis will be conducted for the analysis and synthesis of results, since this review does not intend to detect the effect size of a treatment or intervention, or to estimate the degree of benefit of some treatment or intervention, or to assess the amount of heterogeneity between studies, or to identify which study characteristics may be associated with the effectiveness of a particular treatment (Normand, 1999). Our goal is to systematically locate, gather, and review all relevant research literature on a particular phenomenon (Davis *et al.*, 2014; Petticrew, 2003), so that we can explore contexts and standards present in that phenomenon. Through a rigorous approach and following a structured protocol, we intend to relate the results

of multiple studies, controlling potential biases that could hinder the final result of this review (McGowan, 2012; Tricco *et al.*, 2008). Our research question was not developed directed toward conducting a meta-analysis (Cumming *et al.*, 2012; Davis *et al.*, 2014; Melendez-Torres *et al.*, 2016, 2018). Other methods of analysis are better suited to address questions that do not incorporate meta-analysis (Davis *et al.*, 2014).

Narrative synthesis is one of these methods, and it is considered to be the multiple studies results synthesis best suited for systematic reviews without meta-analysis (Lefebvre *et al.*, 2019; Popay *et al.*, 2006; Ryan, 2013; Tufanaru *et al.*, 2020). Narrative synthesis holds a prime place to support reviews that address questions beyond those of efficacy. It is a method distinct from synthesis that is important in its own right rather than just an alternative method when meta-analysis is not indicated (Campbell *et al.*, 2019; Melendez-Torres *et al.*, 2016). In narrative synthesis, the synthesis of data from the studies included is done using a textual rather than statistical approach (Popay *et al.*, 2006).

For our synthesis, we will use an adapted version of the narrative synthesis proposed by Popay *et al.* (2006). The four main elements of a narrative synthesis proposed by the authors are: 1) develop a theory of how, why, and for whom the intervention works; 2) develop a preliminary synthesis of the findings of the studies included; 3) explore the relationship between data; and, 4) assess the synthesis robustness. These procedures do not need to be performed sequentially or separately. There are several tools and techniques that can be employed in the synthesis process. In the Supplementary File 3, we list the elements of the narrative synthesis, its objectives for our review, and all the tools that can be used at each stage. The reviewers will meet and decide which elements and tools are appropriate for the question and scope of this review, and the choices will be justified and documented. To increase transparency in the synthesis reporting we will use, in a complementary manner to PRISMA 2020 (Page *et al.*, 2021), the items from the Synthesis without meta-analysis (SWiM) reporting guideline that fit our review (Campbell at al., 2020).

3 DISCUSSION

This review aims to develop a more detailed understanding of (1) how the perception of resource inequality influences children's and adolescents' decisions about allocation and (2) the reasons of these children and adolescents for their allocations. Thus, it allows raising the gaps present in literature, and making recommendations for practice, policy, and future research. This

research is relevant because the decision on how to allocate resources worsens the inequalities present in our society. Therefore, the results of the review can help instruct policies and strategies to fight social inequality, exclusion, and prejudice, as well as increase children's and adolescents' sense of justice. Results will be relevant for policy makers, decision-makers, educators, and researchers.

One of the strengths of this review will be the use of a systematic and transparent approach, in which we will employ validated and recommended tools, allowing us to provide clear and unbiased guidance based on a sound synthesis of evidence (McLeroy *et al.*, 2016). To this end, a number of strategies will be incorporated to help reduce the effects of meta-biases, contributing to increase the validity and reliability of the results' synthesis, and will provide methodological robustness and ensure transparency (Donnelly *et al.*, 2018; Felson, 1992; Song *et al.*, 2010; Tricco *et al.*, 2008).

As for the biases present in the identification of studies (sampling bias), firstly, in addition to including studies in three languages (Portuguese, Spanish and English), we will also search in a specific database for these two languages (LILACS), thus reducing the risk of *language bias* (Atkinson *et al.*, 2015; Song *et al.*, 2010). Second, in addition to searching the databases we will also perform backward and forward snowballing, include studies from the reviewers' personal file, and contact the authors of articles included so that a wide range of literature is captured and we can include as many studies as possible to mitigate the potential risk of *indexing bias* (Greenhalgh; Peacock, 2005; Lefebvre *et al.*, 2019; Song *et al.*, 2010). Third, by adding a database that centralizes literature produced in Latin America and the Caribbean (LILACS), we are ensuring that studies from a wide variety of regions are identified, decreasing the risk of *publication location bias* and *country of conduct bias* (Lefebvre *et al.*, 2019; Song *et al.*, 2010).

Regarding biases present in study selection (choosing study bias), two reviewers will independently select the articles to be included and any disagreement will be settled through discussion or with consultation with a third reviewer, reducing the chance of *selection bias* (Felson, 1992).

Regarding obtaining accurate data bias, first we will adopt strict guidelines such as PRISMA-P, PRISMA, SWiM and JBI guidelines for reporting this protocol, and throughout the review process. Furthermore, by publishing this protocol with predefined methods and publishing the rationale for any changes to it, we mitigate the *risk of bias from selective reporting*

of results (Atkinson *et al.*, 2015; Drucker *et al.*, 2016; Song *et al.*, 2010; Tawfik *et al.*, 2020). Second, the two stages of data extraction will be independently conducted by two reviewers, using a standardized form, minimizing the *extractor bias* (Felson, 1992). Finally, as we will include all studies that meet the inclusion criteria, the article quality assessment process will be reported transparently, detailing the reasons for the scoring of each study. A pilot evaluation will be conducted prior to the final assessment, reducing the *risk of study quality scoring bias* (Felson, 1992; Hartling *et al.*, 2013).

Regarding biases present in data analysis and interpretation (combining studies bias), we will conduct a rigorous narrative synthesis of the data that will incorporate the essential components of best practices for conducting and reporting narrative synthesis of quantitative data (Campbell *et al.*, 2019): 1) report the narrative synthesis methods; 2) manage and investigate heterogeneity across studies (conduct a preliminary synthesis); 3) present the links between the data and the narrative in a transparent way; 4) assess the synthesis robustness. In this way, we increase the synthesis transparency and the validity of and confidence in the review results, thus decreasing its potential for bias (Campbell *et al.*, 2019; Campbell *et al.*, 2020).

The main limitation of this study is the exclusion of gray literature. We will not include gray literature due to the size, format, and quantity of the documents that can be found, which requires considerable time, resources, and effort to be located and evaluated. In addition, the lack of a gold standard for conducting the research of this material, the fact that the evidence produced and found may not have been adequately addressed, inconsistent reporting of information, the possibility of duplicates, and the lack of important information may make it difficult to assess the methodological quality of the studies, which may reduce the validity and reproducibility of results to some sources (Benzies *et al.*, 2006; Hopewell *et al.*, 2005; Mahood *et al.*, 2013; Paez, 2017).

Despite all challenges, including gray literature is still a valuable and priceless component that can provide rich contextual details that would supplement the analysis, and provide important data that have not and will not be disclosed such as null or negative results, which would enable a more comprehensive and balanced view of the evidence available (Mahood *et al.*, 2013; Paez, 2017). By not using this literature, we may increase the effect of *publication bias*, *time lag bias*, and *citation bias* (Hopewell *et al.*, 2005; Lefebvre *et al.*, 2019; Petticrew; Roberts, 2006; Song *et al.*, 2010, 2013). However, due to the fact that we will be conducting an

exhaustive and comprehensive search, we anticipate that excluding gray literature will not drastically impact the results of our review.

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ANNEXES

PRISMA-P 2015 Checklist

This checklist has been adapted for use with protocol submissions to Systematic Reviews from Table 3 in Moher D et al: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. Systematic Reviews 2015 4:1

Section/topic	#	Checklist item	Information reported Yes	No	Line number(s)
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	☒	☐	p.1
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	☐	☒	n/a
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	☒	☐	p. 1, 4
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	☒	☐	p.1
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	☒	☐	p. 13
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	☐	☒	n/a
Support					
Sources	5a	Indicate sources of financial or other support for the review	☐	☒	n/a
Sponsor	5b	Provide name for the review funder and/or sponsor	☐	☒	n/a
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	☐	☒	n/a
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	☒	☐	p. 2

Section/topic	#	Checklist item	Information reported Yes	Information reported No	Line number(s)
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	☒	☐	p. 3, 4
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	☒	☐	p. 4
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	☒	☐	p. 5
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	☒	☐	p. 6
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	☒	☐	p. 7
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	☒	☐	p. 7
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	☒	☐	p. 9
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	☒	☐	p. 9
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	☒	☐	p. 9
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	☒	☐	p. 8
DATA					

Section/topic	#	Checklist item	Information reported Yes	Information reported No	Line number(s)
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	☐	☒	n/a
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2, Kendall's tau)	☐	☒	n/a
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	☐	☒	n/a
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	☒	☐	p. 9, 10
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	☒	☐	p. 11
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	☒	☐	p. 10

STUDY CHARACTERISTICS EXTRACTION FORM

Reviewer: ……………………………….. Date: …………………………………………..

Article description:
Authors:
Year of publication:
Language:
Journal:

Study setting:
Country:
Setting (e.g., intergroup …):

Study measures:
Sample size:
Allocated resource type:

Participant characteristics:
Target group (e.g. black, poor)
Age group:
Comparators:
Comments:

Complete   Yes ☐   No ☐

B. QUANTITATIVE DATA EXTRACTION FORM
Reviewer: ……………………………….. Date: …………………………………………..

Author: ………………………………….   Year: …………………………………………..

Study Method
RCT ☐   Quasi-RCT ☐   Longitudinal ☐
Retrospective ☐   Observational   ☐
Other ……………………………..

Studies descriptions
Study 1
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Study 2
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Study 3
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Result measures

Study	Result description	Scale/Measure

Results

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Did the study investigate the reason for allocation? (   ) Yes   (   ) No
Reason for allocation:
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Authors' General Conclusions

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Comments

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Extraction of findings complete   Yes ☐   No ☐

Elements and tools/techniques of a narrative synthesis

Element	Objective	Tool	Description
1. Develop a theory of how, why, and for whom the intervention works	Assist in interpreting the findings; Evaluate the applicability of the findings.	No specific tool was found, but the theory can be presented in narrative form or through a diagram.	Develop a model of the theory of intervention change.
2. Preliminary Synthesis of Findings	Develop an initial description of the results of the studies included to describe standards among them, and explore the relationship between variables.	Textual descriptions of studies	Write an individual paragraph for each study included describing the same information and in the same order.
		Groupings and clusters	Group the studies included and look for standards.
		Tabulation	Use one or more tables to present data.
		Transforming data into a common rubric	Transforming the results of quantitative studies into a common numerical or statistical rubric.
		Vote counting as a descriptive tool	Calculating the frequency of different results between the studies included.
		Thematic analysis	Identify recurring themes and/or concepts that are present in the studies included.
		Content analysis	Systematically pool text words into content groups based on coding rules.
3. Explore the relationship between data	Compare the ways in which relationships were identified and analyzed in the studies. Explore the influence of study heterogeneity on these relationships.	Graphs, frequency distributions, funnel plots, forest plots and L'Abbe plots	Use visual or graphical tools to present results and findings related to study quality, plot confidence intervals and/or outcome measures.
		Moderator variables and sub-group analyses	Analyze the variables that may be interfering with the effects being investigated by the review. This can be done by reviewing the characteristics of the studies or the sample.
		Idea webbing	Conceptualize and investigate relationships between the results of studies included through spider diagrams
		Conceptual mapping	Build a model that highlights the main concepts or relevant issues, and visually represent the relationship being studied through diagrams and flowcharts.
		Conceptual triangulation	Use tables to explore relationships between studies' data, and produce multiple models of explanation for the phenomenon of interest.
		Reciprocal and refutational translation	Transform data into a common rubric in the form of a category of meaning; based on such transformation create a line of argument by analyzing the similarities and differences between studies, and make inferences based on the transformation results. In reciprocal translation, the studies need to be similar enough to be compared. In refutational translation, the studies need to be contrasting.
		Qualitative case descriptions	Use descriptive data from studies included to explain differences in statistical results.

		Investigator/methodological triangulation	Analyze data according to the context in which they were produced, specifically the disciplines and specialties of the researchers who produced them, to explore the influence of this context on the heterogeneity of the study results.
4. Assessing the robustness of the synthesis	Assess the strength of the evidence available to draw conclusions.	Weight of Evidence – e.g. the EPPI approach	In the EPPI approach, specific relevance criteria are created for the review, and studies are considered relevant according to these criteria. The assessment of methodological quality is only done with the studies that are considered relevant for the review.
		Best Evidence Synthesis (BES)	The BES includes only studies that are minimally relevant and methodologically appropriate. Information from the articles included is extracted in a standardized way, and the assessment of study quality and relevance is done using a systematic approach.
		Use of validity assessment – e.g. the CDC approach	In the CDC approach, evidence is considered insufficient because of: A. Insufficient design or execution, B. Few studies, C. Inconsistency, D. Effect size too small, E. Expert opinion not used.
		Critically reflecting on the synthesis process	Provide a section for brief discussion describing the following components: methodology used in the synthesis; evidence used; assumptions made; discrepancies and uncertainties identified; changes that can be expected in technology or evidence; aspects that may influence the technology implementation and its effectiveness in real-world situations.
		Checking the synthesis with authors of primary studies	When the number of studies included is too short, consult the studies' authors to check whether the interpretations of the synthesis are valid, and to what extent primary data can support it.

Source: Adapted from Popay et al. (2006)