EFFECT OF MOTHER'S EMPLOYMENT ON CHILD MORTALITY IN PAKISTAN: MODERATING ROLE OF MOTHER'S EMPOWERMENT

Muhammad Farhan Asif[1], Shaherbano Khalid[2], Karm Shahryar Khalid[3]
and Ghulam Abid[4§]

[1] National College of Business Administration and Economics
Lahore, Pakistan. Email: farhanmalik510@gmail.com

[2] Johns Hopkins Covid Command Centre, Baltimore, USA
Email: shaherbanokhalid@outlook.com

[3] General Practitioner, Zafar Hospital, Lahore, Pakistan
Email: karmshahryar@gmail.com

[4] Department of Business Studies, Kinnaird College for Women
Lahore, Pakistan. Email: dr.ghulamabid@gmail.com

[§] Corresponding author

ABSTRACT

Child mortality is an essential social measure that depicts the health issues in a country and the overall socio-economic development of the country. The Pakistani government has been working hard to bring child mortality to acceptable levels (57.9/1,000 live births in 2021). Pakistan did not meet the Millennium Development Goals target of reducing child mortality and is still working toward achieving the Sustainable Development Goals of reducing child death. Different researchers had identified socio-economic and demographic factors that affect child mortality. The purpose of this research is to examine the relation of mothers' employment status and child mortality and investigate the interaction effect of mothers' empowerment and their employment status on child mortality. This specific type of relationship has hardly been seen in the literature. The binary logistic regression was used to investigate the factors of child mortality in Pakistan. The data was taken from Pakistan Demographic and Health Survey (PDHS) 2017–18. The findings indicate that an increase in mothers' education and empowerment, household wealth status, access to safe drinking water, toilet facilities, proximity to a healthcare facility, adequate birth spacing, and exposure to mass media reduces the likelihood of child mortality. The odds of child mortality increase in those women who are employed rather than unemployed women. The study also discovered that a woman's empowerment had a moderating influence on the association between mother work status and child mortality. The finding shows that a mother's empowerment moderates the relation of mother employment status and child mortality. We concluded that high levels of empowerment have a weaker (inverse) correlation between mother employment and child mortality than low levels of empowerment.

KEYWORDS

Child mortality, Mother's empowerment, Mother employment, Pakistan.

INTRODUCTION

Globally, significant success has been made in reducing child mortality (CM), which have decreased from 12.7 million in 1990 to 5.0 million by 2020. Child mortality has decreased from 91/1,000 live births in 1990 to 37/1,000 live births in 2020, the global child mortality rate has reduced by 53 percent since 1990. The globe has been making rapid progress in reducing the under-5 mortality rate. There are 24 low- and lower-middle-income countries among them. Currently, 79 nations have a mortality rate for children under the age of five greater than 25 fatalities per 1000 live births (WHO, 2020).

Pakistan is one of the populous country in the globe, with an estimated population of 225.2 million people and a population growth rate of 1.95 percent per year (GOP, 2021). "If population growth continues at its current rate, Pakistan will have the fifth largest population in the world by 2050 (WHO, 2005). Currently, Pakistan is one of ten countries responsible for two-thirds of all newborn (neonatal) deaths globally. The PDHS revealed trends in neonatal mortality (42/1000 live births), post-neonatal mortality (19/1000 live births), infant mortality (58/1000 live births), mortality among children under the age of five (67/1000 live births), and perinatal mortality (58.5/1000 births)" (PDHS, 2018; pp-146). Various programs have been integrated into national health policy to promote mother and child health. These programs include improving treatment facilities and better antenatal care offered by qualified health care professionals. It may be due to the significant discrepancy in the quality of care between urban and rural communities in Pakistan, which has prevented a significant drop in child mortality despite all of the efforts made so far (Khan et al., 2012).

According to previous studies, death rates and risk factors were shown to differ depending on bio-demographic and socio-economic parameters (Yaya et al., 2017; Antai et al., 2010; Anyamele, 2009; Argeseanu, 2004). According to research conducted in America and Brazil, maternal malnutrition, maternal obesity, low maternal stature, and mother age less than 25 years or larger than 35 years were all related to increased childhood mortality (Felisbino-Mendes et al., 2015; Myrskylä and Fenelon, 2012). Among the factors related to under-five mortality in Nigeria and Burkina Faso have been documented to be a lack of formal parental education, living in rural areas, and poverty, as well as the season of birth, geographic distance from healthcare facilities, and inter-pregnancy gap (Ezeh et al., 2015; Becher et al., 2004). In addition, empirical research on the association between various socio-economic determinants and child and newborn mortality in the context of Pakistan is available (Bennett, 1999; Agha, 2000; Iram and Butt, 2008; Khan et al., 2018; Asif et al., 2022).

The role of households' socio-economic status (SES) can also be essential in determining child mortality rates (Arber, 1999). Different markers of SES, such as an individual's educational attainment, income, and occupational status, can be used to calculate it (Kabir et al., 2011). Individuals with higher socio-economic status typically have better health indicators. Employment of women in business activity benefits women and their families in various ways, not the least of which is enhanced access to and control over money (Kishor & Parasuraman, 1998). Women's employment has been shown to impact their use of maternity and child health care, but the evidence has been inconsistent among research. According to some research, children of professional mothers have a greater risk of mortality because their mothers lack of appropriate time for child care (Tulasidhar, 1993; Bankole, 1989).

In comparison, other research from industrialized countries indicates that mother work reduces the incidence of preterm delivery and infant mortality (Scharber, 2004). Several studies show a beneficial link between women's job and their ability to influence earned money, allowing them to be more empowered when seeking maternity and child healthcare (Fawole & Adeoye, 2015). Additionally, several of these researchers found that after mother autonomy (involvement in decision-making) was adjusted, the beneficial impact of maternal work frequently vanished (Huda et al., 2016).

Women empowerment is critical for a country's economic and social growth; as well as for a child health (Bibi et al., 2020). Poor child health and women's empowerment are serious public health problems. Both issues disproportionately affect low and middle-income countries (LMICs) (Doku et al., 2020). The involvement of mothers in decision-making has a negative impact on the death of children. Compared to women, men typically choose a large family size and require less contraception than women (Becker, 1999). That's why women get more decision power, resulting in lower reproduction rates (Balk 1994; Eswaran 2002) and more use of contraception (Balk 1994; Eswaran 2002). Hence, individuals with low socio-economic status may have difficulty accessing healthcare facilities. Barriers to access to health care services remain constant in poor nations. According to some studies, access to health care may be classified into five dimensions: cost, accessibility, availability, accommodation, and acceptability (Penchansky & Thomas, 1981). The population's geographic accessibility to health facilities has not been thoroughly examined, particularly in terms of distance to health facilities. It has been established that primary health care utilization trends diminish as distance or travel time to a facility increases. Thus, distance to a health institution has a significant role in influencing health service consumption in rural areas of low-income nations (Tanser et al., 2006). Governments employ a variety of policy choices to ensure that all people have equitable access to healthcare services (Kabir et al., 2011). Such policy approaches may be beneficial in reducing the disparities in health outcomes induced by income disparities between different groups of people (Ashraf et al., 2010).

Mothers' socio-economic status and their empowerment can affect health outcomes, including child mortality. This study aims to evaluate the effect of mothers' employment on child mortality in Pakistan. As well as, this research has also attempted to determine whether a mother's empowerment has a moderating effect on the link between women's working status and CM.

DATA SOURCE

The data of this study was obtained from PDHS 2017-18. The study sample size consisted of 50,495 women. The information on 35,358 women was evaluated after deleting the missing values from the data.

Variables and Measurement

CM = f(MEDU, MES, MEMP, EMM, WSH, POR, ATF, ASDW, BS, ANHF, MES * WEMP)

where the functional form of the model was used to investigate the factors that influence child mortality.

Table 1
Variables and Measurement

Symbol	Variables	Measurement
CM	Child Mortality	1 = If there has been incidence of child death in the home 0 = Otherwise
MEDU	Mother's education	1 = If mothers have uneducated or primary education (less than secondary) 2 = if mothers have secondary or higher educated (at least secondary education)
MES	Mother's employment status	0 = if mother is currently unemployed 1 = if mother is currently employed
MEMP	Mother's empowerment	1 = If mother takes decision regarding household consumption alone or jointly with someone else considered as empowered 0 = Otherwise
EMM	Exposure to mass media	1 = if a home has a television (considered exposure) 0 = Otherwise
WSH	Wealth status of household	1 = If mothers are belonging to poorer, poorer and middle quintile (considered as poorer) 2 = If mothers are belonging to the richer and richest quintiles (considered as richer)
POR	Place of residence	1 = Urban 2 = Rural
ATF	Access to toilet facility	1 = if household has access to toilet 0 = Otherwise
ASDW	Access to safe drinking water	1 = if household has access to safe drinking water 0 = Otherwise
BS	Birth spacing	1 = If women taking less than 33 months birth spacing between two children 2 = If women takes at least 33 months birth spacing
ANHF	Access to nearest health facility	1 = access to nearest health facility 0 = Otherwise
MES*MEMP	Interaction term of mother's employment status and their empowerment	

METHODOLOGY

For categorical variables, descriptive statistics were reported in the form of frequency, percentage, and mean with standard deviation. We have applied binary logistic regression for our empirical analysis because the dependent variable of our study was categorical with two possible outcomes, i.e., the prevalence of CM in the household or the absence of child death. SPSS version 20 was used for all analyses. "We investigate the interaction effect using the bootstrap-based Hayes' PROCESS macro (Hayes, 2012). It is a well-established statistical technique for resampling that evaluates the model's variables and their standard errors solely from the sample" (Zafar et al., 2021; Abid et al., 2021; Yasir et al., 2021; Asif et al., 2022; pp-4).

RESULTS

Table 2 summarizes the descriptive statistics for the study's variables. The incidence of child mortality was reported by 8.6% of the total respondent women. Over half of all women (55%) were less empowerment, were unaware of the media (56.6%) and had access to the nearest health institution (50.1 percent). Around three-quarters of the women (77.5%) had less than secondary school education, and nearly 85.7 percent of women were unemployed. Most of the households were poor (68.4%). More than three-quarters of household had access to toilet and safe drinking water which is 74.8% and 84.6% respectively. About two-thirds of the women gave less than 33 months birth spacing apart (67.9 percent).

Table 2
Socio-demographic Characteristics of Included Participants

Socio-Economic Characteristics		Frequency	Percent
Child Mortality	No	32,318	91.4 %
	Yes	3,040	8.6 %
Mother's Education	Less than Secondary	27,396	77.5%
	At least Secondary	7,962	22.5%
Mother's Employment Status	Currently Unemployed	30,288	85.7%
	Currently Employed	5,070	14.3%
Mother's Empowerment	Low	19,332	54.7%
	High	16,026	45.3%
Exposure to Mass Media	No Exposure	15,360	43.4%
	Exposure	19,998	56.6%
Wealth Status of Household	Poorer	24,181	68.4%
	Richer	11,177	31.6%
Place of Residence	Urban	15,732	44.5 %
	Rural	19,626	55.5 %
Access to Toilet Facility	No	5,460	15.4%
	Yes	29,898	84.6%
Access to Safe Drinking Water	No	26,445	74.8%
	Yes	8,913	25.2%
Birth Spacing	Less than 33 Months	23,998	67.9%
	At least 33 Months	11,360	32.1%
Access to Nearest Health Facility	No	17,634	49.9 %
	Yes	17,724	50.1%

The findings of logistic regression indicates that (Table 3), mother's education (odds ratio = 0.693), maternal empowerment (odds ratio = 0.990), mass media exposure (odd ratio = 0.903), household wealth status (odds ratio = 0.707), access to toilet facility (odds ratio = 0.842), access to safe drinking water (odds ratio = 0.990), adequate birth spacing (odds ratio = 0.552), and access to health facility (odds ratio = 0.987) are all found to be significantly and negatively linked with CM.

Mothers with at least a secondary education, more empowered, exposed to mass media, and sufficient birth spacing have a lower risk of child death than women with less education and less empowerment. Additionally, the likelihood of child mortality is smaller in those women who belong to richer families and have access to potable water and a toilet facility and are close to a nearby health care facility. The odds ratio indicates that child mortality is higher among employed women.

Table 3
Results of Binary Logistic Regression

Independent Variables		β	Sig.	OR
Mother's Education	Less than Secondary		Ref	
	At least Secondary	-.367	.000	.693
Mother's Employment Status	Unemployed		Ref	
	Employed	.288	.000	1.334
Mother's Empowerment	Low		Ref	
	High	-.010	.004	.990
Exposure to Mass Media	No		Ref	
	Yes	-.103	.020	.903
Wealth Status of Household	Poorer		Ref	
	Richer	-.347	.000	.707
Place of Residence	Urban		Ref	
	Rural	.062	.174	1.064
Access to Toilet Facility	No		Ref	
	Yes	-.171	.001	.842
Access to Safe Drinking Water	No		Ref	
	Yes	-.010	.008	.990
Birth Spacing	Less than 33 Months		Ref	
	At least 33 Months	-.594	.007	.552
Access to Nearest Health Facility	No		Ref	
	Yes	-.013	.009	.987

The result of moderation indicates that mother's employment status and mother's empowerment (β = -0.220, p = 0.01) is negative effect on child death (Table 4).

Table 4
Results of Moderation/Interaction

	β	*p-value*
Constant	.609	.000
Mother's Empowerment	-.065	.091
Mother's employment status	.372	.007
Mother's employment status * Mother's Empowerment	-.220	.000

Figure 1 shows the moderating effects of a mother's empowerment on the link among mother's employment status and child mortality. The diagram shows the association of mother's employment and CM is negative for a higher level of mother's empowerment than a lower level of empowerment. It implies that a mother's empowerment weakens (inverse) the association among mother's working status and child mortality.
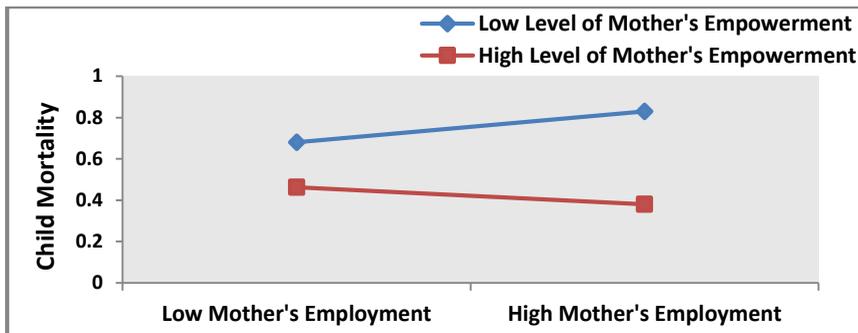
Figure 1: Graphic Representation of Moderation/Interaction

DISCUSSIONS AND IMPLICATIONS

The study's findings indicate that women's education, empowerment, and optimal birth spacing are crucial factors in lowering child mortality rates. Mother's education has the possible to benefit them, their families, and society. Educated women are more likely to be actively involved in the workforce, have reduced fertility, and have healthy children. It is imagined that they will have increased knowledge and awareness of sanitary facilities and preventive healthcare procedures. They may be in a better position to care for their children and themselves throughout and after delivery as well (Hobcraft et al., 1985; Khan and Raza, 2014; Folasade, 2000; Asif et al., 2020). It is reasonable to anticipate that education of mother will play a critical role in decreasing child mortality rates. As a result, removing hurdles to mothers' education and participation in the labor force can have a significant economic impact (Jackson, 2009; Asif et al., 2017; Ali et al., 2020).

Women who have received formal education are often considered more powerful and are probable to participate more actively in family decision. According to Eswaran (2002), women who have better bargaining power are more expected to have lower fertility and take family planning more frequently. Unwanted pregnancies are reduced by up to 57 percent when women have empowered to take decision (Ashraf et al., 2010). Mothers' control over home consumption results in higher expenditures on children's health, nutrition and their education. It has also been observed that when couples contribute to the household income, a more significant proportion of the women's income is consumed on the health and diet of their children (Eswaran, 2002; Shroff et al., 2009; Khan et al., 2020). According to Maitra (2004), increasing mothers' empowerment resulted in a significant reduction in infant mortality due to better prenatal care and the increased chance of giving birth in a hospital.

Mass media exposure is an essential factor of CM because it assistances mothers to obtain essential and relevant information on child health care services that essential be provided to the children and lessen the likelihood of child death (Bennett, 1999; Rafique et al., 2020; Qaiser et al., 2021). Household wealth status has a negative relationship with child mortality. Richer persons enjoy higher living standards and greater access to healthcare services. This can lower the incidence of child mortality among families with higher incomes. Households with lower socio-economic status, on the other hand, are less probable to have access to health facilities as well as to essential services such as sanitation,

sanitary toilets, and safe drinking water (Ali, 2001; Susuman, 2012; Asif and Pervaiz, 2019; Asif et al., 2021).

The availability of toilet facility decreases the chance of CM by decreasing the prevalence of diarrhea in developing countries (NAFDAC, 2001). In 2017, diarrheal illness was the cause of one out of every ten child deaths per year globally (Dadonaite, 2019). Achieving universal access to water, sanitation, and hygiene is the most effective method to avert diarrheal illnesses (Cairncross et al., 2010), which can assist in lowering child death rates (Mondal et al., 2009).

The proper spacing between two births is inversely affected by child mortality. The birth interval is an important factor of child health (Bhutta and Hafeez, 2015). Infant survival increased by 2.4 times and child survival increased by 2.9 times when births were spaced appropriately, i.e., within 2–4 years (PDHS, 2018). Additionally, infants born small for their gestational age are twice as probable as children of average size at birth to die during the neonatal period (Bhutta and Hafeez, 2015).

The results found a negative relationship between the nearest health facility and CM. Numerous research has established a link between travel distance or duration and health effects. Increased distance to a health facility was related to enhance the risk of CM (Kapungwe, 2005). Similarly, access to a health facility was observed to influence childhood mortality in Uganda, with the effect being more pronounced among children born to illiterate women (Katende, 2003).

This study explores that mother's empowerment has a significant moderating influence on the link b/w working status of mother and child mortality. The association between mothers' employment and child mortality is weak when the empowerment level is high. In proportion to the increase in the mother's empowerment level, the influence of a mother's employment on CM becomes more noticeable.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Socio-economic variables can have a significant impact on CM. The study observed the socio-economic factors contributing to infant and CM within Pakistan. It has also looked into the potential moderating effect of mother's empowerment on the association between mother's employment child deaths. However, several other factors can impact child mortality that needs to be researched. A mother's education can also play a moderating role in the association between place of residence and child mortality. Further study may be beneficial in determining the impact of these factors in terms of CM. Additionally, the causes of regional disparities in child mortality must be investigated.

CONCLUSIONS

Our study confirms the importance of primary risk factors for child mortality, i.e., household-, mother- and child, related factors, including socio-economic status, usage of healthcare services, and social behavior. These outcomes demonstrated that a more comprehensive strategy for future child health programs is required to achieve additional decreases in child mortality in Pakistan, particularly in rural and impoverished areas. Improvements in access to formal health services, a focused effort on teaching entire families about birth spacing, special consideration should be given to infants during their

first year of life, delivery through institutions, and efforts to make antenatal care more accessible, and postnatal care for mothers, as well as improvements in household economic status, are all necessary components of such programs. The trends in child mortality in Pakistan indicate that the number of children who have died has fallen marginally. The most significant contribution to this drop was made at the extremes of women's education, greater birth spacing, and the economic level of households. Women's education, home building, and family planning initiatives implemented in the area during this period may have contributed to this reduction.

List of Abbreviations

CM = Child Mortality
SES = Socio-economic Status

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

REFERENCES

1. Abid, G., Shaikh, S., Asif, M.F., Elahi, N.S., Anwar, A. and Butt, G.T. (2021). Influence of perceived organizational support on job satisfaction: Role of proactive personality and thriving. *Int. J. Entrepreneurship*. 25(2S): 1-11.
2. Agha, S. (2000). The determinants of infant mortality in Pakistan. *Social Science & Medicine*, 51(2), 199-208.
3. Ali, S., Asif, M.F., Khan, M.K., Fatima, N., Safdar, H. and Lassi, Z.S. (2020). Moderating role of husband's education and their employment on female labor force participation in Pakistan. *Ilkogretim Online*, 19(4), 5265-5276.
4. Ali, S.M. (2001). *Poverty and child mortality in Pakistan*. Pakistan Institute of Development Economics. MIMAP Technical Paper Series No. 6.
5. Antai, D., Wedrén, S., Bellocco, R. and Moradi, T. (2010). Migration and child health inequities in Nigeria: A multilevel analysis of contextual- and individual- level factors. *Tropical Medicine & International Health*, 15(12), 1464-1474.
6. Anyamele, O.D. (2009). Urban and rural differences across countries in child mortality in sub-Saharan Africa. *Journal of Health Care for the Poor and Underserved*, 20(4), 90-98.
7. Arber, S. (1997). Comparing inequalities in women's and men's health: Britain in the 1990s. *Social Science & Medicine*, 44(6), 773-787.
8. Argeseanu, S. (2004). Risks, amenities, and child mortality in rural South Africa. African Population Study, 19(1), 13-33.
9. Ashraf, N., Field, E. and Lee, J. (2010). *Household bargaining and excess fertility: A study in Zambia. Harvard Business School*. Unpublished Manuscript, http://people. hbs. Edu/nashraf/papers/Ashraf_Field_Lee_December2010. pdf
10. Asif, M. F., Pervaiz, Z., Afridi, J. R., Safdar, R., Abid, G., & Lassi, Z. S. (2022). Socio-economic determinants of child mortality in Pakistan and the moderating role of household's wealth index. BMC pediatrics, 22(1), 1-8.
11. Asif, M.F. and Pervaiz, Z. (2019). Socio-demographic determinants of unmet need for family planning among married women in Pakistan. *BMC Public Health*. 19(1), 1-8.

12. Asif, M.F., Mirza, U.K., Khan, A.H., Asif, M.Z., Riaz, S. and Ahmed, S. (2018). Job satisfaction: Antecedent and consequences. *Bulletin of Business and Economics (BBE)*, 6(4), 185-194.

13. Asif, M.F., Pervaiz, Z., Afridi, J.R., Abid, G. and Lassi, Z.S. (2021). Role of husband's attitude towards the usage of contraceptives for unmet need of family planning among married women of reproductive age in Pakistan. *BMC Women's Health*. 21(1), 1-7.

14. Asif, M.F., Safdar, H. and Ali, S. (2020). Factors affecting the performance of school students: A case study of Bahawalpur. *Ilkogretim Online*, 19(3), 3650-3660.

15. Balk, D. (1994). Individual and community aspects of women's status and fertility in rural Bangladesh. *Population studies*, 48(1), 21-45.

16. Bankole, A. (1989). Maternal employment and infant mortality: An examination of the role of breastfeeding as an intermediate factor. *Biology and society: the journal of the Eugenics Society*, 6(1), 19-26.

17. Becker, S. (1999). Measuring unmet need: Wives, husbands or couples? *International Family Planning Perspectives*, 25(4), 172-180.

18. Bennett J. (1999). Correlates of child mortality in Pakistan: a hazards model analysis. *Pakistan Development Review*, 38(1), 85-118.

19. Bhutta, Z.A. and Hafeez, A. (2015). What can Pakistan do to address maternal and child health over the next decade? *Health Research Policy and Systems*, 13(1), 13-16.

20. Bibi, M., Khan, F.A. and Irshad, I. (2020). Women empowerment and infant mortality in Pakistan: Micro data evidence. *Pakistan Journal of Applied Economics*, 30(2), 181-201.

21. Cairncross, S., Hunt, C., Boisson, S., Bostoen, K., Curtis, V., Fung, I.C. and Schmidt, W.P. (2010). Water, sanitation and hygiene for the prevention of diarrhoea. *International journal of epidemiology*, 39(suppl_1), i193-i205.

22. Dadonaite, B. (2019). Child and infant mortality. University of Oxford. U.S.A. Available at: https://ourworldindata.org/childhood-diarrheal-diseases.

23. Doku, D.T., Bhutta, Z.A. and Neupane, S. (2020). Associations of women's empowerment with neonatal, infant and under-5 mortality in low-and/middle-income countries: Meta-analysis of individual participant data from 59 countries. *BMJ Global Health*, 5(1), e001558.

24. Eswaran, M. (2002). The empowerment of women, fertility, and child mortality: Towards a theoretical analysis. *Journal of Population Economics*, 15(3), 433-454.

25. Ezeh, O.K., Agho, K.E., Dibley, M.J., Hall, J.J. and Page, A.N. (2015). Risk factors for post-neonatal, infant, child and under-5 mortality in Nigeria: a pooled cross-sectional analysis. *BMJ Open*, 5(3), e006779.

26. Fawole, O.I. and Adeoye, I.A. (2015). Women's status within the household as a determinant of maternal health care use in Nigeria. *African Health Sciences*, 15(1), 217-225.

27. Felisbino-Mendes, M.S., Moreira, A.D. and Velasquez-Melendez, G. (2015). Association between maternal nutritional extremes and offspring mortality: A population-based cross-sectional study, Brazil, Demographic Health Survey 2006. *Midwifery*, 31(9), 897-903.

28. Folasade, I.B. (2000). Environmental factors, situation of women and child mortality in southwestern Nigeria. *Social Science & Medicine*, 51(10), 1473-1489.

29. Government of Pakistan (2021). Economic Survey of Pakistan 2020-21. Finance Division, Islamabad, Pakistan

30. Hayes, A.F. (2012). PROCESS: a Versatile Computational Tool for Observed Variable Mediation, Moderation, and Conditional Process Modeling, White Paper [online] http://www.afhayes.com/public/process2012.pdf (accessed 03 November, 2020).

31. Hobcraft, J.N., McDonald, J.W. and Rutstein, S.O. (1985). Demographic determinants of infant and early child mortality: a comparative analysis. *Population Studies*, 39(3), 363-385.

32. Huda, T.M., Tahsina, T., Arifeen, S.E. and Dibley, M.J. (2016). The importance of intersectoral factors in promoting equity-oriented universal health coverage: A multilevel analysis of social determinants affecting neonatal infant and under-five mortality in Bangladesh. *Global Health Action*, 9(1), 29741.

33. Iram, U. and Butt, M.S. (2008). Socio-economic determinants of child mortality in Pakistan: Evidence from sequential probit model. *International Journal of Social Economics*, 35(1/2), 63-76.

34. Jackson, L.W. (2009). Educate the Women and You Change the World: Investing in the Education of Women Is the Best Investment in a Country's Growth and Development. In *Forum on Public Policy Online* (Vol. 2009, No. 2). Oxford Round Table. 406 West Florida Avenue, Urbana, IL 61801.

35. Kabir, M.A., Al-Amin, A.Q., Alam, G.M. and Matin, M.A. (2011). Early childhood mortality and affecting factors in developing countries: An experience from Bangladesh. *International Journal of Pharmacology*, 7(7), 790-796.

36. Kapungwe, A.K. (2005). Quality of child health care and under-five mortality in Zambia: A case study of two districts in Luapula Province. *Demographic Research*, 12, 301-322.

37. Katende, C. (1994). The impact of access to health services on infant and child mortality in rural Uganda. *African Population Studies*, 9(1), DOI: https://doi.org/10.11564/9-1-411

38. Khan, A., Kinney, M.V., Hazir, T., Hafeez, A., Wall, S.N., Ali, N. and Pakistan Newborn Change and Future Analysis Group (2012). Newborn survival in Pakistan: a decade of change and future implications. *Health Policy and Planning*, 27(suppl_3), iii72-iii87.

39. Khan, R.E.A. and Raza, M.A. (2014). Nutritional status of children in Bangladesh: measuring composite index of anthropometric failure (CIAF) and its determinants. *Pakistan Journal of Commerce and Social Sciences*, 8(1), 11-23.

40. Khan, R.E.A., Bari, K.M. and Raza, M.A. (2018). Socio-economic determinants of child mortality: Evidence from Pakistan Demographic and Health Survey. *Business Review*, 2(13), 34-50.

41. Khan, R.S., Jan, S.A., Afridi, J.R. and Asif, M.F. (2020). Impact of" Food for Education Program" on Child Labour incidence in Tribal Districts of Khyber Pakhtunkhwa, Pakistan. *Ilkogretim Online*, 19(3), 3307-3320.

42. Kishor, S., Parasuraman, S. and Parasuraman, S. (1998). *Mother's employment and infant and child mortality in India: National family health survey subject reports/International Institute for Population Sciences*, International Institute for Population Sciences (Mumbai).

43. Maitra, P. (2004). Parental bargaining, health inputs and child mortality in India. *Journal of Health Economics*, 23(2), 259-291.

44. Mondal, M.N.I., Hossain, M.K. and Ali, M.K. (2009). Factors influencing infant and child mortality: A case study of Rajshahi District, Bangladesh. *Journal of Human Ecology*, 26(1), 31-39.

45. Myrskylä, M. and Fenelon, A. (2012). Maternal age and offspring adult health: evidence from the health and retirement study. *Demography*, 49(4), 1231-1257.

46. NAFDAC (2001). National Agency for Food and Drug Administration and Control, Ministry Safety bulletin, Volume 1. Recommendation, National agency for food, Drug, Administration and control. Lagos, Nigeria.

47. NIPS (2018). *Pakistan demographic and health survey 2017-18*. Islamabad, Pakistan, and Rockville, Maryland, USA: NIPS, ICF.

48. Penchansky, R. and Thomas, J.W. (1981). The concept of access: definition and relationship to consumer satisfaction. *Medical Care*, 19, 127-140.

49. Qaiser, N., Sattar, N., Arshi, S., Asif, MF. and Afridi, J.R. (2021). Impact of thriving on job performance, positive health and turnover intention: Consequences of thriving at workplace. *Int. J. of Information, Business and Management*, 13(2), 97-107.

50. Rafique, T., Asif, M.F., Afridi, J.R., Rehman, NU. and Mahmood, K. (2020). Credibility of social networking sites: Impact on organizational attraction in recruitment filed. *Sarhad Journal Management Sciences,* 6(2), 279-94.

51. Scharber, H. (2014). Does "out of work" get into the womb? Exploring the relationship between unemployment and adverse birth outcomes. *Journal of Health and Social Behavior*, 55(3), 266-282.

52. Shroff, M., Griffiths, P., Adair, L., Suchindran, C. and Bentley, M. (2009). Maternal autonomy is inversely related to child stunting in Andhra Pradesh, India. *Maternal & Child Nutrition*, 5(1), 64-74.

53. Susuman, A.S. (2012). Child mortality rate in Ethiopia. *Iranian Journal of Public Health*, 41(3), 9-19.

54. Tanser, F., Gijsbertsen, B. and Herbst, K. (2006). Modelling and understanding primary health care accessibility and utilization in rural South Africa: an exploration using a geographical information system. *Social Science & Medicine*, 63(3), 691-705.

55. Tulasidhar, V.B. (1993). Maternal education, female labour force participation and child mortality: Evidence from the Indian census. *Health Transition Review*, 177-190.

56. World Health Organization. (2020). *Children: improving survival and well-being*. https://www.who.int/news-room/fact-sheets/detail/children-reducing-mortality.

57. Yasir, A., Abid, G., Afridi, J.H., Elahi, N.S. and Asif, M.F. (2021). Social media communication and behavioral intention of customers in hospitality industry: The mediating role of customer satisfaction. *International Journal of Entrepreneurship*. 25(2S), 1-14.

58. Yaya, S., Ekholuenetale, M., Tudeme, G., Vaibhav, S., Bishwajit, G. and Kadio, B. (2017). Prevalence and determinants of childhood mortality in Nigeria. *BMC Public Health*, 17(1), 1-7.

59. Zafar, R., Abid, G., Rehmat, M., Ali, M., Hassan, Q. and Asif, M.F. (2021). So hard to say goodbye: Impact of punitive supervision on turnover intention. *Total Quality Management Business*, 1-23. DOI: 10.1080/14783363.2021.1882844