Under Five Child Mortality & Its Risk Factors in Bangladesh and other South Asian Countries: A Literature Review

Nahian Rahman[1], Md. Ruhul Kabir[1], Oumma Halima[1], Mohammad Rahanur Alam[1], Md. Abdullah Al Mamun[1], Homayra Islam[2]

[1]Department of Food Technology & Nutrition Science, Noakhali Science & Technology University, Bangladesh, [2]Deputy Commissioner Office, Noakhali, People's Republic of Bangladesh

Abstract

Under five child mortality is one of the serious public health issues in all over the world especially in South Asian region. Significant achievements have been made in last ten decades to reduce child mortality globally, but South Asian region still has one of the highest child mortalities in the world (51 deaths per 1000 live births). Out of ten child deaths, three occur in South Asian region. Various risk factors influence this high mortality rate, however, some of the risk factors show similarities and other varies time to time across countries in the South Asian region. Parents literacy, occupation, household wealth, health care accessibility and utilization, poverty and inadequate food intake, poor access to information, mother's age and several socio-cultural factors contributes mostly to the high number of mortalities in young children. However, it is imperative to study the country specific reasons and useful comparison of contexts might be useful to address the immediate, underlying and basic causes of child malnutrition. There, this paper aimed to study the difference in under five child mortality in different South Asian countries and determine whether the associated risk factors are similar or different across those eight countries. For increasing the under-five child survival and achieving the Sustainable Development Goals, South Asian regional countries needs to give serious efforts on maternal and child health sector as it affects national development. Country specific strategies and interventions should be based on most prevalent risk factors.

Key words: *Under-5 mortality, Infant mortality, Determinants of mortality, South Asian countries, Risk factors.*

Introduction

Under five child mortality is a very important public health indicator for estimating a country's progress and overall wellbeing of a nation [(1)]. United Nations International Children's Emergency Fund (UNICEF) describes under-5 mortality as "the probability of dying between birth and exactly five years of age". Early childhood is an important period for determining their future health status. Infant mortality is one of the contributing indicators that can be used to assess the physical quality of life index (PQLI) and wellbeing of a nation [(2)]. According to World Health Organization (WHO), notable global improvement has been done in decreasing child deaths, from 12.7 million in 1990 to 5.9 million in 2015.Since 1990, worldwide under five mortality rates decreased 53%, from 91 deaths per 1000 live births in 1990 to 43 in 2015. Globally, approximate 4.6 million deaths appear annually and 99% of which is occur in developing countries at infancy [(3)].

South Asia contributes a major portion in neonatal mortality in the world. Time period between 1990-2009, countries having more than 50% of neonatal deaths were: India 27.8% (19.6% of global live births), Pakistan 6.9% (4.0%), Nigeria 7.2% (4.5%), China 6.4% (13.4%), and Democratic Republic of the Congo 4.6% (2.1%) [(4)].

The main aim of this paper is to assess the trends, socioeconomic and demographic risk factors associated with under-5 mortality in South Asian region (Bangladesh, India, Maldives, Nepal and Pakistan).

Child Mortality, Infant Mortality, Neonatal Mortality and risk group

Child mortality or under-5 mortality refers to "death of children under the age of 5 years" (UNICEF). During the last two decades, remarkable improvement has been

done in declining under five child mortality. Globally, under five child mortality rate "dropped 53% (from 91 deaths per 1000 live births in 1990 to 43 deaths in 2015)" [5]. In South Asia 1 child from 19 children dies before their reaching 5th birthday. In 2015, 6 million child deaths occurred from which 30% take place in South Asian nations. Three deaths occur out of every 10 children globally happen in South Asia. According to Centre for disease and control (CDC), infant mortality is defined as "child dies before reaching his/her first birthday". The Infant Mortality Rate (IMR) is referred to the rate of children death before one year of age per 1000 live births. In 2015, infant mortality accounted about 4.5 million. therefore, the infant mortality rate reduced globally from "63 deaths per 1000 live births in 1990 to 32 deaths per 1000 live births in 2015" [6].

Methodology

The study accesses the determinants and consequences of under-five mortality after a live birth, using the definition of child mortality: death occurring death of children before five year of age. For the purpose of the study, 1990-2016 was chosen as comparative time periods.

Data Source

For reviewing, searches are done for getting journal articles into Pub Med/Medline, Google scholar, Data base of open Access journal, Research gate and Science direct. The name of eight South Asian countries was added to these terms for getting information of respective countries. Estimates for under five child mortality rates were collected from the UNICEF Report of levels and trends in child mortality 2015. For certain countries within South Asian region, BHDS data for Bangladesh, NDHS for Nepal and PDHS for Pakistan.

Search strategy and identification of studies

The search for under five child mortality in South Asian region and combining used key words were: under five child mortality, child morbidity, neonatal mortality, infant mortality, risk factors of child mortality and cause specific child mortality. For countries with very few studies reporting under five mortality rate such as Maldives, Bhutan consider little source. In this paper, try to estimate the difference in under five child mortality in Bangladesh & South Asian countries and determine whether the associated risk factors are similar or different across the South Asian countries.

Child mortality trends in Bangladesh

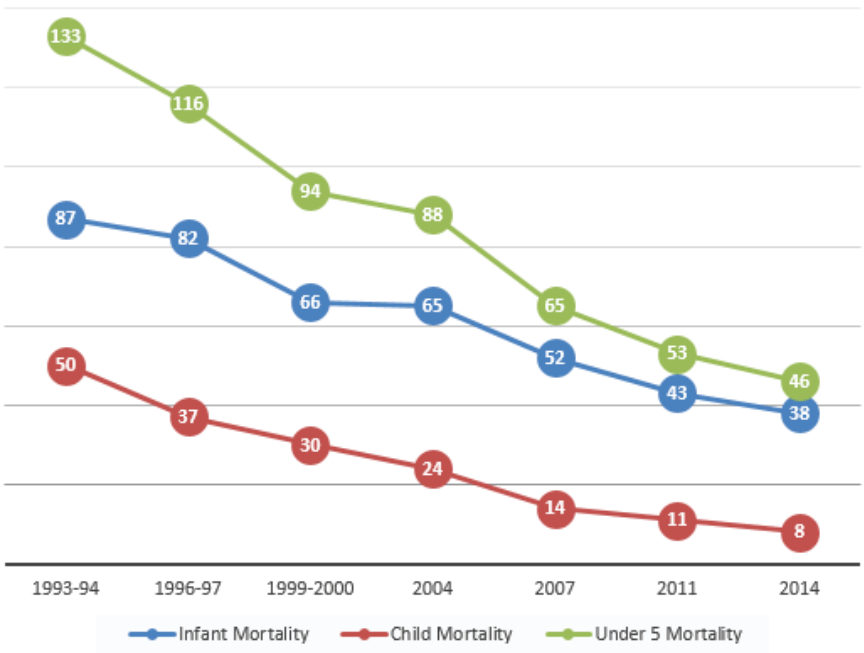

Figure 1: child mortality trends in Bangladesh

Time period of 1993-2014 where the infant mortality rate was 87 deaths per 1000 live births in 1993-94 and reducing by 66 in 1999-2000, 52 in 2007, 43 in 2011 and 38 in 2014. Child mortality rates also reducing trends from 1993-2014; 50 deaths were in 1993-94, 30 in 1999-2000, 14 in 2007, 11 in 2011 and 8 in 2014 per 1000 live births. In contrast to, Under-5 mortality rates, were 133deaths per 1000 live births in 1993-94 and reached at 94 in 1999-2000, 65 in 2007, 53 in 2011 and even 46 in 2014 [6].

Risk factors of under-five mortality in Bangladesh

Maternal age, Poor gestational weight gain, Maternal malnutrition, Marriage age, Poor education level, Wealth index, Insufficient food intake, lack of health facility are key contributors for child mortality in Bangladesh [6, 7].

Age of mother

Mother age is one of the vital factors for gestational risk and child mortality. Adolescent and older age (>45) pregnancy are dangerous for both the child and mother. Giving of births in adolescent period have reduced globally since 1990 but remain young age (11-19) fertility contributes 11% of the births and 95% of these births occur in low and middle-income countries [8].

Women's employment

Most important issue for mother is providing the quality of care by mother to her child. For employed mother has tough responsibility especially for take care of the health outcomes of under-five age children. In India, mortality rate for children under age of five is higher for the working mother. Mothers working for long hours influence the children's nutritional status and management of adequate care [9].

Parental Education

Parental education plays vital role to develop the health status of children. Maternal education contributes to fertility and economic wellbeing. Beside the formal education level, improving reading skills are also very much useful for mother and child survival [10].

Sex of child

Child mortality differing by sex is a vital concerning issue to consider. Under five mortality differing with sex vary from country to country. In developing countries, such as India and China, boys have lower under five mortality rates in comparison to girls [11].

Unintended Pregnancy

Unintended pregnancy influences the mother health status. Mother with unintended pregnancies has less intake of folic acid from the dose of recommended, prenatal/post-partum smoking and depression. Children born by unintended pregnancies are at greater risk of receiving poor antenatal care in developing nations [12].

Contraceptive use

Unintended pregnancy is prevented by using contraceptives which contribute to reduce maternal and child mortality. According to demographic and Health Survey in Bangladesh, use of contraceptives contribute to reduce infant mortality of birth order 2 and higher by 7.9%. In Bangladesh, complete use of contraceptive methods contributes to decrease the child mortality with a birth order of two or higher. Similarly, in Afghanistan higher contraceptive methods are used which is one of the key factors for reduction in child mortality [13].

Smoking

Smoking tobacco cigarette is very familiar sight though non-smoking tobacco products are highly used in developing countries. Passive smoking also caused affects to non-smokers indirectly and about 28% of child death occur globally [14].

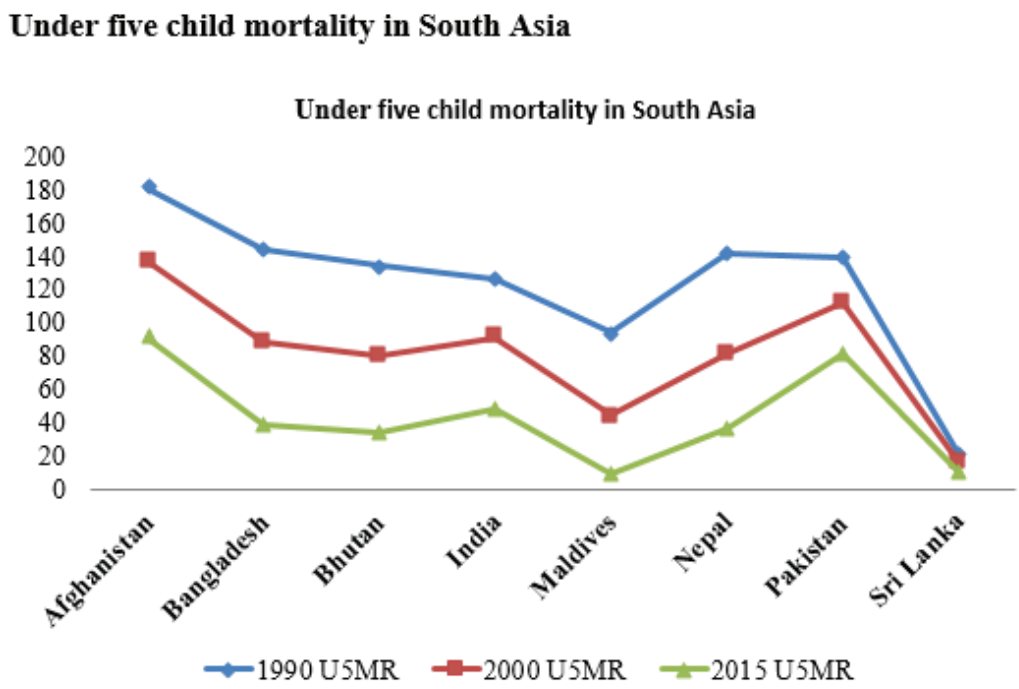

Figure 2: Levels and trends in under five child mortality among South Asian countries, 1990-2015. (Data source: The United Nations Children's Fund, September 2015).

Plotting under five mortality rates against time period of 1990, 2000, 2015 for South Asian countries. Figure 2 presents the under-five mortality distribution per 1000 live births from 1990-2015 where the observation pointed that highest mortality rate was 180 deaths per 1000 live births in Afghanistan at 1990 and decreased to 86 deaths in 2015. Similarly, lowest deaths of 21 per 1000 live births in Sri Lanka at 1990 and reduced to 16 deaths per 1000 at 2015.

Cause specific under-5 mortality

Mortality rate with a considerable cause for a population is referred as cause-specific mortality and Globally out of every 10 deaths, non-communicable conditions contribute for six, three for communicable, nutritional or reproductive and one for injuries. Potential causes are leading to under five mortality were preterm birth issues, maternal complications and pneumonia. The vital causes of child death in South Asian regions with highest under-5 mortality were preterm birth issues. Six conditions are caused for more than 70% of the under-5 child mortality globally, pneumonia (19%), diarrhea (18%), malaria (8%), measles, (4%), HIV/ AIDS (3%), and neonatal issues like as birth pre-term birth, and infections (37%). Malnutrition also consider as key contributor for the neonatal deaths [7].

Discussion

The focus of this study was to access the comparison and determinants associated with under-5 mortality in five South Asian countries (Bangladesh, India, Maldives, Nepal and Pakistan).According to the *State of the world's children*, Under-five mortality rate in Afghanistan is 257 deaths per 1000 live births which are the third highest in the world [15].India is the most populated country in the South Asian region which have the highest number of under-five children deaths in the region (2.1 million deaths in 2006) and one-fifth of under-five deaths globally. Nepal, which has developed in public health and declining under five mortality from 158 (per 1000 live births) in 1990 to 54.4 in 2011 [16].

In Sri Lanka, under five mortality rates was determined at 11 deaths per 1,000 live births before reaching age of five, which estimating a reduction of about 30 per cent during the last 15 years. About 70% of deaths are caused by diarrheal, preterm delivery pneumonia, neonatal infection, and lack of oxygen at birth. Poor sanitation, inadequate of safe water and malnutrition are contributing risk factors to half of under-five child deaths. Maternal malnutrition and

poor gestational weight gain are vital causes of low birth weight and high rates of newborn mortality in Bangladesh. Other factors such as immunization status of children and delivery practice may also accelerate under five child mortality rates. Low economic status of household, lower female literacy, inadequate mother nutritional status, early marriage age of mother, larger family and insufficient access to health care facility lead to high risk for under five mortality in India [17].

Comparison of Country specific risk factors

Risk factors causing under-5 mortality in different South Asian countries vary from each other. Old age of mothers (45-49) had constantly highest risk of under-five mortality in Bangladesh compared with Nepal, India, Maldives and Pakistan. Bangladesh has significant association of mother's age with under five mortality [18]. In India, highest risk of under-5 mortality in children is caused by poor wealth quintile and there are strong relationship between household wealth and under-5 mortality [19].

The association between education level of mother and under-5 mortality also vary between South Asian nations. Lowest level of education or no education of mother had significantly highest risk for under-5 mortality in Nepal comparison with other South Asian countries. In Nepal, there is a significant relationship between mother's level of education and breastfeeding practices [20]. The intention of using contraceptive methods or not also has major role to the risk of under-5 mortality in all countries of South Asia especially India having the highest risk of under five deaths for mother who does not use contraceptive.

Conclusion and Recommendation

This study focused on comparing the prevalence and risk factors of under-five mortality in South Asian countries. Findings from different studies in these countries reveals that the levels of under-5 mortality still unacceptably high among all South Asian countries with marginal differences. Risk factors like old age of mother, poor education, lack of using contraceptive, poor wealth quintile, and maternal smoking are key contributors of under-5 mortalities in each country and overall region.

Women's education is a key factor for improving the child survival among all other socioeconomic factors. The practice of early marriages should be controlled for decaling adolescent pregnancy which could increase child survival. Any specific strategy for reducing under five mortality in any South Asian country should be based on risk factors that are specific to that country. For achieving the Sustainable Development target of reducing child mortality by 2030, countries in South Asian region crying need to take serious attempts on child and mother health.

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Author information

Affiliations

1. **Department of Food Technology & Nutrition Science, Faculty of Science,**

Noakhali Science & Technology University, Noakhali-3814, Bangladesh.

- Nahian Rahman, Research Assistant
- Md. Ruhul Kabir, Assistant Professor,
- Md. Abdullah Al Mamun, Assistant Professor,
- Oumma Halima, Lecturer,
- Mohammad Rahanur Alam, Lecturer

2. **Deputy Commissioner Office, Noakhali, People's Republic of Bangladesh**

- Homayra Islam, Assistant Commissioner & Research Assistant

Contributions

Nahian Rahman and Md Ruhul Kabir conceptualize the idea, analyzed updated evidence, compared it, and prepared the manuscript and drafting. All other authors chipped in with drafting process and helped in comparison and analysis. All authors read and approved the final manuscript.

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