

# IFMSA Policy Document

## Pregnancy and Infant Health

**Proposed by the IFMSA Team of Officials**

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### **Policy Commission**

- Yahan Xu (Liaison Officer for SRHR Issues, including HIV and AIDS, [lra@ifmsa.org](mailto:lra@ifmsa.org))
- Ziad Nasser Mohamed Gamal (IFMSA-Egypt)
- Nouran Waleed (IFMSA-Egypt)

### **Policy Small Working Group**

- Saneeka Vaidya (MSAI India)
- Zeina Chehade (LeMSIC-Lebanon)
- Shivani Nirgudkar (MSAI India)
- Natalia Zofia Kuchenbeker (IFMSA-Poland)
- Sekar Putri Andriani (CIMSA-Indonesia)
- Abdourraouf Yougouda (CAMSA Cameroon)

## Policy Statement

### Introduction

Pregnancy and Infant Health undoubtedly are pivotal areas of health, forming the backbone for short, medium and long-term health outcomes at a societal level. Any deficiencies in these key areas have large implications on life-expectancy, mortality and morbidity of entire populations, and as a result this is an area of utmost priority. Despite the advancements in perinatal and infant care made, outcomes are not uniform globally. Areas of disadvantage experience disproportionately worse outcomes, and thus the issue facing many today is not the need for advancements in perinatal and infant care, but the need to universally increase access, education and provision of these services.

### IFMSA Position

The International Federation of Medical Students' Association (IFMSA) affirms the role a healthy pregnancy and infant period play during the development of all people physically, mentally, and socially. The IFMSA emphasises on the importance of funding and building adequate prenatal, antenatal, and postnatal services and infrastructures, including prenatal, antenatal, and postnatal care units, screening programs, and immunisation programs. The IFMSA recognizes the significant risk of a lack of resources provided from the people who are pregnant and the infant(s), including severe complications, and the need for increased funding under special circumstances, such as public health emergencies, and for under-privileged populations. The IFMSA emphasises the necessity for tailored education regarding healthy pregnancy and infant care in clients' self-care and medical education.

### Call to Action

Therefore, the IFMSA calls on:

#### Governments to:

- Adopt and adapt WHO recommendations for prenatal, intranatal, and postnatal care such as EWEC Global Strategy and UHC 2030
- Improve data and accountability to achieve maternal and newborn health goals and ensure that all policies, plans, data, budgets, and audits related to the implementation of maternal and newborn health strategies are publicly available, transparent, and accessible to non-technical audiences
- Allocate budget and resources to enhance and expand healthcare infrastructure specifically dedicated to maternal and child health
- Enforce and regularly review maternity and paternity leave policies to ensure that pregnant individuals have adequate time for prenatal care, childbirth, and postnatal recovery. Promote policies that facilitate a supportive and healthy work environment during and after pregnancy and reduce cost for day-care.
- Empower individuals to make informed decisions about family size and spacing.

#### UN Entities and Other Non-Governmental Organisations to:

- Strive to establish and maintain humanitarian access, ensuring safe and consistent access for all affected populations.
- Enhance the capacity of all actors in primary health care to apply humanitarian principles, especially in complex and high-threat environments. This includes building capacity in civil-military coordination, access negotiations, and humanitarian advocacy.
- Work collaboratively with the government and NGOs from other sectors to promote healthcare initiatives.
- Engage communities through informative programs emphasising the importance of prenatal care, safe childbirth practices, and postnatal support for both mothers and infants.

**Healthcare industry (including suppliers) and healthcare providers to:**

- Debunk myths and prevent harmful cultural practices in clinical practice.
- Advocate for breastfeeding initiation within the first hour of birth, encouraging latching and skin-to-skin contact after C-sections, in the operating theatre under sterile conditions.
- Promote effective breastfeeding amongst parents who are both able and willing to, while providing other parents, including adaptive or non-lactating ones, aware of various available options as an alternative to breastfeeding.
- Commit to evidence-based practice, and stay updated with the latest research, guidelines, and recommendations in the field of pregnancy and infant health.
- Provide ongoing training and support for healthcare providers on lactation support techniques, including assisting with latching and addressing common breastfeeding challenges.
- Offer lactation counselling and support services for expectant and new parents, including information on breastfeeding techniques, breast pump rentals, and access to lactation consultants.

**Medical schools and training institutions to:**

- Assess educational gaps on pregnancy and infant health to formulate comprehensive, multi-disciplinary, and culturally-sensitive content.
- Provide evidence-based training, and clinical exposure to professors and doctors on topics related to Pregnancy and Infant Health
- Increase focused research on innovative, safe, affordable, and comprehensive health care.
- Develop safe, sustainable methods of infant nutrition and care, especially in emergency situations and resource-limited settings.
- Incorporate cultural competency training into medical school curricula to ensure that future healthcare professionals are prepared to work with diverse patient populations.
- Collaborate with government agencies, non-profit organisations, and industry partners to prioritise research funding for projects aimed at improving maternal and infant health outcomes.

**Medical students to:**

- Create and contribute to innovative, evidence-based initiatives focused on increasing awareness, disseminating information, and educating the public on health programs, policies, and the importance of pregnancy and infant health.
- Utilise current practices within IFMSA to monitor and evaluate the impacts of their interventions on matters related to pregnancy and infant health in international, regional, and national policy and programmes by the Member states;
- Actively engage and collaborate with relevant stakeholders to collectively address matters related to raising awareness and reinforcing evidence-based practices in the field of pregnancy and infant health.

## Position Paper

### Background Information

Pregnancy and infant health form the cornerstone of a society's well-being and future. The current global care situation reflects a dynamic landscape characterised by both progress and persistent challenges. Over recent decades, there has been a notable reduction in maternal mortality rates, signalling advancements in maternal care worldwide. The transition from nearly 500,000 maternal deaths annually in the 1980s to the 2020 estimate of 287,000 demonstrates a positive trend, particularly in regions such as central and south Asia and Australia and New Zealand. (1-4)

However, this encouraging trajectory is not uniform across all regions. Sub-Saharan Africa, Oceania (excluding Australia and New Zealand), east and southeast Asia, and north Africa have experienced stagnation in maternal mortality rates. Furthermore, alarming increases in maternal mortality have been reported in Europe, North America, Latin America, and the Caribbean since 2016. The preventable loss of nearly 3 million women's lives from 2010 to 2020 underscores the urgency of addressing health inequities globally. (1-4)

Since the global landscape depicts a complex tapestry influenced by diverse cultural, social, and economic factors- focusing on biomedical causes alone has contributed to prolonged stagnation in maternal mortality transition stages for numerous countries. The challenges extend beyond maternal health, affecting newborns and infants as well. Over the course of this transformative trajectory in maternal health, it is crucial to acknowledge and address the impact of harmful traditional practices, which, regrettably, persist in certain regions. Despite the overall positive trend, harmful practices such as female genital mutilation (FGM), early and forced marriages, and restrictive cultural norms still pose significant threats to infant health. These practices, deeply rooted in cultural traditions, contribute to adverse outcomes, jeopardising both maternal and infant well-being. This underscores the holistic nature of maternal and infant health, wherein cultural norms and practices must align with the goal of achieving optimal outcomes for both mothers and their infants. (1-4)

### Discussion

#### 1. UHC coverage for antenatal, postnatal, and postpartum care

**Universal Health Coverage (UHC)** is a global initiative aligned with the UHC 2030 Action Agenda, aiming to ensure that all individuals and communities have access to necessary health services without encountering financial difficulties (1). It is a key component of the Sustainable Development Goals set for 2030, focusing on safeguarding population health. Within the framework of UHC, comprehensive maternal care, covering antenatal, postnatal, and postpartum services, is a central aspect that does not only serve to decrease maternal mortality, but also to improve other maternal health indicators like maternal morbidity and neonatal health (5(1)).

#### Maternal Care under UHC

**Antenatal Care (ANC):** UHC advocates for unhindered access to quality antenatal care for all pregnant people, encompassing regular check-ups, screenings, and interventions to monitor and enhance the health of both the parent and the developing foetus (6).

**Postnatal Care (PNC):** UHC includes postnatal care services, ensuring that the pregnant person receives appropriate healthcare in the weeks following childbirth. This involves monitoring their recovery, addressing postpartum complications, and offering support and education on newborn care (6).

**Postpartum Care:** UHC extends postpartum care beyond the immediate weeks after childbirth, providing ongoing support for parents in their transition to parenthood. This includes addressing physical and mental health concerns, offering family planning services, and supporting breastfeeding (6).

### **Key Elements of UHC Coverage for Maternal Care**

UHC aims to eliminate financial barriers, making antenatal, postnatal, and postpartum care affordable for everyone, preventing significant out-of-pocket expenses (6).

- **Geographical Accessibility:** UHC addresses the geographical accessibility of healthcare services, ensuring that even those in remote or rural areas can access maternal health services without undue difficulty (5).
- **Quality of Care:** UHC emphasises high-quality healthcare services, maintaining standards for safety, effectiveness, and patient-centred care (5).
- **Equity and Non-Discrimination:** UHC strives for equity, ensuring equal access to maternal health services regardless of socioeconomic status, gender, or other factors, actively addressing discrimination in care provision (5).

**Implementation and Global Commitments:** Implementation and effectiveness of UHC can vary by country, relying on policies, infrastructure, and available resources (2). Governments and health authorities play a crucial role in designing and implementing policies that promote comprehensive maternal care within the UHC framework (2).

Under the framework of UHC, efforts must align with global initiatives for Women's, Children's, and Adolescents' Health, committing to reducing maternal and child mortality. Access to quality healthcare services for women and children throughout the entire reproductive cycle is crucial (3). Sustainable financing mechanisms, including traditional and innovative approaches, are vital, leveraging entities such as GAVI and the Global Financing Facility for Women, Children, and Adolescents (3).

Evidence-based training for healthcare workers, emphasising the needs of women, children, and persons with disabilities, is paramount (3). This involves skills enhancement, education for health workers, including midwives and community health workers, and promoting lifelong learning (3). Gender considerations are integral, aiming to increase meaningful representation, engagement, and empowerment of women in the health sector (3).

**Holistic Approach and Multisectoral Factors:** Universal access to sexual and reproductive health-care services, integrated into national strategies, aligns with international agreements. This holistic approach emphasises addressing the unique health needs of women, children, and adolescents within the broader context of UHC and global health goals (8).

Multisectoral factors significantly impact health across the life course, necessitating coordination across various sectors to achieve the objectives of the "Survive, Thrive, and Transform" goals outlined in the EWEC Global Strategy. Progress against specific SDGs reveals ongoing challenges in poverty reduction, nutrition, education, and environmental health (8).

**Strategic Priorities:** Strategic priorities include adopting multisectoral approaches in health and social policies, improving food systems, addressing environmental determinants, promoting girls' education, and providing comprehensive sexual and reproductive health services. These priorities underscore the importance of global partnerships and multisectoral action in realising the 2030 Agenda, particularly in the context of women's, children's, and adolescents' health (8).

## 2. Legal Framework and Support

The legal framework and support for pregnancy and infant health vary significantly across different countries and regions. The following discussion provides a general overview of both negative and positive aspects, with a focus on discriminatory practices and supportive measures like maternal leaves.

### Global Overview:

#### Negatives: Discriminatory Practices

1. **Pregnancy Discrimination:** Instances of workplace discrimination against pregnant individuals persist globally. This discrimination can manifest in various forms, including demotions, dismissals, and negative treatment, adversely impacting both employment opportunities and overall well-being (4–8)8-12)
2. **Lack of Accommodations:** In many regions, some workplaces do not provide adequate accommodations for pregnant people. This may include a lack of flexible work schedules, adjusted job duties, or other necessary adaptations to ensure a safe and supportive working environment during pregnancy (4–8).
3. **Healthcare Disparities:** Disparities in access to quality prenatal care and maternal healthcare are prevalent worldwide. These disparities contribute to varying maternal and infant health outcomes, with some individuals facing challenges in receiving essential healthcare services (4–8).
4. **Societal Stigma:** Societal attitudes towards pregnancy and motherhood can contribute to stigmatisation. Negative perceptions and stereotypes may impact the mental health and well-being of pregnant individuals, creating additional challenges during this period (4–8).

#### Positives: Supportive Measures

1. **Maternal Leaves:** Many countries have implemented maternity leave policies, allowing pregnant individuals to take time off work with job protection. In some regions, there are provisions for paid maternity leave, providing financial support during the postpartum period (4–8).
2. **Paternity and Parental Leaves:** Progressive policies are encouraging fathers and partners to play an active role in childcare. Paternity and parental leave policies aim to promote gender equity in caregiving responsibilities, fostering a more balanced approach to parenting (4–8).
3. **Healthcare Protections:** Legal frameworks often include provisions to protect pregnant individuals from discrimination in the workplace. Employers may be required to provide a safe and supportive work environment, ensuring that pregnant employees have access to necessary healthcare without facing negative consequences (4–8).
4. **Breastfeeding Support:** Laws in certain regions protect breastfeeding mothers' rights. These laws allow parents to breastfeed in public spaces without discrimination and may require employers to provide facilities for expressing milk in workplaces, promoting a supportive environment for breastfeeding (4–8).
5. **Anti-Discrimination Laws:** Legal protections against pregnancy-related discrimination exist in many places. These laws prohibit adverse actions in the workplace based on pregnancy status, offering a level of security and fairness to pregnant employees (4–8).
6. **Family Support Services:** Comprehensive legal frameworks may encompass various support services. These services can include counselling, parenting classes, and childcare

assistance, aiming to help families navigate the challenges associated with pregnancy, childbirth, and early parenthood (4–8).

### Examples of Regional Perspectives:

#### North America (9):

1. United States: Paid maternity leave is limited, and workplace discrimination remains a concern. Efforts are ongoing to address workplace discrimination and improve family support policies.
2. Canada: Generous parental leave policies promote a more equitable division of caregiving responsibilities. Efforts are ongoing to improve income support during parental leave.

#### Europe (10):

1. Sweden: Sweden emphasises gender equity in parental leave policies. Workplace discrimination is actively addressed, and there is strong support for work-life balance.
2. Germany: Germany provides extensive maternal leave and protections against workplace discrimination. Various family support services contribute to the well-being of pregnant individuals and infants.
3. Poland: Discussions are ongoing about improving family support policies and addressing workplace discrimination.

#### Asia (10):

1. Japan: Efforts are made to improve work-life balance and address workplace discrimination. Traditional societal expectations pose challenges for pregnant individuals.
2. Singapore: Work-life balance is a growing focus, with efforts to support families better.
3. Kazakhstan: Efforts are being made to address healthcare disparities and promote gender equity in the workplace.

#### Oceania (10):

1. Australia: Legal protections against pregnancy discrimination exist. There is growing awareness of the need for improved family support policies.

#### Africa (10):

1. South Africa: Efforts are ongoing to address healthcare disparities and improve maternal and infant health outcomes.

#### Middle East (10):

1. United Arab Emirates: The UAE is making strides in women's rights and family-friendly workplace policies.

#### Latin America (9):

1. Brazil: Maternity leave is relatively short, and discrimination against pregnant individuals is a concern. Advocacy for improved family support policies is gaining traction.
2. Mexico: Challenges exist in accessing quality healthcare, and workplace discrimination is a concern. Efforts are made to address healthcare disparities and workplace discrimination.

### 3. Maternal and Newborn Health in Emergency and Humanitarian Settings

**Maternal health:** According to WHO, Maternal health refers to the health of women during pregnancy, childbirth and the postnatal period. (11)

**Newborn:** A newborn infant, or neonate, is a child under 28 days of age. During these first 28 days of life, the child is at highest risk of dying. (12)

**Humanitarian Setting:** A humanitarian setting is one in which an event (e.g. armed conflict, natural disaster, epidemic, famine) or series of events has resulted in a critical threat to the health, safety, security and well-being of a community or other large group of people. (13)

**Essential newborn care:** As defined by the WHO and explained in the Field Guide, are care practices and interventions provided to a newborn immediately after birth comprising thermal care, infection prevention, initiation of immediate breastfeeding within an hour after birth, and newborn resuscitation (16).

While much progress was made throughout the Millennium Development Goals era in reducing maternal and neonatal mortality, both remain unacceptably high, especially in areas affected by humanitarian crises (14). Humanitarian emergencies are defined as either short-term or long-term conflicts, wars, civil unrest, natural catastrophes, food shortages, or other crises that significantly increase the death toll among civilian populations. Humanitarian groups and international assistance are typically required in these crises because of the collapse of local and national infrastructure and basic health services. Not only are there high death rates from the disaster's immediate effects, but humanitarian crises frequently have long-lasting, indirect repercussions on population health as a result of this infrastructure collapse (15).

The estimated number of individuals in need of humanitarian help worldwide is one in every 45, the greatest number ever recorded. (16) Afghanistan, Somalia, South Sudan, Central African Republic, and Chad are the five nations in humanitarian crises out of the ten with the highest newborn death rate (16). In addition, the newborn mortality rate for each of them is more than 30 per 1000 live births (16). The quality and availability of comprehensive sexual and reproductive services, professional care during labour and delivery, and access to high-quality emergency obstetric and newborn care must all be improved if maternal and infant mortality are to be decreased. In order for children to live, flourish, and fulfil their potential as valuable contributors to their communities, they need humanitarian help (16). In humanitarian situations, it can be fatal to interrupt or forgo vital health services like prenatal care, professional birth attendance, critical newborn care, sick child care, routine immunizations, and treatment for common childhood illnesses like respiratory infections and diarrhoea (16). The COVID-19 epidemic has made these hardships worse by raising the rate of poverty, enlarging gaps in access to essential services, and accelerating the rise in inequalities (16).

According to estimates, 274 million people—mostly women and children—will require humanitarian aid and protection in 2022 (21). Globally, COVID-19 has had unheard-of effects on social, health, and the economy. Pre-existing disparities in maternity, newborn, and child health (MNCH) outcomes have been made worse by it, putting fragile and conflict-affected settings (FCAS) especially at risk. Prior to the pandemic, these settings had much lower health outcomes than other contexts. This is mostly because the health systems in FCAS are so fragile; they are working with fewer staff members, fewer resources, interrupted supplies, and damaged facilities. Pregnant individuals and infants are disproportionately affected by the pandemic in FCAS because of pre-existing vulnerability factors. (17).



## Maternal and Newborn Health during COVID-19

### COVID-19's Impact on Global Reproductive Health Services and Sustainable Development Goal 3

Nearly every sector of the global economy has been negatively impacted by the COVID-19 epidemic, making it more difficult to accomplish Sustainable Development Goal 3 (targets 3.1 and 3.2) (18). The use and accessibility of vital reproductive health services may generally be harmed by infectious disease outbreaks because health authorities' focus may be diverted to address unavoidable shocks, the breakdown of the health system, or deliberate reaction choices (18).

The effects of COVID-19 on Sexual and Reproductive Health (SRH) services and outcomes were significant, and especially so in low- and middle-income nations. Reduced or discontinued provision of Sexual Reproductive Health services, redirection of resources to COVID-19, and procurement challenges were noted at the health-systems level. The effects on SRH service uptake are diverse and context-specific. Nonetheless, for people, pre-existing financial and geographical access hurdles were exacerbated, while new barriers formed as a result of COVID-19 mitigating measures. There was an increase in negative consequences, including unexpected pregnancy. While numerous effective adaptations were noted, including the use of telemedicine and task-shifting, implementation was hampered by a lack of resources (19).

### Disruptions to MNCH and nutrition services during the pandemic

The pandemic has affected both the demand (service uptake) and supply (service provision) sides of crucial Maternal, Newborn, Child Health and Nutrition (MNCHN) services (17). Stigma, fear of infection, interruption of service provision, real or perceived linkage of COVID-19 measures to punitive restrictions on movement and liberty (particularly for migrants and refugees), distance from health facility, transportation difficulties, increased financial burden, and fear of being quarantined following a positive test result were identified as factors affecting the demand side in literature and interviews(17). According to the literature and interviews, factors affecting supply side included lower staffing due to MNCHN staff being redirected to COVID-19, staff infected with or afraid of spreading the virus at work, resulting in absences; stock outs and supply concerns, including PPE and routine maintenance(17).

The impact during the first wave of COVID-19 in 2020 was more due to the national lockdown, travel restrictions, and increased inaccessibility to healthcare facilities (20). However, the services provided during the second wave of COVID-19 were more related to the saturation of healthcare services - both institutional and outreach - as a result of the exponential increase in COVID-19 cases and the severity of the Delta variant of COVID-19, which resulted in increased hospitalizations during the months of April and May 2021(20). Antenatal care registrations, which include both hospital-based and routine outreach services, were impacted more in 2021 than in 2020 in most states, possibly due to widespread disruptions in services as a result of increased caseload (20).

Shifts in health-seeking habits as a result of social alienation and lockdowns, as well as fear of contagion, are causing parents to postpone routine childhood immunisation (21). Simultaneously, as health services continue to be overburdened, governments have little choice but to take harsh steps, such as reallocating resources from immunisation operations to the COVID-19 response(21). Approximately 6260 health workers active in polio eradication in Pakistan have been engaged in COVID-19 surveillance, contact tracing, enhancing testing capacity, and health communication, and the national Polio helpline has also been moved to the dissemination of information linked to COVID-19 (21).

## **Maternal and Newborn Health During Time of Conflict**

### **The Devastating Impact of Armed Conflicts on Civilian Populations**

Armed conflicts have terrible consequences for civilian populations (15). More than 500,000 civilians have been estimated to have been killed by combat operations in Syria alone between 2011 and 2019, with a significant number of them being civilians (112 623 casualties), including women (13173 casualties) and children and adolescents (21065 casualties under the age of 18)(15). The toll from the long-term, indirect effects of conflict, such as the devastation of food supply, roads, energy and water infrastructure, and health facilities, has also been disastrous (15). In 2017, 701 attacks on health institutions, health-care workers, patients, and ambulances were reported in 23 conflict-affected countries (15). Armed conflicts have also had a negative impact on the global number of forcibly displaced individuals, which has increased year after year over the last decade. (15)

### **Addressing Newborn Mortality in Conflict Zones: Data and Challenges**

Newborn mortality is becoming increasingly concentrated in areas of war and political instability (22). However, there are few recommendations and statistics on the availability and quality of neonatal care in conflict zones(22). An interagency partnership created the Newborn Health in Humanitarian Settings Field Guide-Interim Version (Field Guide) in 2016 (22). Each year, around 2.5 million babies die worldwide, accounting for 46% of all deaths in children under the age of five(22). Conflicts and political instability weaken governance structures and impair infrastructure capacity to provide basic skilled birth attendants, emergency obstetric and newborn care, and address neonatal complications, resulting in an inverse relationship between political stability and neonatal mortality(23). As a result, as political unrest and a humanitarian crisis develop, infant mortality rises (23). There have been 21 countries with major political violence or warfare in the recent decade, resulting in over 10,000 deaths; 52% of these countries were included in this poll. Six (33%) of the 18 countries were affected by a natural disaster such as an earthquake, tsunami, heat wave, or famine in the recent decade (15). Not all programs utilised a comprehensive package of the most effective therapies, including newborn warming, cord care, and breastfeeding (15). Several problems hampered the provision of a comprehensive range of interventions for newborns, including a lack of funding, skilled workers, and medical materials. Even in non-emergency contexts, many low-income countries have the same challenges in implementing and strengthening healthcare services, including pre-existing operational and financial impediments (15).

### **Health care intervention in humanitarian settings**

Providing health care in humanitarian settings contributes to global health security by addressing public health concerns at their source (24). Population movements, breakdowns in health care infrastructure, disruptions in supply chains, and a lack of health care workers and oversight are all obstacles to providing effective health care (24). The Inter-Agency Working Group for Reproductive Health in Crises (IAWG) established the Minimum Initial Service Package (MISP) as a minimum set of priority activities and high-impact interventions to be undertaken in a coordinated manner by trained staff at the onset of an emergency, with expanded activities over time (24). On the other hand, essential newborn care (ENC) is a set of interventions that should be delivered to all newborns even during the acute phase of a humanitarian catastrophe, including but not limited to care checks (24).

The Model for Improvement, developed by University Research Company (URC), is a participatory Quality Improvement (QI) approach that has been successfully applied in a wide range of health care settings in low- and middle-income countries to improve maternal and child health, care for HIV&AIDS and tuberculosis patients, and care for vulnerable children, among others, at the facility and community level (24). Universal Research Company taught healthcare teams from each enhanced intervention centre in QI (24). These teams were made up of health facility personnel involved in maternal and newborn care at various levels (for example, the facility gatekeeper, registrar, and midwife) (24).

As part of the participatory approach, each team chose activities that they believed may improve some areas of maternity and neonatal care delivery. These small changes were continuously tested and effective approaches were kept in order to incrementally but significantly improve the quality of care (24).

### **Measures of essential newborn care**

#### **Essential infant care interventions**

WHO guidelines were used to classify essential infant care interventions into four categories(25):

- Thermal care comprises of immediate drying (drying newborn with towel at birth) and delayed bathing (the newborn did not get bathing from birth to discharge from the health facility), and skin-to-skin contact (the putting of the newborn on the mother's chest following cord cutting with skin-to-skin contact and no barrier between the newborn and the mother)(25)
- Feeding: support offered to the mother for the onset of immediate breastfeeding (provider displays mother early signals of attachment to nipple and suckling), and early initiation of breastfeeding (start of breastfeeding within an hour after birth)(25);
- Hygiene, which includes provider handwashing (provider washes hands with water and soap prior to attending labour) and provider wearing gloves (provider wears gloves during childbirth) (25).

Global approach to minimise the impact of Conflicts/ health crisis on Maternal and Newborn health (26).

- Governance, leadership, and coordination: Political analysis of the power balance between the various warring parties and humanitarian actors; various roles played by the health cluster based on the level of engagement and capacity of national authorities in the humanitarian response; decentralisation of operations through contracting local organisations(26).
- Health financing: Establishment of multi-year funding structures to respond to protracted crises; establishment of emergency pooled funds to respond to emergencies such as outbreaks or unexpected population displacement (26).
- Health workforce: task shifting and task sharing; rotation of senior staff to remote locations; recruiting local workers to foster trust with local populations and value local staff's sense of duty to their country (26).
- Essential medicine and supplies: Development of an electronic stock management and supply information system (26).

#### **4. Prenatal and Antenatal care (physical health and mental health) and screening**

Antenatal care (ANC) is defined as the provision of healthcare services by skilled healthcare professionals to pregnant individuals. Its primary goal is to promote optimal health conditions for childbirth and parental care, as well as to prevent, detect, alleviate, and manage pregnancy-related health issues such as complications, pre-existing conditions, and the impact of an unhealthy lifestyle (27). The essential parts of ANC involve history taking, risk identification and management for maternal illnesses such as hypertensive disorders, anaemia, and other obstetrical complications or concurrent disease, screening, prevention and treatment for infectious diseases such as malaria during pregnancies, HIV, syphilis, and other STIs, immunisation for Tetanus toxoids, provision of prophylactic medication, counselling, and health education and health promotion (28).

Antenatal care provides the first contact opportunity for a woman to connect with formal health services and serves as important for identification and early management of high-risk pregnancies as a means to improve pregnancy outcomes which link women with pregnancy complications to a referral system on appropriate level of

care (29). Antenatal reduces maternal and perinatal morbidity and mortality both directly, through detection and treatment of pregnancy-related complications, and indirectly, through the identification of pregnant people at increased risk of developing complications during labour and delivery. Early initiation during the first trimester and quality ANC over the pregnancy period has been recognized as improving pregnancy outcomes and increasing newborn survival (30). For instance, research revealed that routine prenatal care from a qualified practitioner lowers maternal mortality by 20% (31). Data showed that only 60% of pregnant individuals in the world receive four antenatal care visits, while 87% receive antenatal care with skilled personnel at least once (27). In contrast, there is a correlation between delaying antenatal care (ANC) visits or lacking to follow up on ANC visits with negative foetal-maternal outcomes, including stillbirth, premature birth, low birth weight, and an elevated risk of maternal complications throughout the stages of pregnancy, childbirth, and the puerperium (32). However, in low-income countries, only 25% of pregnant individuals initiated ANC before 14 weeks gestation and 48% of pregnant individuals did not complete 4 ANC visits (33).

Between 2000 and 2017, the maternal mortality rate was reduced only by 38% worldwide. Although reducing maternal deaths has remained a global priority, the progress towards the global target of reducing maternal mortality ratio (MMR) to 70 per 100,000 live births or less by 2030 is very slow, indicating the need for early risk identifications and management of pregnancy-related complications during ANC follow up (34). Pregnancy causes 25% of maternal deaths, with hypertension (that combined with proteinuria might most commonly lead to pre-eclampsia and eclampsia) and antepartum haemorrhage due to inadequate intrapartum care accounting for three and half of these deaths. Complications before the onset of labour account for two-thirds of stillbirths in countries with a mortality rate of more than 22 per 1000 births (27).

In 2016, the WHO approved a new ANC recommendation from a minimum of four antenatal care contacts to a minimum of eight. Recent evidence shows that eight or more ANC contacts can decrease perinatal deaths by 8 per 1000 births in comparison to four visits. It recommends pregnant individuals to have their first contact in the first 12 weeks' gestation, with subsequent contacts taking place at 20, 26, 30, 34, 36, 38 and 40 weeks' gestation. Evidence indicates that globally 43% of pregnant individuals initiate their first ANC visit timely, although there is a huge discrepancy between high-income and low-income regions (35). For example, compared to the high-income region, where 85% of pregnant individuals start their ANC follow-up in the first trimester, only 45% of pregnant individuals start the follow-up in the first trimester in low-income regions, and this stands at 25% for Sub-Saharan Africa (33).

The World Health organisation has released a set of guidelines for antenatal care aimed at minimising the occurrence of stillbirths and pregnancy complications, ensuring a positive pregnancy journey for pregnant individuals, and facilitating a smooth transition to childbirth and a positive motherhood experience. The guidelines identified several key areas of action, comprising nutritional interventions such as daily oral iron and folic acid supplementation and healthy eating and behaviour education, assessment of mother and foetal health, preventive measures including Tetanus toxoid vaccination and malaria prevention, therapies for common physiological symptoms, and health systems initiatives aimed at enhancing the utilisation and quality of antenatal care (27).

Between 1990 and 2017, although the global neonatal mortality rate decreased by 51%, increased efforts to improve progress are still needed to achieve the SDG target by 2030. Accelerated improvements are most needed in the regions and countries with high Neonatal Mortality Rate, particularly in sub-Saharan Africa and south Asia (36). The meta-analysis indicated that neonatal mortality could be reduced by 34% through the implementation of ANC follow-up. In Africa, a systematic review showed that attendance of at least one ANC follow-up by pregnant individuals had a statistically significant effect on Low Birth Weight (LBW). Women who had at least one ANC visit with a qualified attendant in Africa had a 54 percent lower risk of LBW (37). Women

who had four or more Antenatal Care follow ups were 2.11 times more likely to have practised essential newborn care compared to women who had less than four Antenatal Care follow ups (25).

## 5. Postnatal care and screening

A great deal of maternal and neonatal morbidity and mortality occur in the six weeks following childbirth, yet, this critical period remains overlooked (38). At least three in ten women and babies lack access to adequate postnatal care in this time span (38). During this period, immense changes affect a woman's physical, mental, social, and psychological well-being (38). Even though the post-partum period can bring so much joy, significant obstacles arise, such as fatigue, lack of sleep, stress, recovery from childbirth, breastfeeding difficulties, changes in libido, new onset or exacerbations of pre-existing mental or physical disorders, and much more. (39) This is why it was crucial for the WHO to set guidelines to emphasise and advocate for a "positive postnatal experience" as an endpoint for all birthing people and their newborns.(40)

The WHO has set several recommendations for postnatal maternal care. First, all postpartum women should have routine assessment of vaginal bleeding, uterine tone, fundal height, urinary and bowel function, pain, perineal hygiene, lochia, and vital signs during the first 24 hours after birth. Oral analgesics can be given as needed for perineal pain relief and pain due to uterine cramping or involution. For postpartum breast engorgement and for prevention of mastitis, postpartum women should be counselled on conservative treatment through good positioning, expression of breastmilk, and use of cold or warm compresses; pharmacologic treatments are not recommended for breast engorgement or for prevention of mastitis. Moreover, dietary advice should be offered for prevention of postpartum constipation, but the routine use of laxatives is not recommended. As for mental health interventions, psychosocial interventions are recommended during the antenatal and postnatal periods to prevent postpartum depression and anxiety, and screening can be done using validated instruments with subsequent diagnostic and management services when positive. Furthermore, in the absence of contraindications, it is recommended that postpartum women undertake regular physical activity of at least 150 minutes per week, which can include aerobic activities, stretching, and resistance training. Last but not least, comprehensive counselling on contraception during postnatal care is recommended. (40)

As for newborn postnatal care, the WHO makes extensive recommendations for assessment and screening. During each postnatal contact, providers must watch for signs of inadequate feeding, convulsions, tachypnea, lack of spontaneous movement, fever, hypothermia, and jaundice. The WHO also recommends universal screening for abnormalities of the eye, hearing impairment, and neonatal hyperbilirubinemia. It is recommended to delay the first bath for at least 24 hours after birth to prevent hypothermia. Umbilical cord care must be clean and dry, while limiting use of chlorhexidine in the first week to situations where harmful substances were used on the umbilical cord. Additionally, it is recommended to let the baby sleep in the supine position for the first year of life to prevent sudden infant death syndrome. There are no recommendations for nutritional supplementation, however, it is recommended that all babies be exclusively breastfed until 6 months of age due to the health benefits on the baby and mother. Extensive counselling is recommended to promote routine immunisations as per the WHO recommendations. Lastly, all infants and children between ages 0 and 3 should receive responsive care, including learning activities with parents or other caregivers, to promote healthy early childhood development. (40)

In order to optimise care for women and newborns, postnatal care must be an ongoing process tailored to each woman's individual needs. It must be anticipated, and the opportunity to discuss topics, such as transitioning to the postpartum period or reproductive and contraceptive planning, can happen even during pregnancy. (39) According to the WHO recommendations, at least 4 postnatal encounters are to be made, at 24 hours, 48-72 hours, 7-14 days, and 6 weeks, after birth. For uncomplicated vaginal deliveries, healthy women and their

newborns can be discharged at least 24 hours after birth. Prior to discharge, the wellbeing of the mother and baby must be assessed, and counselling the mother and other caregivers is recommended to facilitate the transition and improve outcomes. If feasible, home visits during the first week after birth by a health professional or trained community member is recommended. (40) In case of obstetric complications during childbirth, such as hypertensive disorders of pregnancy, gestational diseases, or preterm birth, women should be counselled on the implications that these complications can possibly have on her future pregnancies or her cardiovascular health in general. For women with pre-existing chronic medical conditions, such as hypertensive disorders, diabetes, renal diseases, mood disorders, and others, they should be counselled on the importance of follow-up with their obstetrician or primary care providers. For women who have experienced miscarriage, stillbirth, or neonatal death, it is crucial to ensure access to an obstetrician or psychological support, if needed. (39)

Strategies including the Global Strategy for Women's, Children's and Adolescents' Health (2016–2030) (41), Strategies toward Ending Preventable Maternal Mortality (42), the Every Newborn Action Plan (43) and other initiatives (44,45) recognize the postnatal period, defined here as beginning immediately after the birth of the baby and extending up to six weeks (42 days) after birth (46), as a crucial time for birth givers and their surrounding community. Despite these efforts, the median coverage for routine postnatal care within two days after birth for women (71%) and newborns (64%) still lags behind global targets for 2025 (47).

## 6. Immunisation

### **Prenatal immunizations for mothers:**

Immunisation of pregnant individuals affords critical opportunity to deliver protective antibodies transplacentally to the foetus and confer protection in those infants too young to have received childhood immunizations at the time of exposure. The current increase in hesitancy about the safety and efficacy of vaccines has created an environment that calls for our urgent commitment to discussing the evidence-based benefits of vaccination with pregnant individuals (50).

### **Infant immunisation:**

According to a state-wide study done in Missouri, some of the socio-psychological factors that influence the immunisation decision-making process are the perceptions of disease susceptibility, its severity, and the efficacy of the vaccine used. In the same study, it has been noted that the infants of young, poor, and less educated parents are more prone to be inadequately immunised. Large family size, lower parental age and education, and (non-whites) race have been correlated with reduced levels of immunisation. The study done in Ethiopia to assess the knowledge, attitude and practice of mothers towards immunisation of infants, reveals that only 55.0% of respondents possess good knowledge regarding infant immunisation. This deficiency in knowledge has the potential to give rise to misconceptions, doubts, and fears about vaccines, thereby fostering vaccine hesitancy or refusal. It is crucial to emphasise that mothers' knowledge about infant immunisation plays a pivotal role in ensuring high vaccination coverage and preventing vaccine-preventable diseases (50).

## 7. Prevention mother-to-child transition

The global health community, led by WHO, has identified triple elimination of mother-to-child transmission (EMTCT) of HIV, syphilis, and hepatitis B as a priority. The aforementioned three infectious diseases are the most prevalent among infections that are passed from mothers who are infected to their infants during the stages of pregnancy, childbirth, and breastfeeding. This is particularly significant in low- and middle-income nations, specifically in Asia and Africa (48). The initiative encourages countries to commit to essential services such as testing for HIV, syphilis, and HBV in antenatal care clinics, prompt and efficacious interventions to treat women who test positive, and to prevent transmission of the infection(s) to their children, counselling for women and their partners to reduce transmission risk, and appropriate follow-up of exposed infants, including HBV vaccine

birth dose, optimal infant feeding, and lifelong treatment and care for mothers living with HIV, or eligible for treatment for HBV or syphilis. Countries with high background prevalence of HIV, syphilis, and HBV infection are eligible for Path to Elimination (PTE) and defined as those with maternal HIV prevalence above 2%, syphilis prevalence in pregnant individuals above 1%, and general population prevalence of HBV above 5%. However, a systematic review has shown that none of the Pacific Island Countries and Territories (PICTs) are on track to achieve triple elimination by 2030, and increased efforts are needed to collect data on key indicators and integrate reporting into existing systems. (49)

In 2007, WHO launched an initiative for the elimination of congenital syphilis and, in 2011, the agency set a target to reduce MTCT of HIV by 90%. In 2014, WHO developed global guidance containing integrated processes and criteria for validation of EMTCT of HIV and syphilis (50). Required process criteria for validation of EMTCT include: 95% of pregnant individuals to receive antenatal care (ANC); 95% of pregnant individuals to receive HIV and syphilis testing in pregnancy; and 95% of pregnant individuals diagnosed with HIV or syphilis to receive treatment. WHO requires that HIV and syphilis EMTCT processes and indicators are achieved within a context of human rights, gender equity, and community engagement. Among countries validated for EMTCT, elimination activities including case reporting, surveillance, and laboratory quality assurance for congenital syphilis were less developed than those for HIV (50).

Countries with high and low maternal HIV, syphilis, and hepatitis B prevalence face different challenges related to achieving the impact and process indicator targets of EMTCT. The obstacles facing prevention of mother-to-child transmission (PMTCT) programs in resource-limited countries include lack of health care infrastructure, limited manpower, slow integration of PMTCT programs to traditional maternal child health services, competing public health priorities, and social norms and structural barriers such as fear. Stigma and discrimination against people living with HIV can hinder the implementation of prevention and treatment programs. This can lead to underreporting of HIV cases and a lack of access to care for those in need. There is a significant lack of coverage for those most in need, particularly in sub-Saharan Africa, where young people and men of all ages consistently have suboptimal outcomes along the HIV treatment cascade. Low-income countries often face economic constraints that can limit their ability to invest in HIV prevention, treatment, and care programs which can hinder the implementation of effective strategies to reduce mother-to-child transmission. (53-56)

In resource-rich settings, PMTCT interventions including antiretroviral therapy (ART) in pregnancy, use of caesarean section in mothers with HIV viraemia, and avoidance of breastfeeding have reduced the risk of MTCT to less than 2%. However, several countries have achieved elimination of vertical transmission, but none of these countries are in sub-Saharan Africa, a region that accounts for 90% of new paediatric HIV infections. The global scale-up of PMTCT services is credited for a 52% worldwide decline in new HIV infections. (53-56)

Innovative approaches such as use of rapid dual HIV/syphilis point-of-care testing in antenatal care can improve maternal screening coverage, particularly for syphilis. Commitment to the triple EMTCT of HIV, syphilis, and hepatitis B is forthcoming from multiple regions and WHO (50).

## **HIV**

Globally, an estimated 1.3 million women and girls living with HIV become pregnant each year. More than 1.4 million pregnant individuals are infected with HIV, and mother-to-child transmission (MTCT) of HIV is estimated to have resulted in over 150,000 infant cases in 2015 (51). In the absence of intervention, the rate of transmission of HIV from a mother living with HIV to her child during pregnancy, labour, delivery or breastfeeding ranges from 15% to 45%. As such, identification of HIV infection should be immediately followed by an offer of

linkage to lifelong treatment and care, including support to remain in care and virally suppressed and an offer of partner services (54).

In 2019, 85% of women and girls globally had access to antiretroviral therapy (ART) to prevent mother-to-child transmission (MTCT). However, high ART coverage levels do not reflect the continued transmission that occurs after women are initially counted as receiving treatment. Achieving retention in care and prevention of incident HIV infections in uninfected populations remain high priorities to reach global elimination targets. Since the global shift to, and accelerated rollout of, highly effective, simplified interventions based on lifelong ART for pregnant individuals living with HIV, virtual elimination of MTCT – also known as vertical transmission – has been shown to be feasible.

Elimination of MTCT of HIV is strongly supported by global commitments and the promotion of integration of prevention of MTCT interventions into maternal, newborn, child and adolescent health services, as well as strengthened health systems. In addition, improved access to sexual and reproductive health services – including preventing unintended pregnancies and screening and treatment for sexually transmitted infections in women and girls living with HIV – is being actively promoted (52).

The minimum Prevention of Mother to Child Transmission (PMTCT) impact targets set by the World Health Organization for HIV are 50 new paediatric infections per 100,000 live births and a transmission rate of either below 5% in breastfeeding populations or below 2% in non-breastfeeding populations annually (50).

## **Syphilis**

Nearly 1 million syphilis infections occur among pregnant individuals globally each year. These syphilis-affected pregnancies resulted in an estimated 350,000 adverse birth outcomes due to congenital syphilis in 2012. Untreated maternal syphilis results in congenital syphilis in over half of affected pregnancies and can lead to early foetal loss, premature birth, stillbirth, low birth weight, complications from infection, and neonatal death (53).

Antenatal screening for syphilis and HIV, and treatment for pregnant individuals infected, prevents MTCT and aligns with the Sustainable Development Goal (SDG) targets of ending preventable deaths of newborns and children under 5 years of age, ensuring universal access to sexual and reproductive healthcare services, and achieving universal health coverage (UHC) (54).

## **Hepatitis B**

Hepatitis B is a part of the MCTC (Mother-to-Child Transmission of Communicable Diseases) programs. The targets of coverage for hepatitis B in MCTC programs include third dose coverage of hepatitis B vaccine and interventions to prevent mother-to-child transmission (55). The integrated approach for triple elimination of mother-to-child transmission of HIV, hepatitis B, and syphilis is highly effective and cost-effective. This approach reduces hepatitis B mother-to-child transmission to 6.1%. The World Health Organization (WHO) developed a global plan for hepatitis B elimination by 2030, which includes goals to increase paediatric and maternal immunisation and to improve screening and treatment. The target levels of HBV DNA for preventing vertical transmission are <200,000 IU/ml. (57-59)

**Progress towards triple elimination of mother-to-child transmission of HIV, hepatitis B and syphilis**



The elimination of mother-to-child transmission (EMTCT) of HIV, hepatitis B, and syphilis, also known as triple elimination, is a global effort to give every child the best chance to start a healthy life, free from preventable communicable diseases. The Regional Framework for the Triple Elimination of Mother-to-Child Transmission of HIV, Hepatitis B and Syphilis in Asia and the Pacific 2018-2030 upholds the vision that every infant should be free from HIV, hepatitis B, and syphilis. The World Health Organization's "triple elimination initiative" encourages countries to simultaneously commit to eliminating mother-to-child transmission of HIV, syphilis, and hepatitis B. Essential triple EMTCT services include testing for HIV, syphilis, and hepatitis B in antenatal care clinics, prompt and efficacious interventions to treat women who test positive, and to prevent transmission of the infection(s) to their children, counselling for women and their partners to reduce transmission risk and ensure appropriate care, appropriately attended, safe delivery, optimal infant feeding, and lifelong treatment and care for mothers living with HIV, or eligible for treatment for hepatitis B or syphilis. (54, 57)

Major progress has been achieved in providing testing and antiretroviral therapy to pregnant and breastfeeding women, thereby reducing the vertical transmission of HIV. As of 2021, WHO has validated 14 countries and areas (Anguilla, Antigua and Barbuda, Armenia, Belarus, Bermuda, Cayman Islands, Cuba, Dominica, Malaysia, Maldives, Montserrat, Saint Kitts and Nevis, Sri Lanka and Thailand) for elimination of mother-to-child transmission. Of the countries reporting to the UNAIDS National Commitments and Policy Instrument, 92 provided testing during pregnancy, 70 at delivery and 51 in the postpartum period. An estimated 85 per cent of pregnant individuals living with HIV globally were receiving antiretroviral therapy in 2020, ranging from 95 per cent in Eastern and Southern Africa to only 25 per cent in the Middle East and North Africa. From 2010 to 2020, there was a 53 per cent decline in vertical HIV infections. During late pregnancy and the postpartum period, however, women's risk of HIV infection increases substantially. Forty-two per cent of pregnant and breastfeeding women acquiring HIV were aged 15 to 24. (54 - 57)

## 8. Service for High-risk populations

### Age:

Childbirth at a young age ( $\leq 19$  years old) or advanced maternal age ( $\geq 35$  years old) is linked to a heightened risk of adverse maternal and perinatal outcomes, along with negative impacts on infant health. Adverse outcomes include preterm birth, poor foetal growth, low birth weight, and neonatal mortality (56).

### Adolescents:

As of 2019, low- and middle-income countries (LMICs) witnessed an estimated 21 million pregnancies annually among adolescents aged 15–19 years, with approximately 50% of these pregnancies being unintended, resulting in around 12 million births. Adolescent mothers (aged 10–19 years) face elevated risks of eclampsia, puerperal endometritis, and systemic infections compared to women aged 20–24 years. Babies born to adolescent mothers also face higher risks of low birth weight, preterm birth, and severe neonatal conditions. (56–58)

Globally, the adolescent birth rate (ABR) has decreased from 64.5 births per 1000 women aged 15–19 in 2000 to 41.3 births per 1000 women in 2023. However, the rates of change have been uneven across regions. Adolescent pregnancy tends to be more prevalent among those with lower education levels or of low economic status. Progress in reducing adolescent first births is slower among vulnerable groups, leading to increasing inequity. Child marriage and child sexual abuse further increase the risk of unintended pregnancies among girls. (56–58)

Additionally, in the age group of 11-18 years, pregnant individuals face higher odds of preterm delivery, chorioamnionitis, endometritis, and mild pre-eclampsia. For those aged 15-19 years, the risks increase with

greater odds for severe pre-eclampsia, eclampsia, postpartum haemorrhage, poor foetal growth, and foetal distress. These findings highlight the ongoing challenges and health risks associated with adolescent pregnancies, emphasising the need for comprehensive reproductive health education and support. (56–58)

**People with advanced maternal age:**

Advanced maternal age, typically defined as 35 years and above at childbirth, has consistently been linked to various adverse maternal and perinatal outcomes. Studies indicate that older women face increased risks for conditions such as hypertension, diabetes, cardiovascular diseases, and a higher likelihood of undergoing caesarean section. Additionally, they may require infertility treatments and assisted reproductive technology. (59,60)

Research has consistently shown higher incidences of multiple gestation, preterm birth, intrauterine growth restriction (IUGR), foetal malformations, intensive care unit admission, and neonatal death among infants born to older mothers. Delayed childbearing is associated with both congenital and acquired health concerns in the child, including Down syndrome, Alzheimer's disease, hypertension, and diabetes. (61–63)

Specifically, women aged over 35 exhibit elevated odds for preterm delivery, hypertension, superimposed pre-eclampsia, and severe pre-eclampsia, while experiencing a reduced risk for chorioamnionitis. In the >40 years age group, there is an increased likelihood of experiencing mild pre-eclampsia, foetal distress, and poor foetal growth. These findings underscore the importance of considering the potential health risks associated with advanced maternal age and the need for careful monitoring and management during pregnancy. (56)

**LGBTQIA+ communities:**

The existing body of knowledge on the maternal and infant health of sexual minority women (SMW) reveals significant gaps, indicating a lack of comprehensive understanding in this area. Studies highlight that SMWs, facing challenges such as limited access to insurance and reliable healthcare sources, are more likely to report unmet healthcare needs, suggesting heightened vulnerability to adverse maternal and infant health outcomes. Lesbian and bisexual women, in particular, encounter heterosexism in reproductive healthcare settings and often lack crucial social support during pregnancy, leading to disturbingly higher rates of miscarriage or stillbirth compared to heterosexual women. These disparities underscore the urgent need for addressing these issues and establishing inclusive and supportive healthcare practices for sexual minority women throughout their maternal and infant health journey. (64)

Similarly, the LGBTQ+ community, encompassing lesbian, gay, bisexual, transgender, queer, and others, experiences worse pregnancy outcomes compared to heterosexual counterparts. Lesbian and bisexual women encounter significantly reduced pregnancy success rates, coupled with a heightened risk of pregnancy loss, including miscarriage and stillbirth. Additionally, pregnant lesbian and bisexual individuals face an increased risk of depression and mental distress during pregnancy. These findings emphasise the necessity of recognizing and addressing the unique healthcare challenges faced by LGBTQ+ individuals in the context of reproductive health. Comprehensive support and inclusive healthcare practices are paramount to improving pregnancy outcomes and safeguarding the well-being of LGBTQ+ individuals during their journey to parenthood. (65–67)

Furthermore, there is a notable lack of information regarding pregnancy outcomes for transgender and non-binary parents, underscoring the urgency for increased research in this area. Researchers must prioritise consistent education on correct terminology related to gender identity to ensure the development of knowledge beneficial for clinicians. Research priorities should focus on understanding disparities in pregnancy outcomes, identifying associated predictors and risk factors, utilising quantitative methods to explore prenatal care experiences and barriers, and evaluating interventions aimed at improving access to care and enhancing

perinatal and pregnancy success outcomes. Additionally, addressing societal stigmas that contribute to the disenfranchisement of the LGBTQ+ population is essential from a social standpoint, recognizing the profound impact of these stigmas on the physical and mental health of LGBTQ+ individuals and highlighting the importance of promoting inclusivity, understanding, and support for diverse reproductive experiences. (68)

**Migrant populations:**

Migrant women consistently face higher risks of maternal and neonatal morbidity and mortality compared to native-born women, stemming from factors like inadequate healthcare in their home country and challenges accessing quality care in the new country (69,70). The migration process itself contributes to adverse physical and mental health outcomes, exacerbated by social issues such as poor socio-economic status, discrimination, and chronic stress. Addressing these interconnected issues is vital for improving maternal and neonatal health outcomes among migrant populations. (71)

Similarly, Migrant and Refugee Youth (MRY), including individuals aged 10 to 24, encounter lower Sexual and Reproductive Health (SRH) knowledge, limited access to services, higher rates of unplanned pregnancies, and treatable STIs. This group, which also encompasses international students, faces challenges such as settlement uncertainty, language barriers, and cultural differences. Understanding their SRH issues is crucial, with themes like premarital sex, forced marriage, and lack of contraception emerging. (72) Comprehensive, adolescent-friendly SRH services and education are essential for addressing these challenges in migrant and refugee communities on the Thailand-Myanmar border, necessitating a tolerant and supportive environment. (73) Additionally, migrant women in need of maternity care require culturally competent healthcare providers, emphasising equitable, high-quality, and trauma-informed services. Interdisciplinary collaboration and continuity of care are essential, and new maternity care models should extend beyond clinical interventions to address the diverse socioeconomic and psychosocial needs of migrant women, fostering a more inclusive healthcare environment. (64)

**9. Best practices by recommendations (eg. WHO, FIGO) and adaptations globally**

**Postnatal Care:**

30 Mar 2022- The World Health Organization (WHO) launched its first global new official guidelines to support women and newborns in the postnatal period. In the 63 recommendations, relevant existing recommendations (the 2014 WHO recommendations on postnatal care of the mother and newborn, and existing WHO guidelines on the management of postnatal complications) have been combined with 31 that are new or updated, for birth givers and newborns receiving facility- or community-based postnatal care in any resource setting. (44)

Despite this advancement, limitations persist. The guidelines primarily address immediate postnatal care, overlooking health and social care needs persisting beyond six weeks after birth. Screening is necessary for long lasting complications like anaemia, cervical cancer, metabolic and cardiovascular diseases, which adversely affect mortality outcomes of both mother and infant. Such conditions are especially prevalent in low-income countries (90%) (58). Instead, recommendations reflect evidence derived to fit a traditional model of postnatal care that has been described as “not fit for purpose” (59).

This approach misses an opportunity to promote the maternal benefits of breastfeeding beyond 12 months that include reduced risk of diabetes and hypertension (60) and postnatal weight management (61).

Recommendations for other common morbidities are not included despite robust evidence. Structured pelvic floor muscle exercises in early pregnancy for continent women could prevent onset of urinary incontinence in

late pregnancy and up to 6 months postnatally, an intervention of potential benefit for millions of women (62). A recommendation that women should be screened for postpartum depression and anxiety with appropriate diagnostic and management services for those who screen positive requires considerable system change and clinical training to implement, with ongoing evaluation of benefit. Screening for postnatal depression is not recommended in the UK due to uncertainty about accuracy of screening tests and lack of guidance on optimal management pathways, which will also be the reality in most LMICs (63).

Health systems face challenges regarding service constraints, workforce capacity, and inadequate resources. The guideline's emphasis on inpatient postnatal care for at least 24h and four postnatal contacts may strain already burdened healthcare services in resource-limited settings. Adverse outcomes of discharge within 24h of a caesarean birth or after complications/ lack of community support raised concerns amongst the members of the guideline developing group. Having birthgivers self-advocate for birth injuries and taboo topics like incontinence remains a challenge due to social stigmatisation. Urgent calls are made for updated research funding to align with current care needs, as some guideline recommendations rely on outdated evidence.

### **Ante and Intrapartum Care:**

Every year, over 300,000 maternal deaths, 2.6 million stillbirths, and 2.7 million newborn deaths occur, predominantly in low-resource areas. Many of these tragedies are preventable. The WHO's Safe Childbirth Checklist (SCC) (64) aims to mitigate these losses by focusing on essential maternal and perinatal care practices. Addressing major causes of maternal, intrapartum-related stillbirths, and neonatal deaths, it underwent rigorous development and usability testing across ten African and Asian countries. This checklist targets critical issues like haemorrhage, infection, obstructed labour, birth asphyxia, and prematurity-related complications, striving to enhance care during childbirth globally (65). Worldwide, practitioners have embraced, customised, applied, and assessed the SCC due to its inherent worth in enhancing the safety and standard of healthcare (66).

After two months of coaching, birth attendants significantly improved essential birth practices (67), achieving 73% completion versus the control's 42%. Notably, intervention facilities showed marked enhancements: oxytocin administration to prevent haemorrhage (80% vs. 21%), breastfeeding initiation (70% vs. 4%), and skin-to-skin contact (79% vs. 11%). Maternal and newborn health measurements, like blood pressure and temperature, saw substantial increases in intervention sites compared to controls. At twelve months, checklist completion remained at 62%, 1.4 times higher than controls. However, this improvement didn't affect stillbirths, newborn, or maternal mortality rates, attributed to persistent gaps in skills, supplies, or care systems for complications. Lack of funding was an evident bottleneck in the same (68).

A systematic review and meta-analysis included three cluster randomised trials and six pre-and-post intervention studies focusing on the WHO SCC. Utilisation of the WHO SCC showed improvements in managing pre-eclampsia (moderate quality evidence) (OR = 7.05 [95% CI 2.34–21.29]), maternal infections (moderate quality evidence) (OR = 7.29[95%CI 2.29–23.27]), Partograph usage (moderate quality evidence) (OR = 3.81 [95% 1.72–8.43]), postpartum counselling (low quality evidence) (RR = 132.51[95% 49.27–356.36]), and reducing stillbirths (moderate quality evidence) (OR = 0.92[95% CI 0.87–0.96]). However, its application did not impact early neonatal death (very low quality evidence) (OR = 1.07[95%CI [1.01–1.13]) or maternal death (low quality evidence) (OR = 1.06[95% CI 0.77–1.45]) (69).

Evidence shows that SCC impacts perinatal outcomes when implemented as part of broader quality improvement interventions. Studies in Rajasthan, India (70) and in Kenya and Uganda (71) demonstrated a reduction in stillbirths and very early neonatal deaths when accompanied by strengthening measures like supportive coaching, supply of medications and equipment, data strengthening, team training, and quality

improvement collaboratives in rural and peri-urban facilities. Several studies have replicated increased adherence to practices in the SCC using various adaptations and implementation approaches (72–74)

In a 2021 global survey, participants expressed the need for specific enhancements in the Safe Childbirth Checklist (SCC), such as defining its purpose, including guidance on pertinent clinical matters, refining low-adherence behavioural aspects, and integrating contextual considerations into the decision-making process (66). They also sought political backing for integrating SCC into policies and continuous clinical training and mentorship for enhanced implementation.

In a RCT published in 2023 outcomes reveal no notable enhancements in diagnostic or medication information accessibility (75). Information transmission via the checklist doesn't augment coordination or communication flows significantly. However, both Intent-to-Treat (ITT) and Complier Average Causal Effect (CACE) analyses indicate increased self-reported comfort in voicing patient care concerns. While the checklist's reminders reduce errors, significant effects are solely evident in perceived errors during heavy work periods. Effects on perceived workload, paperwork, and overall workload are inconclusive. The study also examines information on perceived workload impact, yet neither paperwork nor general workload registers substantial changes due to the checklist's implementation.

### **To Implement the Guidelines:**

The Maternal Health Unit leads efforts to enhance maternal health, reduce mortality, and ensure quality care through evidence, guidelines, and global support (76).

The Unit is supporting mechanisms for engaging the private sector in delivering maternal and newborn health services with quality, in collaboration with the Quality of Care Network. It investigates private sector practices, seeking ways for public-private collaboration. Private healthcare is growing rapidly in most member countries of the Quality of Care Network, yet sustaining quality in low- and middle-income nations remains uncertain. This initiative intends to identify sustainable methods for ensuring quality care in these sectors. Its findings propose models for effective collaboration between private providers and governments, ensuring accountable, high-quality maternal and newborn care. These models serve as a guide for countries developing their own quality care strategies, offering insights into engaging the private sector and enhancing care for mothers and infants.

The Network for Improving Quality of Care for Maternal, Newborn and Child Health (Quality of Care Network) is a broad-based partnership of committed governments, implementation partners and funding agencies working to deliver the vision that 'every pregnant woman and newborn receives good quality care throughout pregnancy, childbirth and the postnatal period'. (74)

This Network is of importance as indicated by the key findings of the systematic review on indicators for monitoring maternal and neonatal quality care. Various sources were tapped, including international repositories, established national sets, grey literature, and articles from 2012 to 2016. Out of 1791 indicators, but only 6.7% of them exhibited all requirements for scientific soundness. A well-reviewed indicator set for maternal and child healthcare, and for charting the progress in fulfilling the Sustainable Development Goals (SDG) is lacking. The study didn't specify unsound WHO indicators but highlighted the general lack of scientific rigour in many indicators, urging more efforts for comprehensive maternal and child healthcare monitoring. Though not specified, some WHO indicators might not meet scientific criteria according to the study. Indicators mainly focused on childbirth and hospital care, lacking robust measures for postnatal and pregnancy periods, crucial for primary healthcare. Initiatives like the WHO Quality of Care Network aim to enhance these indicators. (75)

The framework: “STANDARDS FOR IMPROVING QUALITY OF MATERNAL AND NEWBORN CARE IN HEALTH FACILITIES” that was formulated in 2016 has been endorsed by The Network for Improving Quality of Care for Maternal, Newborn, and Child Health. (76)

In the Global meeting of the Network for Improving Quality of Care for Maternal, Newborn and Child Health from 14–16 March 2023, Accra, Ghana, an event- ‘Marketplace’ saw the design of tool to facilitate access and use of (WHO) programmatic guidance for Maternal, Newborn, Child, and Adolescent Health (MNCAH) (John Hopkins University). (77)

During the meeting, interactions involving information exchange were varied. Although stakeholders shared information, they differed in implementation strategies and quality improvement methods. Disagreements persisted regarding the importance of system-wide enhancements versus localised care improvements, leading to isolated implementation in different geographical areas.

The Plenary session commenced with University College London (UCL) presenting findings from the QoC Network evaluation across Bangladesh, Ethiopia, Malawi, and Uganda from 2019 to early 2022. These outcomes, methodologies, and recommendations, outlined in nine papers submitted to PLoS One (pending peer review), highlighted strong global leadership and national activities. However, local-level efforts were comparatively weaker, albeit with increasing QoC Network awareness (Paper 3). COVID-19 significantly affected local leadership, possibly requiring more time for evident local impact. The evaluation underscored the aspirational nature of a 50% reduction in case fatality rates, indicating the need for extended timeframes and sustained funding.

The evaluation identified a necessity for increased time, financial support, and local investment to bolster Network effectiveness (Paper 4). Capacity constraints at individual, organisational, and systemic levels hampered intended progress (Paper 6). Addressing issues like staff retention, documentation culture, resource scarcity, and policy alignment, the burden of parallel reporting systems, paying for quality healthcare and managing disruptive events such as Covid-19 emerged as crucial for success. Sustaining the Network was deemed more beneficial than introducing new programs, requiring actions to institutionalise innovations and enhance community ownership.

Sustainability actions varied among countries (Paper 9), emphasising the need for the Network to operate for at least five more years. While progress was noted in global and national coordination, local and facility-level enhancements, including robust data systems and domestic funding, were identified as crucial. Finally, to move the work of the Network forward, domestic funding of implementation and homegrown quality improvement expertise is also needed, along with facility- and district-wide systems improvements to further enable frontline ward- and clinic-based improvements.

Other collaborative efforts include the report: Trends in maternal mortality 2000 to 2020- Estimates by a collaborative effort of the WHO, the UNICEF, the UNFPA, the World Bank Group and the UNDESA/Population Division (81). It highlights a distressing reality: every two minutes, a woman loses her life during pregnancy or childbirth. The report estimates approximately 287,000 maternal deaths worldwide in 2020, only marginally lower than the 2016 figure of 309,000, established with the onset of the UN's Sustainable Development Goals (SDGs). Despite notable progress in reducing maternal deaths between 2000 and 2015, advancements halted or even reversed post-2015.

In specific UN regions like Europe, Northern America, Latin America, and the Caribbean, maternal mortality rates surged by 17% and 15% respectively between 2016 and 2020, while elsewhere, rates stagnated. However, the report highlights areas of hope, citing significant declines in maternal mortality rates, such as a 35% drop in

Australia and New Zealand and a 16% decrease in Central and Southern Asia. Thirty-one countries worldwide also witnessed positive declines. Yet, the report underscores an urgent need for accelerated progress to meet global targets for reducing maternal deaths. Failing to expedite this progress could jeopardise the lives of more than a million women by 2030, emphasising the criticality of concerted efforts to safeguard maternal health globally.

SMART Guidelines, encompassing Standards-based, Machine-readable, Adaptive, Requirements-based, and Testable components, revolutionise the implementation of guidelines by offering a comprehensive suite of digital health elements. These include interoperability standards, code libraries, algorithms, and technical specifications. These guidelines streamline guideline adaptation, ensuring fidelity while expediting adoption, even in non-digital environments. They enable countries to efficiently adopt and leverage WHO health and data recommendations through digital systems, fostering interoperable, standards-based solutions. By implementing SMART Guidelines, countries enhance data accuracy, fostering robust and sustainable health information systems. They ensure standardised data collection, offer decision support, and calculate indicators uniformly across diverse regions. Furthermore, they mitigate risks linked to digital investments by reducing software development costs. Governments benefit from SMART software specifications, ensuring vendors deliver quality content, minimising the potential for vendor lock-in. SMART Guidelines thus serve as a transformative approach to guideline implementation, promoting robust, standardised, and cost-effective digital health systems worldwide. (78) The WHO also held a webinar last year, which focused on providing guidance for improving national reporting on maternal mortality measurement. It particularly highlighted the use of the six-box method, an approach aimed at quantifying incomplete and misclassified data in this context. (79)

There has been a lot of work in recent times to enable strengthening countries' capacities to adopt and adapt evidence-based guidelines: A handbook for guideline contextualization was created for the same. (80) Also WHO/Europe came up with a new handbook which will help countries adapt health guidelines to national contexts. (80)

The Organization also saw the development of the WHO Antenatal Care Recommendations Adaptation Toolkit: a standardised approach for countries upon request of countries like Rwanda and Sierra Leone. (81) WHO, along with PATH's Digital Square initiative and partners, developed digital adaptation kits (DAKs) to standardise WHO health and data recommendations for localization into digital systems. The DAKs, starting with antenatal care in 2021 and expanding to family planning and HIV, support the shift from paper-based to digital systems, catering to countries' needs and enabling an adaptable digital transition. (82)

In addition, an antenatal care monitoring framework has been developed to help countries and health facilities track their progress and impact. It's founded on a conceptual framework and a review of ANC indicators, aligning existing measures with the new WHO ANC model. This framework features core indicators for global and national monitoring, with additional contextual and program-specific measures. While nine core indicators are globally or nationally accessible, two need further development. Six context-specific measures are suitable for national and subnational monitoring, and 35 additional indicators are identified based on program priorities, emphasising areas needing further development for comprehensive ANC monitoring. The framework also outlines a research agenda to refine existing measures and promote a comprehensive understanding of ANC performance. (83)

While formulating the WHO recommendations on antenatal care for a positive pregnancy experience, it was decided that the scope of this guideline should prioritise the applicability of interventions in LMIC settings. However, high quality data available was mostly from HICs. Eighty-five documents were discovered, comprising 15 concerning routine ANC and 70 on specific ANC situations. Within the 15 focused on routine ANC, three

originated from WHO, with the remainder from various governmental and non-governmental bodies across countries like Australia, Canada, Hong Kong, India, Japan, Poland, the United Kingdom, and the United States. Among the 70 guidelines related to specific ANC situations, 91% were from high-income countries (HICs) like Canada, the United Kingdom, and the USA, with a notable absence of representation from low- and middle-income countries (LMICs). There was a lack of an existing, comprehensive, and adaptable guideline tailored for routine ANC applicable across varying resource settings. (27)

**SUB SAHARAN AFRICA (84)** - Results of a systematic review and meta analysis conducted in 2021 : Findings revealed a pooled prevalence of 92.3% (95% CI: 91.1%-93.3%) noncompliance with the WHO's guideline of 8+ ANC visits, with Zambia exhibiting the highest prevalence (98.7%, 95% CI: 98.3%-99.1%) and Libya the lowest (73.4%, 95% CI: 70.4%-76.2%). Individual factors like women's age (44-49 years-, 9% CI: 0.14-0.78), health insurance registration (yes-, 95% CI: 0.29-0.98), and economic status (richest-, 95% CI: 0.05-0.49) were linked negatively to noncompliance, while parity (five or more children-, 95% CI: 1.12-2.52) was positively associated. Community literacy showed a negative correlation with noncompliance (high-, 95% CI: 0.32-0.99). The study underscores the pressing need to address factors like economic empowerment, health insurance coverage, education, and specific attention to younger or multiparous pregnant individuals to enhance ANC visit coverage in Sub-Saharan Africa.

**SIERRA LEONE (85)** - Among 5,432 women, 44.8% had initial ANC in the first trimester, and 22.0% had eight or more ANC visits. Late first ANC contact lowered the likelihood of eight or more visits (aOR 0.58). Younger age (15-19 years, aOR 0.64) and economic status influenced ANC visits. Working women had higher odds (aOR 1.33) compared to non-working counterparts. Residence in the south, internet use, and fewer children were linked to more visits. Ease of facility access also increased odds for eight or more ANC visits.

**ETHIOPIA (86,87)** - A 2023 population-based study using the demographic and health survey data for women's utilisation of quality antenatal care (ANC), intrapartum care and postnatal care services in Ethiopia showed that only 43% of women received the recommended four or more ANC visits for their last birth, and secondly, merely 28% commenced their ANC contact during the first trimester. Moreover, despite ANC attendance, disparities were evident in intervention reception: while 36% of women received all six recommended ANC interventions, a higher percentage (53%) was observed among those attending private clinics/NGOs compared to only 18% at government health posts. Notably, the Ethiopian Somali region reported the lowest adherence, with just 15% of women receiving all six recommended interventions during their ANC visits. In contrast, in the capital, Addis Ababa, 60% of the women who received ANC services for the last birth received all the six recommended interventions during ANC. Similar urban-rural disparity was noted in Philippines and Indonesia.

**NIGERIA (88,89)** - In a 2020 study - Among respondents, varied ANC contacts existed: 25% had none, 58% had  $\geq 4$ , and only 20% had  $\geq 8$  contacts. Respondents from households in the richest and middle wealth categories were 129 and 67% more likely to make 8 or more ANC contacts compared to those from households in the lowest wealth category respectively. The likelihood of making 8 ANC contacts was 89 and 47% higher among respondents from communities in the least and middle disadvantaged groups, respectively, compared to the most disadvantaged group. In one study conducted in 2021. From 21,785 respondents, 75% had ANC contact; 24% began in the first trimester, with regional disparities noted.

**BANGLADESH (90)** - From the Bangladesh Demographic and Health Survey (BDHS), it was noted that: On average, mothers received less than three (2.7 visits) ANC visits and only 6% receive the recommended eight or more ANC visits. About 22% of the mothers received all the prescribed basic items of ANC services. About one-fifth (21%) of the mothers never received ANC visits and thus no items of ANC services.



MYANMAR (91) - only 18% of mothers achieved the recommended eight ANC contacts. Around 58% received sufficient ANC components, and 47% started ANC in the first trimester. Predictive models suggest that urban residence or private health facilities could boost adequate ANC components to 70% or 63%, respectively. Urban residence and higher wealth status significantly influenced better ANC coverage. Overall, most women in Myanmar are not meeting the 2016 WHO ANC target.

MALAYSIA (92) - A retrospective cohort study of 522 randomly selected women who used ANC was conducted. In it, around half of the women had <80% of recommended ANC content documented. Health education had the lowest mean score, at around 35%. Inadequate ANC content was associated with higher prevalence of preterm birth, may be due to lesser opportunities to receive some of the care because of lower number of ANC visits among preterm births.

OMAN (93) - The analysis revealed universal (98%) use of at least one ANC visit to Oman. Approximately 75% of mothers initiated ANC in the first trimester and 73% of mothers received the recommended 8 or more ANC visits. On average, the mothers received nine visits to the ANC. Approximately 71% of mothers received all prescribed core components of ANC services. While Oman has achieved a strong level of compliance with the guidelines recommended by the WHO on the early initiation of ANC visits, the optimal frequency (i.e. at least eight) of ANC visits, and all the components prescribed for ANC services, the country is still lagging behind in achieving universal coverage of all of these services.

CHINA (94) - inequities existed between this study's findings and official reports, indicating significant variations in ANC examination practices. In this study encompassing 49,084 women, the mean number of ANC visits was  $6.95 \pm 3.45$ . Findings showed that while 78.79% received ANC exams at least five times, a smaller proportion of 39.93% received examinations at least eight times, and merely 16.66% had them at least 11 times. The percentage of initial ANC exams in the first trimester stood at 61.87%. However, only 49.40% of women received all six recommended ANC examination items during their first visit. Locations for the first ANC examination varied: 50.85% were at maternal and child health care institutions, with the highest examination proportion in community health services centres and the lowest in these institutions.

Overall, age of mothers, parity, level of education, socioeconomic status and area of residence appeared to be important common predictors of initiation and frequent ANC visits across HMICs, UMICs and LMICs alike. Early initiation, planned pregnancies, having media exposure, visiting skilled providers for ANC services appeared as significant predictors for receiving more ANC visits and more components of ANC services.

#### **Notable work and guidelines from other organisations:**

Other organisations eg. MSF and IPPF base guidelines on WHO guidelines. Several others like EngenderHealth, UNICEF, CARE, The White Ribbon Alliance, Global Alliance for Vaccines and immunisation (GAVI) are actively working to implement WHO guidelines concerning pregnancy and infant health across various regions globally. UNFPA's leading initiative, the Maternal and Newborn Health Thematic Fund (MHTF), aims to enhance the well-being of mothers and infants. Introduced in 2008 to amplify worldwide support and resources for maternal health, it's progressing into its third phase, spanning from 2018 to 2022, following the completion of Phase I (2008-2013) and Phase II (2014-2017). While initially centred on maternal health, the MHTF has extended its support to newborn health, a focus explicitly emphasised in this ongoing phase, recognizing the inseparable link between maternal and newborn well-being. (95–97)

Underscoring the need to recognize pregnancy and infant health as a part of the Right to Health, the ORHCR has provided several rights-based approaches to uphold the same and to reduce the MMR and the U5MR in the form of several guides to health workers and health policy makers. (98,99)

The Human Rights-based Approach aims to reduce preventable mortality and morbidity in both children under 5 and maternal healthcare. For children, it emphasises rights, equity, and accessible healthcare, focusing on groups that have been historically marginalised and dismantling disparities through accountable and participatory health systems. In maternal care, it prioritises rights, gender equity, and dignity, advocating for equitable, quality services and addressing systemic inequalities and discrimination. Similarly, UNHCR's guidelines for maternal healthcare underscore rights, equity, and quality care for displaced populations, emphasising non-discrimination, informed consent, and dignity preservation. Both approaches align healthcare with human rights principles, aiming to diminish inequities, empower communities, and ensure inclusive, safe healthcare for vulnerable populations, be it children or displaced women. (100)

The Lancet Global Health published a study as part of a special series on maternal health, shedding light on postnatal health issues that persist long after childbirth. Over 40 million women annually face enduring health problems stemming from childbirth, such as dyspareunia, affecting more than a third (35%) of postpartum women, low back pain (32%), anal incontinence (19%), urinary incontinence (8-31%), anxiety (9-24%), depression (11-17%), perineal pain (11%), fear of childbirth (tokophobia) (6-15%) and secondary infertility (11%). (100)

These challenges, affecting significant percentages of postpartum women, often extend beyond typical postnatal care access. Defined as conditions occurring beyond six weeks postpartum, surpassing typical postnatal care periods, the study includes issues directly or primarily linked to labour and childbirth impact. These issues can result from medical interventions during delivery, like caesarean sections or episiotomies, but can occur irrespective of delivery method or other complications. The series highlights the critical need to address these issues comprehensively to improve maternal health outcomes globally. (100)

The broader series, "Maternal health in the perinatal period and beyond," advocates for increased focus on women's long-term health before and after pregnancy. It underscores the necessity for a holistic approach to reduce maternal deaths, addressing not only immediate biomedical factors but also broader social, economic, and environmental conditions impacting women's health. Neglecting these fundamental issues contributes to the stagnation in reducing maternal deaths across many countries. (100,101)

## **10. Education for Pregnancy and Infant Health**

### **Medical Education:**

Regardless of specialty, every medical student and physician is bound to encounter pregnant individuals, which translates to an indispensable need to learn how to cater to their needs with regards to different disciplines and medical aspects. According to the WHO, every day in 2020, at least 800 women died from preventable causes relating to pregnancy and childbirth, in addition to approximately 6,700 newborn deaths. By training skilled health professionals, many of these lives can be preserved. (102)

Focusing on maternal and newborn health should not only be at the centre of policy and action, but it should also be an integral pillar of medical education. The present and future of healthcare cannot be shaped without the integration of students, who can be considered as a vital investment in the fate of healthcare. Investing in a generation of knowledgeable, skilled, and responsible students is well worthwhile. Ultimately, they must be

educated about the importance of universal health access, the basics of prenatal, antenatal, and postnatal care and newborn health, and the technical skills required in complicated and uncomplicated obstetrics cases. Another crucial skill to adopt would be to learn to continuously advocate for their patients and to listen to their concerns. (103)

### **Self-care and Patient Education:**

The prenatal, antenatal, and postnatal periods can all be extremely stressful times for every woman and/or other caregivers. This is where the role of self-care and patient education comes in to partially alleviate and mitigate these stressors, as well as potentially improving maternal and neonatal outcomes.

Self-care greatly varies between individuals and can take many forms, including, but not limited to, physical exercise, resting, getting enough sleep, eating a well-balanced diet, socialising, practising kind self-talk, taking time for one's hobbies, and so much more. Self-care practices can improve emotional and physical wellbeing, inevitably helping the pregnancy and postpartum period pass by smoother, thus, improving outcomes. To better promote self-care, the WHO recommends giving advice on diet and exercise, as well as offering interventions for relief of bothersome symptoms like nausea, lower back pain, and leg swelling. (104)

Patient education is the key to empowerment, enabling patients to know their rights and responsibilities. To start off with prenatal education, it can undoubtedly help the future parent(s) manage expectations and pay attention to important details, such as folic acid supplementation, avoiding smoking, alcohol, and drug use, manage pre-existing health conditions, check validity of immunisation, and develop a plan. With the transition to the antenatal period, the WHO considers antenatal education as an essential component. Thus, the WHO recommends childbirth training workshops on several topics, including childbirth fear and pain, pain-relief techniques, advantages and disadvantages of caesarean sections and vaginal deliveries, as well as indications and contraindications of each. The WHO also recommends nurse-led training sessions on anxiety and stress during pregnancy, plus relaxation and deep breathing techniques. Other sessions, such as psychosocial couple-based prevention programs and psychoeducation, are also recommended to foster a healthy support system for expecting mothers, in addition to setting expectations for the labour and birth processes. It is very important to keep in mind that education does not end with giving birth; in fact, the continuation of health education strategies postpartum is essential for caregivers, particularly in topics pertaining to breastfeeding and mental health, and can improve maternal and newborn outcomes. (104)

## **11. Maternal and Infant Nutrition**

### **Maternal Nutrition:**

The Sustainable Development Goals (SDGs) and the UN's Decade of Action on Nutrition are driving a renewed focus on nutrition. With the FAO and WHO leading, evidence-based guidance on healthy diets is prioritised. Adequate nutrition, especially for women before and during pregnancy and while breastfeeding, is vital for their well-being and their children's health. Unfortunately, many people who are pregnant globally, especially adolescents and at-risk groups, face inadequate diets lacking essential nutrients. Insufficient intake during pregnancy leads to severe complications, affecting over 20 million newborns annually with risks of anaemia, pre-eclampsia, stillbirths, and low birth weight. (105)

The importance of maternal nutrition has been thoroughly emphasised by globally recognized institutes such as the WHO through sections in guidelines on maternal health and antenatal care. The latter has undergone a "nutritional interventions update" to emphasise the importance and to mention the RDAs of multiple micronutrient supplements during pregnancy (106,107)

WHO Member States endorsed six global nutrition targets in 2012 to improve maternal, infant, and young child nutrition. Among these, three targets significantly impact health during pregnancy and infant well-being: anaemia, low birth weight and breastfeeding. Policies for these targets have delineated the problem to be surmounted, causative agents, the framework for interventions along with case studies. (108–110)

Similarly the FIGO has made the following noteworthy contributions: The International Federation of Gynecology and Obstetrics (FIGO) has undertaken various initiatives to enhance maternal nutrition globally. Here's a breakdown of three significant endeavours:

### **1. The Bukhali Trial:**

The Bukhali randomised controlled trial, a component of the Healthy Life Trajectories Initiative aims to shape policies, identify dietary risks and foster behavioural changes concerning preconception health. This comprehensive intervention, initiated in Soweto an urban-poor area in South Africa, spans the preconception period through pregnancy and postpartum, intending to evaluate a multifaceted approach to optimise: (1) nutrition, (2) physical and mental health and (3) lay the foundations for healthier pregnancies and early child development. (111)

### **2. FIGO Nutrition Checklist and Recommendations on adolescent, preconception, and maternal nutrition:**

The FIGO Working Group on Adolescent, Preconception, and Maternal Nutrition (active from 2014 to 2018) concluded that involving women and their partners in nutrition discussions during preconception or early pregnancy could be enhanced through a straightforward checklist. Introduced in 2015, the FIGO Nutrition Checklist is a pivotal part of FIGO's initiative targeting adolescent, preconception, and maternal nutrition enhancement. It's a user-friendly, swift, and universally adaptable tool geared to spot nutritional concerns and lay the groundwork for discussions on healthy dietary habits. Comprising four segments, it delves into dietary needs, body mass index, nutritional quality, and micronutrients. Its queries seek fundamental data on weight and nutrition, aiming to spark health-focused discussions prior to or during pregnancy while flagging potential nutritional problems that might necessitate additional evaluation or intervention.

The FIGO Nutrition Checklist was devised for women to complete before or during pregnancy, preferably during brief clinical consultations with healthcare professionals. It has been used with positive outcomes in the Bukhali trial (112,113) and in the International Journal of Gynecology & Obstetrics- the official journal of FIGO, several articles have been written to evaluate its ease of use by obstetricians and convenience for the respondents. (114) In these studies in Dublin, Ireland, while the pregnant people reported that the Checklist was quick to complete, all participating obstetricians felt there was not enough time to discuss it in routine practice (115). Despite this, most obstetricians and pregnant individuals recommended the FIGO Nutrition Checklist for use.

In Hong Kong, Tsoi et al conducted a study comparing the FIGO Nutrition Checklist with a locally validated food frequency questionnaire. Their findings indicated a strong association between the Checklist's questions concerning diet quality and the actual consumption of foods and nutrients, as evaluated by the food frequency questionnaire. Specifically, the Checklist's inquiry about dairy intake (3iv) showed a correlation with calcium, milk, and dairy product consumption. Similarly, question 3ii, focusing on fruit and vegetable intake, exhibited a strong relationship with fibre, vitamin C, and overall fruit and vegetable consumption. Moreover, they devised a diet score based on the Checklist, ranging from one to six, which aligned well with established measures of diet quality like the Dietary Approaches to Stop Hypertension index. In LMICs, healthcare providers considered the checklist as an important tool to encourage nutrition-related dialogues with women and recommended its use during clinical visits. However, like Dublin, they noted that the challenges associated with its administration had to be tackled for greater impact. (116)

The FIGO Working Group on Adolescent, Preconception, and Maternal Nutrition also released their recommendations for the same. The FIGO recommendations on adolescent, preconception, and maternal nutrition emphasise the critical role of nutrition in the health of adolescent girls and women, as well as the future

well-being of their offspring. The document provides action points for healthcare providers, including assessment considerations and discussion points related to diet composition, physical activity, anthropometric measures, anaemia, and specific nutritional problems such as low nutrient density and deficiencies in folate, iron, calcium, vitamin B12, vitamin D, iodine, zinc, and PUFAs. It underscores the importance of a healthy diet, exercise, weight loss counselling, and addressing risky behaviours and exposures. Additionally, the recommendations highlight the significance of women's nutrition and health in the intergenerational transmission of human health capital, advocating for investments in adolescent, preconception, and maternal nutrition to yield cumulative benefits and improvements in health across multiple sectors of society. The document is directed at various stakeholders, including healthcare providers, healthcare delivery organisations, professional organisations, educators, and women and their families, aiming to create a global framework for action to improve nutritional care and support for adolescent girls and women through different periods of life. (117)

### **3. Pregnancy, Obesity, and Nutrition Initiative (PONI) and Guidelines:**

Pregnancy, Obesity, and Nutrition Initiative (PONI) by FIGO, is their newly released supplement. The PONI forms part of the activities of FIGO's Pregnancy and Non-Communicable Diseases (PNCD) Committee. PONI addresses the critical nexus between pregnancy, obesity, and nutrition, aiming to mitigate adverse maternal and foetal health outcomes linked to obesity during pregnancy. The supplement offers comprehensive guidelines, expert insights, and evidence-based strategies to navigate obesity-related challenges in maternity care. It emphasises holistic approaches, including preconception interventions, weight management, nutritional guidance, and postpartum care, emphasising the need for global standardised protocols to tackle obesity's impact on maternal health. (118)

FIGO's Pregnancy and Non-Communicable Diseases (PNCD) Committee also released guidelines to manage pre-pregnancy, antenatal, and postpartum obesity. The guideline reviews good clinical practice recommendations from previously published international documents and serves as a practical resource to support obstetricians and gynaecologists in the management of obesity during pregnancy. Many guidelines have been developed to date, although they vary in scope, methodology, and individual recommendations. The strength of this review is that the perspectives and key considerations of different member organisations are outlined and synergies or differences discussed. The guideline encourages member organisations to use the guidance in this document as a framework to create and publish their own evidence-based localised and pragmatic clinical practice guidelines, especially in low- and middle-income countries that are currently underrepresented in the literature and have specific needs in relation to obesity that warrant special consideration. (119)

Poor nutrition during breastfeeding poses challenges for mothers to replenish their nutrient stores and meet increased dietary requirements. Factors such as limited food access, affordability issues, gender disparities, and cultural norms significantly impact women's dietary choices and access to adequate care.

Studies have found that women in households with lower socioeconomic status, as indicated by poverty-to-income ratio (PIR) and household food security, were more likely to have inadequate intake of essential nutrients. (120)

Enhancing the dietary habits, access to nutritional services, and care practices among women before, during pregnancy, and throughout breastfeeding is crucial in preventing various forms of malnutrition, especially for the most vulnerable mothers and infants.

**Pre-Pregnancy Nutrition:** Initiatives that enhance accessibility and affordability of nutritious foods while employing behaviour change communication to advocate for healthy diets. Additionally, support extends to widespread food fortification programs, such as iodizing salt and fortifying staples like wheat flour, rice, and cooking oil with essential vitamins and nutrients to elevate the quality of women's diets.

**Pregnancy Nutrition:** Integrating nutritional counselling into prenatal care services, healthy eating, micronutrient supplementation (iron, folic acid, or multiple micronutrients), deworming, weight monitoring, physical activity, and adequate rest during pregnancy. This aligns with global recommendations, bolstered by nutritional counselling and support.

**Breastfeeding Nutrition:** The focus remains on promoting healthy dietary habits, micronutrient supplementation, deworming, physical activity, and rest for breastfeeding women, supported by nutritional counselling during postnatal care.

**Adolescent Mothers' Nutrition:** Tailored programs are designed for pregnant adolescents, breastfeeding teenage mothers, and other nutritionally vulnerable groups, offering specialised support, counselling, micronutrient supplementation, and balanced energy-protein supplements where applicable. Strengthening education and awareness programs on maternal nutrition.

**Innovations:** Call for innovative approaches to improve maternal nutrition, testing interventions during pregnancy and breastfeeding. Efforts aim to expand access to cost-effective, high-quality micronutrient supplements and innovate products while developing field-friendly methods to assess micronutrient deficiencies.

**Key Actions for Improvement:** These include bolstering nutrition governance, enhancing food systems for nutritious diets, expanding access to nutrition services and social protection programs, advocating for improved nutrition and care practices, and driving social and economic empowerment for adolescent girls and women. Implementing targeted interventions for vulnerable populations. Supporting research and innovation in prenatal nutrition.

Collaborative efforts between healthcare providers, policymakers, and community organisations, along with allocation of resources and funding for maternal nutrition programs and monitoring and evaluation mechanisms to assess program effectiveness shall also prove effective in the long run.

**Work done till now:**

The Nutrition Landscape Information System (NLIS), a web-based tool, consolidates WHO Global Nutrition Databases and other food and nutrition-related data from partner agencies. NLIS offers country profiles and downloadable data structured by UNICEF's malnutrition framework, providing an overview of a nation's nutrition, health, and development. Drawing data from diverse sources including WHO, UNICEF, UNDP, FAO, DHS, World Bank, IFPRI, and ILO, the system also integrates newer data from varied sources. (121)

The Global Nutrition Monitoring Framework (GNMF) aids countries in tracking progress toward these targets, measuring outcomes and monitoring policies influencing these pathways. WHO, in collaboration with UNICEF and the EC, created a Tracking Tool to assist countries in setting and tracking national targets aligned with the global goals until 2030. This updated version allows scenario exploration, accounting for different progress rates and timeframes. Available in multiple languages, this tool supports nations in monitoring and achieving their nutritional targets. (122)

The holistic approach involves leadership, evidence-driven decisions, improved food systems, enhanced services, communication strategies, empowerment, and challenging discriminatory norms for women's nutrition rights. Translating global targets to national ones necessitates considering profiles, risk factors, demographics, policy experience, and health system development. Comprehensive nutrition services, education, and better food access are crucial. Empowering women's decisions in healthcare ensures healthier pregnancies and better outcomes for both mothers and children globally. (121)

**Infant Nutrition (Breastfeeding)**

Breastfeeding has significant economic benefits that are related to Sustainable Development Goals 1, 8, and 10 which focus on ending poverty, promoting economic growth and reducing inequalities. According to the World Bank's Investment Framework for Nutrition analysis, every dollar invested in achieving the breastfeeding target generates a return of \$35 in economic benefits. It produces a productive and healthy workforce, but also reduces absenteeism rates and thus generates more returns in economic terms. Many empirical evidences recommend

that policies and initiatives to increase breastfeeding rates can be implemented at a low cost which makes them cost-effective in social and economic terms.

Inadequate breastfeeding leads to a higher number of cases of childhood and maternal disease, which causes a higher burden on a health care system.

As a practical step towards protecting the survival and health of babies and breastfeeding people, breastfeeding is a central part of the 2030 Agenda for Sustainable Development and is linked to all of the Sustainable Development Goals (SDGs).

As governments develop budgets and action plans to achieve the SDGs, breastfeeding should be a priority. Breastfeeding contributes not only to achieving many of the SDGs, it is also a critical component of the Global Strategy for Breastfeeding people's/mother's, Children's and Adolescents' Health.

Breastmilk does not require industry for production and is created and consumed with a minimal ecological footprint. Breastfeeding is linked to better nutrition, health and greater well-being for children and breast-feeding parents, which contributes to central goals of the 2030 Sustainable Development Agenda.

### **Breastfeeding and COVID 19**

Misinformation and formula milk donations are threatening breastfeeding during COVID-19. Breast milk is a baby's 'first vaccine'. Breast milk is so important to babies' health that UNICEF and the World Health Organization urge breastfeeding people to breastfeed even if they have COVID-19 — as the benefits of breast milk far outweigh the risks of infection to the baby. However, research recently commissioned by UNICEF in five countries across South Asia found that less than 25% of people interviewed understood it's safe to continue breastfeeding if a breast-feeding parent has symptoms of COVID-19. (117)

Confusion, misinformation and inappropriate donations of formula milk are stopping breast-feeding parent from breastfeeding — further jeopardising the health of children.

The public health messages on physical distancing, combined with a lack of access to correct information and counselling on breastfeeding and misinformation on social media is leaving breast-feeding parents anxious and confused. Formula should always be a last resort for families. It is inferior to breastmilk in nutritional content and is costly, so parents often dilute it too much to make it last longer. However, social media messages promoting formula milk claim differently. In some cases, influencers on social media deliver marketing messages that undermine breastfeeding people's confidence to breastfeed. (117)

### **Role of marketing and Pharmaceutical Companies**

A major factor in early breastfeeding cessation is the early introduction of breast-milk substitutes, due to societal and commercial pressure, which includes marketing and promotion by formula producers, in addition to the inaccuracy of the medical advice from health workers who lack the skills and training in breastfeeding support.

The focus should not just be on counselling but also teaching the right technique. Eighty percent of neonatal deaths occur in the low-and middle-income countries (LMICs), where delayed breastfeeding initiation is the highest. Place and mode of childbirth are important factors determining the time of initiation of breastfeeding. (123) Health education/advice provided during antenatal visits appear to play a significant role in the process of counselling and teaching.

- **Social Barriers (123):**

The common misconception around poor breastfeeding rates in India is that there is a lack of awareness. But it isn't poor messaging around healthcare or outreach that is to blame.

Breastfeeding is one of the areas affected by gender inequities as women lack support by family, worksites, and communities. In a male-dominated society, women's breasts are objectified and sexualized, and public breastfeeding is stigmatised, limiting women's mobility in public spaces, which can prompt the choice to bottle feed as a substitute. In returning to work, many mothers cease breastfeeding or begin mix feeding due to a lack of time, a lack of privacy, or an environment that is not conducive to continuing breastfeeding in addition to other employers' perception of the presence of infants in the workplace and work regulations and rules which bar children from the workplace. Consequently, paid maternity leave, the option to work part-time, breastfeeding breaks, on-site crèches and facilities for expressing and storing breast milk have been identified as factors protective of continuing breastfeeding.

A lack of education about breastfeeding is one of the main social barriers to breastfeeding. Higher rates of breastfeeding have been found in families with a high education level in general, and in the non-vulnerable population, in comparison with families with low socio-economical and education level, and vulnerable population respectively.

Disasters and crisis situations, such as pandemics, can negatively impact rates of breastfeeding due to various factors such as stress, disruptions to healthcare services, and increased reliance on formula feeding. It is important to provide support and resources to breastfeeding mothers during these times to mitigate the potential negative effects on infant health and well-being

- **Medical Barriers (123):**

Though breastfeeding gives the complete nutritional requirements needed by the infant most especially within the first 6 months of life and also confers a benefit to the mother, there are some medical indications however that may serve as barriers to breastfeeding.

These contraindications include but are not limited to the presence of Ebola disease, infection with T-cell, untreated brucellosis, active herpes simplex virus, active varicella and tuberculosis. Some other factors that have been indicated as negatively influencing breastfeeding include advanced maternal age, mastitis, and nipple fissures. Some mothers may also experience barriers to lactation due to primiparity, maternal obesity, gestational diabetes, stress and various other factors. Moreover, psychological factors also play a role in the barriers to breastfeeding such as friends and families who do not breastfeed their babies; low belief in breast milk's nutritional value; as well as poor body image. Maternal reassurance in addition to mechanical breast pumping and early postnatal follow-up have been suggested as potential strategies in the management of delayed, reduced or absent lactation.

Human milk bank is an option for mothers that are not able to breastfeed due to various reasons. Breast milk is the optimum source of nutrition for the first six months of life, and regardless of advances in infant formulas, human milk offers benefits that cannot be replicated by other sources of nutrition, thus, human donor breast milk should be considered as an alternative, especially for the low-birth weight infants. Thus, development and support of human milk banks are crucial for the promotion of breastfeeding.

- **Feeding in exceptionally difficult circumstances (124):**



Families and children in difficult circumstances require special attention and practical support. Breastfeeding remains the preferred mode of infant feeding in almost all difficult situations, for instance:

- Low-birth-weight or premature infants;
- Mothers living with HIV in settings where mortality due to diarrhoea, pneumonia and malnutrition remain prevalent;
- Adolescent mothers;
- Infants and young children who are malnourished; and
- Families suffering the consequences of complex emergencies.

### **Breastfeeding and infections**

Breastfeeding is known to provide various benefits to both the mother and the child. However, there are certain infections that can be transmitted through breastfeeding. In particular, HIV and TB are two infections that are of great concern, along with other infections like herpes. According to the guidelines issued by the National AIDS Control organisation (NACO) in India, breastfeeding is recommended for all infants, including those born to HIV-positive mothers. However, in such cases, certain precautions need to be taken to minimise the risk of transmission of HIV through breast milk like ensuring that the mother receives antiretroviral therapy (ART) to reduce her viral load, providing exclusive breastfeeding for the first 6 months and then along with complementary supplements for 12 months. (125)

Similarly, for mothers with TB, the Centers for Disease Control and Prevention (CDC) recommends that breastfeeding should continue unless the mother is too ill to breastfeed or is on medications that are harmful to the infant, wherein expressed breast milk or formula milk can be given to the infant. Regarding herpes, the American Academy of Pediatrics (AAP) recommends that breastfeeding should be continued unless there are active herpes lesions on the breast or nipple. (126,127)

There are several other infectious diseases that can be transmitted through breastfeeding. Some examples include:

- Hepatitis B and C: Infants born to mothers infected with hepatitis B or C should receive appropriate immunisations to prevent infection. In cases where the mother's viral load is high or there are signs of active liver disease, formula feeding may be recommended. (128)
- Zika virus: Infants born to mothers with suspected, probable or confirmed Zika virus infection, or who reside in or have travelled to areas of ongoing Zika virus transmission, should be fed according to normal infant feeding guidelines. They should start breastfeeding within one hour of birth, be exclusively breastfed for six months and have timely introduction of adequate, safe and properly fed complementary foods, while continuing breastfeeding up to two years of age or beyond. (129)
- Syphilis: Infants born to mothers with untreated syphilis are at risk of acquiring the infection through breast milk. Treatment of the mother with antibiotics is necessary. (130)
- Group B Streptococcus (GBS): Infants born to mothers colonised with GBS are at risk of acquiring the infection through breastfeeding. Appropriate antibiotic treatment of the mother can reduce the risk of transmission. (131)

### **Breastfeeding and caesarean delivery**

Despite the fact that WHO advises commencing breastfeeding within the first hour after birth to maximize the benefits for the newborn, mothers who undergo caesarean delivery often experience delayed initiation of breastfeeding. At the maternity hospital level, separation of babies from mothers especially in caesarean

section births, more so in the private sector; inadequately trained health staff; unnecessary use of infant formula due to commercial influence of baby food industry on health facilities; and inadequate counselling and support to mothers during antenatal and postnatal periods were found to be some of the additional barriers.

A collaboration between the Government of Telangana, India; UNICEF, and the Breastfeeding Promotion Network of India (BPNI) has introduced an initiative to promote early breastfeeding for C-section mothers. This involves trained staff nurses assisting mothers in feeding their newborn within one hour of birth, even in the operation theatre. The program aims to sensitise, train, and certify select health facilities as 'Baby Friendly Hospital Initiative' to encourage early breastfeeding. (132)

### **Non-cis Gender people and Breastfeeding**

Breastfeeding or chestfeeding are neglected in the context of the transgender and gender-diverse population. Many factors including socio-demographic factors, and family environment are associated with it. Better social and family support is necessary to improve breastfeeding or chestfeeding practices. An article from the Lancet states that compared to the cisgender population, transgender and gender-diverse parents showed a lower exclusive breastfeeding or chestfeeding rate and a shorter breastfeeding or chestfeeding duration. (123)

Having received hormonal therapy before having a child, higher gender dysphoria level, experiencing family ostracism and partner violence, having a child with artificial insemination and surrogacy, no feeding education, and experiencing discrimination during health seeking are associated with poor breastfeeding or chestfeeding practices. It is crucial to help to build a better social environment for transgender people to improve breastfeeding or chestfeeding practices. Employment is already scarce for gender non-binary people in India, and them taking leaves to chest/breastfeed may lead to further loss of opportunities.

For transgender women wishing to breastfeed, the primary challenges are inducing lactation and establishing a milk supply. La Leche League (LLL) is an international, nonprofit, nonsectarian organisation that supports everyone who wants to breastfeed or chestfeed in reaching their goals. Forming an association or incorporating an organisation like LLL or World Alliance for Breastfeeding Action (WABA) can be a boon to India which requires to formulate such aid for gender non binary people. Policymakers can take inspiration from LLL to make India more gender inclusive in terms of breastfeeding. In policies, inclusive phrasing to secure the gender non-binary population of our country can go a long way in promoting effective breastfeeding, eg. by substituting "parent" for "mother" or "woman". (124)

Policies should be made which strongly advocate an overall effort to improve breastfeeding in the Transgender population, including: improving the accessibility of human milk by making provisions for milk banks in trans-care hospitals, including trans/ gender non-binary people in policies and laws incentivizing or promoting exclusive breast/chestfeeding, developing door-to-door education strategies for breastfeeding/chestfeeding, and eliminating discrimination in seeking healthcare. Most importantly, more studies are required to understand the challenges of breastfeeding/chestfeeding faced by gender and sexual minorities and provide essential support and solutions.

### **Commercialization of Breast milk (133–136)**

The buying and selling of human milk raises important ethical questions. The conditions under which milk may be produced demand ethical consideration. For instance, poorer breastfeeding people may be more motivated to sell their milk than more affluent breastfeeding people, and they may be at risk of exploitation if commercial milk production is their only means of economic exchange.

Also, access to human milk may be determined by socioeconomic status, in the same way as access to high quality, nutritious food.

Commercialization may provide economic opportunities to the population but deprive human milk banks of breast milk creating a socio-economic divide. It therefore will violate the Right to Health. Rationing access to milk banks – which limits who can get milk on fixed medical criteria, excluding, for example, those adults looking for fitness supplementation – directs milk to those who need it most. Such a discussion must respect breastfeeding and long-held customary practices concerning infant feeding in diverse cultures, but we must address the fact that multinational corporations are moving into the space. Policymakers must consider what this means for breastfeeding people and their infants and place these voices at the centre of responses.

### **Ethics of Breastfeeding (136–138)**

Breastfeeding people who are unable to breastfeed due to malnutrition and poverty, or those who can but choose not to breastfeed for a variety of reasons, are often perceived negatively for not breastfeeding.

It brings to the fore two other critical issues worth deliberating:

1. The right of a mother to choose the manner in which her child should be nourished and
2. The rights of a child to an optimal source of nourishment.

The policy ramifications of this debate between the rights of a child vis-à-vis that of the mother are significant. If the one and only source of optimal nourishment for infants is recognised to be breastmilk, does this mean that a mother can be obligated or compelled to breastfeed? Does this not usurp the autonomy that the mother has over her body? Should the law dictate that a mother ought to breastfeed, how will this be enforced? Would this not violate her fundamental right to privacy? Is society right in judging and stigmatising a young mother over her feeding choices? On the other hand, if a child's right to breastfeed is not recognised, given the life-threatening risks associated with other infant foods, would it not amount to violating the child's fundamental right to life?

It is thus evident that breastfeeding – a natural and intimate act between a mother and her child – has become a complicated political issue, involving several other stakeholders such as the family, society, governments and businesses, with unfortunately not all acting under benign interests. However, any outcome of such deliberation should be to recognise the irreplaceable role that a mother has in deciding the manner in which her child is to be fed.

It is important to begin by not moralising the costs and benefits. Not all birth parents can provide breast milk. About 1 in 8 experience disrupted lactation or early undesired weaning. Others may suffer from postpartum conditions or unresolved sexual trauma. Breastmilk substitutes are vital in these cases and parents should not be pressured or harassed when they use them, especially given that human milk banks have been inaccessible for the majority population of most nations.

Amongst all the stakeholders, the mother is the most affected as well as the most likely party to have the best interests of her child in mind. The role played by other stakeholders should merely be to facilitate the mother to nourish her child – either by way of breastfeeding or formula – as long as her choice is based on credible information and counselling.

### **Working women and breastfeeding**

**IFMSA International Secretariat, Nørre Allé 14, 2200 København N., Denmark**

Expressed Breastfeeding is an impracticable concept, one that is impossible to follow in the context of competing time demands for paid work, household chores and other caregiving responsibilities. The conditions at the workplace – long hours of work, no regular breaks, physically arduous tasks – reduce women’s ability to breastfeed on time and an adequate number of times. Most women’s daily routine indicates the little time they have to breastfeed their infants. The other challenge is the dearth of infrastructural support to facilitate breastfeeding in public spaces. Even though India does not have any law which punishes breastfeeding in public, it is usually stigmatised due to hyper-sexualisation of a breastfeeding people’s mammary glands. On the other hand, no effort has been made to provide private nursing rooms in public spaces such as bus stops, malls, railway stations etc. A breastfeeding person should not be forced to be within the confines of her home in order to breastfeed her child. Accessibility to public spaces and adequate support at workplaces is likely to curb the trend of breastfeeding people choosing not to breastfeed, especially in urban areas. (139)

### **Laws for Breastfeeding**

The International Code Of Marketing Of Breast-Milk Substitutes and its 20 Resolutions, is a landmark document that protects breastfeeding’s crucial role in child survival as a safe, renewable natural food resource that contributes to food and water security. All Member States (MS) have an obligation to implement it and commercial companies must comply with it While 144 countries have implemented the Code to some degree, WHO’s recent reports expose many loopholes that allow digital and other forms of predatory marketing to flourish.

In a three-paper series published in The Lancet, researchers have called out formula milk manufacturers, saying that their marketing tactics are exploitative and urgent clampdowns are needed to tackle misleading claims and political interference. (140) Of the 194 countries analysed in the report, 136 have in place some form of legal measure related to the International Code of Marketing of Breast-milk Substitutes and subsequent resolutions adopted by the World Health Assembly (the Code). However, the legal restrictions in most countries do not fully cover marketing that occurs in health facilities. Only 79 countries prohibit the promotion of breast-milk substitutes in health facilities, and only 51 have provisions that prohibit the distribution of free or low-cost supplies within the health care system.

In a report of a multi-country study also released this year both United Nations agencies presented findings on women’s exposure to, and experience of, formula milk marketing. (141) The study findings exposed the aggressive marketing tactics used by the formula milk industry to influence how babies and young children are fed. Formula milk companies employ sophisticated tactics, utilising scientific language and imagery, to craft misleading messages that target and exploit parents' anxieties and emotions while tapping into their aspirations. Assuming friendly and supportive roles, these companies manipulate pregnant individuals and mothers to boost sales. According to a survey, a staggering 93% of women were exposed to formula milk promotions either online or in-store, with 68% directly receiving such promotions. The advent of digital marketing platforms, particularly on social media, is increasingly favoured for its perceived effectiveness over traditional advertising methods. This shift not only broadens the reach but also provides companies with a wealth of personal data to refine and focus their marketing strategies. Despite women's strong desire to breastfeed, the constant influx of deceptive marketing messages perpetuates myths about breastfeeding and breast milk, eroding women's confidence in their ability to breastfeed. This troubling interplay between marketing tactics and maternal aspirations underscores the need for heightened awareness and regulation in the formula milk industry.

### **Opportunities for action**

Drawing on compelling evidence highlighting the disruptive impact of formula milk marketing on informed decision-making and its detrimental effects on breastfeeding, the report advocates a comprehensive set of opportunities for immediate action. Firstly, it emphasises the imperative to recognize the scale and urgency of the problem. The proposed solutions extend to legislative measures, urging countries to promptly adopt or strengthen national mechanisms that rigorously regulate and enforce restrictions on formula milk marketing.

Additionally, the report underscores the importance of safeguarding the integrity of science and medicine by establishing mechanisms that counteract conflicts of interest and challenge commercially motivated messages related to infant feeding. To ensure children's health on digital platforms, the need for protective measures is emphasised. The report also calls for a strategic shift in investments, encouraging support for mothers and families while divesting from formula milk companies. Lastly, it advocates for the expansion of coalitions to drive collective action, recognizing the collaborative effort required to address the multifaceted challenges posed by formula milk marketing.

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