International Journal of Scientific Research in Science, Engineering and Technology (www.ijsrset.com)
© 2020 IJSRSET | Volume 7 | Issue 2 | Print ISSN: 2395-1990 | Online ISSN : 2394-4099
DOI : https://doi.org/10.32628/IJSRSET2072113

A Comparative Study of Out-of-Pocket Payment on Child Health Outcome Among BRICS Countries

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ABSTRACT

Direct costs incurred in the acquisition of healthcare services have been a significant impediment to equitable health delivery in BRICS (Brazil, Russia India, China and South Africa) countries. This study analyzes the influence of out-of-pocket payments health care spending on child health outcome among BRICS countries during 2000 to 2015 period. The study employed fixed effects approach to analyze the data. The first and second generation panel unit root and cointegration tests confirmed stationarity and existence of long-run relationship of the variables. The results show that, a rise in out-of-pocket payments increases neonatal, infant and under five mortality rate while an upsurge in health care expense reduces neonatal, infant and under five mortality rate in all the BRICS countries. Economic growth lessens child mortality however, upshot in female labor participation reduces infant mortality rate among some of the BRICS economies. Immediate and concerted action towards improving survival chances of children in BRICS is indispensable. The study recommends unprecedented shift from out-of-pocket charges to sustainable health insurance options in order to provide better health security for citizens of BRICS.

Keywords : Out of pocket payment, Under-five mortality, neonatal mortality, infant mortality, fixed effects

I. INTRODUCTION

Obtaining financial protection from dangers associated with Out-of- Pocket (OOP) expenses for health care remains at the centre of nationwide health strategies in emerging countries. The World Health Organization (WHO) recognizes the provision of financial risk security as a measure of excellent performance for health systems. Health expenditure is much higher in families with children and aged populations, nevertheless the demise of a child before adulthood is detrimental to the family, community and nation as a whole [1].

A 2019 report by the United Inter-Agency Group for death of a Child Estimation shows a tremendous decline in child mortality between 1990 and 2015 (You et al., 2015) . Yet, direct costs incurred in the acquisition of healthcare services have been a significant impediment to equitable health delivery in the BRICS countries (Brazil, Russia India, China and South Africa). Focusing on BRICS as a starting point is critical to the global initiative because the five countries together account for more than 40% of the global population (Sundaram, 2018). Moreover, these are countries experiencing the rising healthcare cost and slow decline of child mortality (Sundaram, 2018). Over reliance on out-of- pocket payment as a health financing system may cause health consumers to face high health expenses, consequently leading to impoverishment and risky health seeking behaviors, which may exacerbate the already precarious health problems (Ma, Lu, & Quan, 2008), (Wagstaff, Yip, Lindelow, & Hsiao, 2009). According to the WHO, a

percentage increase in out of pockets payment will lead to a rise in catastrophic health expenses of household by 2.2%. Inversely, a 30% decline in OOP payment on health care will protect the individual from high health cost in addition to promoting health equity (Organization, 2015).

The persistence surge of out-of-pocket payment for health care in the BRICS requires constant and robust research attention to device appropriate intervention reversing the imminent healthcare catastrophe. This is necessary to avert further threat to the attainments of the global benchmark of the Sustainable Development Goals (SDGs) that is aimed at pursuing 'healthy lives and promoting well-being for all in all ages'. Several studies have been carried out in the past to investigate the challenges of accessing health care but these efforts have largely resulted in conflicting policy proposals and outcomes. The ground breaking studies in this area analyzed the impact of OOP among the elderly population (Milan, Vasiliadis, Guerra, Berbiche, & adherence, 2017) (Mohanty, Chauhan, Mazumdar, & Srivastava, 2014) whiles others, (Akazili et al., 2017) considered only one component of child health (under-five mortality) ignoring the effect on others (neonatal and infant mortality) that equally requires urgent attention.

Raeesi, Harati-Khalilabad, Rezapour, Azari, and Javan-Noughabi (2018) investigated the impact of private and public health expenses on health status among countries with different health care systems covering the period 2000 to 2014 and proposed the need for health policymakers to focus on the issues residing within the health system to improve healthy lives. Novignon, Olakojo, and Nonvignon (2012) also studied the consequences of private and public health spending in sub-Saharan Africa and reported that public and private health cost have strong positive connection with health outcome, with public health expenses exhibiting moderately higher effects. The seminal study by (Rahman, Khanam, Rahman, & health, 2018) was conducted within the SAARC-ASEAN region and analyzed the nexus between health expenses and health status by employing random and fixed effect models. The study reported a key finding of public and private health expenditure reducing infant mortality rates. Precisely, the magnitude of the effect of private health spending was comparatively greater than that of public health expenses in improving child health outcome.

In a related study, Tahsina et al. (2017) conducted a research in Bangladesh's rural areas and offered an insight on the prevailing issues of the financial difficulties when dealing with OOP cost of health care for under-five children. The study concluded that, OOP could expose poor families with sick children to more catastrophe with long-run ramifications.

It is however, evident that, only few studies considered the relationship between private health expenditure and health outcome within the emerging economies. Specifically, the absence of extensive literature exploring the relationship between OOP and child health within BRICS on one hand is a motivation for this study. On the other hand, in order to nudge the BRICS nations to achieve a drastic reduction in child death, this study is timely as it comprehensively evaluates the impact of OOP on child health in among BRICS nations. The study employs a collection of econometric models to estimate the effect of health expenditure on child health. The study comprehensively disaggregated child health outcome into infant, neonatal and under-five mortality in this study. This is essential because it will enable BRICS countries performing poorly in terms of reducing the burden of health cost on households to direct best practices to specific aggregate of child health outcome needing most attention. Insight of this will enable governments to establish their priorities right; either to encourage out-of-pocket payment for health care or to reduce out-of-pocket health expenses given the serious implications on child health.

II. METHODS AND MATERIAL

Data

The study sourced data out from the World Bank's World Development Indicators (WDI) database covering the period 2000 to 2015. The dependent variables were child health outcome as proxy by neonatal, infant and Under-five mortality rate (Muldoon et al., 2011). The key independent variable for the study include out-of-pocket payment (OOP); however, other indicators are explored as substitute for national factors associated with child mortality. These factors include Gross Domestic Product per Capita (GDPPC) as a proxy for economic growth, Public health care expenditure per Capita, and female labor force participation rate (FLFP) (Rana, Alam, Gow, & Integration, 2019).

Table 1 : Definition of variables

Abbreviation	Variable name	Unit	source
U5MR	Under-five mortality	Deaths of under 5 year olds per 1,000 live births	WDI (2018)
IMR	Infant Mortality	Deaths of under one olds per 1,000 live births	WDI (2018)
NMR	Neonatal mortality	Deaths of under 21 days olds per 1,000 live births	WDI (2018)
OOP	Out-of-pocket payments	constant 2010 US$	WDI (2018)
HCE	Current health expenditures per capita in PPP	constant 2010 US$	WDI (2018)
GDPPC	GDP per capita	constant 2010 US$ per person	WDI (2018)
FLFP	Female force participation	Females with ages 15 and older who are economically active	WDI (2018)

WDI World Development indicators, 2018

Model specification

The theoretical framework for the study is grounded on Grossman (1972) "demand for health" model. The healthcare production function proposed by Grossman assumes that citizens and states become healthy by consuming health care services. In addition, the study employed the fixed effects procedure to estimate the long run relationship among the study variables. The fixed effects model is efficient if there is no time relationship between the error and the residual terms (Baltagi, 2008). To examine the effects of out-of-pocket payment on child health under-five mortality(U5MR), Infant mortality (IMR), neonatal mortality (NMR), the study begins with a panel model as:

$$Y_{it} = \alpha_i + \beta_1 X_{it} + v_{it} \quad (1)$$

where Y is the dependent variable (under-five infant mortality, mortality and neonatal mortality); X is the independent variable Out-of-pocket payment (OOP), Gross domestic product per capita (GDPPC), Health

care expenditure (HCE), β is the vector coefficients of independent variables α the intercept which represents the country and v denotes the error term. In limiting the equation to suit the objective of this study equation 2 is written as;

$$U5MR_{it} = \alpha_{it} + \beta_1 OOP_{it} + \beta_2 HCE_{it} + \beta_3 GDPPC_{it} + \beta_4 FLFP_{it} + v_{it} \quad (2)$$

where U5MR represents under-five mortality rate, OOP represent Out-of-pocket payment, α the intercept which represents the country, β are the coefficients, (HCE) denotes public health care expenses, FLFP is female labour force participation, GDPPC is the GDPper capita, capita, and v is error term.

Equation three (3) is also represented as follows;

$$NMR_{it} = \alpha_{it} + \beta_1 OOP_{it} + \beta_2 HCE_{it} + \beta_3 GDPPC_{it} + \beta_4 FLFP_{it} + v_{it} \quad (3)$$

where NMR represents neonatal mortality rate, OOP represent Out-of-pocket payment α the intercept which represents the country, β are vector the coefficients, HCE denotes public health care expenses, FLFP is female labor force participation, GDPPC is the GDP per capita, and v is the error term.

The fourth equation is also transcribed as

$$IMR_{it} = \alpha_{it} + \beta_1 OOP_{it} + \beta_2 HCE_{it} + \beta_3 GDPPC_{it} + \beta_4 FLFP_{it} + v \quad (4)$$

where IMR represents infant mortality rate, OOP represent Out-of-pocket payment, α the intercept which represents the country, β are the vector coefficients, HCE denotes public health care expenses, FLFP is female labor force participation, GDPPC is the GDP per capita, and v is the error term.

III. RESULTS AND DISCUSSION

RESULTS

The descriptive analysis of the data set shows the mean, standard deviation, minimum and the maximum values of the variables studied. Outcome of the analysis shows that, the average number of death among neonates, children under 5 and infant mortality were 16.093 28.8 and 1638.057 per 1000 live birth with a standard deviation 10.785, 17.239 and 26. 283 respectively. Similarly, out-of-pocket as a percentage of consumer health expenditure average stood 38.555 and a standard deviation of 20.106. Public healthcare expenditure shows an average of 5.827 with a standard deviation of 1.726. Also, GDP per capita averaged 130433.6 and standard deviation of 194589.0. Again female work force as a percentage of female above 15 years who are economically active shows a mean of 51.172 and a standard deviation of 13.035

Table 2 : Descriptive statistics

Variable	Mean	Standard - deviation	Minimum	Maximum
U5MR	38.057	26. 283	8.600	91.700
NMR	16.093	10.785	3.8000	45.100
IMR	28.816	17.239	7.3000	66.700
OOP	38.555	20.106	7.699	74.106
HCE	5.827	1.726	3.246	8.911
GDPPC	130433.6	194589.0	6839.809	614634.8
FLFP	51.172	13.035	26.809	71.010

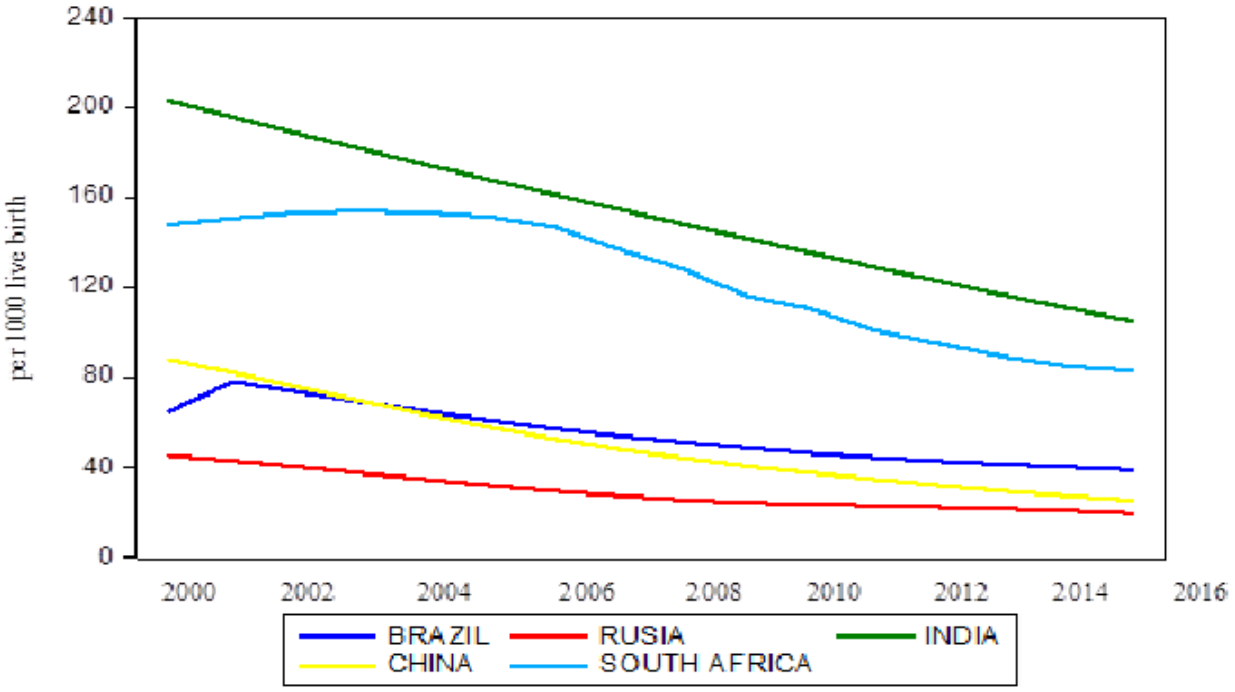

Figure 1. Time series pattern of child mortality among BRICS from (2000 – 2015)

As seen from Figure 1 is a significant improvement in the decline of Child mortality among all BRICS nations even though more can still be done. Russia is performing marvelously well as compared to China, and the remaining countries in the reduction of under-five, neonatal and infant mortality. Yet, notwithstanding the downturn tendency of infant, neonatal and under5 mortality, indications from the graph shows India has performed worse compared to South Africa, Brazil, China and Russia.

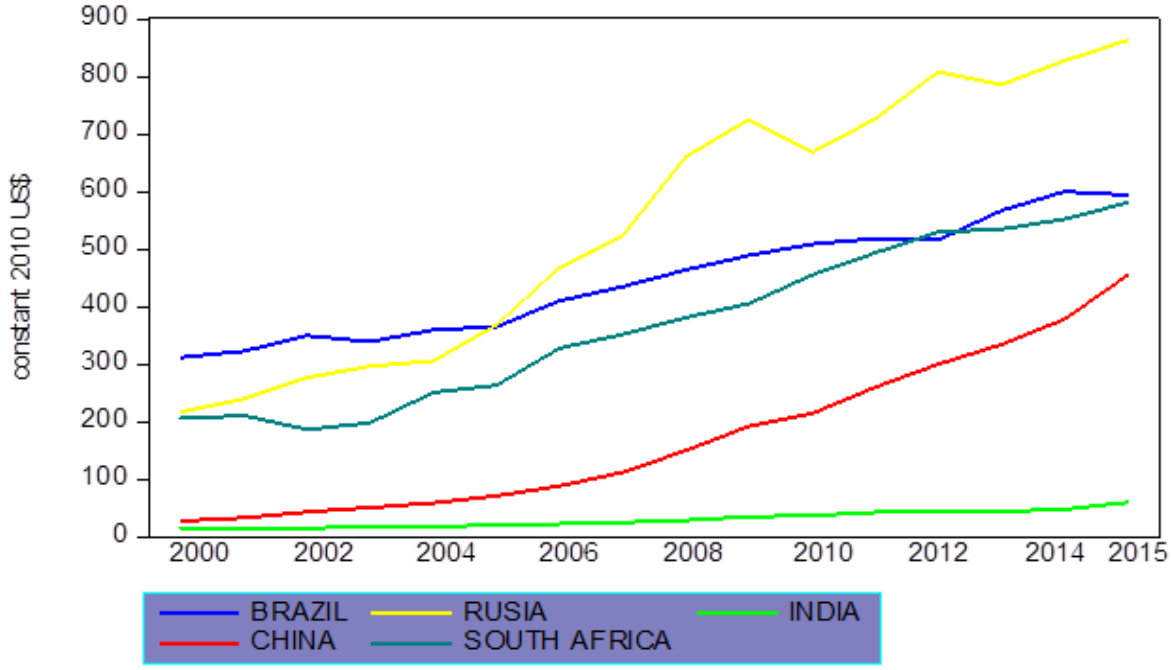

Figure 2. Time series pattern of Public Health Care Expenditure among BRICS, 2000 to 2015

It can be noted in Figure 4 that, BRICS government quest to promote better health among citizens necessitated tremendously increase of government funds in support the public and private health services among within the period 2000 to 2015. Comparing Russia to the selected BRICS countries, Russia performed massively well with regards to having higher rate of government expenditure. However, India performed worse against the four remaining countries in BRICS to contribute least of its resources in funding both curative and preventive health services.

Cross- section dependence and Homogeneity test

Testing for cross-sectional dependence is necessary in selecting appropriate econometric methods for stationarity, cointegration and estimation. Spatial independence test in Table 3 showed the presence of cross-sectional dependence among the study variables. Homogeneity test proved a rejection of the null hypothesis of homogeneity at 5% significant level, with a confirmation of heterogeneous coefficients.

Table 3. Results of Cross- section dependence and Homogeneity test

Variable	CD-test	p-value
*ln*U5MR	12.303	0.00
*ln*IMR	12.503	0.00*
*ln*NMR	12.385	0.00*
*ln*HCE	4.153	0.00*
*ln*FLFP	0.99	0.04*
*ln*GDPPC	6.233	0.00*
*ln*OOP	7.233	0.00*

Homogeneity test results

	U5MR		IMR		NMR	
Test	Statistics	p.value	Statistics	p.value	Statistics	p.value
Delta_tilde	24.46	0.00*	32.84	0.00*	27.9	0.00*
Delta_tilde adj	3.909	0.00*	6.84	0.00*	5.134	0.00*

The values with * indicate statistical significance level at 5%

Due to the presence of cross-sectional dependence within the series, the study employed Cross-section Augmented Dickey-Fuller (CADF) panel unit root test, a very effective method in the existence of CD dependence within the series. The results in Table 4 confirmed the variables are non-stationary at levels, y et, the variables became static at the first difference for which the null hypothesis claiming unit root is present at the first difference is false.

Table 4. Results from unit root test

	CADF-test		CIPS test	
Variable	Level	1st difference	Level	1st difference
*ln*U5MR	(-1.35)	(-0.088)*	(-0.088)	(-0.607)*
*ln*IMR	(-2.038)	(-2.567)**	(-2.065)	(-2.667)**

*ln*NMR	(-3.725)*	(-3.005)***	(-2.696)	(-3.197)***
*ln*HCE	(-2.278)	(-3.725)**	(-3.801)	(-3.646)***
*ln*FLFP	(-0.694)	(-3.148)***	(-1.140)	(-2.673)***
*ln*GDPPC	(-1.482)	(-3.05)***	(-1.546)	(-3.050)***
*ln*OOP	(-1.546)	(-3.05)*	(-1.546)	(-3.087)***

The values in the brackets represents the t statistics whilst *, **, *** indicate statistical significance level at 10%, 5% and 1%.

Preceding the testing of unit root, Pedroni cointegrating test was performed to examine long run relationships among the variables. Pedroni panel cointegration test results in Table 4 confirmed long run relationship among the variables. The cointegration test revealed within- dimension and between- dimension statistics has seven statistics. The results point out that 4 out of 7 panel (Panel PP, Panel ADF, Group PP and Group ADF) statistics proved negative values yet, significant failing to agree with the premise of the null hypothesis of no cointegration. This means the alternative hypothesis was accepted at 5%.

Table 5. Results from Pedroni panel cointegration test.

Common AR coef. (within-dimension)				
	Statistic	Prob.	Statistic	Prob.
Panel v-Statistic	0.273	(0.531)	-0.811	(0.961)
Panel rho-Statistic	-0.4614	(0.817)	-0.796	(0.687)
Panel PP-Statistic	-6.062	(0.003)***	-4.0979	(0.002)***
Panel ADF-Statistic	-2.650	(0.002)***	-1.746	(0.001)***
Individual AR coefficients (between-dimension)				
	Statistic	Prob.		
Group rho	1.760	(0.876)		
Group PP	-1.390	(0.005)**		
Group ADF	-1.881	(0.039)*		

Note: * indicate statistically significant at 5% respectively while figures in parenthesis represent probability values

In selecting the appropriate results for fixed effect estimation panel regression, Hausman (1978) test was performed. The outcome of the Hausman test rejected the random effects favoring the acceptance of Fixed effects. The findings of the fixed effects are discussed below:

Table 6. The panel results for fixed effect model

	FIXED EFFECTS			RANDOM EFFECTS		
Variable	U5MR	NMR	IMR	U5MR	NMR	IMR
*ln*OOP	0.929***	0.905***	0.16	0.983***	0.689***	1.040**
	(0.031)	(0.029)	(0.09)	(0.037)	(0.020)	(0.059)
*ln*HCE	-1.581***	-0.569**	-0.791***	-0.767***	-0.809***	-0.880***
	(0.218)	(0.026)	(0.169)	(.055)	(0.369)	(.344)
*ln*GDPPC	-2.865***	-1.790***	-1.583*	-1.521***	-2.163	-1.790***
	(0.671)	(0.126)	(0.935)	(0.513)	(2.261)	(0.126)
*ln*FLFP	-0.413***	0.138***	-0.414***	-0.031***	0.096	-0.472***
	(0.151)	(0.042)	(0.044)	(0.009)	(0.076)	(0.026)
constant	-39.400	135.5***	154.13***	48.41*	-210.4***	102.900
	(42.950)	(10.06)	(26.64)	(17.50)	(36.05)	(58.100)
R^2	0.853	0.837	0.918	0.850	0.953	0.935
Wald X^2				413***	1054.32***	487.66***
F statistics	23.01***	234.29***	153.38***			
Number of observations	80	80	80	80	80	80

Note: Figures with parenthesis are standard errors whiles ***, ** * indicate statistically significant at 1%, 5% and 10% respectively.

The estimation results of Table 6 revealed the linkage between OOP and U5MR and IMR has a positive relationship. Precisely, a unit increase of out-of-pocket payment will increase U5MR and NMR by 0.929% and 0.905% respectively but IMR was insignificant. It is clear that, as OOP payment for accessing healthcare services increases in BRICS nations, child mortality also increases and vice versa.

The outcome again indicates that an escalation of health spending by BRICS governments will lead to a reduction in under5, neonatal and infant mortality by 1.581%, 0.569%, and 0.791% respectively. This means government role in the health sector has a key impact on child survival among BRICS nations.

GDP per capita together with female labor force participation proved to be an effective determinants of child mortality among the BRICS nations. The link between the variable (GDP per capita) and the three dependent variables (U5MR, NMR IMR), showed income per capita decline U5MR, NMR IMR by 2.865%, 1.790% and 1.583% at 1% and10% significant level respectively. Regarding FLFP, it was found that, female workforce will lead to a fall in U5MR, and IMR by 0.413%, and 0.414% while increasing NMR by 0.138%.

Table 7. The results for fixed effect model for individual countries

	BRAZIL			RUSIA			INDIA			CHINA			SOUTH AFRICA		
Variables	U5MR	NMR	IMR	U5MR	NMR	IMR	U5MR	NMR	IMR	U5MR	NMR	IMR	U5MR	NMR	IMR
*ln*OOP	0.983*** (0.037)	0.022*** (0.006)	0.101** (0.04)	-0.064 *** (0.008)	0.516*** (0.223)	0.074*** (0.016)	2.043** (0.795)	0.225*** (0.030)	0.975*** (0.202)	0.077** (0.027)	0.207 (-0.135)	1.672*** (0.013)	0.905*** (0.029)	0.247** (0.115)	0.182*** (0.067)
*ln*HCE	-0.145** (0.007)	-0.569** (0.026)	0.339** (-0371)	-0.0278** (0.011)	-1.040** (0.059)	-0.031** (0.009)	0.0925 (-0.078)	-0.158* (0.935)	-0.104* (0.062)	-0.157*** (0.052)	-0.135*** (0.013)	-0.856*** (0.016)	-0.517*** (-0.053)	-2.163 (2.261)	-0.856*** (0.016)
*ln*GDPPC	-1.583* (0.935)	-1.790*** (0.126)	-2.865*** (0.671)	-1.521*** (0.513)	-0.096 (0.076)	0.031*** (-0.143)	-0.788*** (0.210)	-0.108*** (0.032)	-0.380*** (0.030)	0.138*** (0.042)	-0.400** (0.160)	0.973*** (0.047)	-0.250*** (0.050)	-0.380** (0.030)	-1.581*** (0.218)
*ln*FLFP	-0.180*** (0.05)	-0.440* (0.20)	0.685*** (-0.008)	-0.130** (0.642)	-0.104* (0.062)	-0.157*** (0.052)	-0.333*** (0.087)	0.667*** (-0.016)	-0.452** (0.188)	-0.414* (0.218)	-0.264*** (0.105)	0.090 (0.99)	-0.211*** (0.119)	-0.193*** (0.037)	-0.347*** (0.122)
R^2	0.770	0.917	0.816	0.929	0.889	0.946	0.930	0.860	0.942	0.847	0.878	0.838	0.856	0.828	0.847

Note: Figures indicated in parenthesis are standard errors whiles ***, **,* indicate statistically significant at 1%, 5% and 10% respectively.

The fixed effect model results for individual countries in table 7 show that, in Brazil, OOP escalate U5MR, NMR and IMR by 0.983%, 0.022% and 0.101%. Moreover, a unit rise in health care expenses will decrease U5MR and NMR by 0.145%, 0.569% but it increases IMR by 0.339%. A surge in per capita income leads to a reduction in U5MR, NMR by 1.583%, 1.790% while increasing IMR by 0339%. Similarly, IMR, NMR and IMR will be reduced by 0.180% and 0.440% and 2.865% respectively as FLFP increases. In addition, the elasticity of (R^2) determination of the model among Brazil represent 77%, 91% and 81% implying high percentage of the variations in the model is being explained by the dependent variables.

According to the outcome in Russia, a unit increase of OOP spending on health care will increase Neonatal and Infant mortality rate by 0.516% and 0.074% whereas decreasing Under-five mortality by 0.064%. Conversely, a unit increases in health care expenses will decrease U5MR, NMR and IMR by 0.0278%, 1.040% and 0.031% respectively. A unit surge in per capita income lead to a reduction in U5MR by 1.521% but increases IMR by 0.031%, whereas NMR rate is insignificant. Similarly, FLFP escalation will reduce U5MR, NMR and IMR by 0.130%, 0.104% and 0.157% respectively. In addition, the elasticity of determination (R^2) of the model in Russia represent 92%, 88% and 94% implying high percentage of variations in the model is being explained by dependent variables.

Findings from India, evinces that U5MR, NMR and IMR are significantly positive. Indicating a rise in OOP spending on health care will increase U5MR, NMR by 2.043%, 0.225%. and 0.975%. However, an increase in health care expenses will decrease NMR and IMR by 0.158% and 0.104% respectively. A surge in per capita income will lead to a reduction in U5MR, NMR and IMR by 0.788% 0.108% and 0.380%. Similarly, FLFP will reduce U5MR and IMR by 0.333% 0.452% but intensify NMR by 0.667%. In addition, the elasticity of determination (R^2) for the model represent 93%, 86% and 94% implying high percentage of the variations in the model is being explained by the dependent variables.

In the case of China, the findings show that OOP spending on health care intensify U5MR, and IMR by 0.077% and 1.672% but NMR is insignificant. Nonetheless, a unit increase in health expenses will

decline U5MR, NMR and IMR by 0.157%, 0.135% and 0.856%. Income will lead to a decline in NMR by 0.400% while increasing IMR and U5MR by 0.973% and 0.138%. Similarly, a percentage rise in female labor force participation will reduce U5MR, NMR by 0.414%, and 0.264% with IMR being insignificant. In addition, the elasticity of determination (R^2) for the model in China represent 84%, 87% and 83% implying high percentage of the variations in the model is being explained by the dependent variables.

Finally, the study also revealed that OOP spending for health care in South Africa will increase U5MR, NMR and IMR by 0.905%, 0.247% and 0.182% respectively. Conversely, on one hand, a unit increase in current health expenses will decrease NMR and IMR by 2.163% and 0.856% but contrary, causes a surge in U5MR by 0.5178%. Similarly, a unit increase in per capita income lead to a reduction in U5MR, NMR and IMR by 0.250%, 0.380% and 1.581% respectively. Furthermore, a unit increase in female labor force participation will reduce U5MR, NMR and IMR by 0.211%, 0.193% and 0.347% respectively. In addition, the elasticity of determination (R^2) for the model in South Africa represent 85%, 82% and 84% implying high percentage of the variations in the model is being explained by the dependent variables.

DISCUSSION

The findings of this study is suggestive that, out-of-pocket payment for accessing healthcare contribute to death among neonates and under-five children in BRICS countries. It is well evident from the study that, families of neonates and children under-five who experience direct expenses of health payment are expected to be exposed to more preventable death than those with health insurance. The outcome from this study denotes that through the exorbitant out-of-pocket payments, child health services has become unaffordable for the poor. Consequently, health professionals are unable to avert health risks of children that could result in child deaths. This may be explained by the fact that direct payment of health cost could deny the parents from receiving health care for their children. An indication that out-of-pocket payment exposes poor people and their children to difficulties in accessing better health care services due to financial hardship. The analysis of this study further shows that vulnerable groups (poor mothers with unhealthy children) burdened with OOP payments in receiving healthcare may delay or stop seeking health care and may result increase in self-medication or alternatives that could result in demise of their children. The outcome for the BRICS economies corroborates with the work of Shubha, Kaur, and Mahabalaraju (2016) for India and Akazili et al. (2017) in Ghana which revealed that increases in OOP exacerbate child death. On the contrary, the findings also indicate that out-of-pocket payment reduces under-five mortality in Russia. This suggests that, parents who are willing and could afford for direct health cost for their children are able to get the best priority to treatment, and by so doing protect their children from high risk of death.

Moreover, child mortality reduced with an upsurge of public health care expenditure. These findings are similar to Farag et al. (2012) outcomes from 133 lower and middle income nations supporting the idea that government funds in supporting the healthcare system promotes child health. However, the findings of this study are inconsistent with earlier conclusions of Nicholas, Edward, and Bernardin (2016) that, health expenditure has no huge effect on decreasing mortality rate. At the individual country level however, current health expenses were revealed to be positive and significant in connection with families losing their children under-five in Brazil. The reason could also be that, as Brazil governments invest in healthcare, less attention has been geared towards providing necessary medical equipment, research and development in improving the health needs of the children. It could be attributed to the fact that, health resources provided to improve health needs of younger children are diverted for personal gains as usually alleged in the Brazilian media. This

consequently could reduce the required resources vital for effective child health care delivery.

Furthermore, a negative and significant relationship was found between economic growth and child mortality. This is possibly because as countries developed economically, so does infrastructure including hospitals and health equipment. This is because health facilities that provide easy access to healthcare become readily available. In this instance, it gives opportunity to people to seek medical attention anytime the need arises (Wade & Häring, 2010). On the other hand, economic growth increases under-five death in China and Infant death in Russia. This could be due to the fact that the as the economy grows so thus unhealthy lifestyles that could exposed people to other preventable diseases and untimely death. This outcome is in agreement with Ang (2008) asserting that, economic growth contribute to mortality rate. The negative and significant findings of female workforce again, corroborate the study of Biccard et al. (2018) showing that mothers who work and earn higher income, experience less child mortality since they are capable of offering the basic needs that improve the health of the child.

IV.CONCLUSION

This study presented the influence of out- of- pocket payment to healthcare on child's health outcomes (U5MR, IMR, and NMR) among BRICS nations. The study sourced data from the World Bank's World Development Indicators (WDI) database for the year 2000 to 2015. Fixed effects model was used to analyze the data. The first and second generation panel unit root and panel cointegration tests confirmed that the variables are stationary and the existence of long-run relationship. Results from the fixed effect model is indicative that, out-of-pocket payments for accessing healthcare contribute to death among neonates and under-five children in BRICS whereas economic growth reduces child death at the panel level, but exhibited a mixed result at the individual countries. The study also revealed that public funding for health care potentially reduces the rate of child mortality among BRICS countries.

The study proposed several policies based on its findings. First, there is the need to shift away from out-of- pocket charges to contributory schemes founded on pre-payment through spending on health insurance schemes. These schemes should concentrate on risk pooling and enabling financial protection from the healthy-wealthy to sick-vulnerable groups leading to enhanced health status.

Female education again should be prioritized among the BRICS to guarantee women better employment opportunities. This will adequately place them into meaningfully and relatively high earning jobs to improve child health. Female labor participation also could reduce child mortality rate, and therefore intensive female education, in the long run, could promote quality health among family members. Furthermore, it is essential for governments and stakeholders to increase public healthcare expenditure in the emerging countries and implementing for health policies that will help lessen inequities in health care.

Finally, to achieve the SDG3.2, attention should be focused on the provision of financial incentives and assistance by the state, and financial institutions for individuals with innovative models. This way, healthcare sectors must be less conscious of cost and aim at providing affordable and high-quality healthcare for better health among the BRICS countries. To this end, further study that seeks to understand the role of research and development (R&D) on health expenses in emerging countries is worthwhile exploring.

Conflict of interest

Authors declare no conflict of interest.

Acknowledgement

We wish to express our profound gratitude to Bentil Asafo and the Wireko family for their support.

V. REFERENCES

[1]. Akazili, J., Ataguba, J. E.-O., Kanmiki, E. W., Gyapong, J., Sankoh, O., Oduro, A., . . . rights, h. (2017). Assessing the impoverishment effects of out-of-pocket healthcare payments prior to the uptake of the national health insurance scheme in Ghana. 17(1), 13.

[2]. Ang, J. B. (2008). Economic development, pollutant emissions and energy consumption in Malaysia. Journal of Policy Modeling, 30(2), 271-278.

[3]. Baltagi, B. (2008). Econometric analysis of panel data: John Wiley & Sons.

[4]. Biccard, B. M., Madiba, T. E., Kluyts, H.-L., Munlemvo, D. M., Madzimbamuto, F. D., Basenero, A., . . . Gobin, V. J. T. L. (2018). Perioperative patient outcomes in the African Surgical Outcomes Study: a 7-day prospective observational cohort study. 391(10130), 1589-1598.

[5]. Farag, M., NandaKumar, A., Wallack, S., Hodgkin, D., Gaumer, G., Erbil, C. J. I. J. o. H. C. F., & Economics. (2012). The income elasticity of health care spending in developing and developed countries. 12(2), 145-162.

[6]. Grossman, M. J. J. o. P. e. (1972). On the concept of health capital and the demand for health. 80(2), 223-255.

[7]. Hausman, J. A. J. E. J. o. t. e. s. (1978). Specification tests in econometrics. 1251-1271.

[8]. Ma, J., Lu, M., & Quan, H. J. H. a. (2008). From a national, centrally planned health system to a system based on the market: lessons from China. 27(4), 937-948.

[9]. Milan, R., Vasiliadis, H.-M., Guerra, S. G., Berbiche, D. J. P. p., & adherence. (2017). Out-of-pocket costs and adherence to antihypertensive agents among older adults covered by the public drug insurance plan in Quebec. 11, 1513.

[10]. Mohanty, S. K., Chauhan, R. K., Mazumdar, S., & Srivastava, A. J. S. i. r. (2014). Out-of-pocket expenditure on health care among elderly and non-elderly households in India. 115(3), 1137-1157.

[11]. Muldoon, K. A., Galway, L. P., Nakajima, M., Kanters, S., Hogg, R. S., Bendavid, E., . . . health. (2011). Health system determinants of infant, child and maternal mortality: a cross-sectional study of UN member countries. 7(1), 42.

[12]. Nicholas, A., Edward, N.-A., & Bernardin, S. J. I. J. o. S. E. (2016). The effect of health expenditure on selected maternal and child health outcomes in sub-Saharan Africa. 43(12), 1386-1399.

[13]. Novignon, J., Olakojo, S. A., & Nonvignon, J. J. H. e. r. (2012). The effects of public and private health care expenditure on health status in sub-Saharan Africa: new evidence from panel data analysis. 2(1), 22.

[14]. Organization, W. H. (2015). Investing to overcome the global impact of neglected tropical diseases: third WHO report on neglected tropical diseases 2015 (Vol. 3): World Health Organization.

[15]. Raeesi, P., Harati-Khalilabad, T., Rezapour, A., Azari, S., & Javan-Noughabi, J. J. M. j. o. t. I. R. o. I. (2018). Effects of private and public health expenditure on health outcomes among countries with different health care systems: 2000 and 2014. 32, 35.

[16]. Rahman, M. M., Khanam, R., Rahman, M. J. G., & health. (2018). Health care expenditure and health outcome nexus: new evidence from the SAARC-ASEAN region. 14(1), 113.

[17]. Rana, R. H., Alam, K., Gow, J. J. J. o. I. M., & Integration. (2019). The Impact of Immigration on Public and Out-of-Pocket Health Expenditure in OECD Countries. 1-24.

[18]. Shubha, D., Kaur, N., & Mahabalaraju, D. (2016). HEALTH CARE SEEKING BEHAVIOUR AND OUT-OF-POCKET HEALTH EXPENDITURE FOR UNDER-FIVE ILLNESSES IN URBAN SLUMS OF

DAVANGERE, INDIA. In: BMJ Specialist Journals.

[19]. Sundaram, J. (2018). Pharmaceutical Patent Protection and World Trade Law: The Unresolved Problem of Access to Medicines: Routledge.

[20]. Tahsina, T., Ali, N. B., Hoque, D. E., Huda, T. M., Salam, S. S., Hasan, M. M., . . . Nutrition. (2017). Out-of-pocket expenditure for seeking health care for sick children younger than 5 years of age in Bangladesh: findings from cross-sectional surveys, 2009 and 2012. 36(1), 33.

[21]. Wade, A. G., & Häring, J. J. I. c. p. (2010). A review of the costs associated with depression and treatment noncompliance: the potential benefits of online support. 25(5), 288-296.

[22]. Wagstaff, A., Yip, W., Lindelow, M., & Hsiao, W. C. J. H. e. (2009). China's health system and its reform: a review of recent studies. 18(S2), S7-S23.

[23]. You, D., Hug, L., Ejdemyr, S., Idele, P., Hogan, D., Mathers, C., . . . Alkema, L. J. T. L. (2015). Global, regional, and national levels and trends in under-5 mortality between 1990 and 2015, with scenario-based projections to 2030: a systematic analysis by the UN Inter-agency Group for Child Mortality Estimation. 386(10010), 2275-2286.

Cite this article as :

Ampon-Wireko Sabina, Zhou Lulin, Asante Antwi Henry, Wireko Brobby Ebenezer, "A Comparative Study of Out-of-Pocket Payment on Child Health Outcome Among BRICS Countries", International Journal of Scientific Research in Science, Engineering and Technology (IJSRSET), Online ISSN : 2394-4099, Print ISSN : 2395-1990, Volume 7 Issue 2, pp. 548-560, March-April 2020. Available at doi : https://doi.org/10.32628/IJSRSET2072113
Journal URL : http://ijsrset.com/IJSRSET2072113