# Polio Eradication in Sudan
# Evidence base

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Word count : 400 words

## Background

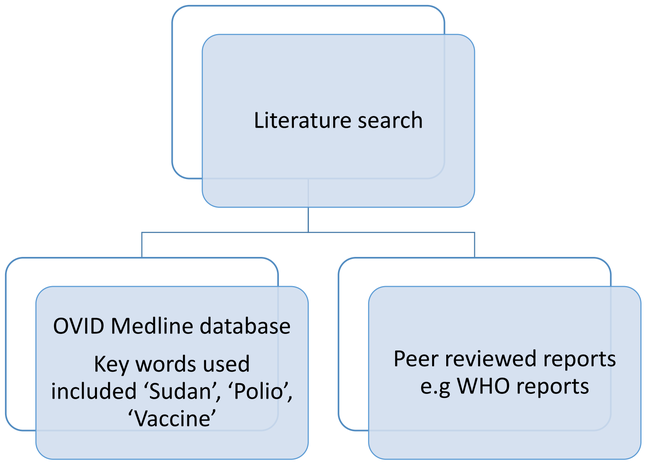
Poliomyelitis a life-threatening infectious disease caused by the poliovirus. It can cause paralysis and mainly affects children.

## Aims

My aims for the literature review were to:

1. Illustrate the role of vaccine in the eradication of polio
2. Identify the strengths and weaknesses of the current eradication method using the polio vaccine in Sudan

## Methods




## Findings

**'Salk' Polio Vaccine field trials (1)**

- Randomized control experiment
- Over 1,800,000 children participated
- Double blinded
- Canada, Finland and the USA

World changing findings are found, where injectable inactivated polio vaccine (IPV) is 99-100% effective when given three doses.

Oral Polio Vaccine (OPV) is then discovered and chosen as the preferred eradication choice by World Health Organization (WHO) (2)

## Strengths

- Cases reduced by **> 99% worldwide** (Graph 1)
- > 18 million cases of paralysis prevented
- 1.5 million childhood deaths prevented (3)

## Weaknesses

68 years since the vaccine discovery, outbreaks are still continuing in Sudan and other developing countries. The efficacy of OPV is much lower than expected in developing countries due to (4)

- Environmental enteropathy
- Breast-feeding and maternal antibodies
- Non-polio enterovirus
- Coinfections
- Diarrhea
- Malnutrition

**Specific challenges for the African continent** (5)(6)

In 2003, vaccine refusal in Nigeria led to :

- Quadrupling of polio cases in the country
- Outbreaks in 39 countries that were previously polio-free

**Research from developing countries**

| Saleem *et al.* (2018) (Pakistan) | Jenkins *et al.* (2010) (Nigeria) |
|---|---|
| Adding IPV to OPV improves immunological response | There is reduced immunity to type 2 circulating vaccine-derived polioviruses |

## Discussion

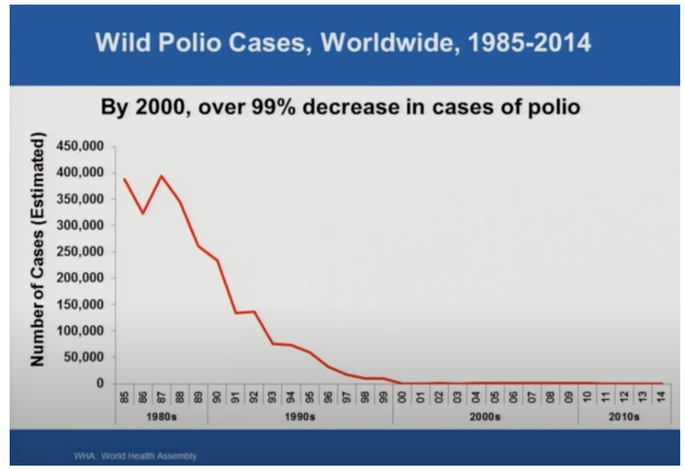
There is limited up-to-date research focusing on Sudan and other low-income countries. However, the evidence that is available is generally strong and published in high impact journals. Moving forward, we cannot continue having a 'once size fits all' eradication plans.

## 2023 Plan for a polio free Sudan

- Sudan recently received type 2 monovalent polio (mOPV2) vaccines
- The eradication initiative will use IPV catch-up campaigns
- A particular focus will be on nomads and other vulnerable groups
- The current plan for Sudan is in line with WHO and findings from previous literature in developing countries

## Final words

Polio continued to be a threat in the developing world. No country is risk free, until we have completely eradicated polio **worldwide.**




Graph 1 : showing a sharp decline of polio cases worldwide between 1985-2014 (7)

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(7) CDC Public Health Ground Rounds https://www.youtube.com/watch?v=LibQP5BNYsM&t=1080s

(8) Image from: https://commons.wikimedia.org/wiki/File:Polio_vaccine_poster.jpg


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