Asian Research Journal of Arts & Social Sciences

7(4): 1-15, 2018; Article no.ARJASS.45197
ISSN: 2456-4761

Understanding the Neonatal Health Situation of Bangladesh in Relation to Other South Asian Countries

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Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/ARJASS/2018/45197
Editor(s):
(1) Dr. David A. Kinnunen, Department of Kinesiology, California State University Fresno, USA.
(2) Dr. K. N. Bhatt, Professor, Department of Economics, G.B. Pant Social Science Institute, Allahabad Central University, India.
Reviewers:
(1) Simon Pius, University of Maiduguri, Nigeria.
(2) Giuseppe Gregori, Italy.
(3) Lawrence Okoye, University of Maiduguri, Nigeria.
(4) Jandryle Trondillo, University of Southeastern Philippines, Philippines.
Complete Peer review History: http://www.sciencedomain.org/review-history/27740

Review Article

Received 19 September 2018
Accepted 03 December 2018
Published 14 December 2018

ABSTRACT

Background: Bangladesh has reduced the neonatal mortality rate from 52 to 28 per 1,000 live births during 1993 -2014 to achieve the target of Millennium Development Goal -4 by 2015. Though, Bangladesh couldn't reach the target, its achievement is appreciable. But, it still remains a challenge for Bangladesh. For that knowing the causes of it and taking necessary steps for improving neonatal health situation in Bangladesh has become essential. And so, in this article it is tried to present, analyse and inter-relate recent data in such a way that the barriers could be identified easily for taking future steps.

Main Text: This manuscript is prepared considering three objectives: to present the neonatal health situation of Bangladesh on the basis of contemporary data, to compare the situation of Bangladesh with other South Asian countries and to identify some scopes for improving the neonatal health situation of Bangladesh. A rigorous literature review has been done as a main method of data collection from some renowned journals and research reports of different nation al

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and international health organisations published from 2001 to May 2018 and tables and graphs were made according to the objectives. The data analysis explores that, the neonatal mortality in Pakistan, Afghanistan, India, Bangladesh, Nepal and Bhutan are respectively 46, 36, 28, 23, 22 and 18, whereas Maldives and Sri Lanka has only 5 neonatal deaths per 1,000 live births in 2015, which is a great difference. Again, premature birth is high in India, Pakistan, Nepal and Bangladesh. In case of Bangladesh, the mothers' from lowest to middle wealth quintile, the neonatal mortality rate is high than highest wealth quintile in Bangladesh where the neonatal mortality rate is nearly twice which should be a matter of great concern for Bangladesh. Besides, for some cases, neonatal health situation of Bangladesh at the national level remains in a struggling situation to improve like Sri-Lanka because of the rural area backwardness, for examples postnatal care, essential newborn care, perinatal mortality, tetanus toxoid vaccination, and for some case, all countries, except Maldives and Sri Lanka, in South Asia have shown lower participation, take an example of postnatal care for newborns.

Conclusion: Among the South Asian countries, the condition of neonatal health is not sophisticated. Many countries are still showing a poor condition in various indicators of neonatal health and need to improve more. So, this paper will be very supportive for the neonatal health researchers, medical anthropologist, medical practitioners for further studies and specifically for the health-policy makers and corresponding authorities to take necessary actions for overcoming the obstacles of improving neonatal health situation in South Asian countries as well as Bangladesh.

Keywords: Neonatal mortality rate; neonatal health; postnatal care; essential newborn care; perinatal mortality; Bangladesh; South Asia.

1. INTRODUCTION

Child health is the purview of paediatrics and it is concerned with the health of infants, children and adolescents, their growth and development, and their opportunity to achieve full potential as adults. Neonatal death is defined as a death during the first 28 days of life (0-27 days). Worldwide, 2.6 million neonatal deaths occurred in 2016 [1]. Over two-thirds of these early child deaths are due to conditions that could be prevented or treated with access to simple, affordable interventions. The reduction of neonatal deaths is a high priority for the international community, especially in view of the increased attention on the Sustainable Development Goals 3.2. The South Asia region accounts for almost one-third of global mortality in neonates and children under 5 years of age. Despite of wide disparities in socio-economic and health indicators, many countries in this region are unlikely to reach SDG 3.2 which means reducing neonatal mortality to at least as below as 12 per 1,000 live births and end preventable deaths of them by 2030.

South Asia region contains eight countries: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka [2], still face huge public health challenges, particularly in maternal and newborn health. South Asia covers about 5.2 million km^2 (2 million mi^2), which is 11.71% of the Asian continent and 3.5% of the world's land surface area. The population of South Asia is about 1.891 billion, about one-fourth of the world's population, making it both the most populous and the most density populates geographical region in the world. Overall, it accounts for about 39.49% of Asia's population, over 24% of the world population and is home to a vast array of peoples. So, the maternal and neonatal health of this number of population has a great impact on world population [3].

After a steady decline in infant mortality rate, there is stagnation attributable to continued high neonatal mortality rates. In several countries, neonatal mortality is about two- thirds of infant mortality. Early neonatal deaths are two-thirds of neonatal mortality. Deaths during the first day of life are two -thirds of early neonatal deaths. The data on cause of death is unsatisfactory. In the hospitals, prematurity tops the cause of deaths while in the community, infections lead the list of causes. Countries in the Region have achieved good coverage with TT during pregnancy, and this has led to reductions in deaths due to neonatal tetanus, although it still continues to be a public health problem in several provinces/states in some of the Member Countries. The continuing high proportion of home deliveries conducted by untrained traditional birth attendants, relatives or family members reflects the deficiencies in health systems and poor demand for services.

Traditional practices like administration of prelacteal feeds, late initiation of first breast feed, the practice of not seeking health care for sick neonates and inconsistent measures to keep the baby warm are common in some countries. Delivery is considered an unclean process and adequate attention is not paid to cleanliness at the time of cutting the umbilical cord and while caring for the umbilical stump. Exclusive breast feeding rates are low [4].

2. OBJECTIVES AND METHODS

This paper is written keeping two objectives in mind: firstly, to present an overview of the neonatal health situation among South Asian countries, and secondly, to present the situation of neonatal health in Bangladesh in comparison to other South Asian Countries with some scopes of improvement of the situation. A rigorous literature review has been done as the main method of secondary data collection from Elsevier, Lancet, PubMed, WHO, World Bank, UNICEF, BMMS, BDHS and other journals published from 2001 to May 2018 and then the authors have prepared some tables and graphs from those big data to analyse the situation of neonatal health in Bangladesh and to compare it among South Asian countries.

3. CAUSES OF NEONATAL MORTALITY

The major causes of neonatal deaths in South Asia region, Diarrhea (28%), Sepsis/Pneumonia (26%), Tetanus (23%), Pre-term birth (6%) are major [5]. According to the data of UNICEF in 2015, data on the causes of neonatal deaths in Pakistan, Nepal, India, and Bangladesh are presented in the following graphs for comparative analysis.

According to Fig. 1, data on causes of neonatal deaths in Bangladesh, India, Nepal and Pakistan indicate that, most of the neonatal deaths occurred in all these four counties due to prematurity and birth asphyxia, and also the condition of neonatal deaths is almost same in all these countries which need concentration.

In Bangladesh, the main causes of neonatal mortality are birth asphyxia, prematurity, birth injuries and acute respiratory infections (ARI).

It is found that 43% of neonatal deaths in Bangladesh occurred due to birth asphyxia, 24% due to neonatal pneumonia, 22% due to prematurity, 5% due to sepsis, 0.2% due to meningitis and encephalitis, 0.1% due to congenital malformation and 5% causes are still remain undetermined [7].

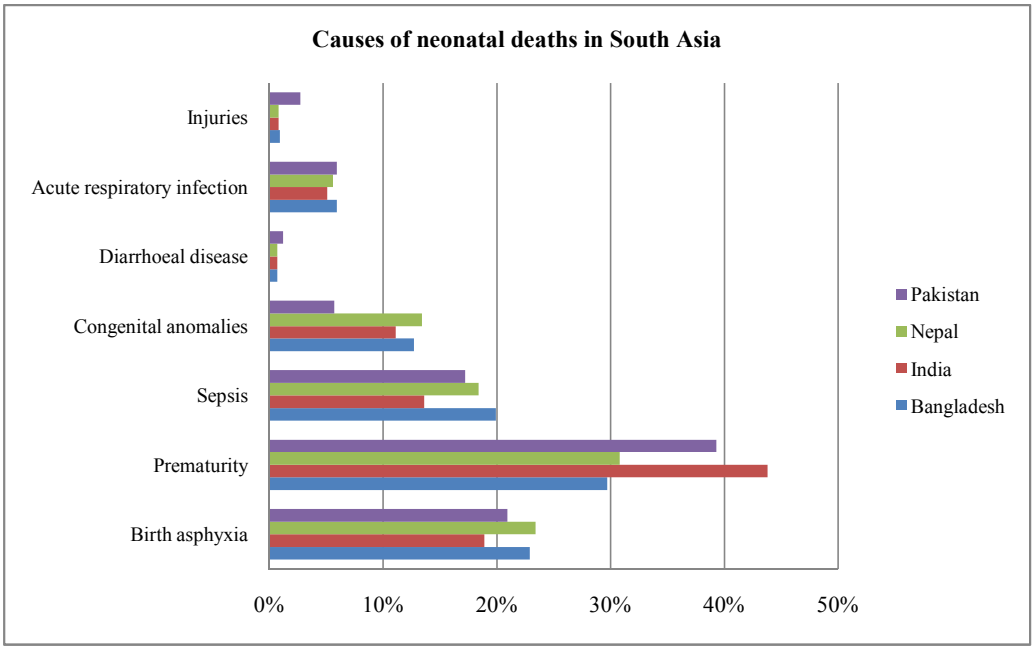

Fig. 1. Comparative variation in the causes of neonatal deaths in Pakistan, Nepal, India and Bangladesh [6]

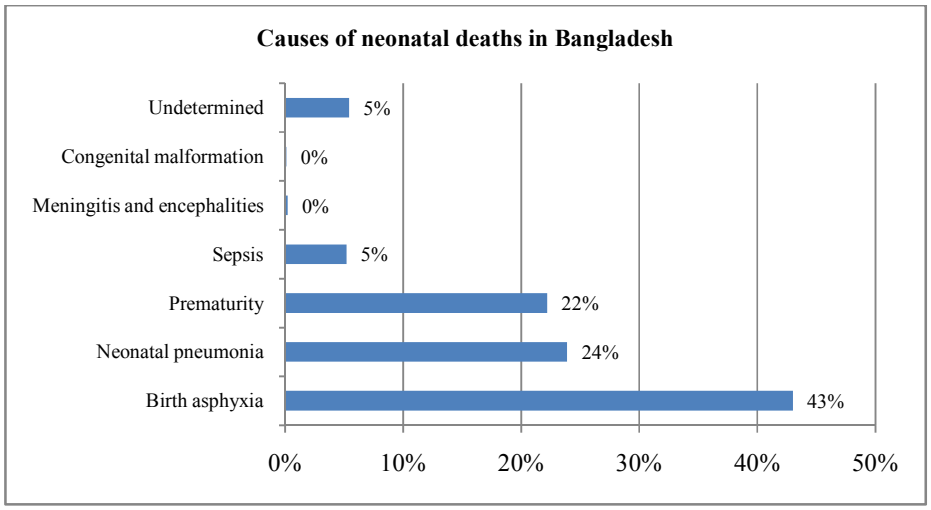

Fig. 2. Causes of neonatal deaths in Bangladesh [7]

4. NEONATAL HEALTH CARE SITUATION, BARRIERS AND SCOPES FOR IMPROVEMENTS IN BANGLADESH IN COMPARISON TO OTHER SOUTH ASIAN COUNTRIES

More than one-third of the neonatal deaths in the world occur in three South Asian countries - India, Pakistan and Bangladesh. Among all these countries, India has the largest number of neonatal deaths primarily because of large number of births [5,8]. According to the estimates neonatal mortality rates are highest in Pakistan (51 per 1000 live births) followed by Bangladesh (50 per 1000 live births) followed by India (47 per 1000 live birth) and Nepal (39 per 1000 live births) [9,10,11,12].

Among the various persistent problems, neonatal mortality is one of the leading factors that kill 33 newborns per 1000 live births in South Asia (SA) [13]. Neonates have the highest risk of death among all children. It is estimated that almost 99% of the world's neonatal deaths occur in low-income and middle-income countries, primarily in South Asia and Sub-Saharan Africa. In the SEA region-India, Nepal Bangladesh, Myanmar and Indonesia contribute to 99% of the total neonatal deaths. Out of these, India has a 76.6% contribution to the regional burden of neonatal deaths [14].

4.1 Neonatal Mortality Rate in South Asian Countries

The number of neonatal death in South Asian countries in 2015 has been shown in Table 1.

Table 1 presents the scenario of neonatal mortality in south Asia, where the regional neonatal mortality rate (NMR) was 46.27 per 1,000 live births in 1995. The overall condition of the countries was similar to this. But they successfully change the scenario from 1990 to 2015. Sri-Lanka has changed its NMR percentage almost 52% (from 10 in 1995 to 5 in 2015) which is the best among other countries. But Pakistan still contains high rate than other and fail to reduce NMR (42.18 per 1,000 live births in 1995 and 46 per 1,000 live births in 2015).

Neonatal Mortality Rate in South Asia by Background Characteristics has been depicted in Table 2.

This shows as usual trends in mortality in rural areas are higher than urban areas in all the countries. Neonatal mortality rate consistently decrease with increase with mothers education this fact was found true in both the survey point and in all the countries. Mortality rate decreases with increase in mother's education except in India in 2005-06. Above result does not show consistent result in all the countries. It was achieved in all the survey that teen age mothers have higher mortality. Mothers in the age group (20-35) show lowest mortality except in Pakistan (52.8 per 1,000 live births in 2006-07 and 47.1 in 1990-91) on both the time and Bangladesh in 2007 (29.8 per 1,000 live births). In case of child's sex, male child has high rate of mortality in all countries than female child.

4.2 Trends of Neonatal Mortality in Bangladesh

Fig. 3 shows the improvement in reducing the neonatal mortality rate during 1993 -2014 extracted from BDHS surveys. National level NMR declined from 52 to 28 per 1,000 live births which is almost half during this period with a percentage change of about 46% [18,19,9,20-23].

Neonatal Mortality Rate by Background Characteristics has been shown in Table 3.

Table 1. Neonatal mortality rate in regional and national level of South Asian countries [15,16]

Countries	NMR (per 1,000 live births)	
	2015	1995
Regional NMR	-	46
Afghanistan	36	-
Bangladesh	23	47
Bhutan	18	-
India	28	47
Maldives	5	-
Nepal	22	46
Pakistan	46	42
Sri Lanka	5	10

Table 2. Differentials in neonatal mortality rate in Bangladesh, India, Nepal and Pakistan by background characteristics [17]

		NMR in Bangladesh, India, Nepal and Pakistan by background characteristics							
		Bangladesh		India		Nepal		Pakistan	
		1993-94	2007	1992-93	2005-06	1996	2006	1990-91	2006-07
Residence	Urban	30.8	27.3	33.5	27.9	29.3	25.1	37.2	49.1
	Rural	52.0	38.7	51.4	41.8	49.9	33.4	52.5	54.8
Mother's education	No education	54.3	43.8	54.5	44.9	51.2	39.0	50.5	58.3
	Primary	46.2	37.2	40.9	44.3	40.1	29.8	39.2	45.7
	Higher	38.3	30.9	28.8	26.8	33.7	16.2	37.4	41.3
Mother's age	<20	67.0	51.2	66.0	53.2	69.2	47.2	53.3	75.4
	20-35	41.2	29.8	40.9	33.7	42.5	27.1	47.1	52.8
	35+	66.7	20.1	51.7	44.7	53.1	40.9	46.8	36.6
Child's sex	Male	58.4	38.7	51.4	40.4	54.5	30.3	55.6	59.6
	Female	41.1	34.1	43.1	36.0	42.4	34.6	39.6	46.0

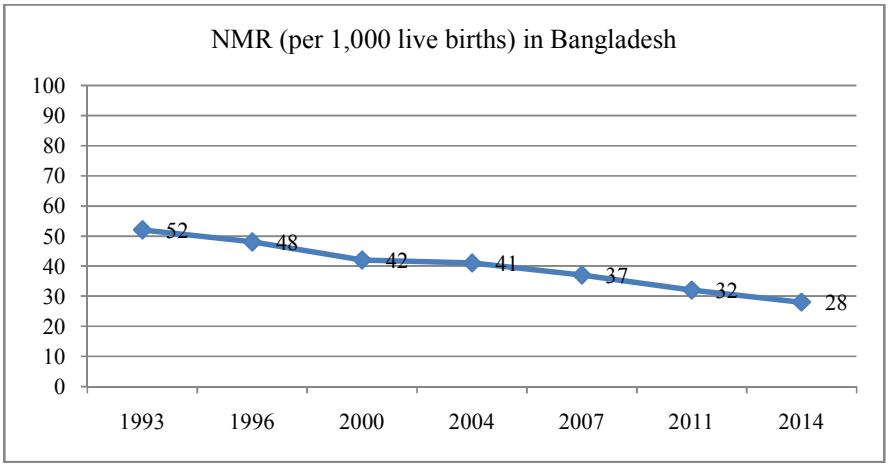

Fig. 3. Neonatal mortality rate (per 1,000 live births) in Bangladesh

Table 3. Differentials in neonatal mortality rate by background characteristics [18,19,9,20-23]

		Neonatal mortality rate per year						
		2014	**2011**	**2007**	**2004**	**2000**	**1997**	**1994**
Residence	Urban	21	32	33	44	42	41	44
	Rural	31	33	41	47	52	56	66
Mother's education	No education	26	32	47	51	55	58	71
	Primary incomplete	31	38	35	44	51	56	56
	Primary complete	31	32	44	51	43	45	55
	Secondary incomplete	33	30	39	38	-	-	-
	Secondary complete or higher	13	33	21	35	41	45	41
Wealth quintile	Lowest	35	34	48	55	-	-	-
	Second	35	38	44	43	-	-	-
	Middle	34	32	40	50	-	-	-
	Fourth	23	33	32	39	-	-	-
	Highest	14	23	27	42	-	-	-
Child's sex	Male	31	39	42	52	55	60	71
	Female	26	26	36	40	46	49	56
Mother's age	<20 years	31	45	55	58	72	70	81
	20-29	27	26	30	37	41	47	56
	30-39	28	26	38	48	40	47	57

Table 3 shows neonatal mortality rate according to women's residence, age, education, household wealth status and child's sex. The neonatal mortality rate in rural area is reduced from 66 in 1994 to 31 in 2014 which is almost half, but is still high than urban area (21 in 2014). The rate of improvement in rural area (53%) is almost equal to urban area (52%).

Neonatal mortality rate on the basis of mother's age shows that, the age group of mother's <20 years age has the highest rate of mortality from the year 1994 to 2014 and the rate of reduction is 62% from 81 in 1994 to 31 in 2014. On the other hand, situation of age group 20-29 is much better comparison to others (56 in 1994 and 27 in 2014) though the success rate of all the age group is higher than 50%.

Mother' education has also an impact on neonatal mortality which is presented by demographic and health survey report (BDHS 1994-2014). Result of the Table 4 presents that, the situation of mother's having no education is comparatively worse (71 in 1994 and 26 in 2014) than others and its improvement rate is 63%. But mothers completed secondary education has the lowest rate in mortality (41 in 1994 and 13 in 2014) having an improvement rate of about 68%.

Neonatal mortality rate among the women of lowest wealth quintile is high than other wealth quintile (55 per 1000 live births in 2004 and 35 in 2014). Most improvement has been achieved in neonatal mortality at highest wealth quintile decreased 56% in 2014 than 2004 (14 from 41 per 1000 live births). The ratio of improvement in neonatal mortality of lowest wealth quintile is relatively slow (36%).

Neonatal mortality rate on the basis of child's sex shows high rate of mortality among the male child in all the study year from 1994 to 2014 (71 in 1994 and 31 in 2014) where mortality rate among female child is relatively low (56 in 1994 and 26 in 2014). But the improvement rate in both the group is almost equal and higher than 50%.

4.3 Perinatal Mortality in Bangladesh by Socio-economic Factors

A perinatal death is a fetal death (stillbirth) or an early neonatal death. The distinction between a stillbirth and an early neonatal death is a delicate one, often depending on the achieved presence or absence of some signs of life after delivery. The causes of stillbirths and early neonatal deaths overlap, and examining just one or the other can understate the true level of mortality around delivery. For these reasons, it is suggested that both events be combined and examined together [22].

Table 4. Differentials in perinatal mortality rate by background characteristics in Bangladesh 2000-2014 [9,20-23]

		Perinatal mortality rate (per 1,000) per year				
		2014	**2011**	**2007**	**2004**	**2000**
Residence	Urban	35	47	41	67	55.6
	Rural	47	51	59	65	57.7
Mother's education	No education	47	57	62	69	62.0
	Primary incomplete	49	52	53	62	54.6
	Primary complete	53	52	70	60	63.4
	Secondary incomplete	43	47	56	59	-
	Secondary complete or higher	29	43	33	70	47.7
Wealth quintile	Lowest	50	49	54	69	-
	Second	55	60	57	64	-
	Middle	52	53	71	64	-
	Fourth	33	51	51	59	-
	Highest	26	36	39	70	-
Previous pregnancy interval in months	First pregnancy	51	71	73	99	81.7
	<15	50	53	154	89	108.7
	15-26	45	41	52	52	60.2
	27-38	25	32	45	48	32.4
	39+	39	41	29	50	40.9
Mother's age	<20 years	44	63	79	80	71.6
	20-29	41	41	41	54	50.0
	30-39	51	53	49	73	56.2
	40-49	71	62	46	-	-

Table 4 shows perinatal mortality rate according to women's residence, age, education, household wealth status and pervious pregnancy intervals in months. The perinatal mortality rate in urban area is reduced from 55.6 in 2000 to 35 in 2014 which is almost half. In comparison to urban area perinatal mortality rate in rural area is relatively high, which changes from 57.7 in 2000 to 47 in 2014 per 1,000 live births. But the rate of improvement in rural area is almost very low.

Mother's education has also an impact on perinatal mortality which is presented by demographic and health survey report (BDHS 2000-2014). Result of the table presents that, the situation of mother's having no education, primary incomplete, primary complete and also secondary incomplete are worse. But mothers completed secondary education has the lowest rate in mortality (47.7 in 2000 and 29 in 2014).

Perinatal mortality rate among the women of lowest to fourth wealth quintile are high. The improvement has been achieved in perinatal mortality in highest wealth quintile is 26 in 2014, the perinatal mortality has decreased 62.86% than 2004 (70 per 1000 live births). The ratio of improvement in perinatal mortality of other wealth quintile is relatively slow (36%).

Perinatal mortality rate on the basis of previous pregnancy intervals in months shows high rate of mortality among the women of first pregnancy and <15 months in all the study year from 2000 to 2014 (81.7 in 2000 and 51 in 2014; 108.7 in 2000 and 50 in 2014) where mortality rate among 39+ months is relatively low (40.9 in 2000 and 39 in 2014). But the improvement rate in this group is stacked in same position.

Perinatal mortality rate on the basis of mother's age shows that, the age group of mother's <20 years age has the highest rate of mortality from the year 2000 to 2014 and the rate of reduction is only 38.55%. In comparison to others, situation of age group 20-29 is much better, though the success rate of all the age group is very slow.

4.4 Neonatal Care Condition/ Postnatal Care for Newborn

Table 5 show the trend in the coverage of postnatal care for new-born at national levels in six south Asian countries. The postnatal care of these countries found Afghanistan, Bangladesh, Bhutan, India, Nepal and Pakistan new-born respectively 9% (in 2015), 32% (in 2014), 30% (in 2010), 24% (in 2016), 58% (in 2014) and 43%

(2013). These statistics suggest these countries contain a very poor condition in postnatal care for their newborn.

Fig. 4 shows that, at national level, the percentage of postnatal care for newborn in Bangladesh is increased from 30% in 2011 to 32% in 2014, and there is no constant increase. Again, at the urban area, the percentage is 50% in 2011 increased to 51% in 2014 and the percentage of rural area is 24% in 2011 increased to 25% in 2014 and there is also no constant increase.

In addition to the above factors, the postnatal checkup in the first two days after birth, from a medically-trained provider have also taken under consideration according to the background characteristics of Bangladesh between 2007-2014.

Table 6 shows percentage receiving checkup within 2 days of delivery from a medically trained provider according to women's residence, age, education, and household wealth status. Percentage receiving checkup within 2 days of delivery from a medically trained provider in urban area is increased from 35.8 in 2007 to 55.9 in 2014 which is almost 35.96% increase. In comparison to urban area percentage receiving checkup within 2 days of delivery from a medically trained provider in rural area is relatively low, which changes from only 13.9 in 2007 to 29.5 in 2014 per 1,000 live births, which shows that, the rate is increases by 52.88%.

Mother' education has also an impact on Percentage receiving checkup within 2 days of delivery from a medically trained provider which is presented by demographic and health survey report (BDHS 2007-2014). Mothers completed secondary education has the highest rate (47.9 in 2007 and 66.2 in 2014) in comparison to others, where as mother's of having no education are in worse situation.

Table 5. Postnatal care for newborn in South Asia [24]

Countries	Year	Percentage of postnatal care for newborn
Afghanistan	2015	9%
Bangladesh	2014	32%
Bhutan	2010	30%
India	2016	24%
Nepal	2014	58%
Pakistan	2013	43%

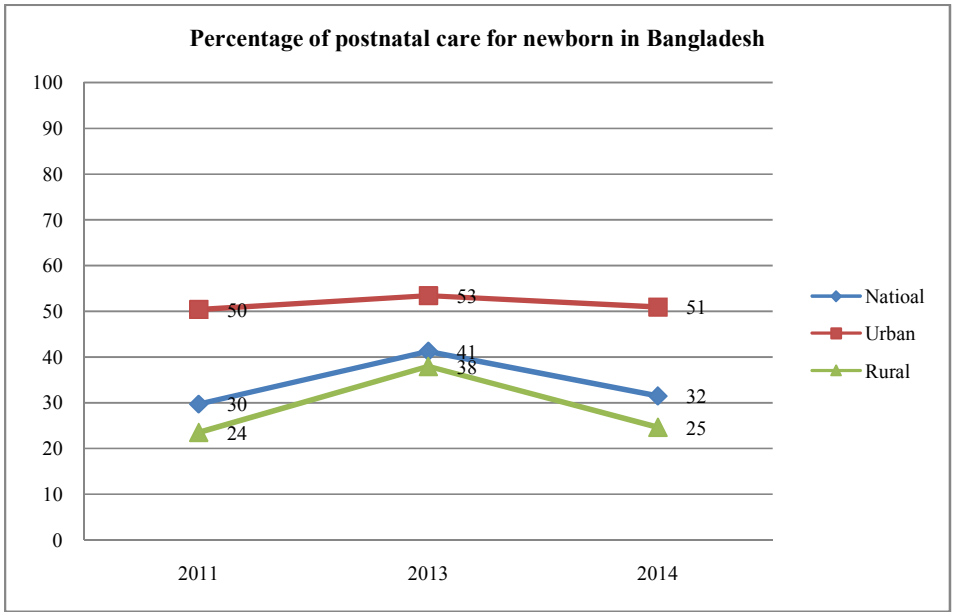

Fig. 4. Percentage of postnatal care for newborn in Bangladesh [24]

Table 6. Percentage of receiving checkup within 2 days of delivery from a medically trained provider per year in Bangladesh

		2014	2011	2007
Residence	Urban	55.9	46.2	35.8
	Rural	29.5	21.5	13.9
Mother's education	No education	16.0	10.4	5.4
	Primary incomplete	23.6	14.4	7.8
	Primary complete	26.5	19.5	12.5
	Secondary incomplete	39.1	31.2	26.7
	Secondary complete or higher	66.2	63.1	47.9
Wealth quintile	Lowest	15.1	8.9	5.3
	Second	22.8	14.8	7.8
	Middle	32.9	23.2	12.2
	Fourth	43.9	36.7	23.5
	Highest	68.5	57.6	47.9
Mother's age	<20 years	35.6	27.0	17.4
	20-29	37.2	27.6	19.5
	30-39	29.0	20.2	14.2

Note: Medically trained provider includes doctor, nurse, midwife, paramedic, family welfare visitor (FWV), community skilled birth attendants (CSBA) and SACMO [21-23]

Percentage receiving checkup within 2 days of delivery from a medically trained provider among the women of lowest and second wealth quintile are surprisingly high. The improvement has been achieved in taking vaccination of highest wealth quintile is 47.9 in 2007 and 68.5 in 2014. But in all the case, the percentage remains almost in same position.

Percentage receiving checkup within 2 days of delivery from a medically trained provider on the basis of mother's age shows that, the age group of mother's 30-39 years age has the lowest rate of taking vaccination from the year 2007 to 2014 (14.2 and 29.9). On the other hand, situation of age group <20 years is much better comparison to others (93.1 in 2007 and 93.6 in 2011) though the success rate of all the age group are not as expected and need more concentration to save neonates life.

4.5 Tetanus Toxoid Vaccinations

Neonatal tetanus is a leading cause of neonatal deaths, especially in developing countries where a high proportion of deliveries are conducted at home or in places where unhygienic conditions prevail. Tetanus toxoid (TT) injections are given to pregnant women during pregnancy to prevent neonatal tetanus, which can occur when sterile procedures are not followed in cutting the umbilical cord after delivery. If a woman has received no previous TT injections, she needs two doses of TT during pregnancy for full protection. However, a woman may require only one or no TT injections during pregnancy if she has been vaccinated before, depending on the number and timing of past injections. A total of five doses are considered to provide lifetime protection [22].

Between 2007 and 2011, Percentage of receiving checkup within 2 days of delivery from a medically trained provider has remained almost the same (91 and 90 percent, respectively). The above Table 7 shows Percentage of receiving checkup within 2 days of delivery from a medically trained provider according to women's residence, age, education, and household wealth status.

Percentage of receiving checkup within 2 days of delivery from a medically trained provider in urban area is increased from 92.3 in 2007 to 93.5 in 2011 which is almost stacked. In comparison to urban area Percentage of receiving checkup within 2 days of delivery from a medically trained provider in rural area is relatively low, which changes from 89.6 in 2007 to 88.8 in 2011 per 1,000 live births, which shows that, the rate is decreases by 0.89% instead of increase.

Mother' education has also an impact on Percentage of receiving checkup within 2 days of delivery from a medically trained provider which is presented by demographic and health survey report (BDHS 2007-2011). Result of the table presents that, the situation of mother's having no education is worse than others (80.8 in 2007 and 78.1 in 2011). But mothers completed secondary education has the highest rate (96.6 in 2007 and 96.3 in 2011).

Table 7. Percentage of mothers whose last birth was protected against neonatal tetanus in Bangladesh by background characteristics, 2007-2011, [21,22]

		Percentage of mothers whose last birth was protected against neonatal tetanus per year	
		2011	**2007**
Residence	Urban	93.5	92.3
	Rural	88.8	89.6
Mother's education	No education	78.1	80.8
	Primary incomplete	87.9	89.8
	Primary complete	90.8	91.7
	Secondary incomplete	93.8	95.5
	Secondary complete or higher	96.3	96.6
Wealth quintile	Lowest	82.2	87.0
	Second	89.9	88.1
	Middle	91.9	88.5
	Fourth	92.4	93.0
	Highest	94.7	95.3
Mother's age	<20 years	93.6	93.1
	20-29	89.5	89.8
	30-39	67.9	79.4

Percentages of receiving checkup within 2 days of delivery, from a medically trained provider, among the women of lowest and second wealth quintile are surprisingly high. The improvement has been achieved in taking vaccination of highest wealth quintile is 94.7 in 2011. But in all the case, the percentage remains almost in same position.

Percentage of receiving checkup within 2 days of delivery from a medically trained provider on the basis of mother's age shows that, the age group of mother's 30-39 years age has the lowest rate of taking vaccination from the year 2007 to 2011 (79.4 and 67.9). On the other hand, situation of age group <20 years is much better comparison to others (93.1 in 2007 and 93.6 in 2011) though the success rate of all the age group are not as expected and need more concentration to save neonates life.

4.6 Essential Newborn Care

The National Neonatal Health Strategy and Guidelines for Bangladesh recommend a set of essential newborn care practices (MOHFW 2009). Essential newborn care focuses on the use of clean instruments to cut the umbilical cord, applying nothing to the cord, immediate drying (within five minutes) keeping the baby warm, delaying bathing to 72 hours after birth, and initiating breastfeeding within 1 hour of delivery.

Overall, only 6 percent of newborns receive all the essential newborn care practices. This proportion was 5 percent in 2011. A comparison of the 2011 and 2014 BDHS findings shows considerable improvement in newborn bathing practices in Bangladesh (Fig. 5). Using a clean delivery kit/bag or boiling the blade to cut the cord has increased slightly from 86 percent in 2011 to 88 percent in 2014. The recommended practice of applying nothing to the umbilical cord of the newborn has declined from 59 to 52 percent. In contrast, use of the recommended practice of drying the newborns within 5 minutes of birth has increased substantially, from 51 to 67 percent. Adherence to recommended practices regarding initiation of breastfeeding within one hour of birth and delayed bathing of the newborn has increased in the last three years. The recommended practice of first bathing babies at least 72 hours after birth has increased from 17 percent in 2007 to 28 percent in 2011 and further increased to 34 percent in 2014. Initiation of breastfeeding within one hour of birth increased from 50 percent in 2011 to 57 percent in 2014.

4.7 Early Initiation of Breast Feeding

Table 8 shows that the percentages of Bangladesh and Nepal in almost all the case are

similar, but Pakistan is far behind and are below 24% which is very bad for the neonate of a country. Again, in both Bangladesh and Nepal, mothers of rural residence and poorest wealth quintile (52.7 and 56.9) are more sincere than the mother's of urban residence and richest wealth quintile (45.2 and 44.0).

4.8 BCG Vaccine for Newborn

Table 9 shows that the percentages BCG vaccine for newborn in Bangladesh and Nepal in almost all the case is similar, but Pakistan is behind, which is not very good news for the neonate of a country and need to improve.

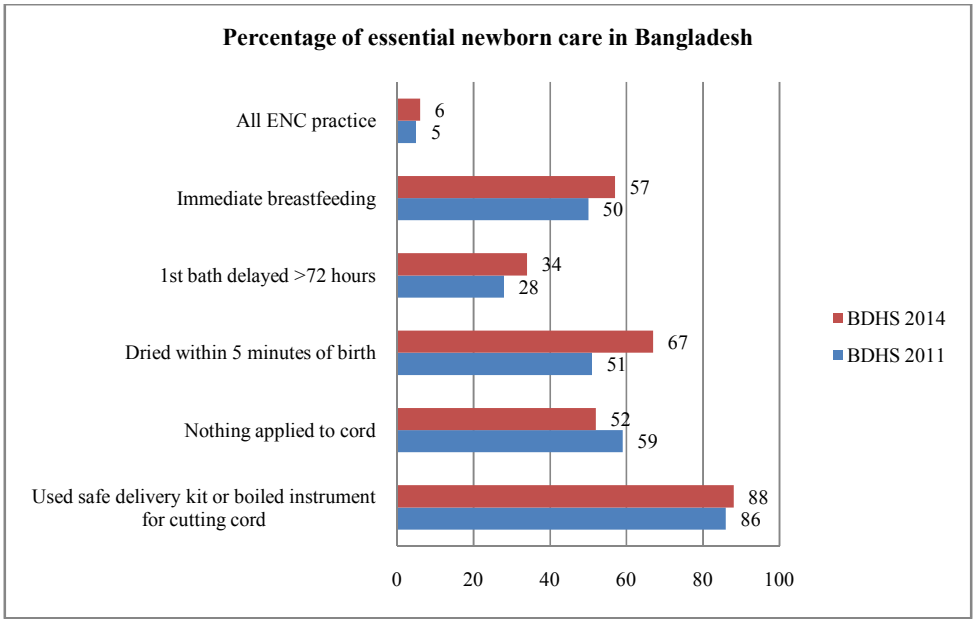

Fig. 5. Percentage of essential newborn care in Bangladesh [22,23]

Table 8. Percentage of early initiation of breast feeding in Bangladesh, Nepal and Pakistan

		Bangladesh [25]	Nepal [26]	Pakistan [27]
Residence	Urban	45.2	44.6	17.9
	Rural	52.7	49.3	18.1
Household Wealth	Richest	44.0	39.7	21.9
	Poorest	56.9	90.0	21.7
Mother's education	No education	55.6	54.0	18.8
	Primary	54.3	49.9	12.3
	Secondary	48.9	48.9	18.3
	Higher	43.3	38.8	23.8

Table 9. Percentage of BCG vaccine for newborn in Bangladesh, Nepal and Pakistan

		Bangladesh [25]	Nepal [26]	Pakistan [27]
Residence	Urban	98.9	98.9	93.0
	Rural	97.6	95.3	81.7
Household Wealth	Richest	99.8	98.0	97.3
	Poorest	96.5	96.9	70.6
Mother's education	No education	93.9	92.0	78.4
	Primary	97.1	96.6	89.2
	Secondary	99.1	98.3	94.6
	Higher	99.6	99.1	97.2

4.9 Lessons Learned from South Asian Countries Experience

Sri Lanka:

The achievement in maternal and child health in Sri Lanka are very much impressive. Sri Lanka has given a high priority to MCH and FP programme. Government of that country has established strong infrastructure at the community level with the development of a cadre of public health and institutional midwives. They also provide free health care service and subsidised transport for this sector. They also have a well-established monitoring and evaluation system which helps them to achieve their target. Important steps taken for the improvement of maternal and child health include the establishment of maternity hospital, antenatal services, midwives training program, promotion of institutional deliveries and also safe motherhood programs. These programs mostly worked to imrove monitoring of labour by using partogram in maternity units, resuscitation of asphyxiated babies and deliver practice. Sri Lanka eliminated neonatal tetanus by using tetanus vaccination during pregnancy and by adoption of aseptic techniques during delivery. For further upgradation, they also improve EOC and neonatal care in institutions, continued training to sustain programe quality and improve the services in the mostly affected area and estates [28].

Maldives:

The health policies of Maldives include the access to family planning, antenatal care, clean and safe delivery and post natal care, though there is no specific policy for neonatal care. National policy of that country supports exclusive breastfeeding in the first six months after birth and arrangement of timely referral services. There are medical doctors to provide services in health centres and also community health worker and female workers manage health posts. But there are some insufficiency has been identified in the management of birth asphyxia. There are proposals to ensure provision of services by obstetricians and pediatricians in the regional and central hospitals and to provide resuscitation equipment and staff training in resuscitation of asphyxiated newborns [28].

Nepal:

After experiencing a decade-long civil war, Nepal achieved most of the benchmark in heath indicators. Then, the Nepal Newborn Change and Future Analysis Group underlined the situation analysis in 2001 and in 2004, plan to fed into the Second Long Term Health Plan (1997-2017). This plan was mostly influenced by the national commitment to reaching the MDGs. Later MoHP and partners implement the Nepal Safe Motherhood and Neonatal Long Term Plan 2006-2017 which provided guidance for integration of the newborn component and Community-Based Newborn Care Package (CB-NCP) which engages the FCHVs and others frontline health workers in the delivery of a community-based package of newborn care interventions. The most important part of Nepal's maternal and neonatal health's improvement is they evaluate, update and implement policies according to the demands changes.

Shortage of human resource and a weak human resource data system was a challenge for Nepal (the health workers density was only 6.7 per 10,000 populations). So, to progress the community-based services, they trained FCHVs and ensure reliable supply of drugs and equipment [29].

4.10 Scopes for Bangladesh

Bangladesh is on track for Millennium Development Goal 4, and has made more progress in reducing neonatal deaths than most low-income countries. The neonatal mortality decline in the last decade (4.0% per year) is higher than the regional and global averages (2.0% and 2.1% per year, respectively); however, the decline for children 1–59 months was double this rate (8.6% per year). Over the last decade extensive changes have occurred in health policy related to newborn care, including a National Newborn Health Strategy. Civil society and academics have played key roles, alongside the government. Local and global data and evidence have been influential, but pathways between research and action are complex due to a pluralistic health system and a diversity of policies and programmes. However, the following things could be taken under consideration for further development of neonatal health situation and to reduce neonatal mortality in Bangladesh:

- The initial focus for newborn care was primarily through community-based initiatives. Eighty per cent of pregnant women live in rural areas, but models to service the growing urban poor population are urgently needed as well.

- Priorities to further accelerate progress for newborn survival include greater consistency between the many implementing partners at community level, and more systematic focus on quality of care in facilities, especially for the vulnerable.
- Lack of services and distance meant that women delay accessing care, resulting in increased maternal and neonatal mortality [30].
- Neonatal mortality is many times more common for women with complications in childbirth, requiring access to timely, appropriate care [31].
- The low levels of skilled birth attendance are associated with higher proportions of intrapartum-related neonatal deaths [32].
- A sub-national qualitative study found that most families considered careseeking during the newborn period fatalistic, preferring care delivered at home by homeopaths [33].
- Potentially harmful practices, such as using mustard seed oil on the baby's skin and umbilical cord, were also prevalent [34,33].
- There have been some increases in coverage of key interventions, such as skilled attendance at birth and postnatal care, however these are low and reach less than one-third of families.
- Major reductions in total fertility, some change in gross national income and other contextual factors are likely to also have had an influence in mortality reduction. However, other factors such as socio-economic and geographic inequalities, frequent changes in government and pluralistic implementation structures have provided challenges.
- As coverage of health services increases, a notable gap remains in quality of facility-based care.
- Future gains for newborn survival in Bangladesh rest upon increased implementation, scale up and greater consistency in content and quality of programmes and services.

5. CONCLUSION

Neonatal mortality in South Asian countries is rampant. Global commitment of reducing under-five mortality without improvement of neonatal survival is difficult to achieve. To explore the root causes of neonatal deaths can help to work out viable solution that can improve survival of a huge number of populations. The top ten countries of the world which contribute 67% of neonatal deaths are India (27%), China (10%), Pakistan (7%), Nigeria (6%), Bangladesh (4%), Ethiopia (4%), Democratic Republic of the Congo (3%), Indonesia (2%), Afghanistan (2%) and United Republic of Tanzania (2%). While existing programmes for future mothers, health care during pregnancy and child birth and programmes to promote child health and development should continue to be strengthened and intensified, there is an immediate need to focus on essential neonatal care package to improve neonatal health. Based on available information, it is possible to stratify states and divisions into those with very high (above 50/1000 NMR), high (35-50/1000 NMR); moderate (20-34/1000 NMR); and low (less than 20/1000 NMR) neonatal mortality rates. A stratified approach should be adopted with increasing sophistication of the package as the mortality rates decline. In the Region, WHO is supporting countries in implementing IMCI strategy; safe motherhood programmes, adolescent health and child health and development programmes. The integrated approach should be extended to fully cover the grey area of neonatal health and should follow the experiences of successful countries like Si Lanka, Maldives, Nepal, etc. to improve the program and policy strategy in Bangladesh. Time to time program evaluation and changes, if needed, is also can be a strategy for the countries which are still behind the target of SDG goals.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sciencedomain.org/review-history/27740