

MASTER OF PUBLIC HEALTH
JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH
AND IIHMR UNIVERSITY

PRACTICUM REPORT

BY

PARIDHI GUPTA
COHORT-05
2017-2019

Under the guidance of

Dr. Neetu Purohit
Associate Professor
IIHMR University

Dr. Ritu Rana
Assistant Professor
Indian Institute of Public Health Gandhinagar – PHFI

2019

TO WHOMSOEVER IT MAY CONCERN

The Candidate has successfully carried out the study designated to her during practicum training and her approach to the study has been sincere, scientific and analytical.

The Practicum Training is in fulfilment of the course requirements.

I wish her success in all his future endeavors.

Sd-

Dr. Neetu Purohit

Practicum Advisor

CERTIFICATE BY SCHOLAR

This is to certify that the Practicum Project titled '*Feeding interventions for infants under six months who are at risk of growth failure: A systematic review*', submitted by me, Paridhi Gupta with Enrollment No. IIHMR-U/07/2017-2019/0030 with JHU ID AC6E98 under the supervision of Dr. Neetu purohit and Dr. Ritu Rana for award of Master of Public Health degree carried out during the period 3/12/2018 to 31/01/2019 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Dr. Paridhi Gupta

MPH Cohort 2017-19

CERTIFICATE FROM THE ORGANIZATION



INDIAN
INSTITUTE OF
PUBLIC HEALTH
GANDHINAGAR

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Dr. Paridhi Gupta**, student of Master of Public Health Program offered by IIHMR University, Jaipur in cooperation with Johns Hopkins Bloomberg School of Public Health, Baltimore has undergone Practicum Training at **Indian Institute of Public Health Gandhinagar, Public Health Foundation of India** from 3rd December 2018 to 31st January 2019.

She was engaged with a World Health Organization (WHO) commissioned systematic review on feeding interventions for young infants who are at risk of growth failure. The candidate has independently performed a systematic literature search on three electronic databases, followed by screening, data extraction and synthesis. She also contributed to preparation of a manuscript based on the above research work. During this period, her conduct was good.

The above research work was carried out under my direct supervision.

Dr. Ritu Rana

Assistant Professor

Indian Institute of Public Health Gandhinagar

Date: 7.2.19

INDIAN INSTITUTE OF PUBLIC HEALTH - GANDHINAGAR

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THE ORGANIZATION:

Public Health Foundation of India

The Public Health Foundation of India (PHFI) is an autonomously governed public-private initiative registered as a Society under the Societies Registration Act 1860. PHFI is working towards building a healthier India. It is helping to address the limited institutional and systems capacity in India by strengthening education and training, advancing research and technology and facilitating policy and practice in the area of Public Health. PHFI is headquartered in New Delhi with national presence through its constituent units of regional Indian Institutes of Public Health (IIPHS) and Centers of Applied Research in core public health themes. The Foundation, established in 2006 as a public-private initiative, is governed by an independent board comprised of senior government officials, eminent Indian and International academic and leaders, civil society representatives, and corporate leaders.

Indian Institute of Public Health Gandhinagar

Indian Institute of Public Health Gandhinagar (IIPHG) is India's first Public Health University. IIPHG aims to strengthen the overall health system in the country through education, training, research, and advocacy/policy initiatives. IIPHG is recognized as a University under IIPHG Act 2015 of the Government of Gujarat. IIPHG is India's largest Public Health University and is the Hub for excellence in Public Health Teaching, Public Health Innovation, Research, and Practice. The Chairperson of IIPHG is an independent person of high repute, and currently, this position is held by Mr. Sudhir Mankad (IAS), former Chief Secretary of Government of Gujarat. The institute is headed under the directorship of Prof. Dileep Mavalankar, a renowned Academician and Researcher trained in India and United States of America and working in the field of public health since last three decades.

PROJECT BRIEF:

A systematic review to identify feeding interventions for infants under six months who are at risk of growth failure. Through this review, we aim to inform research priorities to prevent and manage growth failure among infants under six months.

This project was commissioned by WHO and was a collaborative project between IIPHG, India; Emergency Nutrition Network, UK; and London School of Hygiene & Tropical Medicine, UK.

ROLE:**Role Title:**

Research Assistant

Responsibilities:

- Developed search strategy
- Developed inclusion/exclusion criteria
- Conducted search on 3 electronic databases
- Screened articles (title and abstract; full-text)
- Data extraction and synthesis
- Manuscript writing as per PRISMA statement
- Field data collection, analysis and report writing

Duration of Practicum:

3/12/2018 – 31/01/2019 (60 Days)

Hours of Practicum:

380 Hrs

Faculty Advisor:

Dr. Neetu Purohit

Preceptor:

Dr. Ritu Rana (Assistant Professor, IIPHG - PHFI)

LEARNING OUTCOMES:

1. Analytical/Assessment Skills:

- Defined Public Health Problem- Interventions to prevent growth failure among infants under six months.
- Able to do a systematic review to identify feeding interventions which included the following process:
 - a. Identification- all the information was collected through various electronic databases such as PubMed, CINAHL Plus and Cochrane
 - b. Screening- Title and Abstract, Full-text
 - c. Eligibility- Using pre-defined inclusion / exclusion criteria
 - d. Data extraction and Synthesis- Narrative synthesisWith the help of Eppi Reviewer Software

2. Policy Development Skills:

- Able to publish the findings of this review in peer-reviewed journal using PRISMA guidelines.
- Findings were presented at **WHO Technical Consultation- Research Priorities to Prevent, Identify and Manage Young Infants with Growth Failure in the First Six Months of Life** on 28-29 January 2019, Geneva, Switzerland.

3. Communication Skills:

- Utilized learned skills to communicate effectively with the stakeholders associated with the project.
- Developed a brief for media in layman's term and a policy brief which was scientific.

This project concerns the identification of at-risk mothers and infants with an interest in nutrition vulnerability. Therefore, one of my major responsibilities was to identify relevant and valuable nutritional interventions for at-risk infants who are less than six months. It included feeding interventions with a focus on restoring or improving the volume and quality of breastmilk and breastfeeding. The assessment of these interventions was based on feeding practices, anthropometric measurements, morbidity, and mortality status.

Fundamentally through this research, we contributed to the World Health Organization technical consultation on research priorities to prevent and manage growth failure among infants under six months.

My priorities were to complete the assigned task within the project timeline; to ensure the authenticity of the information during the review stage which means disseminating the intervention details with valid referencing; and also, to make it error-free. Once it was prepared, I forwarded it to the supervisor after whose approval, started to prepare the final output. This initiative aims to generate awareness during the crucial period of life which can have a direct impact on a child's physical as well as mental ability to grow and learn.

During field visits, I had visited sub-centers and worked with the field team to complete the field level activities and data collection. The data collection was done using a pre-tested and validated questionnaire. The information was collected with the interview

method. The exposure provided me with a great learning experience in the public health environment.

BACKGROUND:

With the introduction of the World Health Organization (WHO) child growth standards, early growth faltering was identified as a much greater problem than previously believed [1]. Subsequently, based on new standards, an analysis of child growth data from 21 developing countries revealed, an estimated 8.5 million infants aged under six months (<6m) suffer from acute malnutrition [2].

Infants <6m are not simply younger-children; the six months represents a period of rapid maturation [3]. These infants have unique dietary needs, as they are solely dependent on breastfeeding or a breastmilk substitute for non-breastfed infants. The mother or maternal substitute, therefore, plays a critical role in fulfilling the nutritional requirements [4]. Unmet nutritional requirements can have serious implications for normal growth and survival. The short-term implications include a higher risk of morbidity and mortality, while long-term effects have implications for later health and well-being including the risk of non-communicable diseases [3].

The WHO global strategy for infants <6m focuses on early initiation of breastfeeding and exclusive breastfeeding [5]. However, only 37% of infants <6m are exclusively breastfed in developing countries [6]. Moreover, it is assumed that a significant number of infants <6m might face challenges in breastfeeding. Globally, an estimated 15-20% of all births are low birth-weight (LBW) [7]. Regarding feeding practices, these infants are often not breastfed and many times not fed at all during the initial hours and days of life [8].

Risk factors for growth failure include both infant and maternal factors. In addition to LBW, sub-optimal feeding practices, congenital abnormalities, and underlying morbidities are common risk factors, while maternal physical and mental conditions are increasingly recognized as other potential causes [9].

Many early-life interventions to improve growth among young infants have been tested, these ranges from cup feeding or spoon-feeding to the fortification of either human/donor breastmilk or formula [10-16]. However, currently, there is insufficient data to develop recommendations [13-15, 17-19]. Although, in 2011 and 2013, WHO published recommendations on the feeding of LBW infants and management of severe acute malnutrition among infants <6m respectively, but these recommendations are based on a limited and low or very low quality of evidence [8, 20].

Given the importance of early infant feeding practices on morbidity and mortality, and long-term health and well-being, generating high-quality evidence is essential to inform prevention and management of growth failure among young infants.

Through this review, we aim to inform research priorities to prevent and manage growth failure among infants <6m. The objectives include- 1) to identify and describe feeding interventions with a focus on restoring or improving the volume and quality of breastmilk and breastfeeding when breastfeeding practices are sub-optimal or prematurely stopped, and 2) to assess the impact of these interventions on feeding practices, anthropometry, morbidity, and mortality status.

METHODS:

Developed and followed a standard systematic review protocol in accordance with the PRISMA statement.

Eligibility criteria:

Population: Infants under six months of age who are at risk of growth failure such as-LBW, weight loss and feeding difficulties.

Intervention: Studies were eligible if they focused on feeding interventions that aimed at restoring or improving the quality and volume of breastmilk, and optimising breastfeeding when breastfeeding practices are sub-optimal or prematurely stopped.

Outcome: Studies reporting on at least one of the following outcomes- feeding practices, anthropometry, morbidity or mortality were included.

Study Design: Studies that included randomized control trials, quasi-experimental, cohort, cross-sectional and other comparative observational studies.

Search Strategy: Search process was conducted in three databases- PubMed, CINAHL Plus and Cochrane Library with following search strategy; for PubMed-((((((((Infant) OR ((newborn OR newborns OR neonate OR neonates))) OR ((low birth weight OR low birthweight OR low- birth-weight OR LBW))) OR ((small for gestational age OR small-for-gestational-age OR SGA))) OR ((premature OR pre-mature OR preterm OR pre-term))) OR ((severe acute malnutrition OR malnutrition OR SAM OR wasting OR wasted))) OR ((foetal growth retardation OR foetal growth restriction OR fetal growth restriction OR fetal growth retardation OR intrauterine growth restriction OR intrauterine growth retardation OR IUGR))) OR ((failure to thrive OR FTT))) OR (((growth failure OR growth faltering)))) AND (((((((((((human milk OR breast milk OR breastmilk))) OR infant formula) OR establishing breastfeeding) OR supplement* suck*) OR spoon fe*) OR cup fe*) OR bottle feeding) OR breast milk substitute) OR breast milk fortifier) OR infant feeding practices) OR early weaning) OR relact*) OR

complementary food) OR supplementary food) and similar keywords were used with other selected databases.

Limiters: Studies published in the English language from 1st Jan 1990 to 12th December 2018 and focusing on human species.

Study Selection: All identified records were imported in Eppi Reviewer software (version V.4.8.0.0, EPPI-Centre, UCL Institute of Education, University of London, UK). Studies were screened based on titles and abstract, and full text.

Data Extraction: Independently extracted data using standard data extraction codes developed for this study. Extraction of data was based on- population (including sample size, details of setting, country, and breastfeeding potential), intervention (description), comparison, outcome (description, type of measurement, effect size and strength of evidence) and study design.

Analysis: Since the review examines a range of interventions and outcomes, the analyses were presented as a narrative synthesis. However, where the authors had given the magnitude of effect and strength of evidence, it is presented in the results table.

RESULTS:

The search identified 16,638 records. After duplicate removal, 177 records were eligible for full-text review. Among them 130 did not meet the inclusion criteria. Finally, 47 studies were included in the analysis.

General Characteristics of the Included studies: Most of the studies (n=35) were from High-Income Countries. Majority of the studies were randomized control trials (80%) and sample size of studies ranged from 20-642. Regarding population focus, the majority included preterm with LBW/VLBW/ELBW (n=41), while a few included

mothers of preterm (n=3) and infants with faltering growth (n=2). Interventions identified were categorized into the following groups-

formula fortification/supplementation (n=31), enteral feeds (n=8), cup feeding (n=2) and other interventions (n=6). Similarly, identified outcomes were categorized as- anthropometry (n=40), feeding (n=16), morbidity (n=11) and mortality (n=5).

CHALLENGES FACED:

Before starting my practicum, I was trying to fit in, to the new work culture. It was like starting to build a good relationship with my supervisor based on trust, dependability, bonding with other team members, doing new duties and responsibilities as public health nutrition was a new area for me. However, I realized that I can learn a lot from this place, I took my work seriously and did it with full dedication.

LEARNING EXPERIENCE:

Being associated with this project allowed me to grow and undertake the practical applications of public health learned during the course. Working with other stakeholders from different backgrounds gave me the opportunity to learn and contribute to public health research and child nutrition. This project has helped me in developing skills in data collection, analyzing and presenting data, and developing the report. The early career experience would add on in enhancing my knowledge with respect to public health nutrition in particular and public health in large.

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