

# INRICH/ISSOP Systematic Reviews on the Unequal Impact of COVID-19 on Child Health.

Professor Nick Spencer with co-  
researchers from INRICH &  
ISSOP, INRICH 2021

# Background

- Work programme on impact of COVID 19 on children
- ISSOP/INRICH joint initiative
- 8 thematic research groups – 40+ projects
- 3 systematic reviews focusing on inequity in impact on children

# Three reviews

## 1. **Pandemics, epidemics and inequities in routine childhood vaccination coverage: a rapid review**

Nick Spencer, Rita Nathawad, Emmanuele Arpin, Samantha Johnson

## 2. **Impact of COVID 19 on inequities in routine vaccination coverage: a systematic review.**

Nick Spencer, Rita Nathawad, Emmanuele Arpin, Samantha Johnson, Wolfgang Markham, Geir Gunnlaugsson, Nusrat Homaira, Maria Lucia Mesa, Catalina Jaime

## 3. **Reframing the narrative: A scoping review on socioeconomic differences in deaths of family members due to COVID-19 in Sweden and the UK from a child perspective.**

Georgina Warner, Sahar Nejat, Jamile Marchi, Nick Spencer

# REVIEW 1

Published as a research letter in BMJ Paediatrics Open


# Rapid review

Open access

Original research letter

BMJ  
Paediatrics  
Open

## Pandemics, epidemics and inequities in routine childhood vaccination coverage: a rapid review

Nick Spencer ,<sup>1</sup> Rita Nathawad,<sup>2</sup> Emmanuele Arpin,<sup>3</sup> Samantha Johnson<sup>4</sup>

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### ABSTRACT

Inequity in routine childhood vaccination coverage is well researched. Pandemics disrupt infrastructure and divert health resources from preventive care, including vaccination programmes, leading to increased vaccine preventable morbidity and mortality. COVID-19 control measures have resulted in coverage reductions. We conducted a rapid review of the impact of pandemics on existing inequities in routine vaccination coverage. PICO search framework: Population: children 0–18 years; Intervention/exposure: pandemic/epidemic; Comparison: inequality; Outcome: routine vaccination coverage. The review demonstrates a gap in the literature as none of the 29 papers selected for full-paper review from 1973 abstracts identified from searches met the inclusion criteria.

coverage reduction in the UK has been raised though no reference cited.<sup>2</sup> We conducted a rapid review to synthesise published evidence for the impact of pandemics and epidemics, including COVID-19, on inequities in routine childhood vaccination coverage.

### METHODS

PICO search framework: Population: children aged 0–18 years; Intervention/exposure: pandemic, epidemic, COVID-19, SARS, Middle East respiratory syndrome, H1N1; Comparison: inequality/inequity; Outcome: immunisation, vaccination coverage. Using a search strategy devised by SJ (see Ovid MEDLINE search strategy in [box 1](#)), we conducted searches in Medline, Embase, and

# Rationale

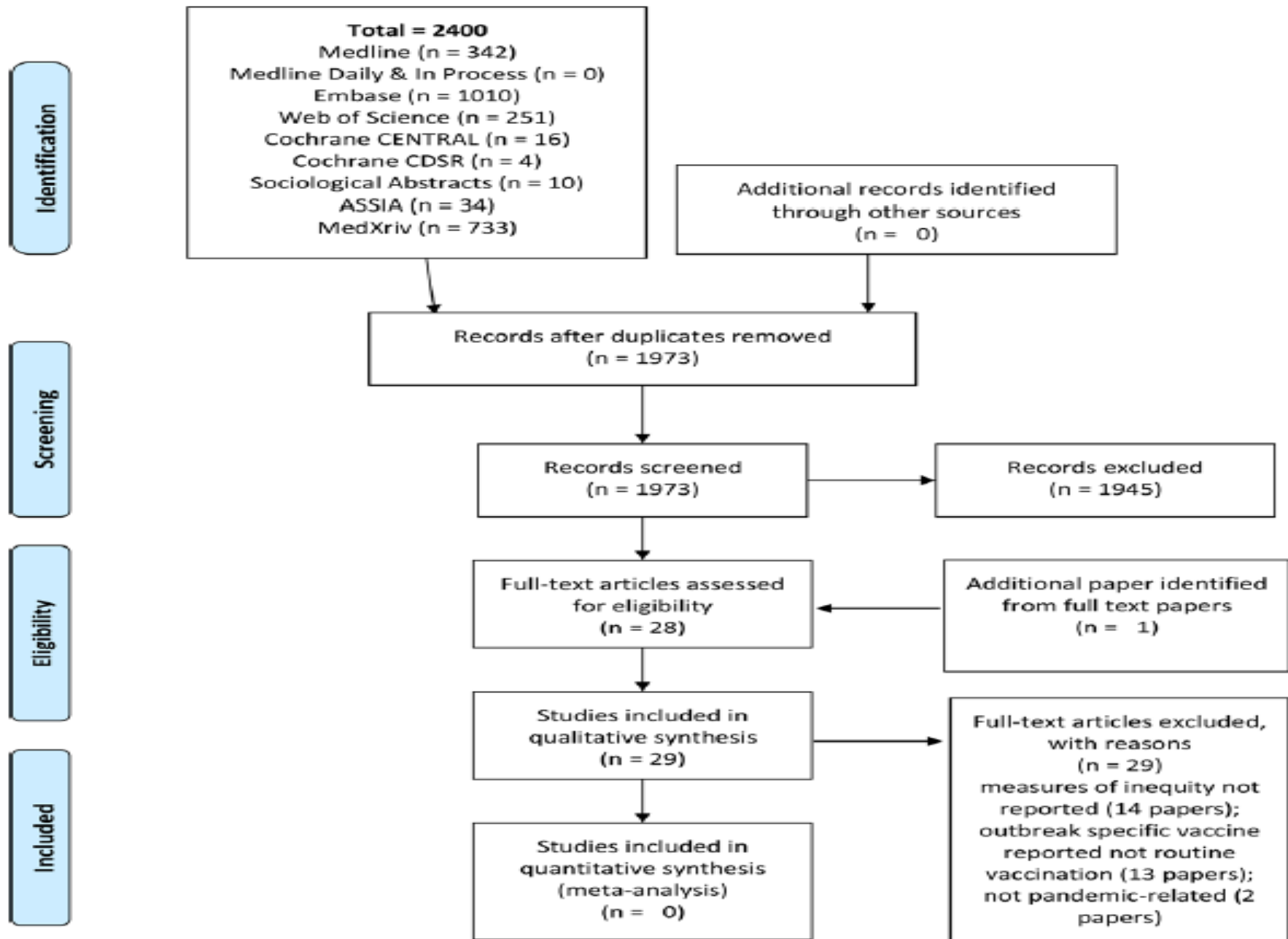
- Inequity in routine vaccination coverage is well documented across in high & low income countries
- We hypothesized that past & present pandemics/epidemics (e.g. H1N1, Ebola & Covid) would exacerbate inequities
- Search back to early 20<sup>th</sup> century & first 5 1/2 months of 2020

# Methods

**PICO search framework:** Population: children aged 0–18 years; Intervention/exposure: pandemic, epidemic, COVID-19, SARS, Middle East respiratory syndrome, H1N1; Comparison: inequality/inequity; Outcome: immunisation, vaccination coverage.

**Search strategy:** we searched Ovid MEDLINE(R); MEDLINE Daily; MEDLINE Epub Ahead of Print and In Process & Other Non-Indexed Citations; Embase; Web of Science; Cochrane Central; Cochrane CDSR; Sociological Abstracts; ASSIA; and MedRxiv. From start dates to June 2020, week 2.

**Inclusion criteria:** papers reporting data on social, regional or gender inequality in reductions in routine childhood vaccination coverage during any pandemic or epidemic



**Figure 1** PRISMA 2009 Flow diagram. From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009).



# Results/Conclusions

All 29 papers for full review excluded: measures of inequity not reported (14 papers); outbreak-specific vaccine reported not routine vaccination (13 papers); and not pandemic related (2 papers).

Our rapid review did not find any publications in the international literature encompassing pandemics and epidemics since 1900 with data on reduction in routine childhood vaccination by equity stratifiers.

We recommend research during the COVID 19 pandemic, using international data and including equity stratifiers, to inform policy so that advances in vaccination coverage equity are not reversed.

# Review 2

In progress

# Rationale

- Subsequent to publication of Review 1 we identified a paper from Pakistan which fulfilled inclusion criteria of rapid review
- Review 2 with focus only on COVID 19 initiated with expanded group of researchers

# Methods

**PICO search framework:** Population: children aged 0–18 years; Intervention/exposure: pandemic, epidemic, COVID-19 (expanded search terms); Comparison: inequality/ inequity; Outcome: immunisation, vaccination coverage

**Search strategy:** same as for Review 1 but only COVID 19 search terms included and from January 2020 to end April 2021

**Inclusion criteria:** papers reporting data on social, regional or gender inequality in reductions in routine childhood vaccination coverage during COVID 19 pandemic

# Screening of abstracts

- Review in progress
- Currently screening citation abstracts
- Papers for full review not yet identified
- Paper from Pakistan – see next slide

# Impact of COVID-19 pandemic response on uptake of routine immunizations in Sindh, Pakistan: An analysis of provincial electronic immunization registry data

Subhash Chandir<sup>a,b,\*</sup>, Danya Arif Siddiqi<sup>a</sup>, Mariam Mehmood<sup>c</sup>, Hamidreza Setayesh<sup>d</sup>, Muhammad Siddique<sup>c</sup>, Amna Mirza<sup>c</sup>, Riswana Soundardjee<sup>d</sup>, Vijay Kumar Dharma<sup>c,e</sup>, Mubarak Taighoon Shah<sup>c</sup>, Sara Abdullah<sup>c</sup>, Mohammed Adil Akhter<sup>c,e</sup>, Anokhi Ali Khan<sup>c</sup>, Aamir Javed Khan<sup>a,b</sup>

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## ABSTRACT

**Background:** COVID-19 pandemic has affected routine immunization globally. Impact will likely be higher in low and middle-income countries with limited healthcare resources and fragile health systems. We quantified the impact, spatial heterogeneity, and determinants for childhood immunizations of 48 million population affected in the Sindh province of Pakistan.

**Methods:** We extracted individual immunization records from real-time provincial Electronic Immunization Registry from September 23, 2019, to July 11, 2020. Comparing baseline (6 months preceding the lockdown) and the COVID-19 lockdown period, we analyzed the impact on daily immunization coverage rate for each antigen by geographical area. We used multivariable logistic regression to explore the predictors associated with immunizations during the lockdown.

**Results:** There was a 52.5% decline in the daily average total number of vaccinations administered during lockdown compared to baseline. The highest decline was seen for Bacille Calmette Guérin (BCG) (40.6% (958/2360) immunization at fixed sites. Around 8438 children/day were missing immunization during the lockdown. Enrollments declined furthest in rural districts, urban sub-districts with large slums, and polio-endemic super high-risk sub-districts. Pentavalent-3 (penta-3) immunization rates were higher in infants born in hospitals (RR: 1.09; 95% CI: 1.04–1.15) and those with mothers having higher education (RR: 1.19–1.50; 95% CI: 1.13–1.65). Likelihood of penta-3 immunization was reduced by 5% for each week of delayed enrollment into the immunization program.

**Conclusion:** One out of every two children in Sindh province has missed their routine vaccinations during the provincial COVID-19 lockdown. The pool of un-immunized children is expanding during lockdown, leaving them susceptible to vaccine-preventable diseases. There is a need for tailored interventions to promote immunization visits and safe service delivery. Higher maternal education, facility-based births, and early enrollment into the immunization program continue to show a positive association with immunization uptake, even during a challenging lockdown.

# Review 3

Full results not reported here due to time constraints & imminent submission for publication

# Background/Rationale

- Case study on inequity in loss of care givers in UK due to COVID
- Professor Anna Sarkardi proposed UK/Sweden comparison
- Research group formed
- To compare inequity in children's experience of loss of family members in UK & Sweden due to COVID



# Methods

- **Initial scoping review** – no papers with empirical data on inequity in children's loss of family members due to COVID
- **Scoping review** – papers with empirical data on social inequity in deaths due to COVID
- **Primary analysis from Stockholm County** - association of proportion of children per municipality in the lowest income quintiles and COVID-19 mortality per 10 000 population.
- **Allowing indirect comparison of inequity in loss of family members among children in two countries with different social policies**

# Results

- 15 papers/reports – 10 UK & 5 Sweden
- Similar social gradients by income, education, area deprivation etc. reported in both countries even after adjustment for ethnicity etc.
- Stockholm: Correlation between %age children in lowest income quintile and COVID deaths/10,000 population

# Conclusions

- Despite long term differences in social policy, children in low SES families in Sweden and the UK have a similar increased likelihood of having lost a family member during the pandemic compared with those in high SES families.
- Likely to have downstream mental and physical health implications for these children and adolescents.
- Equity must be a priority in the design and delivery of strategies to tackle the long-term consequences, and mechanisms to ensure accountability at national and international levels must be developed.

# Importance of Equity lens

- COVID pandemic has exacerbated existing inequities
- Indirect impact on children significant
- Research with an equity lens essential to full understanding of the impact of pandemic on socially disadvantaged children between & within countries

# THANKYOU

ISSOP/INRICH C-19 work programme google drive:

<https://drive.google.com/drive/folders/12jsXjJhCS6aJmme4htzunZ3oSuWCzm9i>