Protocol: Systematic review of immunisation coverage among rural-to-urban migrant children in Low and middle income countries.

Childhood immunisation has been identified as a child survival strategy as well as the most cost-effective and successful public health investment for reducing morbidity and mortality in children. Immunisation is the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine. The vaccines stimulate the body to mount a protective immune response against subsequent infection or disease in the person (1). It is estimated that immunisation averts between 2 and 3 million deaths each year world-wide.

In 1974, less than 5 percent of children under the age of one year were immunised globally, however, currently 83 percent of infants are immunised following the launching of the Expanded Programme on immunisation (EPI) in 1974 (2).

Vaccines for various vaccine-preventable diseases (VPDs) have been recommended for routine use in countries by the World Health Organisation (WHO). These include: tuberculosis (BCG), diphtheria, tetanus, pertussis (DTP vaccine), measles, poliomyelitis and rubella. Vaccines against pneumonia due to Haemophilus influenza type B and streptococcus; and rotavirus diarrhoea are recommended but not used routinely in many low-income countries as a result of the cost (3).

Despite improvements in immunisation coverage, one child still dies every 20 seconds from a VPD(3). In 2011 alone, 1.5 million children under the age of 5 years died from VPDs and a fifth of the world’s children about 22.6 million are still not reached by routine immunisation services. 70 percent of these children live in countries in Asia and Sub-saharan Africa and more than ½ of these children live in 3 countries: India, Indonesia and Nigeria(4).

In this era of increased population mobility and urbanisation, migration has been identified as one of the determinants of low immunisation coverage (5). There has been an increase in rural-urban migration within and across low and middle income countries (LMICs) for various reasons ranging from socioeconomic reasons to forced migration due to conflict, disasters, famine among others. Majority of these migrants living in clusters in urban slums and deprived neighbourhoods. The following factors have been established as contributors to incomplete immunisation uptake: user characteristics such as parental age, level of education, lack of adequate prenatal care use, financial barriers, home delivery, family poverty(6). Others include difficult storage requirements (optimal temperature control for the transport, storage and handling of vaccines) and transportation networks (inadequate cold-chain) (3).

Globally, there have been improvements in vaccine coverage but disparities exist between within populations (4). There is increasing evidence of disparities in access and use of health services between migrant populations and the local residents. These disparities are also observed between recent migrants and long-term migrants. This phenomenon has been partly attributed to poor cultural and social adaptation of migrants to host community norms and livelihood insecurity (6, 7).
According to the World health Organisation, disparities may result from limited resources, competing health priorities, poor management of health systems, inadequate monitoring and supervision (4). As a result of these variations, clusters of under-vaccinated children are found within populations, thereby increasing the vulnerability of the rest of the population to major outbreaks of VPDs (5). For instance, studies in Kenya and Guinea have associated measles outbreaks with recent migration status (8, 9).

The Global Vaccine Action Plan (GVAP) is set to achieve the decade of vaccines which is to deliver universal access to immunisation from 2011 to 2020 (10). However, if this vision is to be achieved, then the factors responsible for these disparities in immunisation coverage in rural to urban migrants living in LMICs must be addressed.

*Migration in the context of this review is rural-urban migration within or between LMICs which is defined as the movement of people from rural areas to urban areas in order to find work or better living conditions.

**Rationale:**

Many socioeconomic, demographic and cultural factors have been identified as determinants of immunisation coverage. There has been increased rural-urban migration in LMICs but the effect of this on child health outcomes such as immunisation is yet to be firmly established. This group of migrants are often found in in unauthorised settlements in urban slums where adequate health services are usually not available. As rural-urban migration cannot be reversed, an understanding of the vaccine coverage in rural-to-urban migrants will inform strategy formulation, resource allocation and targeting of services to ensure adequate immunisation coverage and improved survival of migrant children; and in addition, reduce the disparities in access within and between populations.

**Objective:**

The objective of this systematic review is to examine immunisation coverage in rural-to-urban migrant children.

**Search strategy:**

A systematic search will be undertaken through the following online databases: Pubmed, EMBASE, CINAHL, global health library, global health and grey literature. The search terms to be used will be as follows:

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<th>Population</th>
<th>Exposure</th>
<th>Outcome</th>
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<tbody>
<tr>
<td>Child*</td>
<td>Migrant*</td>
<td>Immunis*</td>
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<tr>
<td>Infant*</td>
<td>Immigrant*</td>
<td>Immuniz*</td>
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<tr>
<td>Schoolchild*</td>
<td>Refugee*</td>
<td>Vaccin*</td>
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<tr>
<td>Boys</td>
<td>Asylum-seeker*</td>
<td>coverage*</td>
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<tr>
<td>Girls</td>
<td>“transients and migrants”</td>
<td>“Immunization programs”</td>
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<td>“emigration and immigration”</td>
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The reference lists of relevant studies will be done to identify any secondary references. The PRISMA guidelines for the presentation of systematic reviews will be followed.

Data collection:

Studies will be screened against inclusion and exclusion criteria. Data from included studies will be extracted from each study using a data collection proforma developed by the authors.

Risk of bias analysis:

A critical appraisal and quality assessment of the included studies will be carried out using a risk of bias tool developed by the authors and based on the Newcastle Ottawa Quality Assessment scale. The tool will use a star allocation system to assess the quality of each study.

Synthesis of results:

Collected data from each study will be analysed by meta-analysis provided the data allows this. If studies are found to be highly heterogenous, a narrative summary of the evidence will be presented. Statistical analyses will be conducted using stata.

REFERENCES.

2. UNICEF. Expanding Immunisation Coverage. 2011.
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<tr>
<th></th>
<th>Inclusion</th>
<th>Exclusion</th>
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| **Participants** | • History of Rural-to-Urban migration within or across low/middle income country (LMIC)  
• Children under the age of 5 years | • Non-migrants (rural and urban), rural-rural migrants  
• Studies in which migrants’ origin is not rural (e.g. urban-rural urban-urban migrants) or is not clear.  
• Studies with no mention of migration status |
| **Outcome**    | • Quantitative coverage of any/all of the WHO recommended routine vaccines under the original Expanded Program on Immunisation (EPI). These are: Bacille Calmette-Guerin (BCG), Diphtheria, Pertussis, Tetanus, Oral Polio and Measles vaccines. As well as other relevant vaccines such as Hepatitis B vaccine that some countries use additionally.  
• Immunisation status assessed using child’s immunisation records or health facility data and parental/care-giver recall | • Quantitative coverage of non-routine EPI vaccines. |
| **Other**      | • Any quantitative study  
• Any publication date  
• Any language  
• Published and unpublished data | • Qualitative studies  
• Policy papers without original data |