Trends Analysis of MMR and Domestic Health Expenditure Among SAARC Country During 2015-2020: With Special Reference to SDG 3 Target 3.1.1

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Abstract

MMR is not just a statistic; it is a lifesaving metric that helps governments, organizations, and healthcare providers make informed decisions to improve maternal health and save lives. Health expenditure plays a direct and significant role in reducing Maternal Mortality Ratio (MMR) by strengthening healthcare systems, improving maternal services, and ensuring timely interventions. Countries that invest more in maternal health services, emergency obstetric care, and skilled birth attendance experience lower MMR. So, this study analyses the trends of MMR and domestic health expenditure of different members of SAARC nations and to examine whether SAARC Country achieved the target number 1 of SDG-3 by 2030 related to MMR. Countries that prioritize maternal healthcare experience faster economic growth, gender equality, and poverty reduction, making it an essential part of sustainable development.

Keywords: MMR, SDG, SAARC.

Introduction

Maternal health plays a crucial role in economic growth by improving workforce productivity, reducing healthcare costs, and fostering overall societal development. When maternal health is prioritized, countries experience higher labour participation whether in formal jobs, entrepreneurship, or unpaid care work, lower child mortality, and stronger economies. In countries with high maternal mortality, economic growth is slowed because families lose working-age women who contribute to household income and national productivity. Countries with poor maternal health systems spend more on treating preventable conditions, such as postpartum haemorrhage, infections, or birth complications. Investing in maternal health saves millions in medical costs by reducing the burden on hospitals and public health systems. Better maternal health leads to better child nutrition, cognitive development, and education outcomes, creating a more skilled workforce in the future. Access to maternal healthcare empowers women by allowing them to plan their families, continue education, and participate in economic activities. When women receive proper maternal healthcare, they stay in the workforce longer, boosting family income and national economic growth. Gender-equal societies with strong maternal healthcare achieve higher economic stability and growth rates. Countries with strong healthcare systems attract foreign investment, as businesses prefer stable, healthy workforces. High maternal mortality rates

indicate poor healthcare infrastructure, discouraging international businesses and investors. Countries that invest in maternal health see long-term economic benefits, including higher living standards and improved human capital. Reducing maternal mortality is a key strategy for breaking the cycle of poverty and promoting long-term economic development.

Maternal health is not just a medical issue—it is a key economic driver. Investing in maternal health leads to higher labour force participation, stronger economic productivity, and healthier future generations. Countries that prioritize maternal healthcare experience faster economic growth, gender equality, and poverty reduction, making it an essential part of sustainable development. Maternal Mortality Ratio (MMR) is a crucial indicator of a country's healthcare system, social development, and women's health status. It plays a vital role in shaping policies, resource allocation, and public health interventions. Investing in maternal health leads to stronger societies and economic growth.

Health expenditure is a key determinant in reducing MMR. Countries that invest in maternal healthcare, skilled birth attendance, emergency obstetric care, and family planning see significant reductions in maternal deaths. Allocating more funds to maternal health not only saves lives but also improves economic productivity, gender equality, and long-term development.

From above discussions, it is quite clear that there is need of analyses the trends of MMR and domestic health expenditure of different members of SAARC nations and to examine whether SAARC Country achieved the target number 1 of SDG-3 by 2030 related to MMR.

Objective of the Study

The objectives of this study are:

- To examine whether SAARC Country achieved the target number 1 of SDG-3 by 2030 related to MMR.
- To analysis the trends of MMR and domestic health expenditure (% of GDP) among SAARC country during the study period i.e. 2015-2020.

Methodology

This study is mainly Analytical and Descriptive research in nature. The study is based upon the secondary data collected from Statistics Division, UNESCAP, The United Nations Building, Rajadamnern Nok Avenue Bangkok 10200, Thailand (email: stat.unescap@un.org, Copyright © 2024 United Nations ESCAP). The MMR data has been taken from Statistics Division, UNESCAP for comparison from 2015 to 2020. For analytical study, statistical tools are used like mean (average), standard deviation, correlation and Linear Regression model etc. The statistical program SPSS is used to calculate all of the values for regression analysis.

Status of MMR (SDG 3.1.1) of SAARC Country

The Maternal Mortality Ratio (MMR) or the number of maternal deaths per 100,000 live births, as measured by SDG Indicator 3.1.1. The global aim for this category is to lower the maternal death ratio to less than 70 per 100,000 live births by 2030.Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka are among the nations that make up the SAARC. There are initiatives in place to enhance mother health through legislative changes, education, and healthcare infrastructure improvements, as these nations have differing rates of maternal death.

Table 1: Status of SDG Goal 3.1.1 (targeted by 2030) achieved by SAARC Country with help of Regression Model

S.No.	Country	Current Status of MMR(2020)	Model	SDG 3.1 by 2030 of MMR (less than 70 per 100000 live births)	
				Target achieved Year	Status
1	**Afghanistan**	**620.4**	**X=64753.505-31.754Y**	**2038**	**Not Achieved**
2	Bangladesh	123	X=33087.971-16.314Y	2024	To be Achieved
3	Bhutan	59.9	X=5511.8-2.7Y	2016	Achieved
4	India	102.7	X=8325.41-4.069Y	2029	To be Achieved
5	Maldives	56.7	X=74.59-0.011Y	BEFORE 2015	Achieved
6	Nepal	174.4	X=30961.914-15.243Y	2027	To be Achieved
7	**Pakistan**	**154.2**	**X=11186.986-5.457Y**	**2038**	**Not Achieved**
8	Sri Lanka	28.8	X=508.386-0.237Y	BEFORE 2015	Achieved

Data Source: Compiled by author from Statistics Division, UNESCAP, The United Nations Building, Rajadamnern Nok Avenue Bangkok 10200, Thailand. email: stat.unescap@un.org, Copyright © 2024 United Nations ESCAP and with the help of SPSS

Note:

- Coefficient and constant value of the regression model are calculated with the help of statistical software SPSS (See Annexure 1).
- X = Estimated Value of MMR, Y= Year
- The value of X in calculation is taken as 70 per 1 lakh live births targeted by 2030.

The outcome of regression analysis is shown in Table 1. With the exception of Afghanistan and Pakistan, Table 1 indicates that all SAARC member nations will probably achieve SDG Goal 3.1.1 by 2030 (i.e. MMR- less than 70 per 100000 live births). As of currently (2020), Sri Lanka, Bhutan, and the Maldives have been currently achieved the target while Bangladesh, Nepal, and India can reach the desired outcome of SDG Goal 3.1.1 by 2030, whereas Pakistan and Afghanistan are not achieving the target by 2030 but they expected to achieve the target till 2038.

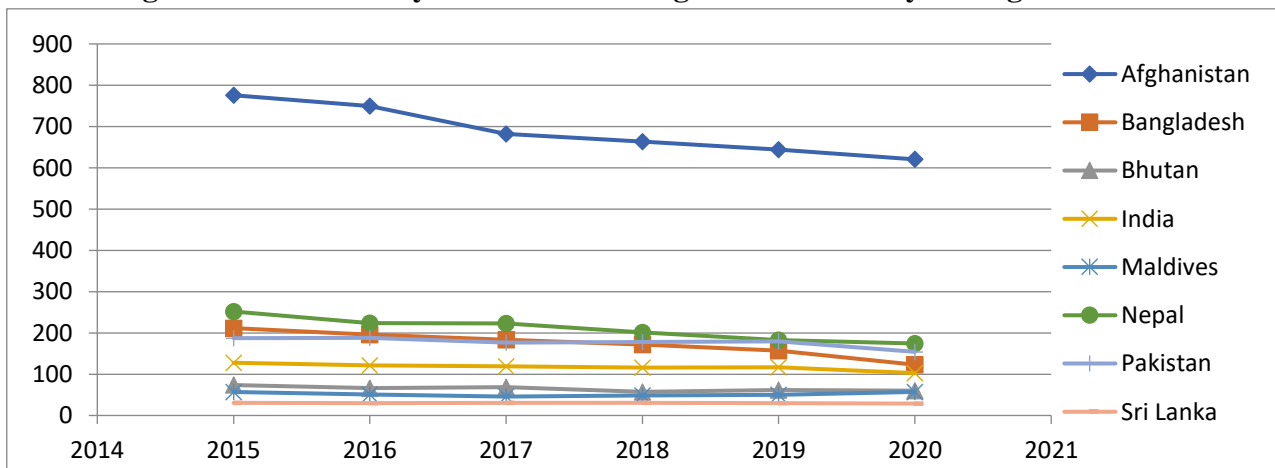**Figure A: Trends analysis of MMR among SAARC country during 2015-2020**

Figure A is showing the trends analysis of MMR of different members of SAARC country during the study period of 2015-2020. The trend lines of MMR of different members of SAARC nations are showing declining nature during the study period. Afghanistan has higher rate of maternal death as compared to other members of SAARC nations during the study period followed by Nepal and Pakistan respectively in this regard. While Sri Lanka has been achieved the target of SDG Goal 3.1.1 till date.

Table 2: MMR and Domestic general government health expenditure (% of GDP) of SAARC Nations

| Time	Afghanistan		Bangladesh		Bhutan		India		Maldives		Nepal		Pakistan		Sri Lanka	
	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
2015	775.7	0.52	211.6	0.39	73.7	2.79	127.7	0.92	56.9	6.27	251.8	0.91	187.4	0.68	30.4	1.62
2016	749.8	0.60	196.1	0.48	66.4	2.64	121.2	0.94	51	7.43	223.8	1.01	188	0.70	29.8	1.56
2017	681.8	0.64	183.4	0.50	68.4	2.49	118.7	0.97	45.8	6.60	223.2	1.07	176.6	0.91	30.6	1.37
2018	663.4	0.55	172.1	0.49	57.3	2.58	115.7	0.98	48.5	5.75	201.2	1.07	177.7	0.94	30.3	1.66
2019	644.3	0.50	157.2	0.45	61.6	2.65	116.4	1.04	50.3	6.00	182.3	1.10	179.3	0.94	29.8	1.85
2020	620.4	1.19	123	0.41	59.9	3.40	102.7	1.21	56.7	9.08	174.4	1.57	154.2	1.04	28.8	1.97

Data Source: Statistics Division, UNESCAP, The United Nations Building, Rajadamnern Nok Avenue Bangkok 10200, Thailand. email: stat.unescap@un.org, Copyright © 2024 United Nations ESCAP and World Development Indicators.

Note: X=MMR (Per Lakh Live Births)

Y=Domestic general government health expenditure (% of GDP)

Table 2 describes the MMR and Domestic general government health expenditure (% of GDP) of SAARC Nations from 2015 to 2020. The study finds out that as government spending on health sector and MMR (per lakh of population) have inverse relationship. As government spending on health sector increases, MMR (per lakh of population) decreases among SAARC nations during the study period. Among SAARC nations, as like Maldives, Bhutan and Sri Lanka are spending more on health expenditure and it increases while MMR decreases. It means as spending on health sector increases, it reduces MMR. And as Bangladesh, Afghanistan, Pakistan, Nepal and India have less government spending on health sector, its MMR is respectively high which duplicated in following figure A & B.

Figure B: Trends analysis of MMR and Domestic Health Expenditure (% of GDP) of members of SAARC country during 2015-2020
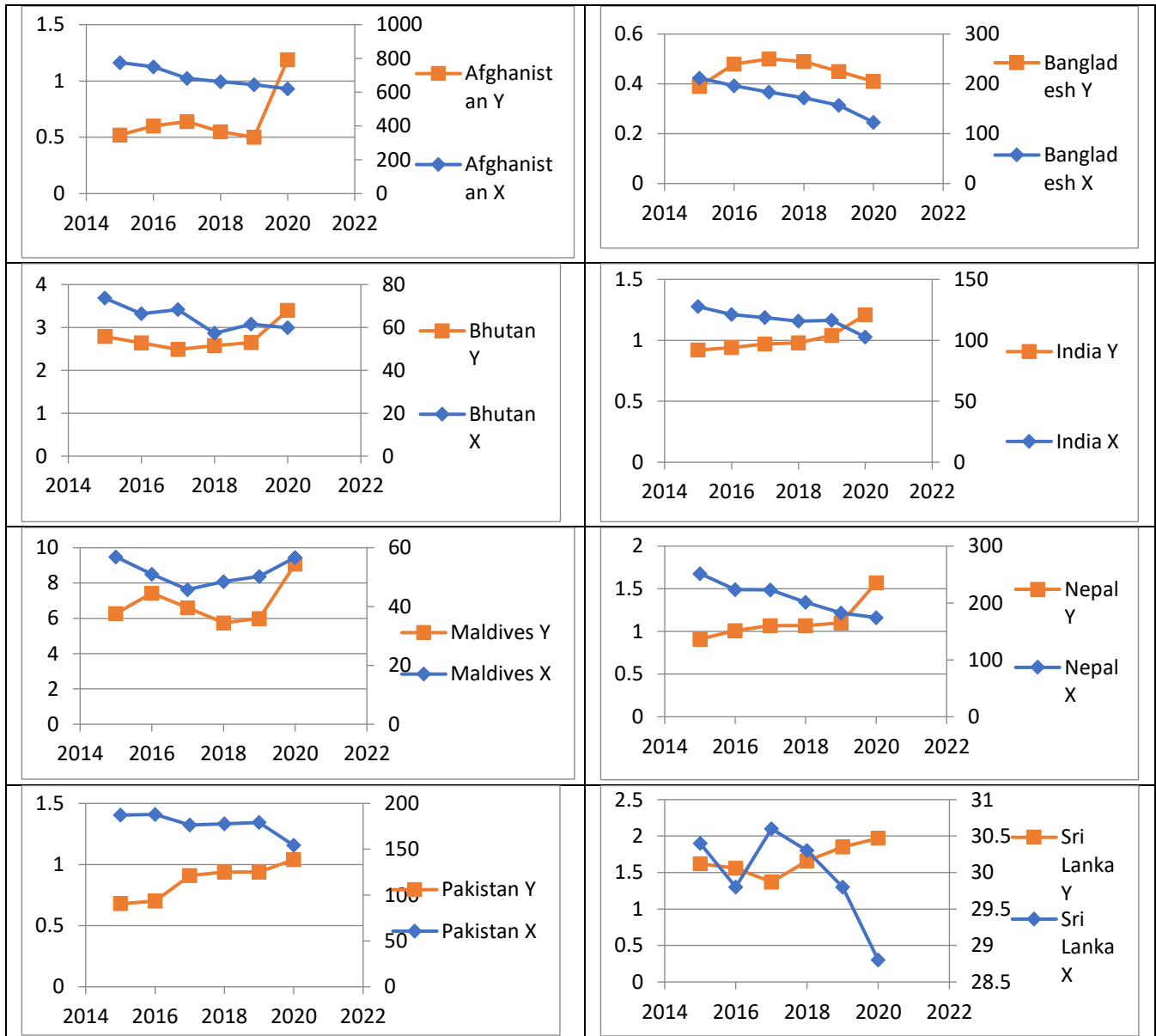
Note: X=MMR (Per Lakh Live Births)

Y=Domestic general government health expenditure (% of GDP)

Figure B has shown the regression relation between MMR and Domestic health expenditure (% of GDP) of SAARC members' nation during the study period. The X-trend line show MMR (Per Lakh Live Births and the Y-trend line show Domestic general government health expenditure (% of GDP) of respecting SAARC nations during the study period. during the study period, the Y-trend line is showing upward sloping from left to right while X-trend line shows negative slope. It means as spending on health sector increases, it reduces MMR.

Conclusion

This study concludes that the trend line of MMR is declining in nature throughout SAARC nations during the study period of 2015-2021. Maternal mortality rates are often higher in Afghanistan and Pakistan because of a variety of issues, including poverty, lack of access to healthcare, and political

unrest, whereas MMR is lower in both members of SAARC nations i.e. Sri Lanka and Maldives due to improved healthcare systems and maternal health initiatives. Allocating more funds to maternal health not only saves lives but also improves economic productivity, gender equality, and long-term development. This study is intended to help policymakers, government planners, and administrators understand the maternal health across SAARC nations and identify areas for targeted improvement such as improving hospitals, training midwives, or expanding healthcare access.

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Annexure: 1

Coefficients of MMR of SAARC Country						
S.No.	Model		Unstandardized Coefficients		Standardized Coefficients	t
			B	Std. Error	Beta	
1	Afghanistan	(Constant)	64753.505	7543.390		8.584
		Year	-31.754	3.739	-.973	-8.493
2	Bangladesh	(Constant)	33087.971	3573.324		9.260
		Year	-16.314	1.771	-.977	-9.211
3	Bhutan	(Constant)	5511.800	1825.014		3.020
		Year	-2.700	.905	-.831	-2.985
4	India	(Constant)	8325.410	1736.375		4.795
		Year	-4.069	.861	-.921	-4.727

5	Maldives	(Constant)	74.590	2403.779		.031
		Year	-.011	1.191	-.005	-.010
6	Nepal	(Constant)	30961.914	3013.378		10.275
		Year	-15.243	1.494	-.981	-10.205
7	Pakistan	(Constant)	11186.986	3685.089		3.036
		Year	-5.457	1.827	-.831	-2.988
8	Sri Lanka	(Constant)	508.386	256.430		1.983
		Year	-.237	.127	-.682	-1.866
a. Dependent Variable: MMR						