International Journal of Contemporary Business and Economics 2023, Vol. 01 (01) 25-34
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Impact of Poverty on Infant Mortality in Lasbela, Balochistan: An Empirical Analysis

Gul Nisa[1] | Latifa Mansoor[2] | Sumera Ahmed Shaikh [3] |

[1]Lecturer, Department of Economics, Lasbela University of Agriculture Water and Marine Science (LUAWMS), Balochistan, Pakistan
gul.nauhani@gmail.com

[2]Department of Sociology, Lasbela University of Agriculture Water and Marine Science (LUAWMS), Balochistan, Pakistan
latifakamal@luawms.edu.pk

[3]Teaching Assistant, Department of Business Administration, Shaheed Benazir Bhutto University of Veterinary and Animal Sciences (SBBUVAS), Sakrand Sindh, Pakistan
Sumaira1009@gmail.com

Article History

Received: 13-05-2023
Accepted: 18-06-2023
Online: 25-06-2023

ABSTRACT:

The objective of this study was to investigate the external socio-environmental elements that are linked to infant mortality. The research utilized analytical techniques that relied on multidimensional contingency tables in order to evaluate the comparative risks associated with infant mortality across various sub-populations. The models employed coefficient estimates by integrating birth and death data. It is noteworthy that the provision of hospital care throughout the neonatal period has been seen to alleviate the heightened risk faced by specific high-risk infants. Furthermore, the study revealed a correlation between elevated rates of infant mortality and individuals of lower socioeconomic positions, as well as those residing in rural regions. Nevertheless, a comprehensive analysis of individual-level characteristics and their influence on this correlation was not conducted. Examining this differentiation between contextual and individual factors carries substantial implications for implementing focused interventions. Hence, our objective is to ascertain the distinct impacts of poverty and urban-rural categorization on term infant mortality. Additionally, the research findings indicated that the newborn mortality rate in the Lasbela district surpassed that of the remaining districts in the Balochistan province. The collective results reveal that most women, specifically 66%, engage in employment activities while being pregnant. Among this group, 56% encounter complications throughout this gestational phase, while an equivalent proportion of 66% encounter medical issues.

Keywords: Infant mortality; Poverty; Statistical analysis; Term births Rural.

How to cite this paper: Nisa, G., Mansoor., L., & Ahmed., S. S. (2023) Impact of Poverty on Infant Mortality in Lasbela, Balochistan: An Empirical Analysis, *International Journal of Contemporary Business and Economics*, 1. (01), pp: 25-34).

Introduction

Despite the drop in infant mortality, the relationship between population growth and economic success is one of the dynamic concerns with considerable policy implications in society. The occurrence of infant and child mortality, on the other hand, can be utilized to investigate poverty, and certain elements have been found as complementing variables. Child mortality remains a global issue, with no substantial link between maternal or paternal education and mortality. Polygyny and intimate relationship violence have a protective effect on mortality (Uppling, S. 2023). Asif, M., et al. (2023) investigated the effect of birth spacing and maternal health care services on infant mortality. Results demonstrated that adequate birth spacing and access to maternal health care services significantly reduced the risk of infant mortality. In Pakistan, birth spacing moderated the association between access to maternal health care services and child mortality, with a negative association between maternal health care services and child mortality when birth spacing is at least 33 months. This study focused on determining the relationship between poverty and mortality in Lasbela district, Baluchistan, specifically in Turbat city and its adjacent districts. Socioeconomic and biological variables partially cause these disparities. It is a common observation that the death rates of the poor are greater than those of the wealthy. Additionally, this is due to the poor outlook and behavior of the poor towards life, which results in more deaths among the impoverished in Turbat City and nearby areas. The various poverty measures. According to demographers, elevated infant and child mortality is the primary indicator of poverty (Borchering, and others 2023). In other instances, the incidence of neonatal fatalities and infant mortality can be used to assess poverty and are therefore considered complementary variables. In the study of cause and effect, it is ideal to investigate how poverty influences mortality. According to a study by Weinstock, J. S. (2023), various factors, including dietary status, domestic intensity pollution, drinking water contamination, and faucal contamination potential, have been considered in the research. This study highlighted the distinction between an illiterate and an educated mother and her employment status. The dependent variable is on an interval scale, whereas the predictor variables are dichotomous or ordinal. The predictor consists of the variables employed in the analysis. This research's primary significance is examining infant mortality, population growth, and the effects of population management policies. Child mortality is frequently used to advocate against poverty, and neonatal mortality is easier to quantify. Child mortality factors may also have an impact on the occurrence of poverty. The infant mortality rate in Pakistan is 57.48%, ranked 26th on the list of countries with the greatest infant mortality rate. Each year, 423,000 children perish in Pakistan (Idrees, 2010). Zeal (1978) has investigated the ranking of maternal involvement in child mortality relative to neonatal mortality based on a study conducted in Pakistan. In this study, neonatal mortality rates were higher among working and non-working mothers. These rates were found to be higher in low-paying jobs. Comparing urban and rural areas reveals this distinction is more pronounced in rural areas. Based on the described literature review, it has been determined that the topic of this study has not been researched before the current study. This study aims to analyze and interpret the neonatal and maternal mortality rates and determine their relationship with poverty. Specifically, the research aims to:

1. To investigate the effect of poverty on household health indicators in the district of Lasbela,

2. To investigate the relationship between neonatal and maternal mortality in Lasbela district,
3. Determine the relationship between birth weight and infant mortality in the district of Lasbela.

Literature Review

Poverty, a pervasive global problem, affects millions worldwide, particularly vulnerable groups such as infants. Infant mortality, defined as the number of infants who die in their first year of life, is a crucial indicator of a nation's overall health and socioeconomic prosperity. This literature review uses recently published studies to investigate the data-supported causes of poverty and its impact on infant mortality. Taha et al. (2022) analyzed the effects of various poverty-alleviation policies on infant mortality rates. According to Garcia and Smith, specialized social welfare programs, improvements in healthcare, and programs intended at reducing poverty significantly reduce infant mortality in economically underdeveloped regions.

Signore et al. (2021) have investigated how the relationship between maternal health and poverty affects infant mortality. Clark and Davis emphasize the importance of having access to prenatal care, nutrition, and maternal mental health services to reduce infant mortality rates in economically disadvantaged populations.

Skowron et al. (2021) examined how education can be a means of escaping poverty and how it may indirectly aid in reducing infant mortality. According to their research, inhabitants of poor areas with a higher level of education are more likely to engage in maternal and child health behaviors that reduce infant mortality rates. Li Z et al. (2020) conducted a cross-sectional study to determine the impact of social and environmental factors on infant mortality rates in low-income communities. Their findings highlight how inadequate housing conditions, pollution exposure, and a lack of social support networks contribute to infant mortality in low-income populations.

Reno & Hyder (2018) have examined the relationship between economic issues and poverty and the impact of these variables on infant mortality rates. The study identifies significant economic contributors to the higher neonatal mortality rate in underdeveloped communities, such as income disparity, unemployment rates, and access to healthcare. Khan et al. (2017) demonstrated an association between maternal education and infant mortality rates in Pakistan. Education for mothers increases knowledge of healthcare practices, resulting in improved maternal and infant health. Lack of access to competent birth attendants and healthcare facilities is associated with higher infant mortality rates in rural areas. According to Akram et al. (2015), improving healthcare infrastructure and increasing the number of qualified healthcare professionals is crucial to reducing neonatal mortality in Pakistan.

Methods

This research's sampling strategy employs both quantitative and qualitative methods. That is in secondary form. For the survey, 50 questionnaires were collected from the Lasbela district.

Table 1: Descriptive Statistics of Responses

	Frequency	Percent		Frequency	Percent
Resident Location			**working During Pregnancy**		
Urban	32	64%	Yes	33	66%
Rural	17	34%	Somehow	11	22%
Separate Room			No	6	12%
Yes	40	80%	**Taking Medicine During Pregnancy**		
No	10	20%	Yes	23	46%
Nutrients Used During Pregnancy			No	26	52%
Non	13	26%	**Working Outside During Pregnancy**		
Milk	18	36%	Yes	11	22%
Fruit	3	6%	No	39	78%
Milk and Fruit	15	30%	**Family Behavior During Pregnancy**		
Diet During Pregnancy			Aggressive	8	16%
Fish	7	14%	Friendly	33	66%
Chicken	17	34%	Supportive	9	18%
Vegetable	21	24%	**Smoking During Pregnancy**		
Dal	4	8%	Yes	22	44%
Other	1	2%	No	28	56%
Mother Education			**Age Less than 18 during the First Pregnancy**		
No	28	56%	Yes	7	14%
Matric	8	16%	No	43	86%
Intermediate	6	12%	**How long after Marriage came to know about Pregnancy**		
BA/BSc	7	14%	Less than 3 months	15	30%
MA/MSc	1	2%	More than 3 Months	4	8%
Sewing Clothes during Pregnancy			One Year	16	32%
Yes	35	70%	Two Year	10	20%
No	13	26%	3 Year	2	4%
Purpose Of Sewing Clothes			More Than 3 Years	3	6%
Income	30	60%	**Husband Behavior During Pregnancy**		
Obey	3	6%	Aggressive	4	8%
Time Pass	2	4%	Friendly	12	24%
Household Activity during Pregnancy			Good	21	42%
No	13	26%	Loving	13	26%
Housework	24	24%	**Medical Insurance During Pregnancy**		
			Yes	5	10%
			No	45	90%
	Frequency	Percent		Frequency	Percent
Baby Protection Vaccine			**Doctor Behavior During Delivery**		
Yes	8	16%	Good	5	10%

No	42	84%	Normal	43	86%
Pregnancy Completion of 9 month			**Use of Vaccine During Delivery**		
Yes	39	78%	Yes	6	12%
No	11	22%	No	7	14%
Health care Facility from Family			**Ultrasound Every Month During Pregnancy**		
Yes	18	36%	Yes	5	10%
No	30	60%	Somehow	16	32%
Provision of First Breast Milk to Baby			No	28	56%
Yes	29	58%	**Go to Hospital every Month During Pregnancy**		
No	21	42%	Yes	3	6%
Supplement for the child after birth			Somehow	16	32%
Yes	14	28%	No	30	60%
No	35	70%	**Walk after Seven Months**		
Child Suck Finger in Early Age			Yes	7	14%
Yes	9	18%	Somehow	10	20%
Somehow	29	58%	No	31	62%
No	11	22%	**Environment during Pregnancy**		
Self-care During Pregnancy			Good	13	26%
Yes	12	24%	Normal	15	30%
Somehow	26	52%	Bad	4	8%
No	11	22%	**Facilitated During Pregnancy**		
Delivery happened			Yes	17	34%
Normal	21	42%	No	32	64%
Operation	28	56%	**Medical Problems During Pregnancy**		
Feel Complication During Pregnancy			Yes	38	76%
Yes	33	66%	No	11	22%
Somehow	6	12%	**Mental Stress During Pregnancy**		
No	10	20%	Yes	24	48%
Delivery Place			Somehow	16	32%
Home	4	8%	No	9	18%
Govt. Hospital	12	24%	**Pregnancy Effect on Health**		
Private Hospital	33	66%	Yes	27	54%
			Somehow	16	32%
			No	6	12%

Source: Authors' own calculation

Table 1 reveals that 66% of women labor during pregnancies, while 52% do not take vaccines or medications. Many expecting women are illiterate; 56% of women are illiterate. Sewing garments during pregnancy accounts for 70% of all pregnancies. They lack health insurance coverage during pregnancy. 56% of pregnancies end in cesarean section, 66% have complications, 54% have pregnancy-related health issues, 54% do not take care of themselves during pregnancy, and

62% of pregnant women do not walk. The results indicate that most participants (76%) reported experiencing medical issues during their pregnancy, while 22% responded negatively. It is also evident that most pregnant women experience mental tension. 18% of pregnant women do not experience mental tension, whereas 32% do. Only 12% of women believe that pregnancy has no influence on their health, whereas the majority believe that pregnancy has definite health effects.

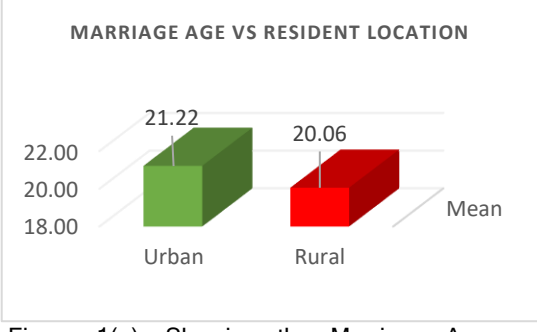

Figure 1(a): Showing the Marriage Age vs. resident Location.

The preceding diagram depicts the average marriage age in two distinct living environments, namely rural and urban. In urban areas, the average age at which a woman marries is 21 years, whereas in rural areas, the average age is 20. It is evident from the above graphic that early marriages are more prevalent in rural areas, as the sample average is lower for rural settings.

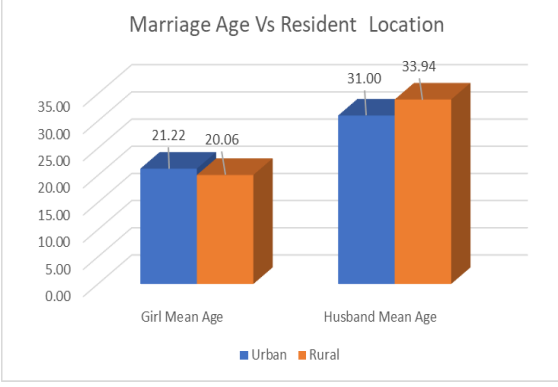

Figure 1(b): Marriage Age vs. Resident Location

The preceding diagram depicts the average marriage age in two distinct living environments, namely rural and urban. The graph illustrates that the typical age of a woman getting married in urban areas is older than in rural areas. It is evident from the above image that the average age of husbands in rural areas is approximately 34 years, while the average age in urban areas is 31.

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Table 2: Logistics Regression Coefficient

Poverty	Coefficients	S. Error	Z	P> Value	95% C.I.	
Girl Age at time of marriage	-0.39185	0.407932	-0.96	0.337	-1.19138	0.407683
2. Resident Location	22.16512	69.69711	0.32	0.75	-114.439	158.7689
Number of Family Member	-7.38147	23.0729	-0.32	0.749	-52.6035	37.84059
Number of Rooms in House	5.877881	22.34461	0.26	0.793	-37.9168	49.67251
2.Seprate Room at home	2.29746	21.9966	0.1	0.917	-40.8151	45.41
Pregnancy Diet						
2	-6.70186	23.05733	-0.29	0.771	-51.8934	38.48969
3	6.240613	23.36332	0.27	0.789	-39.5507	52.03187
Childbirth Weight	12.85519	45.43064	0.28	0.777	-76.1872	101.8976
_cons	3.503413	44.74751	0.08	0.938	-84.2001	91.20693

Source: Authors' own calculation

As its summary statistics indicate, the Logistic Regression model is statistically significant. The factors account for approximately 66% of the variance in poverty in the study sample. There is a negative relationship between being impoverished and the age of the bride-to-be, which can be explained by the fact that an increase in age is associated with a decreased likelihood of being poor. The resident location is positively associated with the dependent binary variable, which can be explained as follows: urban residents are less likely to be impoverished than rural residents. The results indicate that having a separate room at home increases the likelihood of being impoverished, which is a misleading result based on the presented coefficient table. The second variable category, "diet of a pregnant mother,"

reflects a greater likelihood of being impoverished than the first. An increase in the weight of a newborn decreases the probability that the dependent variable will be equal to 1 in a prediction.

Secondary Data Analysis

The section analyzes the data obtained from the District Health Information System District Lasbela, Balochistan. The data is analyzed using various statistical and econometrical techniques, which are given below.

Analysis of the Situation in District Lasbela

The following analysis is based on secondary data from the district health information system. This section comprises descriptive analysis, correlation analysis, and regression analysis as analysis tools.

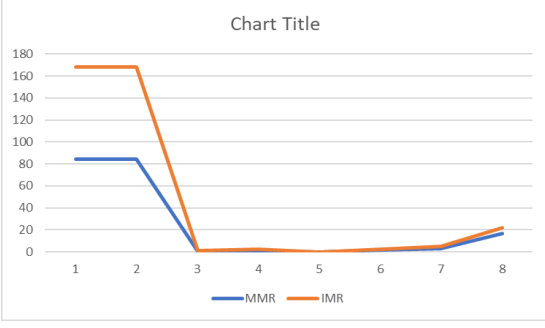

Figure 2: MMR vs. IMR

Figure: Mother Mortality Rate vs. infant Mortality Rate

The diagram depicts the relationship between the mother and infant mortality rates, or the number of maternal deaths per one hundred thousand pregnant women and the number of newborn deaths per one thousand per year in the Lasbela District of Balochistan, Pakistan. In Districts Lasbela, Balochistan, Pakistan, the mother mortality rate is at the bottom of the graph, while the infant mortality rate is above the bottom line, indicating that the annual infant mortality rate is higher than the mother mortality rate.

Table 3: Descriptive of baby Birth under Expert Supervision

	Percentiles	Smallest		
1%	51	51	N	84
5%	85	53	Sum Wgt.	84
10%	97	73	Mean	173.6786
25%	140.5	81	S.D.	51.53176
50%	179.5			
	Largest		Var	2655.522
75%	210.5	246	Skew.	-0.39139
90%	241	249	Kurt.	2.378467
95%	245	250		
99%	256	256		

Source: Authors' own calculation

The descriptive analysis for the study variable monthly number of babies born under the supervision of an expert in district Lasbela, Balochistan, from January 2010 to December 2016 is depicted in the table above. During the study period, the average number of births in the Lasbela district was approximately 174 per month, according to the findings. The median number of births under expert supervision is approximately 179 per month, ranging between 51 and 256 per month.

Table 4: Descriptive of Infant Death

	Percentiles	Smallest		
1%	0	0	N	84
5%	0	0	Sum Wgt.	84
10%	0	0	Mean	0.559524
25%	0	0	S.D.	0.826536
50%	0			
		Largest	Var	0.683161
75%	1	3	Skew.	1.612194
90%	1	3	Kurt.	5.124946
95%	3	3		
99%	3	3		

Table 4 provides a descriptive analysis of the study variable Infant Mortality Rate per Month in District Lasbela, Balochistan. According to the results above, the average monthly number of infant deaths in district Lasbela during the study period was approximately one. The median number of infant deaths per month is zero, with the lowest being zero and the highest being three.

Table 5: Correlation Matrix

Variables	1	2	3	4	5	6	7	8
1. Normal Vaginal Delivery	1							
2. Not Normal Vaginal Delivery	-0.091	1						
3. Birth by Expert	0.719	-0.195	1					
4. Weight Less than Five Kg at the time of birth	0.110	-0.036	0.146	1				
5. Pregnant women registered by LHV	0.001	-0.058	-0.011	-0.180	1			
6. Delivery by skilled person	-0.158	-0.082	-0.092	-0.269	0.432	1		
7. Maternal Death	-0.113	-0.079	-0.186	-0.100	0.084	0.030	1	
8. Infant Death	0.011	0.047	0.042	-0.035	-0.012	0.136	-0.046	1

Table 5 displays the Pearson correlation coefficients between the variables of the study. The Pearson correlation coefficient between the monthly number of Normal Vaginal Births and Not Normal Vaginal Births is -0.091, which is not statistically significant. A moderate correlation exists between the monthly number of Normal Vaginal Births and Expert-Assisted Births. The correlation between the monthly number of Normal Vaginal Births and the birth weight of infants weighing less than five kilograms is 0.110, which is sufficiently low. The correlation between the monthly number of Normal Vaginal Births and the monthly record of Maternal Death is weak, with a coefficient of -0.113. A weak but positive correlation exists between personal money spent and parental approval, with a correlation coefficient of 0.233. The above table also indicates that a negative correlation exists between the birth weight of infants weighing less than five kilograms and the number of maternal deaths per month. Surprisingly, there is a correlation between births performed by an expert and the monthly number of infant fatalities.

The preceding discussion can conclude that the model will not suffer from multicollinearity due to incorporating the study's covariates.

The diagram below depicts the model's executive summary. There are 84 months of data records chosen for regression analysis. The p-value of F statistics indicates that the regression equation is statistically insignificant, as the p-value is 66%, which exceeds the 5% significance level. R2 equals 0.0293, the proportion of variation explained by the regression equation. And the adjusted R2 value is critically low at 0.0199. The low R2 value is because the variables selected for the model are relatively unimportant regarding their impact on the dependent variable. The absence of additional explanatory variables is due to the limited data availability.

Table 6: Regression Model of Infant Mortality

Model Summary						
No	84	P Value	0.6666	Adj. R^2	0.0199	
F(4, 79)	0.6	R^2	0.0293	RMSE	1.265	
Model Coefficients						
Infant Death	Coefficient	S.E.	T	P Value	95% C.I.	
Normal Vaginal Delivery	0.000562	0.001871	0.3	0.765	-0.00316	0.004287
Not Normal Vaginal Delivery	0.028467	0.055332	0.51	0.608	-0.08169	0.138624
. Delivery by skilled person	0.018699	0.014966	1.25	0.215	-0.0111	0.048495
Weight < 5 Kg at the time of birth	-0.00019	0.02089	-0.01	0.993	-0.04178	0.041398
Maternal Death	-0.02783	0.074872	-0.37	0.711	-0.17689	0.121224
_cons	0.096561	0.550092	0.18	0.861	-0.99859	1.19171

The model is summarized in Table 6 depicted. The regression analysis consists of 84 months' worth of data records. The p-value of F statistics indicates that the regression equation is not statistically significant, as the p-value is 34%, which exceeds the 5% significance level. The value of R2 is 0.055, which represents the proportion of variance explained by the regression equation. In addition, the adjusted R2 has a value of 0.007, which is critically low. The low R2 value is because the variables chosen for the model account for a small proportion of those that influence the dependent variable. Other explanatory variables are not included because of the limited availability of data.

Conclusion

This evidence-based analysis sheds light on the intricate relationship between poverty and infant mortality in Lasbela, Balochistan. Socioeconomic factors play a significant role in determining infant health outcomes, as limited access to education, healthcare, and economic opportunities contribute to health disparities among the region's most vulnerable population. Suboptimal living conditions, insufficient nutrition, and restricted access to essential healthcare services significantly affect infant mortality. To address

these obstacles and their detrimental effects on infant mortality, targeted interventions, and policy measures are required.

Priority should be given to evidence-based approaches, such as investments in social welfare programs, enhanced healthcare infrastructure, and initiatives empowering marginalized communities.

Thus, stakeholders can pave the way for a brighter and healthier future for Lasbela, Balochistan's neonates.

This study aimed to calculate neonatal and maternal mortality rates and investigate their relationship to poverty. It aimed to determine whether poverty significantly affects neonatal and maternal mortality in the Lasbela district. The findings indicate increased regular vaginal deliveries are associated with increased infant mortality. Most participants' families lived in impoverished conditions, as indicated by the survey's development indicators. The two study variables strongly correlate, indicating that the mother and infant mortality rates tend to increase and decrease together.

This study addresses a research gap in the current body of literature by examining the relationship between family economics and health development to gain insights into the factors contributing to decreased or increased maternal and newborn mortality rates in the Lasbela district. The findings of this study reveal that many women, precisely 66%, engage in employment while pregnant. Additionally, 56% of these women encounter complications during this phase, while an equivalent proportion of 66% have medical issues.

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