

BRIEF COMMUNICATION

POLICY, HEALTH FACILITY AND COMMUNITY IMPLICATIONS OF THE FINDINGS OF THE STUDY OF ILLNESSES IN PRETERM (SIP PROJECT): SUMMARY RECOMMENDATIONS FROM A DISSEMINATION WORKSHOP

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ABSTRACT

The Study of Illness in Preterm (SIP) was designed in 2015 to identify the major causes of morbidity and mortality in preterm babies. Preterm complications are the commonest cause of neonatal mortality. The SIP study investigators in collaboration with Federal Ministry of Health-Ethiopia (FMOH) organized a dissemination workshop during the world prematurity day between Nov 17-18, 2021.

The objective of the SIP dissemination workshop was to conduct a policy dialogue with policy makers and program implementers to support policy and practice changes. Five publications that have immediate policy and practice implications were selected and discussed in a dissemination workshop. These were hypothermia, preterm nutrition, bacterial isolates and antimicrobial resistance (AMR), antenatal corticosteroid utilization and respiratory distress syndrome (RDS).

For each topic, the workshop assessed and documented the magnitude of the burden of disease, operationally feasible recommendations at policy, facility and community levels and potential implementation research ideas that could help facilitate rapid scale up of interventions.

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Introduction

Every year, an estimated 15 million infants are born preterm, and this number will continue to increase unless and until appropriate measures are taken immediately [1]. Preterm birth is the leading cause of under-five mortality, especially neonatal mortality. In 2021, 2.3 million newborn deaths occurred globally, accounting for 47% of all under-five deaths. Just over a third of these infants died because of preterm complications [2]. The World Health Organisation (WHO) estimates that prematurity is the leading cause of under-five mortality with nearly 18 deaths per 1000 live births [3]. In September 2015, the international community has launched a global Sustainable Development Goal (SDG). One of the health targets of the SDG is target 3.2.2, and it is committed to reducing neonatal mortality rate (NMR) to 12 per 1000 livebirths by 2030 [4]. However, the neonatal mortality rate in Ethiopia has not been declining and in fact, the 2019 mini-DHS shows, the NMR standing at 33 per 1000 live births [5].

The Study of Illness in Preterm (SIP) was designed in 2015 in collaboration with the Federal ministry of Health of Ethiopia (FMOH) and other development partners primarily to identify the major causes of death in preterm babies. The SIP study investigators in collaboration with FMOH and development partners organized a dissemination workshop during the world prematurity day between Nov 17-18, 2021. The objective of the SIP study dis-

semination workshop was to conduct a policy dialogue with policy makers and program implementers to support necessary policy and practice changes based on the findings of the study. In consultation with the MCH directorate of the Federal MOH, 5 SIP publications that have immediate policy and practice implications were selected and discussed in the dissemination workshop: Hypothermia, preterm nutrition, bacterial isolates and antimicrobial resistance (AMR), antenatal corticosteroid utilization, respiratory distress syndrome (RDS). Under each of these topics, a small group was formed to discuss the following issues:

- Identify and discuss local experiences in addressing the problem - regional or national.
- Identify barriers to scaling up available interventions, both the demand and supply side bottlenecks.
- Recommend solutions; innovations, tools and technologies that could help scale up interventions that are lagging behind.
- Identify an enabling environment such as policy/ guidelines, financial support etc.
- Provide recommendations to be taken forward such as priority bundles of care and potential implementation research ideas.

The workshop involved regional health bureaus including the maternal and newborn focal persons and implementing partners. The summary of the outputs of the workshop are summarized below for each topic.

Respiratory Distress Syndrome (RDS)

One of the objectives of the SIP project was to determine the major causes of preterm mortality. The prospective multi-centre clinical study documented detailed maternal/obstetric history, clinical observations, x-rays, ultrasound, and microbiological data using standardized protocols without interfering in the routine management of the preterm infants. Primary and contributory causes of death were determined by an independent team of subject matter experts composed of international and national researchers, and professionals. Final diagnosis was made using a composite clinical criterion such as clinical diagnosis by the treating physician and a post-mortem diagnosis based on the complete body diagnostic Autopsy (CGA) and/or Minimally Invasive Tissue Sampling (MITS).

The workshop identified the following major problems:

- Lack of recognition of RDS as a major newborn health problem despite being responsible for 45% of preterm deaths
- Low coverage of interventions targeting prevention and management of RDS

Hypothermia

The SIP study has revealed that the number one underlying cause of death in preterm babies was hypothermia [6]. What was alarming was that hypothermia was documented even in the tertiary hospitals and among all preterm admissions, more than 85% of preterm babies had hypothermia [6]. With decrease in body temperature from less than 35.50 C to <33 OC

at admission, mortality increased with an OR ratio of 1.6 to 7.1 [6].

The workshop has discussed on the following major problems:

High prevalence of hypothermia at all levels of newborn care.

Low coverage of known interventions for thermal control. This is primarily due to poor health care providers behaviour and poor health care seeking behaviour of the communities.

Antenatal corticosteroids (ACS)

The coverage of antenatal steroids in the majority of low- and middle-income countries remain very low as compared to the high-income countries [7]. ACS use has demonstrated a 34% reduction in the incidence of respiratory distress syndrome (RDS), a 46% reduction in intraventricular haemorrhage, and a 31% reduction in neonatal mortality [7, 8]. Trials on administration of ACS use for preterm births in developing countries have shown mixed results. Some results were comparable to those in developed countries [9,10] while other studies did not show a reduction in mortality.

In Ethiopia, the practice is to give 4 doses of antenatal dexamethasone to pregnant women with preterm labour between 24- 34 weeks) [11]. Maternal ACS utilization was assessed among those neonates whose gestational age was below 35 weeks [12]. There was low utilization of antenatal dexamethasone in the 5 tertiary hospitals (37.5%) [12]. The major causes of preterm death were respiratory distress

distress syndrome, sepsis and asphyxia [13].

The workshop identified the following major problems:

- Low coverage at the national and sub-national level
- Most deliveries happening at Primary health care unit (PHC) level
- Lack of clarity on the global standard recommendations and use of ACS

Bacterial isolates, and Antimicrobial Resistance (AMR)

Neonatal sepsis is the third leading cause of neonatal mortality, next to prematurity and birth asphyxia [13]. WHO estimates that one million neonatal deaths per year are due to neonatal sepsis and that 42% of these deaths occur in the 1st week of life. In addition, the survivors of neonatal sepsis are vulnerable to short and long-term neuro-developmental morbidity [14,15].

Neonatal sepsis is a life-threatening condition, and needs immediate empirical antimicrobial therapy to reduce mortality. It is important to choose an antibiotic regimen that covers the most common pathogens. Antimicrobial therapy in most developing countries is mainly empirical due to the relative lack of appropriate laboratory facilities for culture and sensitivity. However, AMR is continuously increasing and therefore challenging the use of empiric antibiotics.

The workshop identified the following major problems:

- Alarming high prevalence of AMR (more than 80% resistance to recommended antibiotics- ampicillin and gentamicin)

[16].

- High prevalence of hospital acquired infections.
- Shortage of recommended second-level antibiotics.

Preterm nutrition

Undernutrition in preterm infants is associated with serious consequences such as increased mortality and long-term neurodevelopmental, metabolic, and growth disorders [17]. Undernutrition largely affects the brain, resulting in poor brain growth and neurodevelopmental delay [18]. Regardless of the degree of prematurity, early postnatal growth (i.e., during hospitalization) has been associated with neurological and cognitive outcomes in infancy and preschool-age [19]. Premature infants are prone to nutrient deficiencies due to inadequate stores, inability to feed adequately, and digest due to immaturity of the digestive system, while optimal nutrition of preterm infants is expected to result in growth similar to that of normally growing foetuses of the same gestational age [20]. The SIP paper explored the nutritional support of preterm infants in the five study hospitals and assessed the association of pattern of feeding and neonatal outcomes [21].

The workshop identified the following major problems:

- High prevalence of extrauterine growth restriction
- Delayed initiation of enteral feeding
- Lack of breast milk fortification guideline

- Lack of parenteral nutrition service for pre-term infants
- Lack of breast milk bank

The workshop made the following operational-ly feasible recommendations based on the study findings as well as results of the discussions in the workshop:

On policy level interventions

- Review and revise current guideline and develop national protocols.
- Initiate integrated refresher training, provide necessary supplies and conduct supportive supervision regularly.
- Policy guidance for task shifting to allow PHCs to initiate ACS.
- Review and revise national guideline on infection prevention and control.
- Strengthen surveillance on AMR at national and sub-national levels sentinel sites.
- Avail the necessary inputs and supplies that are necessary to prevent and manage RDS at all levels including supply of blended oxygen and CPAP equipment.
- Establish breast milk bank at national and regional levels

On facility readiness (actions at the facility level)

- Increase the number of trained staff on management of the 5 problems by providing regular refresher trainings at all levels.
- Identify essential supplies for thermal control and ensure regular availability of dexamethasone, first line and second line antibiotics for sepsis, Infection prevention con-

trols/IPC (water supply, soap, disinfectants etc) and oxygen concentrator, nasal prongs, blended oxygen supply, pulse oximeters, apnoea monitors, Continuous positive airway pressure (CPAP) machines. Ensure regular supply of breast milk fortification, parenteral nutrition supplies, pre-term feeding equipment and supplies etc.

On demand generation (improve health service utilization)

- Provide refresher training to Health Extension Workers (HEWs).
- Awareness creation at the community level on prevention and management of all the 5 problems.
- Improve access to Antenatal Care (ANC) and service for preterm deliveries through task shifting

Potential future implementation research ideas:

- Continuous KMC (immediate KMC followed by community KMC)
- Introduction of new tool and technology for thermal control such as a thermos-watch
- Test for possible task shifting: Initiation of ACS at PHC level (potential for Randomized clinical trials/RCT)
- Feasibility of use of caffeine to prevent preterm apnoea
- Develop and test new screening tool for neonatal sepsis at the hospital level (such as using serial micro-ESR, C-reactive protein, other acute-phase reactants)

- Introduction of non-invasive (aerosolized) surfactant at hospital level
- Evaluate the outcome of preterm infants with RDS managed using CPAP
- The use of growth curve in Neonatal Intensive Care Units (NICU), calculating the percentage of weight loss- would it improve the nutritional support?
- Rapid advancement of breastmilk feeding, higher versus standard volume (Randomized clinical trials/RCT)
- Operational feasibility of breast milk fortification in the Ethiopian context

Cross-cutting interventions for all 5 problems

- Expansion and improvement of infrastructure for newborn care (e.g., proximity of NICU to the delivery room, space versus number of babies, different rooms for different purposes).
- Integrated cluster mentorship program for newborns through vertical integration and network of care
- Develop and design for quality assurance and control programs for newborn health care at all levels.
- Introduce digital technology to improve newborn health outcome.
- Design and develop monitoring learning and evaluation framework for newborn health at all levels.
- Strengthen the communication and referral system for newborn health care.

Conclusion:

The workshop assessed and documented the magnitude of the burden of disease, operation-

ally feasible recommendations at policy, facility and community levels and potential implementation research ideas that could help facilitate rapid scale up of interventions.

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