Austerity policy and child health in European countries: a systematic literature review

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Abstract
Objectives: To analyse the impact of austerity measures taken by European governments as a response to the 2008 economic and financial crisis on social determinants and child health (SDCH), and child health outcomes (CHO).

Methods: A systematic literature review was carried out in Medline (Ovid), Embase, Web of Science, PsycInfo, and Sociological abstracts in the last 5 years from European countries. Studies aimed at analysing the Great Recession, governments’ responses to the crisis, and its impact on SDCH were included. A narrative synthesis of the results was carried out. The risk of bias was assessed using the STROBE and EPICURE tools.

Results: Fourteen studies were included, most of them with a low to intermediate risk of bias (average score 72.1%). Government responses to the crisis varied, although there was general agreement that Greece, Spain, Ireland and the United Kingdom applied higher levels of austerity. High austerity periods, compared to pre-austerity periods were associated with increased material deprivation, child poverty rates, and low birth weight. Increasing child poverty subsequent to austerity measures was associated with deterioration of child health. High austerity was also related to poorer access and quality of services provided to disabled children. An annual reduction of 1% on public health expenditure was associated to 0.5% reduction on Measles-Mumps-Rubella vaccination coverage in Italy.

Conclusions: Countries that applied high level of austerity showed worse trends on SDCH and CHO. European governments must act urgently and reverse these austerity policy measures that are detrimental to family benefits and child protection.

Background
The Great Recession was characterised by an economic and financial crisis following the bail out of the banks in 2008. There followed a decline in gross domestic product (GDP) and high levels of unemployment, affecting European countries and worldwide.¹ Nevertheless, the magnitude of the crisis, its size, duration and geographical spread was different across European countries. Some countries experienced more substantial and sustained falls in GDP and rises in unemployment than
From 2010-11 onwards most European countries adopted austerity measures in response to the recession. These austerity measures taken by governments, mainly characterised by reducing social spending and increasing taxation, were neither homogeneous nor similarly implemented; some protected public sector programs and systems while others instituted large budget cuts in education, health, and other public services.²

The impact of the economic crisis on child health has been widely analysed. Studies suggest that the economic crisis disproportionately affected the most vulnerable groups, mainly children and youth from disadvantaged families.³ Most studies of the impact of economic crisis on health have not distinguished between economic crises themselves and policy responses to these crises.⁴ Although it would be difficult to disentangle the impact of the crisis itself from the Governments’ responses,⁵ some studies have attempted to separately analyse this effect on the general population, mainly addressed specifically at adult health.⁶ Less attention has been addressed to the impact of austerity measures on social determinants of child health (SDCH) and child health outcomes (CHO).⁷ ⁸ Childhood is a vulnerable period to the main determinants of health. Factors related to financial, human and social capital have potential influence on future child health and development.⁹ ¹⁰ Moreover, there is evidence for the profound effects of social factors on health throughout childhood and into adulthood.¹¹ ¹² ¹³

The objective of this systematic literature review was to analyse the impact of austerity measures taken by European governments as a response to the 2008 economic and financial crisis on the SDCH and CHO. The hypothesis was that a higher level of austerity could be associated with a greater impact on inequalities and health, especially in the childhood population, where investment in the early lifecourse is essential to facilitate equitable and adequate child development, as well as the future adult health.

Methods
A systematic literature review was carried out in the databases Medline (Ovid), Embase, Web of
Science, PsycInfo, and Sociological abstracts. Manual search for local published and unpublished documents were also included (search strategy available in the appendix).

The Preferred Reporting Items of Systematic reviews Meta-Analyses (PRISMA, http://www.prisma-statement.org/) guidelines was followed, although some items are not applicable given the characteristics of included studies.

**Inclusion Criteria**

Included studies were those published in the last 5 years (from January 1rst, 2014 to November 4th, 2019) that reported on the impact of changes in family/children benefits, or in budgets, or access to healthcare system, or to social benefits as Government responses to the Great Recession on child health and living conditions (children < 18y) in European countries. Studies should include the results of at least one European country, at least one SDCH or CHO, separately from adult outcomes. Studies should analyse austerity and/or government responses to the crisis as the main exposure measure. Systematic or narrative reviews, longitudinal, before-after, qualitative and cross-sectional studies were included.

**Exclusion Criteria**

Those studies reporting only the impact of the crisis were excluded, except when it could be linked to changes in policy responses; general population studies without stratification by age group or studies of adult populations, and Editorial or opinion papers were also excluded.

**Procedures**

Abstracts obtained by the initial search strategy were assessed for possible inclusion by two of the authors (AH, LR). Full text papers of the studies were obtained in doubtful cases and were independently assessed by these authors. Differences of opinion on inclusion were decided by discussion and consensus among all authors.

**Data Extraction And Analysis**

Data extracted included: setting (according to the country: international, national or regional study); type of study (trends of repeated cross-sectional data, before-after comparative study, cross-sectional study, review, etc); objective of study; years covered by the study; the specific target population (age range); measures of exposure, including austerity measures; outcome measures; and results in terms
of impact on SDCH and/or CHO.

The risk of bias of included studies was assessed by 4 of the authors (AH, DTR, NS, LR) using the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) initiative for quantitative studies.\textsuperscript{14} Qualitative studies were assessed using EPICURE (Engagement, Processing, Interpretation, Critique Usefulness, Relevance and Ethics).\textsuperscript{15} STROBE items not applicable in certain study designs due to the inclusion of indicators based on ecological data (i.e., items related to characteristics of the individuals included in these indicators) were excluded from the evaluation of these specific studies. Thus, the average score between evaluators was calculated and subsequently the percentage achieved by each study on the total items evaluated. Risk of bias was stratified as high (< 50%), intermediate (50%-75%) and low (< 75%). For qualitative studies, 4 out of the 7 items (P, I, U, R) were considered essential to assess studies as average or low risk of bias (the latter if also met at least one of the other items). The lack of one or more of these 4 essential items was considered as high risk of bias. Analysis was stratified regarding the type of studies, the exposure measure of austerity, and the main outcome measures (SDCH, [CHO], and healthcare, and preventive services). A meta-analysis was not carried out given the nature of the study design and heterogeneity of the findings. A narrative synthesis of the results was carried out.

Results
Characteristics of studies and exposure measures

Table 1 spells out the characteristics of included studies: study design (cross-sectional, trends over time, before-after approach, cohort study, or qualitative study), country (individual country, or the number of countries analysed), exposure (type of austerity measure and source of data), outcome (SDCH and/or CHO), and the risk of bias. Nine studies report time trend analyses of cross-sectional repeated data and two studies report before-after analyses following the implementation of austerity measures. The level of austerity measures was assessed by methods proposed by the International Monetary Fund (IMF),\textsuperscript{16} the European Union’s Maastricht criteria,\textsuperscript{17} or by analysing spending on families/children social protection in specific periods of time.\textsuperscript{18, 19}

| Table 1 |
| Type of studies and risk of bias |

| Study Design | Country | Exposure | Outcome | Risk of Bias |
|--------------|---------|----------|---------|-------------|
| Cross-sectional | Individual country | Type of austerity measure and source of data | SDCH and CHO | Average or Low |
| Trends over time | Number of countries analysed | | | |
| Before-after approach | | | | |
| Cohort study | | | | |
| Qualitative study | | | | |

5
| Type of study (first author, year) | Country/-ies | Exposure measure (year/s of study, source of data) | Outcome measure | Risk of bias (% of the total score-STROBE) |
|----------------------------------|--------------|--------------------------------------------------|----------------|------------------------------------------|
| Cross-sectional                  |              |                                                  |                |                                          |
| Horridge et al. 2019<sup>17</sup> | 32 EU countries | Survey to professionals and families/children. Countries classified according to the level of austerity following the European Union’s Maastricht criteria (2016-17) | Healthcare services to disabled children. Requests on changes in the quality and characteristics of services in the last years | Intermediate (70.4) |
| Trends over time - Repeated cross-sectional analysis |              |                                                  |                |                                          |
| Chzhen et al. 2017<sup>18</sup> | 30 EU countries (27 EU plus Ice, Nor, Swi) | Spending on Social protection as a share of GDP (EU-SILC) (2008-13) | Relative and anchored (2008) child poverty rates | Low (78.75)* |
| Gunnlaugsson 2015<sup>26</sup> | Ice | Governmental responses to the crisis (2004-14) | Social determinants and child health | Low (76.25)* |
| Herranz-Aguayo et al. 2016<sup>23</sup> | Sp and Por | Government investment in family function (EU-SILC) | Child poverty rates and AROPE taxes | Intermediate (62.5)* |
| Nygard et al. 2019<sup>19</sup> | 22 EU countries | Public expenditure on family cash benefits and in-kind transfer benefits (OECD) (2006-15) | Child poverty rates (EU-SILC) | Low (87.5)* |
| Rajmil et al. 2018<sup>16</sup> | 16 EU countries | Countries stratified in 3 austerity groups according to the CAPB (EU-SILC) (2005-15) | Material deprivation, child poverty, perinatal outcomes (OECD) | Low (82.5)* |
| Rajmil et al. 2015<sup>24</sup> | Sp | Government responses to the crisis (2005-13) | Social determinants, child health, and HCS | Intermediate (67.5)* |
| Robinson et al. 2019<sup>28</sup> | England | Effects during and after the English inequality strategy (1998–2010 / 2011-17) | IM according to the Townsend index of deprivation area in quintiles | Low (83.7)* |
| Toffolutti et al. 2018<sup>29</sup> | It | Public health expenditure 2000-14 | MMR coverage by health region | Low (82.5)* |
| Zografaki et al. 2018<sup>27</sup> | Gree | Changes in perinatal outcomes centered on the long term trends (1980–2004 and 2004-14) | Perinatal outcomes at early (2008-10) and “established crisis” (2011-14) | Intermediate (67) |
| Before-after approach             |              |                                                  |                |                                          |
| D’Agostino et al. 2019<sup>20</sup> | It, Gree, Fr, Uk | Changes in social protection benefits (EU-SILC) (2009/14) | Monetary and non-monetary indicators of well-being | Intermediate (75)* |
| Stefansson et al. 2018<sup>25</sup> | Ice | People own assessment of their ability to make ends meet (EU-SILC) (2009/14) | Material deprivation by dimensions, vulnerability | High (46.25)* |
| Cohort study                     |              |                                                  |                |                                          |
| Reinhard et al. 2018<sup>21</sup> | Ire | Cohort GUI; 3 waves included a question on reduction in social welfare benefits (2009/11/13) | Family living conditions; child health, etc | Low (82.9) |
| Qualitative study                |              |                                                  |                |                                          |
| Stalker et al. 2015<sup>22</sup> | Scotland | Survey to providers for disabled children, and focus | Changes in access and quality of services after budget cuts | STROBE: High (47.7) EPICURE (47.7) |
A before-after approach was used to compare Italy, Greece, France and the UK, in terms of the ability of social benefits to reduce child poverty. One cross-sectional study collected information on a survey to families of disabled children and professionals from 32 European countries, while a follow-up of a cohort of children from Ireland reported on the consequences of reported reductions on welfare benefits, and a qualitative study from Scotland provided information on the impact of austerity measures on families with disabled children.

Risk of bias
Seven out of 14 studies showed a low risk of bias according to STROBE (average score = 72.1%; median = 75.6%), 2 studies showed high risk of bias, while the qualitative study showed intermediate risk of bias on the EPICURE assessment.

Social determinants of child health (SDCH) (Table 2)
Table 2
Social determinants of child health (SDCH): child poverty, material deprivation, and social inequalities

| First author (year) | Main results |
|---------------------|--------------|
| Rajmil et al. 2018\(^{16}\) | Material deprivation increased during the period 2012–15 in those countries with higher austerity (interaction austerity*period 2012–15 = B: 5.62; p < 0.001) |
| Chzhen et al. 2017\(^{18}\) | Children were significantly less likely to be poor in countries with higher levels of social protection spending in 2008–2013, even after controlling for the socio-demographic structure of the population, per capita GDP and the working age unemployment rate. The effects of spending were larger and more precisely estimated for relative rather than anchored poverty, and it was not statistically significant in the last 2 years of the study (2012/13) |
| Nygard et al. 2019\(^{19}\) | Child poverty: the coefficients for spending on in-kind benefits (B = -1.6) were negative and consistently stronger than for cash benefits (B = -1.2), even when controlling for other variables. There was also a gradual downward trend in the strengths of both coefficients as well as in the R Squares over time, which indicates that both forms of spending have become less efficient in reducing poverty over the studied period. This result can at least partly be attributed to higher unemployment of parents and a lower up-take rate of services (such as childcare services), as well as to cuts in the generosity of cash transfers to families |
| D’Agostino et al. 2019\(^{20}\) | The shares of the social benefits devoted to the Family/Children function were approximately double in the UK and France than those of Italy and Greece. The higher and lower level of expenses in family/children benefits were for Italy: 5.4% (2014) and 4.1% in 2010; Greece: 4.4% (2014) and 3.5% in 2012; France: 8.6% (2007) and 7.6% in 2014; UK: 11.3% (2010) and 10.3% in 2013. |
| Herranz-Aguayo et al. 2016\(^{23}\) | In 2013, Portugal exceeds the average on EU child poverty by almost 3% and Spain by almost 7% points. In Spain, one in three households is below the poverty thresholds (33.9%), followed by Portugal (31.1%). In Spain and Portugal, the ability to reduce poverty rates is much lower, remaining below the EU average (EU-15: 9.6% and EU-27: 9.1%), since both countries only achieved to reduce by 7.4% the risk of poverty and social exclusion after social transfers |
| Stefansson et al. 2018\(^{25}\) | Both children’s deprivation and economic vulnerability were measured at higher levels in 2014 than in 2009, though only the change in the latter was statistically significant. Rates of deprivation in individual dimensions was low and the overlap very limited, which may be indicative of low deprivation rates |
| Gunnlaugsson 2015\(^{26}\) | Governmental responses gave prominence to redistribution, through taxes and the social protection system. A set of measures represented protection of children were specifically improved (mental health, maternity care, immunisation, etc.). Percentage of children living in poverty almost not modified |

EU: European Union; GDP: Gross Domestic Product

The study analysing indicators of child poverty and material deprivation in 16 European countries according to the extent of austerity implemented by governments found that material deprivation increased in the period 2012–2015 in countries with high austerity level (interaction austerity*period
Children were significantly less likely to be poor in countries with higher levels of social protection spending in 2008-2013 in 30 EU countries. Spending on in-kind benefits was more effective in reducing child poverty (B = -1.6) than for cash benefits (B = -1.2), although a gradual downward trend in the efficacy of both coefficients over time was reported.

Child and family poverty rates increased in Spain and Portugal following the crisis partly due to low levels of social protection; social transfers in both countries only reduced poverty and social exclusion by 7.4%. Shares of the social benefits devoted to family/children in the UK and France were approximately double those in Italy and Greece and the UK was the only one of these countries in which deterioration in some of the measures of well-being analysed in the study from D’Agostino et al was avoided. Both children’s deprivation and economic vulnerability were measured at higher levels in 2014 than in 2009 in Iceland, though only the change in the latter was statistically significant. Rates of deprivation and vulnerability were low and the overlap very limited, which may be indicative of low deprivation rates.

Child health outcomes (CHO)

Results on CHO are summarised in Table 3. Increasing rates of low birth weight (LBW) were associated to high level of austerity in the study of 16 countries (interaction austerity*period 2012-15, B: 0.25; p = 0.004). Preterm birth and LBW increased by 37% and 7% respectively in Greece the years 2011-14. In Iceland, small for gestational age increased from 2-3.4%.26
| First author                  | Main results                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rajmil 2018 et al.           | LBW increased during the period 2012–15 in those countries with higher austerity (interaction austerity*period 2012–15, B: 0.25; p = 0.004)                                                                                                                                                                                                                                                                                                                                                         |
| Zografaki et al. 2018        | LBW increased (Standardised rate ratio, SRR = 1.07[1.06-1.09]), as well as preterm births (SRR = 1.39, [1.37-1.42]) during established crisis. Some differences found according to maternal origin and age                                                                                                                                                                                                                                                                                                         |
| Gunnlaugsson 2015            | Governmental responses gave prominence to redistribution, through taxes and the social protection system. A set of measures protected children and were specifically improved (mental health, maternity care, immunisation). A few indicators worsened (i.e. small for gestation age changed from 2-3.4%)                                                                                                                                                                                                                                           |
| Robinson et al. 2018         | Absolute inequalities on IMR increased in 1990–1999 (annual change between the most deprived local authorities and the rest of England = 0.03) decreased during the welfare strategy period 2000–2010 (-0.11) and increased in 2011–2017 (0.04). The analysis suggests that it is increases in public spending on healthcare and welfare that are associated with decreases in inequalities in the IMR.                                                                                                                                                                |
| Reinhard et al. 2018         | 48% in 2011 and 60% in 2013 reported a reduction in welfare benefits. Besides the effect of the crisis itself, it was associated with an increased risk of reporting asthma ($\beta = 0.014$, 95% CI: 0.004, 0.023) and atopy symptoms ($\beta = 0.014$, 95% CI: 0.001, 0.027).                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                     |
| Rajmil et al. 2015           | Great impact on health of vulnerable children related to cutting budgets on housing, access to HCS, preschool investment. Increasing number of children living in poverty. No impact on child health at general population level but to the most vulnerable groups                                                                                                                                                                                                                                                                                                                                                                  |
| Mental health, and disability| Health care professionals reported worsening quality of services than 3 years ago: increased waiting times, and less time allocated to see each child compared to 3 years ago, and worst working conditions in the last year. Nine in every ten families reported worsening quality of services for their disabled children compared to 3 years ago. Families from countries with austerity cuts reported more difficult access to welfare support and benefits.                                                                                                                                                                                                                     |
| Horridge et al. 2019         | Reduction or withdrawal of services in a wide range of provision—social work, education, voluntary organisations, health and professions allied to medicine. Examples of services that were not provided or shortened. Closure of day centres. Voluntary sector survey: A Shift from Preventative Work to Crisis Intervention. Increase in unmet needs. Some families waited between one and three years for assessments or services on child mental health for diagnose, equipment and/or home extensions. Difficulty meeting the needs of children on the autistic spectrum was a recurring theme.                                                                 |
| Preventive services          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Toffolutti et al. 2018       | PHE fell by 2% in the whole country between 2010 and 2014. By regions, each 1% annual reduction was associated to 0.5% (0.36-0.65) reduction on the coverage on MMR.                                                                                                                                                                                                                                                                                                                                                                                                     | IMR: Infant mortality rates; HCS: healthcare services; LBW: low birth weight; PHE: Public Health Expenditure |
Absolute inequalities in infant mortality rates (IMR) in England increased in 1990-1999 (annual changes between the most deprived local authorities and the rest of England: 0.03), decreased during the welfare strategy period 2000-2010 (-0.11) and increased in 2011-2017 (0.04) after the end of this strategy. \(^{28}\) The study Growing Up in Ireland (GUI) found that 48% of participating families in 2011 (2y old children) and 60% in 2013 (4y olds) reported a reduction in welfare benefits, and it was associated with an increased risk of reporting asthma and atopy symptoms in the latter period.\(^{21}\)

**Healthcare services, and preventive services**

In the study of 32 European countries, families from countries with high austerity level reported more difficulties in access to healthcare services and benefits for children with disability; professionals reported worse quality of services provided and increasing waiting time for visits.\(^{17}\)

The study from Scotland showed a reduction or withdrawal of services in a wide range of provision—social work, education, voluntary organisations, health and professions allied to medicine.\(^{22}\) Voluntary sector survey showed a shift from preventative work to crisis intervention and an increase in unmet needs. Some families waited between one and three years for assessments on child mental health services for diagnosis, equipment and/or home extensions. Difficulty meeting the needs of children on the autistic spectrum was a recurring theme.\(^{22}\)

An annual reduction of 1% in public health expenditure (PHE) was associated to 0.5% reduction in Measles-Mumps-Rubella (MMR) vaccination coverage by region in Italy. \(^{29}\)

**Discussion**

The results support the hypothesis that those countries that have applied and maintained high levels of austerity have experienced adverse consequences for children with worsening SDCH, CHO and reduced access to, and quality of, preventive and curative healthcare services. These negative impacts on child health and development may have implications for the future adult health of a generation.

The results of the present study corroborate other studies at the European general population level.\(^{1}\). \(^{6}\) Although there are many differences between countries, according to these studies, results suggest
that the interaction of fiscal austerity with economic shocks and weak social protection ultimately may produce greater social crisis with a negative impact on health. Moreover, in countries that applied high levels of austerity, another review at the European general population level showed an increase in homelessness, and food insecurity, and worsening mental health and increase of suicide rates, as well as difficulties with access to care.\textsuperscript{2} The latter study also shows that in Greece, Spain, UK, and France charities also reported marked rises in people seeking emergency food support coinciding with the introduction of austerity measures.

The present review shows significant variability in the situation of European countries before and during the crisis. Classification of countries according to the level of austerity also shows an important variability. However, the results are consistent with respect to the impact of austerity measures on SDCH and CHO.

Poverty reduction strategies, either in-kind or cash benefits, were suggested to be less effective as a result of austerity measures employed by governments.\textsuperscript{18,19} Investment in family and child policies declined during the study period even in countries that traditionally invested more, and was clearly insufficient in countries such as Spain and Portugal.\textsuperscript{20,23} And these changes coincide again, with the period of greatest adjustment for austerity.

The impact on children’s health has been detected especially in perinatal indicators and in countries that have significantly reduced the healthcare budget, such as Greece.\textsuperscript{17} The impact has been greater in families with vulnerable children and a very important change has been detected in the access to, and provision of, services for children with disabilities and in child mental health services. Simultaneously, the global migrant and refugee crisis has reached historically high rates, and the interactive effects of these two factors in Greece were associated with a deterioration in child mental health.\textsuperscript{30}

Austerity measures have been described to impact deprived groups the most.\textsuperscript{2} In this sense, children represent a particularly vulnerable population group. Inequalities in early child development have been identified as a major contributing factor to inequalities in adult health.\textsuperscript{31} Besides the studies
included in the present review, the recent increase in infant mortality in the poorest areas of England associated with rising child poverty would also be associated to the impact of austerity policies,\textsuperscript{32} and the need to urgently address these policies for the real protection of families and children. Despite almost all of the included studies showed low risk of bias there are some limitations. First, the analysis of ecological data prevents the establishment of causal associations. Moreover, some studies comparing SDCH included ecologic exposure or outcome measures which prevents application of some items in STROBE. Nevertheless, almost all included studies show that a high level of austerity is associated with worse outcomes in SDCH. Secondly, differences in classifications used to assess the level of austerity make it difficult to establish comparisons and summary measures. Moreover, these classifications do not discriminate well between specific aspects of budget reduction, such as family benefits, early child investment, prenatal care, etc. It may not adequately reflect specific national policies that establish general economic rigor while trying to protect the most vulnerable groups, such as children. This could partly explain why Iceland,\textsuperscript{26} despite having a high level of austerity at the beginning of the economic crisis and in response to the crisis, showed trends more consistent with countries with low levels of austerity and protecting social benefits for children. On the other hand, almost all included studies agree that countries such a Greece, Spain, Portugal or the UK applied higher levels of austerity than the rest. Thirdly, the difficulties establishing causal associations between exposure and outcomes is well known especially in the case of comparisons such as those carried out in the present study. Finally, there is a lack of studies of trends in gradients in social inequalities in child health, while studies at the general population level showed an increase in inequalities during the recession and austerity periods.\textsuperscript{33} A study that analysed the investment per child in England according to the area of residence found a greater reduction in areas with greater deprivation, a fact that the authors called the inverse intervention law.\textsuperscript{34} In summary, this review highlights the need for more robust studies of the impact of austerity on child health in individual countries.

Conclusions
Countries that applied high level of austerity showed worse trends on SDCH, CHO, and access to, and quality of, preventive and curative healthcare services, demonstrating the importance of economic policy for equity in child health and development.  

**Abbreviations**

CHO: Child health outcomes; EPICURE: Engagement, Processing, Interpretation, Critique Usefulness, Relevance and Ethics; GDP: Gross Domestic Product; SDCH: Social determinants of child health; STROBE: Strengthening the Reporting of Observational Studies in Epidemiology.

**Declarations**

*Ethics approval and consent to participate*

This study does not include individual data.

*Consent for publication*

Not applicable

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*Availability of data and materials*

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 interest.

*Authors’ contributions*

LR, NS and AH were involved in the initial conception and design of the study. LR and AH extracted data and NS, DTR, GG and HR participated in the data analysis strategy. All authors were involved in the interpretation and discussion of results through call conferences. LR developed the first draft of the manuscript. All authors have read and approved the manuscript. LR is study guarantor.

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Figures
Figure 1

Search flow.

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