

# Inflation and health: a global scoping review

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High levels of economic inflation can adversely affect societies and individuals in many ways. Although numerous studies explore the health implications of macroeconomic factors, systematic investigation of the inflation–health nexus has been scarce. We conducted a comprehensive scoping review mapping the literature on inflation and health. From 8923 screened records, 69 empirical studies were analysed. These studies explored a wide range of health-related risk factors (eg, diet, substance use, stress, and violence) and outcomes (eg, life expectancy, mortality, suicidal behaviour, and mental health) linked to inflation, across diverse contexts and timeframes. The findings suggest a predominantly negative effect of inflation on health, with specific socioeconomic groups facing greater risks. Our Review uncovers notable gaps in the literature, particularly in geographical coverage, methodological approaches, and specific health outcomes. Among global socioeconomic and geopolitical shifts, understanding and mitigating the health effects of inflation is of contemporary relevance and merits thorough academic attention.

## Introduction

The relationship between socioeconomic conditions and health is well researched.<sup>1</sup> Importantly, health has been linked not only to a person's immediate socioeconomic circumstances, but also to broader macroeconomic conditions. Among these conditions, inflation stands out for its potentially far-reaching effects. Defined as the rate that prices for goods and services increase, thereby eroding purchasing power, inflation can have profound societal effects through multiple pathways.<sup>2</sup>

Although low and predictable inflation rates are often deemed benign or even advantageous for stimulating spending in an economy,<sup>3</sup> persistently high inflation rates, such as those in Latin America during the 1980s, as well as unexpected inflation spikes, such as those seen in the aftermath of the COVID-19 pandemic and in the context of the 2022 energy crisis, present many challenges.<sup>4</sup> If inflation is persistently high, the benefits of holding cash disappear and the functioning of the economy becomes less efficient, thereby lowering growth and making economies poorer. But in a low-inflation environment, as observed in most developed economies since the 1990s, inflation has a negative effect when it occurs unexpectedly. Inflation acts like a tax hike that diminishes household purchasing power, makes essential commodities, such as food and medication, less affordable, and triggers a cascade of health-related issues. However, when policies are then implemented to counter inflation, such as a tightening of monetary policy, economies often fall into recessions.<sup>5</sup> Economic recession not only increases unemployment, an established trigger for various health issues,<sup>5</sup> but also strains government finances and potentially results in decreased fiscal allocations to health infrastructure, medical research, and public health initiatives. This budgetary pullback can, in turn, impede the accessibility and quality of health services, indirectly affecting population health.

The socioeconomic ramifications could further complicate this landscape. Economic strains and resultant financial uncertainties at an individual level can lead to stress and mental health challenges and promote risky

behaviours, such as increased consumption of tobacco or alcohol. Simultaneously, inflation can decrease educational attainment and societal cohesion—all established determinants of health and wellbeing. Inflation also has the potential to accentuate socioeconomic inequalities.<sup>6</sup> With the escalating cost of living, vulnerable populations might find themselves disproportionately affected, intensifying prevailing health disparities.

Although considerable research has delved into the health implications of economic factors, including unemployment and income inequality, the nexus between inflation and health—particularly its nuanced effects on health outcomes and associated risk factors—remains comparatively uncharted. This scoping review aims to bridge this knowledge gap by comprehensively mapping the scientific evidence focusing on the interplay between inflation and health, including health-related risk factors. Through this strategy, we seek not only to present insights for a diverse audience, including researchers and policy makers, but also to spotlight this domain and the specific areas that require deeper, more targeted inquiry in the future.

## Methods

Given the complex and multifaceted nature of the topic, we used a scoping review. This method not only captures the diversity of study designs and disciplinary perspectives in the field, but also helps to identify key concepts and gaps.<sup>7</sup> Our review was based on an existing protocol and is reported in accordance with the PRISMA Extension for Scoping Reviews (appendix pp 4–5).<sup>8</sup>

## Search strategy and selection criteria

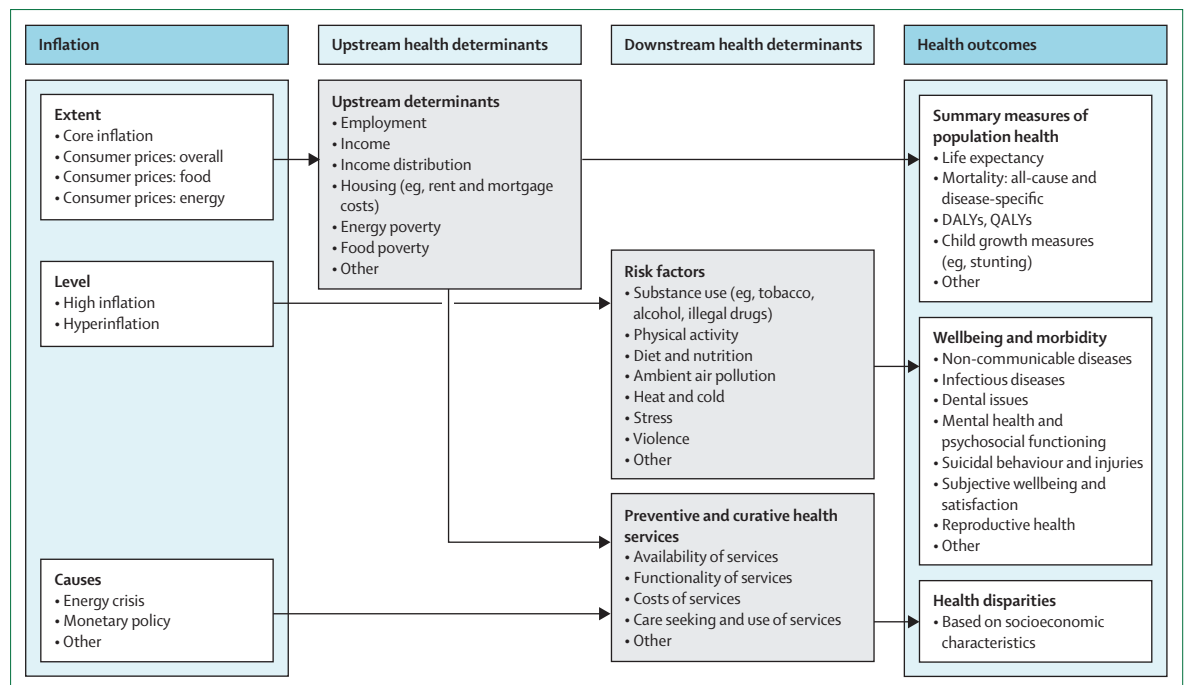
We searched the following databases until March, 2023: MEDLINE ALL (1946–current), APA PsycINFO (1806–current) via Ovid, ASSIA (1987–current) via ProQuest, EconLIT (1886–current), Business Source Complete (1886–current) via EBSCOhost and Web of Science Core collection, including Science Citation Index, Social Sciences Citation Index, Conference Proceedings Citation Index—Science, and Conference

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For more on the existing protocol see <https://osf.io/t7ksb>  
See Online for appendix



**Figure 1: Preliminary logic model illustrating the possible pathways of inflation's effects on health**  
DALYs=disability-adjusted life years. QALYs=quality-adjusted life years.

Proceedings Citation Index—Social Sciences and Humanities (1990–current), Arts and Humanities Citation Index (1975–current), and Emerging Sources Citation Index (2015–current). Our broad strategy used a combination of free text and, where applicable, controlled vocabulary terms. The strategy was developed around two search blocks focusing on inflation and health. The search strategy with tailored search terms for MEDLINE can be found in the appendix (pp 2–3). This search strategy was modified as needed for the other databases. All retrieved results were consolidated in EndNote 20 (Clarivate; London, UK) for removal of duplicates.

To define the scope of the review, we developed a preliminary logic model outlining the potential pathways linking inflation and health (figure 1). The model depicts the possible pathways through upstream (broader socioeconomic, cultural, and environmental conditions that indirectly influence health outcomes; eg, employment and household income) and downstream determinants (more immediate factors that have a direct impact on health; eg, risk factors and health services) where inflation could affect health. We included papers exploring inflation that affected the entire economy, either as an isolated economic occurrence or alongside other economic developments, irrespective of level, cause, and duration. We included papers examining the relationship between inflation and any of the following downstream determinants and health outcomes: health-related risk factors, such as substance use (eg, tobacco and alcohol), physical activity, diet and nutrition, ambient air pollution,

stress, and violence; health outcomes including aggregate health metrics, such as life expectancy and overall and disease-specific mortality, as well as morbidity and wellbeing from specific non-communicable or infectious diseases, subjective wellbeing and satisfaction, mental health and psychosocial functioning, reproductive health, and suicidal behaviour and injuries. We did not put restrictions on population groups or countries.

We included any full-length empirical (quantitative, qualitative, or mixed-methods study) or non-empirical papers (editorials and opinion papers) published from 1980 onwards in peer-reviewed journals in English, German, Russian, French, Spanish, and Italian. We excluded scientific papers that either solely focused on inflation in specific commodities (eg, food inflation), were concerned with other economic developments or crises (eg, recession) without examining the effect of inflation distinctively, or explored the relationship of inflation exclusively with upstream determinants. For manageability, we also excluded the extensive literature concerned with the availability, functionality, cost, or use of health-care services. We also excluded grey literature, including books, theses, governmental or non-governmental reports, and social media posts.

#### Data screening, extraction, and mapping

We initially screened the identified records' titles and abstracts using Rayyan (Cambridge, MA, USA). All authors involved in this phase piloted the screening guidance by reviewing the same 50 titles and abstracts,

leading to more standardised guidance. One of the authors (AM, FW, JK, MC, or SV) then screened the remaining titles and abstracts, applying a conservative approach—any uncertainties about a record's exclusion led to a discussion with another author.

For the full-text screening, all involved authors initially screened a sample of ten papers, discussing any questions and further refining the guidance. Subsequently, one of the authors (shared among AM, FW, JK, MC, or SV) screened the remaining papers. Uncertainties were discussed with a second review author and, where needed, a third author (ER) was consulted.

We developed a data extraction form in Microsoft Excel (Microsoft Corporation; Redmond, WA, USA). Before data extraction, the developed form was independently piloted on three selected papers by two members of our review team. One author (either FW or HL) performed the data extraction, with a second author (AM) verifying all entries. The form captured generic information (eg, publication year and journal), context (eg, setting and timeframe), method, inflation description, and health-related risk factors or outcomes.

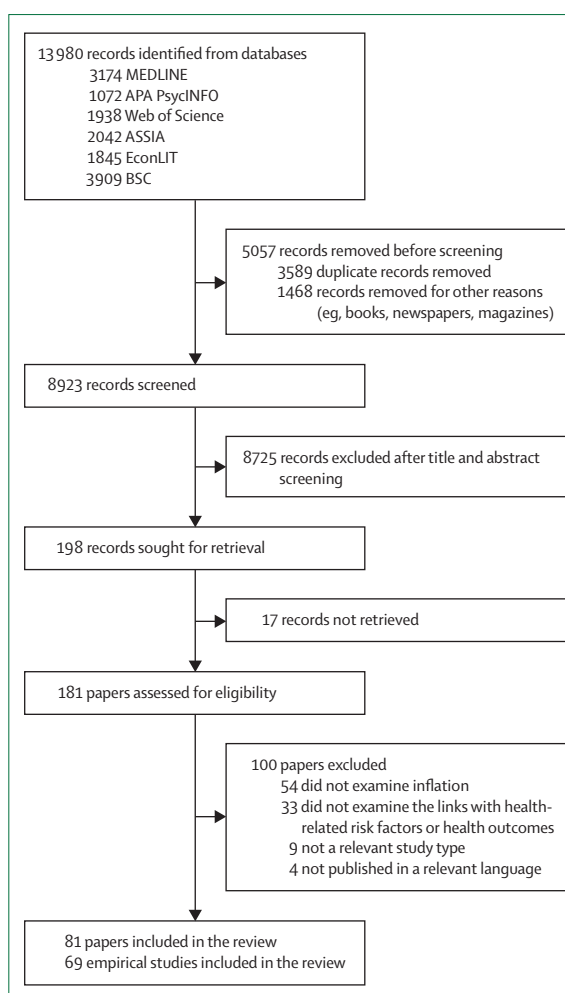
Consistent with scoping review methods, we used tabular and thematic strategies to summarise the extracted data.<sup>7,8</sup> Although some subcategories within each extraction category, such as diet and nutrition under health-related risks, were predefined, we remained open to emergent subcategories. During data charting, we used specific papers as illustrative examples.

## Results

We identified 8923 unique records from database searches. Of these, 198 records were found to be relevant for full-text screening. Despite a concerted effort to obtain all 198 full texts, including contacting authors, we were unable to locate 17. Consequently, we reviewed the full texts of the remaining 181 records. Ultimately, 81 papers, among them 69 empirical studies, met the eligibility criteria and were included in the scoping review. The characteristics of each included study are described in the appendix (pp 6–16).

Reasons for excluding records are presented in figure 2. Records were primarily excluded because they did not examine overall inflation (n=54) or did not examine the relationship of inflation with health-related risk factors or health outcomes (n=33). Other reasons for exclusion included publication type (eg, abstracts and media posts) and use of a language other than those prespecified. A list of 13 records, selected because their exclusion involved rounds of discussions among the authors, is presented in the appendix (p 21).

The bulk of the included papers (n=66) were quantitative empirical studies that primarily used data from national or international databases (eg, World Bank and Eurobarometer survey) to examine the link between inflation and risk factors, health outcomes, or both, often across multiple countries. Broadly, these papers



**Figure 2: Scoping review PRISMA flow diagram**

In the diagram and manuscript text, we use records to refer to search results, papers for those records included in the review, and studies to denote those with an empirical component.

used descriptive analysis (n=13), various regression analyses (n=39), time series (n=7), and other types of statistical analyses (n=7). In contrast, a single study used a qualitative research method, using focus groups and semi-structured interviews to explore the effect of currency devaluation on household dietary changes and nutritional vulnerability in Congo (Brazzaville) and Senegal.<sup>9</sup> We identified two studies using mixed methods. One of these used semi-structured interviews and a multiple attitude decision-making method to assess the influence of macroeconomic factors on social and health inequalities in Iran.<sup>10</sup> The other examined changes in child food practices using quantitative methods in Congo (Brazzaville) and qualitative methods in Senegal.<sup>11</sup> Finally, we categorised 12 papers as so-called perspective papers. These typically featured broad literature reviews and highlighted key data sources, such as surveys, to discuss the relationship between inflation and risk factors, health

Studies (n=69)	
<b>Discipline</b>	
Economics, finance, and marketing	32 (46%)
Environment	3 (4%)
Health	24 (35%)
Interdisciplinary	7 (10%)
Social sciences	3 (4%)
<b>Study method</b>	
Quantitative*	66 (96%)
Descriptive analysis	13 (20%)
Regression analysis	39 (59%)
Time series	7 (11%)
Other statistical analysis	7 (11%)
Qualitative	1 (1%)
Mixed methods	2 (3%)
<b>Income status</b>	
Low income	0
Lower-middle income	11 (16%)
Upper-middle income	12 (17%)
High income	21 (30%)
Mixed	25 (36%)
<b>Geographical area (based on WHO region)</b>	
African region	8 (12%)
Eastern Mediterranean region	5 (7%)
European region	23 (33%)
Multiregional	14 (20%)
Region of the Americas	8 (12%)
South-East Asian region	2 (3%)
Western Pacific region	9 (13%)
<b>Gender considered in the study</b>	
Yes	33 (48%)
No	36 (52%)
<b>Age considered in the study</b>	
Yes	28 (41%)
No	41 (59%)
Data are n (%). *We categorised the methodologies of the included studies into four broad categories, reflecting the diversity and complexity of analytical approaches used: (i) descriptive analysis: involves basic data summarisation techniques, including data tabulation and correlation metrics, to describe data characteristics; (ii) regression analysis: uses various regression techniques (eg, linear, logistic, multivariate, and panel data regression) to investigate relationships between variables; (iii) time series: uses time-ordered data to analyse trends and cycles, incorporating models such as autoregressive distributed lag and vector autoregression, focusing on interactions over time; (iv) other statistical analysis: addresses complex data structures and relationships beyond the scope of traditional models, including non-linear and mixed models, hazard models, and cluster analysis.	
<b>Table: Characteristics of the included empirical studies</b>	

outcomes, or both. Among these perspective papers, one used a systematic review method to identify the principal factors contributing to life expectancy.<sup>12</sup> Although we had originally decided to include and map all types of papers in this scoping review, given the large number of empirical studies identified, we made a post-hoc decision to exclude perspective papers from the analysis stage. However, the characteristics of these

perspective papers are described in the appendix (pp 15–16).

### Characteristics of the included empirical studies

The table provides an overview of the characteristics of the 69 included empirical studies. Additionally, the panel illustrates one selected case. Most studies were published in journals focusing on economics, finance, and marketing (n=32) and health (n=24). Seven studies were found in interdisciplinary journals. Studies published in the fields of environmental (n=3) and social sciences (n=3) were less frequent. Of the included studies, 11 were from low-income and middle-income countries, 12 from upper-middle-income countries, and 21 from high-income countries. 26 of the studies sourced data from many countries with diverse income levels. One study dates back to as early as 1981 (appendix p 22), but the majority became available in the 2000s, with a notable increase in publications from the mid-2000s onward. Finally, 48% of the studies reported data on gender, and 41% factored in age.

Included studies sourced data globally, covering nearly all countries and territories with very few exceptions (appendix p 23). Using established WHO regions, 23 studies sourced data from the European region,<sup>14–36</sup> with 11 of these investigating multiple countries. The region of the Americas was represented in eight studies,<sup>37–44</sup> four of which investigated several Latin American countries. The African region was covered by eight studies,<sup>9,11,45–50</sup> one of which compiled data from 48 countries in sub-Saharan Africa.<sup>48</sup> The Western Pacific region was the focus of nine studies,<sup>51–59</sup> with China being the primary focus in four of these. The Eastern Mediterranean region was represented in five studies,<sup>10,60–63</sup> and the South-East Asia region in just two.<sup>64,65</sup> Finally, 14 studies were multiregional,<sup>13,66–78</sup> covering between two and 127 countries. Of these multiregional studies, two examined countries from the Organisation for Economic Co-operation and Development.<sup>70,77</sup>

Included studies varied widely in the time periods they considered, as shown in figure 3. Collectively, the studies covered an extensive timeframe, ranging from 1800–2022. Only two studies used data from before World War 1. One study examined the long-term relationship between economic growth and life expectancy in Sweden from the 19th to the 20th century.<sup>23</sup> The other explored the economic factors contributing to the decline in mortality rates in Malta during the early 20th century.<sup>29</sup> The majority of the studies concentrated on data from the 1990s to the 2010s. Figure 4 provides the overarching evidence gap map.

Inflation was commonly defined as a general increase in consumer prices and was predominantly quantified using annual changes in the Consumer Price Index. However, two studies used the annual rate of change in the Gross Domestic Product deflator as an alternative metric for tracking the year-to-year changes in general

price levels.<sup>23,66</sup> 13 studies did not specify the methods used to operationalise inflation.<sup>21,30–33,35,36,39,41,45,61,62,71</sup> These studies typically focused on the effect of a broader range of macroeconomic indicators on health and wellbeing, with inflation as one of several variables under consideration. Among the included studies, three specifically investigated the effects of currency devaluation.<sup>9,11,46</sup> Although these studies did not directly address inflation, they were included because inflation is an implicit factor in currency devaluation.

The scope of the studies in our Review varied substantially in terms of the contexts and causes of inflation, a result of our inclusive criteria that encompassed studies from any country and period (for specific study periods and contexts reported in each study, see appendix pp 6–14). Several large-scale macroeconomic events were recurrently cited. These events included the early 1980s external debt crisis in Latin America and the Caribbean,<sup>41,44</sup> the socioeconomic transition in Russia and other post-Soviet states during the 1990s,<sup>14,16</sup> and the global economic crisis of 2008.<sup>22,26,35,36,43,44,51,70,77</sup>

In terms of inflation levels, hyperinflation was rarely the focus in the studies reviewed. Specific cases included Israel's economic struggles following the 1973 war,<sup>25,78</sup> Russia's socioeconomic transition in the 1990s,<sup>14,16,26</sup> Lebanon's chronic war conditions during the 1980s and 1990s,<sup>62</sup> and Argentina's economic struggles starting from the 1980s.<sup>40</sup>

### Effects of inflation on health-related risk factors

We identified a total of 19 studies that examined how inflation might affect health-related risk factors. Nine studies examined the relationship between inflation and diet and nutrition.<sup>9,11,24,26,48,58,62,64,65</sup> Most of these studies focused on economic transitions during the 1990s and early 2000s affecting countries in the African, Eastern Mediterranean, and European regions. Such transitions included: the 50% devaluation of the Communauté Financière Africaine franc in 1994,<sup>9,11</sup> which profoundly affected the economies of the African Financial Community's member countries; the transformation of economies in post-Soviet countries from centrally planned systems to market-oriented economies;<sup>24,26</sup> and conflict conditions in Lebanon.<sup>62</sup> Only one study extended to the 2010s, specifically focusing on India in 2013, a year marked by a record high inflation rate of 7%.<sup>65</sup> Through price increases, inflation was commonly shown to negatively affect diet and nutrition. Specifically, inflation was associated with a reduction in food expenditure,<sup>58,65</sup> the purchase of lower-quality foods, and changes in food preparation and consumption.<sup>9,24,64,65</sup> Such changes included a reduction in the amount of fat and vegetables in meals,<sup>64</sup> the frequent omission of desserts and sometimes of an entire meal,<sup>9</sup> and a reduction in eating out practices.<sup>64,65</sup> Studies suggested that economically disadvantaged households might be more affected by these changes.<sup>9,64</sup>

### Panel: Illustration of an included empirical study

#### Study scope and objectives

The study by Tejada and colleagues<sup>13</sup> examines the effects of economic crises on child health across 127 countries from 1995–2014. Using data from the World Bank and WHO, the study explores the relationship between macroeconomic indicators (gross domestic product per capita, unemployment and inflation rates, and the misery index) and child mortality rates (neonatal, infant, and under-five).

#### Methods

Using a multivariate regression model with the countries' fixed effects, the study assesses how fluctuations in economic indicators influence child mortality rates and investigates the role of public health expenditure as a mitigating factor.

#### Key findings

Economic downturns, characterised by lower gross domestic product per capita, and higher inflation and unemployment rates, correlate with increased child mortality rates. The adverse effects of economic indicators on child mortality are more pronounced in low-income and middle-income countries. Increased public health expenditure can alleviate the negative effects of poor economic indicators on child mortality.

#### Implications

The study underscores the vulnerability of child health to economic fluctuations and the crucial role of sustained public health investments, particularly in economically challenging times. The results highlight the need for policy makers to prioritise public-health funding to shield the most vulnerable populations from the detrimental health effects of economic crises.

As an example, the study by Joshi and Gandotra on Indian urban households coping with rising prices from 1995–96 to 1999–2000 highlights differential impacts on various income groups due to their unique consumption baskets and spending patterns.<sup>64</sup> One of the coping mechanisms used by families included reducing the consumption of specific items like ghee and oil. This was adopted more by low-income and lower middle-income families (88% and 71%, respectively) compared with middle-income and higher middle-income families (55% and 65%, respectively). Studies conducted in sub-Saharan Africa<sup>11,48</sup> and Lebanon<sup>62</sup> further showed that children might be particularly at risk of malnutrition and associated physical growth challenges because of inflation. In Congo (Brazzaville), the use of infant formula based on commercially imported flour decreased and was replaced by local products of inferior nutritional value. However, no changes in breastfeeding practices were observed in either Congo (Brazzaville) or Senegal after the devaluation.<sup>11</sup>

Two studies examined the relationship between inflation and alcohol consumption,<sup>33,34</sup> and one study investigated the relationship between inflation and smoking initiation.<sup>40</sup> Kitchin's research, using ordinary least squares regressions on UK data from 1956–75<sup>33</sup> and extended to 1979,<sup>34</sup> suggests that both upward and downward shifts in inflation could be associated with increased alcohol consumption. However, a study from Argentina spanning 2005–11 and applying discrete-time

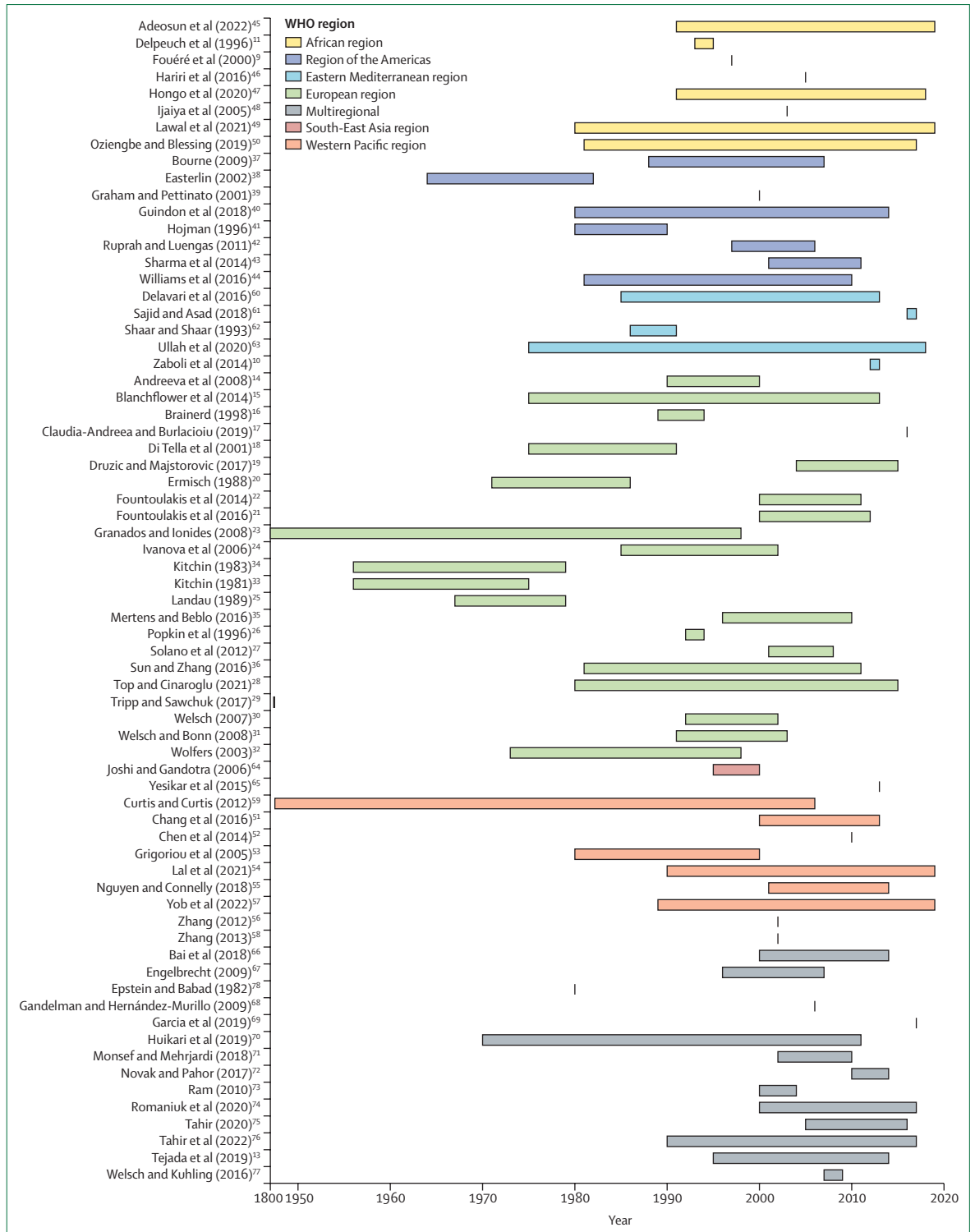
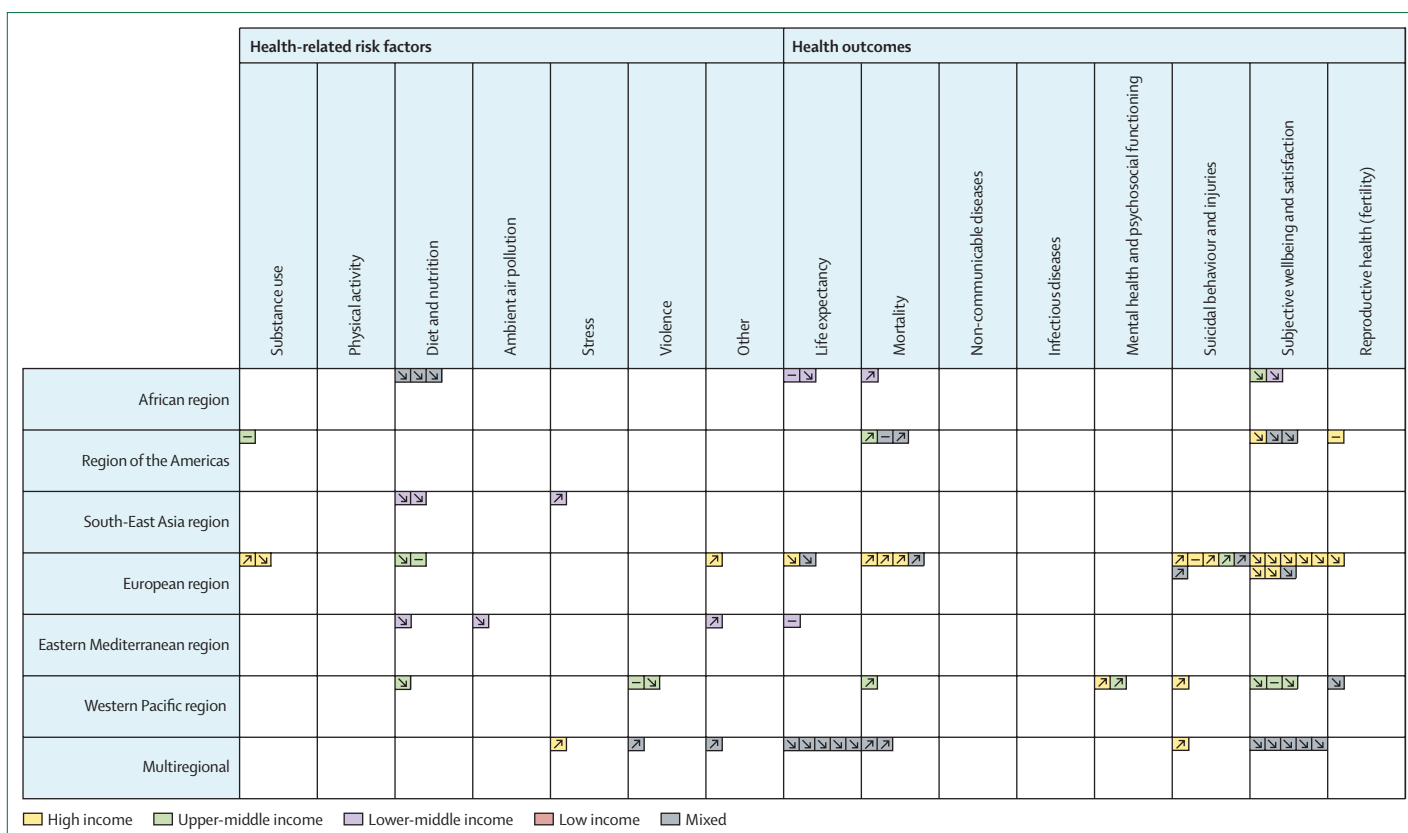


Figure 3: Timeframes covered by the included empirical studies

hazard models to two extensive surveys, showed that although tobacco prices influenced smoking initiation, the smoking onset hazards remained consistent during

periods of hyperinflation.<sup>40</sup> These findings support the notion that prices can lose their informational role during turbulent economic times.



**Figure 4: Evidence gap map**

Symbols used to represent the nature of the relationships explored in the studies, based on direction of effect. Upward-facing diagonal arrow indicates a positive relationship between the variable examined in the study and inflation, suggesting that as inflation increases, the associated health-related risk factor or outcome also increases. Downward-facing diagonal arrow denotes a negative relationship between the variable examined in the study and inflation, suggesting that as inflation increases, the associated health-risk factor or outcome also decreases. - signifies no discernible relationship between the variable examined in the study and inflation. The number of arrows in each box denotes the number of studies where a relationship was measured.

Two studies examined the relationship between inflation and stress, with the results suggesting that inflation could have a negative effect on stress.<sup>64,78</sup> Epstein and Babad used a social psychological perspective to assess the level of stress associated with the perceived threat of inflation as a subjective experience in 1980.<sup>78</sup> In both American and Israeli populations, the level of reported stress was more closely related to perceived threat than to actual income.<sup>78</sup> Additionally, a 2001 survey of 255 families in India indicated that the highest level of mental stress as a result of a general rise in prices was observed in families in the lower-middle income group.<sup>64</sup>

Two studies explored inflation and violence.<sup>57,75</sup> One, using an autoregressive distributed lag (ARDL) approach with data from Malaysia spanning 1989–2019, showed that inflation did not influence rates of child abuse in the short term, but had beneficial long-term effects.<sup>57</sup> These beneficial long-term effects were explained by the government’s increased spending at a time of higher living costs and targeted measures taken to reduce child abuse.

Individual studies also examined other risk factors. Specifically, Ullah and colleagues, using an asymmetric

ARDL approach on Pakistani data from 1975 and 2018, found that unexpected inflation shifts might have different effects on environmental quality: unexpected decreases in inflation could increase emissions of CO<sub>2</sub> and N<sub>2</sub>O, but unexpected increases in inflation might not have a lasting effect on such emissions.<sup>63</sup> Another study, examining Brazil, Russia, India, China, and South Africa between 2000 and 2017, suggested positive correlations, albeit weak, between inflation and immunisation and tuberculosis detection rates.<sup>74</sup> A mixed-methods study, involving qualitative interviews with experts on social determinants of health in Iran, indicated a positive relationship between macroeconomic factors, including inflation, and the broad, non-specified concepts of social determinants of health and health disparities.<sup>10</sup> Finally, one study using Israeli data from 1967–79 explored social solidarity, operationalised through four indicators—solidarity between ethnic groups, solidarity between religious and secular groups, desire to remain in the country, and readiness for economic sacrifices. The study found positive effects of economic stressors, including inflation, on the solidarity indicators in the short term.<sup>25</sup>

### Effects of inflation on health outcomes

We identified a total of 55 studies that examined the relationship between inflation and health outcomes. Of these, ten studies examined the relationship between inflation and life expectancy.<sup>23,28,49,50,60,66,69,71,74,76</sup> Most of these studies spanned time periods from the 1980s through to the 2010s. One study provided an extensive historical perspective by examining data from 1800–1998 in Sweden, offering unique insights into long-term trends in life expectancy and mortality.<sup>23</sup> Sourcing multicountry data from global databases, studies generally indicated an inverse relationship between inflation and life expectancy. One study used the human development index—a summary measure of three indicators, including life expectancy at birth, mean years of schooling, and gross national income per capita.<sup>76</sup> Another study, using data from 65 countries involved in the Belt and Road initiative<sup>79</sup> from 2000–14 and employing a linear quantile mixed model, suggested that the inverse relationship between inflation and life expectancy might only be present in men in countries with the lowest life expectancy.<sup>66</sup>

11 studies examined the relationship between inflation and mortality.<sup>13,16,17,23,29,37,41,44,45,53,74</sup> These studies included measures of overall mortality,<sup>16,17,23,29,37,44,45</sup> as well as maternal, infant, and child mortality.<sup>13,41,44,53,74</sup> Only one study focused on disease-specific mortality, namely tuberculosis mortality.<sup>29</sup> Inflation was commonly associated with increases in mortality rates, particularly in the short term. Temporally, these studies commonly covered the period from the 1980s or 1990s to the late 2010s. However, two studies analysed earlier periods, with one examining the years 1800–1998,<sup>23</sup> and another the years 1911–24.<sup>29</sup>

The geographical scope of the data are diverse, including the African region, region of the Americas, European region, and Western Pacific region. For example, an ecological study analysing Nigerian data from 1991–2019 found a short-term positive relationship between inflation and mortality; however, no long-term relationship was observed.<sup>45</sup> Other studies showed that lower-income countries<sup>13</sup> and male populations might be more affected by inflation, in terms of mortality outcomes.<sup>44</sup> An ecological study sourcing data from 21 Latin American countries between 1981 and 2010 found that inflation was associated with deteriorations in child and adult mortality rates, with the largest deterioration in male adult mortality.<sup>44</sup>

Subjective wellbeing and satisfaction was the most frequently reported outcome, examined in 21 studies.<sup>15,18,19,25,30–32,35,38,39,42,46,47,52,56,58,67,68,72,73,77</sup> Many studies covered multidecade time periods, such as from 1975–2013.<sup>15</sup> The geographical coverage was also broad, with studies commonly aggregating data across multiple countries and sometimes multiple regions, thereby capturing a wide spectrum of economic contexts. Wellbeing and satisfaction was assessed through various scales measuring subjective wellbeing,<sup>15,25,32,46,47,67,72,77</sup> life

satisfaction,<sup>18,30,31,35,68,73</sup> and feelings of happiness within the economics of happiness framework.<sup>15,18,19,38,39,42,52,56,73</sup> To measure subjective wellbeing, some studies adopted specific questions from broader surveys, such as the Eurobarometer survey.<sup>19</sup> Studies commonly showed that inflation had a negative effect on subjective wellbeing. A small number of studies suggested that households with lower incomes could be more adversely affected.<sup>52</sup> Studies did not examine long-term effects.

Seven studies examined suicidal behaviour and its relationship with inflation, indicating a potential positive relationship.<sup>14,21,22,27,36,59,70</sup> These studies often spanned multiple countries and decades, extending up to the early 2010s. The effect of inflation on suicidal behaviour appeared to be more pronounced in some socio-demographic groups, particularly men,<sup>21,22,27</sup> people who were unemployed,<sup>27</sup> and individuals older than 40 years.<sup>36</sup> For example, a study by Solano and colleagues examined how inflation affected suicidal behaviours according to employment status in Italy from 2001–08.<sup>27</sup> The study found a positive association between inflation and attempted suicides, specifically among individuals who were currently unemployed who had been employed previously, though such an association was not observed for those who had died by suicide.

Two studies examined the relationship between inflation and mental health,<sup>51,55</sup> suggesting a negative effect on mental health. Specifically, a nationwide retrospective study conducted in Taiwan from 2000–13 to understand the repercussions of the global economic crisis of 2008, suggested that inflation might exacerbate the risk of postpartum depression.<sup>51</sup> Similarly, a study examining the wellbeing of Australian immigrants from 2001–14 found that inflation in the countries of origin might have a negative influence on the mental health of immigrants; however, this effect appeared to diminish with increasing time since emigration.<sup>55</sup>

Three studies examined reproductive health outcomes.<sup>20,43,54</sup> Two of these studies indicated a potential negative correlation between inflation and fertility rates.<sup>20,54</sup> However, a study examining the rates of vasectomies and vasectomy reversals in the USA from 2001–11 found no discernible link with inflation.<sup>43</sup>

### Discussion

Our scoping review offers a thorough overview of empirical studies examining the relationship between inflation and health across diverse contexts and timeframes. To our knowledge, this is the first effort to comprehensively map the extant literature on this subject, spotlighting its importance in contemporary discourse. Although the included studies covered a broad range of geographical and economic situations, the majority hail from the mid-2000s onwards, emphasising the contemporary relevance of this issue. Our analysis reveals that researchers have investigated a wide array of health outcomes and health-related risk factors in connection



with higher rates of inflation. Most of these studies suggest that inflation has a predominantly negative effect on various health-related risk factors and outcomes. Furthermore, our findings suggest that particular socioeconomic groups might bear a disproportionate burden. For instance, men appear more susceptible to the effects of inflation on suicidal behaviours. This finding aligns with existing literature that indicates men are generally more sensitive to financial adversities or economic and political upheaval.<sup>80</sup> For example, studies from the Great Recession show a pronounced rise in mental health issues among men compared with women.<sup>81,82</sup> Similarly, economically disadvantaged groups and low-income families seem to endure more of inflation's detrimental effects, given their restricted resources to tackle the ensuing economic challenges.<sup>81</sup>

Our scoping review uncovers several gaps in the literature on inflation and health (figure 4), highlighting areas for future investigation. The predominance of quantitative empirical studies, mainly using data from large surveys collected for a different purpose, underscores the absence of qualitative research. This gap signifies a missed opportunity to understand the nuanced, qualitative experiences and personal narratives surrounding the effects of inflation on people's health. Geographically, although almost every country is represented, a substantial proportion of the studies focused on high-income European settings. The regions of the Eastern Mediterranean and South-East Asia are particularly underexplored. This geographical disparity also underscores the necessity for more localised studies that can offer insights into the diverse effects of inflation across different settings and different sociodemographic groups in these settings. The current body of research primarily emerges from the fields of economics and health, indicating a potential oversight of interdisciplinary approaches that could enrich our understanding of inflation's multifaceted effects. Future research could benefit from integrating perspectives from sociology, psychology, and environmental studies, among others, to construct a more holistic view.

Although the existing literature extensively investigates the effects of inflation on various health outcomes and risk factors, some gaps remain. Specifically, a substantial number of studies have centred on subjective wellbeing and satisfaction. Despite these subjective metrics offering insights into how individuals perceive their health, there is a need to expand research into objective health metrics. There is some investigation into mental health and psychosocial functioning, but we found no empirical research on non-communicable and infectious diseases. Furthermore, although some studies differentiate effects based on gender and socioeconomic status, the literature lacks consistent examination of the effects of inflation on various ethnic, racial, and other demographic subsets. Cultural and socioeconomic backgrounds can considerably influence how individuals navigate and

respond to financial stressors.<sup>80</sup> Temporally, the scarcity of empirical studies examining recent global events, such as the COVID-19 pandemic and the Ukraine war, is striking. These events were alluded to in some of the identified perspective papers, but their empirical ramifications remain largely unexplored. However, our search concluded in early 2023, and the research landscape continues to evolve. Illustratively, a later 2023 study we encountered explored the relationship between inflation-induced distress in the USA and potential gender disparities.<sup>80</sup> Similarly, Broadbent and colleagues modelled the effect of the ongoing cost-of-living crisis in the UK, and specifically the energy price spikes on poverty and mental health, under various policy scenarios.<sup>83</sup> Lastly, although the existing literature covers extensive time periods, the necessity for more detailed long-term studies that trace the effects of inflation longitudinally is clear. Such analyses are crucial for tracing the pathways of how inflation affects health over time and for informing policy decisions that can mitigate adverse outcomes.

The key strength of this scoping review lies in its systematic compilation of a diverse array of studies from multiple disciplines, facilitated by a systematic search strategy with a preregistered protocol. However, inherent limitations exist when attempting to systematise such a multifaceted topic. A primary limitation was that only one review author screened and extracted data. Although this process was subsequently verified by a second reviewer and any ambiguities were collaboratively addressed in team meetings, potential oversights cannot be entirely ruled out. Additionally, in the interest of manageability, we conducted searches only in English and excluded grey literature. Although we included studies published in several languages, these were not exhaustive. We also did not conduct supplementary searching, such as citation tracking. These exclusions might have led us to overlook additional insights, especially theoretical perspectives that might predominantly feature in book chapters. Moreover, as this was a scoping review, we did not conduct a quality appraisal of the included studies. Consequently, our portrayal of the general trends and effects should be viewed as illustrative rather than definitive. For a more precise understanding of the effects of inflation on specific health outcomes and related risks, a systematic review encompassing rigorous appraisal and synthesis of evidence would be imperative. A systematic review should also examine the nature of inflation in the included studies in more detail, such as distinguishing between situations with persistently high rates of inflation and situations with transitory episodes of high rates of inflation. Finally, as highlighted in our introduction, inflation can influence health through various pathways. In this Review, our focus remained on health outcomes and immediate health-related risks, without delving into upstream determinants or the implications for health-care services. To create an exhaustive conceptual framework of the relationship between the effects of

inflation on health, these determinants and existing pathways should also be considered. Nonetheless, the breadth of the relevant literature is vast, making a single, all-encompassing review unfeasible.

#### Contributors

ER, AM, and HS generated the review idea. ER, AM, and TW developed the review protocol and all coauthors reviewed and approved it before registration. AB developed and ran the searches. AM, FW, JK, MC, HL, SV, and ER screened the records. AM, FW, HL, and HS extracted the data. AM mapped the data and developed the manuscript draft. All coauthors reviewed the manuscript at least twice before submission.

#### Declaration of interests

We declare no competing interests.

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