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EFFECT OF MATERNAL EMPLOYMENT ON NUTRITIONAL STATUS OF CHILDREN IN FAISALABAD CITY

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ABSTRACT

For the overall personality development of children, receiving care and attention from their parents is crucial. Mothers play a crucial role in a child's upbringing and nutritional status. Employed women face many challenges in society, including multitasking. They are obliged to balance their job with household responsibilities and childcare. This study analyzed the impact of a mother's employment status on the nutritional status of children under five years in the district Faisalabad of Punjab Province of Pakistan. The respondents included in this study were between 15-49 years mothers. A multi-stage probability sampling was used, where the first step involved the selection of five towns. In the second step, 218 respondents were selected. Respondents from each town were selected in proportion to the population of the town. A well-structured, open- and close-ended questionnaire was used to collect data. Children were assessed using anthropometric measures to see if they were underweight, wasted, or stunted and to evaluate a person's weight for height, weight for age, and height for age. Results revealed that children of working mothers had healthy body weight (BMI within the 5th percentile to 85th percentile) compared to mothers who do not work, i.e., 43.1 and 27.5 percent, respectively. Almost one-fifth of working mothers' children were underweight, the lowest ratio compared to children of non-working mothers, i.e., 37.6 percent. 6.4 percent of mothers with working children were overweight, higher than 2.8 percent of mothers without jobs. Children with working mothers comprised 29.4 percent of the population, and children with jobless mothers comprised 17.4 percent. Logistic regression was used to analyze the data. A significant association was found between the mother's employment and the nutritional well-being of a child. At a 95 percent confidence interval, the mother's age was statistically significant ($p = 0.028$), and its Wald statistics was 4.84 with 1 degree of freedom. The odds ratio, i.e., Exp (B), is 0.935, and regression coefficient B of Mage (Mother Age) is -0.067 which reduces the likelihood of children's nutritional status to 6.5 percent. Duration of breastfeeding (DBF) is significant ($p = 0.05$) at a 95 percent confidence interval, and its Wald statistics is 16.233 at 1 df. The regression coefficient DBF is 0.137, showing an increase in the nutritional status of children.

Keywords: Nutritional status; Children; Working mothers; Faisalabad; Pakistan.

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INTRODUCTION

Historically, women have been tagged with labels of a weaker gender, both physically and intellectually. Women are assigned roles that revolve around domestic work and child care. Nevertheless, things changed with the passage of time, and women started participating in the labor market and many women gained impressive positions. Currently, an encouraging proportion of women are part of the workforce than ever before. The position of women has changed in society and families due to their entrance into the labor market. More than half of women who work are contributing family members (55.9 percent), compared to

more than eight in ten men who work for themselves (40.4 percent) or are employed (47.0 percent). Regarding development over the comparator periods, the share of employees (39.8 percent, 42.0 percent) jumps up while own account workers (35.8 percent, 35.5 percent), contributing family workers (22.9 percent, 21.1 percent) goes down the and share of employers (1.5 percent, 1.4 percent) approximates the share. The share of females in comparison respective share of males is more visible in both urban formal (42.1 percent) and rural formal (28.9 percent), while the share of males is more prominent in rural informal (77.0 percent) and urban informal (69.7 percent). Employment share in the formal sector decreased (27.6 percent, 27.5 percent), while the share of the informal sector increased marginally (72.4 percent, 72.5 percent) during the comparative period (Pakistan Labor Force Survey, 2020-21).

In this regard, a mother's role is particularly crucial. Mothers serve as a protective buffer, shielding their children from the negative aspects of the outside World. The importance of a mother's role during a child's early life is evident worldwide, as reflected in literature. Newborns are completely vulnerable and require someone to care for them (Gežová, 2015; Yeleswarapu & Nallapu, 2012). During a child's early years, they are completely dependent on their parents. The attention and care provided by parents during this phase foster self-confidence and shape the child's personality for future challenges. Her responsibility begins even before childbirth, as children can sense and hear their mothers while developing their sense organs. Children rely on their mothers and learn extensively from them. Numerous studies support the notion that a woman's role as a mother is central to her family. She not only provides emotional support to her husband but also plays a significant role in the healthy upbringing of her children (Dewey & Begum, 2011). Pakistan's national nutrition survey showed that the prevalence of malnutrition is a severe problem in rural areas and according to anthropometry results, it was reported that 46.3 percent of children are suffering from malnutrition in rural areas, whereas 36.9 percent in urban areas across the country (National nutrition survey, 2011).

Inattentive parenting by a mother can cause a major disorder in her child. According to an estimation, one-third of under-five deaths are attributable to malnutrition and three hundred youngsters die due to malnutrition associated with nursing is an underlying reason for quite 2.6 million child deaths each year. For working mothers, doctors recommend taking leave for at least one year so that they may provide full attention to their newborn baby for an ideal upbringing. Several investigations confirmed that a working mother who spends quality time per day even one hour may bring up their children many folds better than those housewives who ignore their children throughout the day (Das, 2015). There is a serious conflict between the role of the mother and the role of the patient in the outside work stress. Every year in Pakistan 1200 children under age five die due to malnutrition. Recent data showed that 43 percent of Pakistani children are stunted, and 14.8 percent are wasted.

Biological and non-biological factors influence the nutritional status of a child, such as age, sex, growth, disease, and genetics being biological factors; however, socioeconomic status is among the non-biological factors. Poverty is the major cause of poor nutritional status because it imposes limits on living in the environment. Socio-cultural factors are directly or indirectly linked with nutritional status, like what people understand to be edible nutrients, what they eat, and, as such, on which nutrients are consumed and which nutrients are needed in higher quantities (Jackson, 2003). Nationwide the major cause of child death is undernutrition.

In the labor market, female participation is increasing day by day, so several studies have explored child health determinants. Maternal employment is linked with a child's nutritional status in two ways: it improves household income (Majbouri, 2016). If nonworking mothers tend to move towards employment while considering the income effects, this way, they may improve their quality of life and their family conditions (Parcel & Menaghan, 1990). There are many positive aspects of maternal employment, such as

the family's financial resources can be easily carried out (Stafford, 1987). On the other hand, there are some negative aspects of mother employment, such as they cannot give time to their children due to work burden or giving them proper diet on time. Several studies suggested that fathers do not spend much time with their children, which the mother cannot do due to stress (Sivakami, 1997; Cawley & Liu, 2012).

What is the situation regarding the child’s nutritional status in Punjab?

In Punjab, nutritional problems are found mostly in females in adolescence, where large number of females are obese and overweight, but the percentage of underweight is found to be normal. Females tend to have a high ratio of pregnancies which is higher than the Pakistani average. Table 1 describes the Form of nutrition, its prevalence in Punjab, and its consequences on the population.

Table 1. Nutritional status of children in Punjab and their reasons.

Malnutrition type	Prevalent in Punjab	Consequence
Stunted (under 5)	39.2 percent	5–11 IQ points each kid are lost.
Wasted (under 5)	Moderate = 8.9 percent Severe = 4.8 percent	Mortality odds ratio: Mild wasting = 3.0; Severe wasting = 9.4.
Iodine deficiency disorder (school age children)	39.0 percent	Reduction of 10-15 IQ points per child
Anemia (under 5)	60.3 percent	Adult productivity was reduced by 5-17percent 25 IQ points loss was shown in young toddlers under 2
Deficiency of vitamin A (under 5)	51.0 percent	23 percent less immunity to illness

Source: GOP (2012).

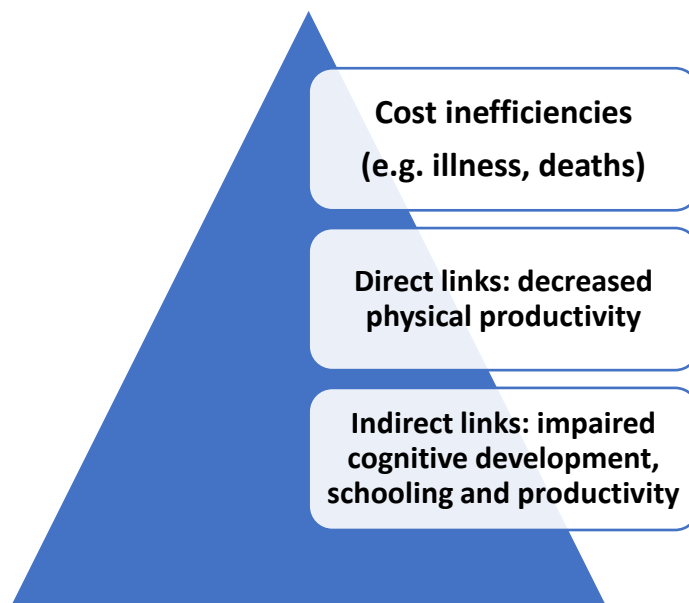


Figure 1. Malnutrition Reduces Productivity 3 Pathways; Source: GOP (2012).

Punjab's economic and social development is hindered by malnutrition in three main paths, as seen in Figure 1.

It is known that nutritional status is linked with physical status (Behrman & Rosenzweig, 2001). In childhood, 1 percent decrease in childhood productivity results in 1.4 percent decrease in adults’

productivity (Hunt, 2005). Anemia is a significant contributor to decreased adult productivity, with the potential to reduce productivity by 5-17 percent when effectively addressed (Horton & Ross 2003). Poor intellectual lead to improper body functioning. At the same time, a low ratio of fetal malnutrition lessens an individual's intelligence by five percentage points, while stunting reduces 5-11 percent, whereas iodine shortage reduces it by 10-15 percentage points.

According to a 2018 national nutrition study in Pakistan, 43.7 percent of children under the age of five had poor nutrition status, which affects mothers and children more than any other age group. Pakistan is the 2nd largest country after India which has the highest ratio of malnutrition because Bangladesh, India, and Pakistan have 78 percent of the World's malnourished children. (Gross & Webb, 2006). In order to remove nutritional problems Punjab government and its associates have involved development sectors. Their reviews were assessed to identify the main cause of malnutrition, and every possible intervention was done for its reduction. Malnutrition is the ultimate reason for child death (Bryce et al., 2005).

METHODOLOGY

The research was conducted in Faisalabad, which was chosen as the research area due to its status as the second-largest metropolis in the Punjab province and the third-largest city in Pakistan. The sample data was obtained using multistage sampling. The sample size was calculated using the formula developed by Yamane in 1967, which is commonly employed by researchers. The sample size based on this formula is widely used by researchers (Qasim et al., 2011; Hussain & Thapa, 2012; Ullah & Perret, 2014). The formula is represented as

$$n = N/1+N(e)^2 \tag{1}$$

Where,

N represents the total number of agricultural families in the research region

n represents the sample size

e represents the fixed accuracy of 5 percent.

Theoretical Framework

Several studies investigating factors related to nutritional status have established a link between the nutritional status of preschoolers and their mothers' employment status. The causes of childhood malnutrition are described in Figure 2.

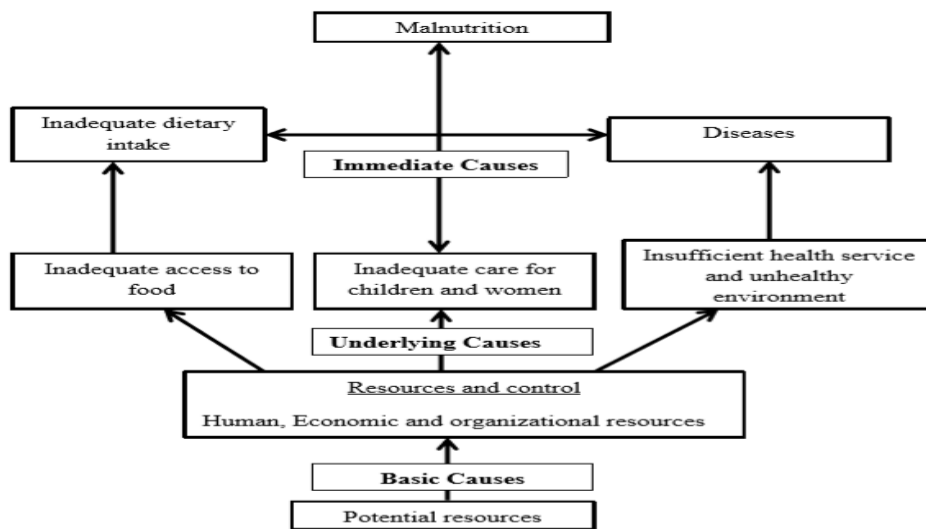


Figure 2. The theoretical framework of the study.

Anthropometric Measurement

Anthropometry is the field of study that involves measuring the dimensions of the human body, including bone, muscle, and adipose (fat) tissue. The English term "anthropometry" derives from the Greek words "anthropo" and "metron," both meaning "measure," reflecting its roots. Nutritional anthropometry focuses on physically measuring the human body at different stages of life and considering nutritional values (Nakahara et al., 2006; Akorede & Abiola, 2013; Bhandari & Chhetri, 2013; Negash et al., 2015; Roy et al., 2015; Wondafrash et al., 2017; Garti et al., 2018; Ndemwa et al., 2017; Senthilkumar et al., 2018). Moreover, Dangol (2018) and Lamichhane (2018) utilized anthropometric measurements to assess the weight-for-age, weight-for-height, and height-for-age indicators according to the World Health Organization (WHO) guidelines, aiming to determine if the children were underweight, wasted, or stunted. The chi-square test was employed to identify the underlying causes of malnutrition, and validated test settings were used to establish correlations between factors and the nutritional status of children. Ndemwa et al. (2017) also employed anthropometric measurements to evaluate nutritional status, employing descriptive statistics and univariate logistic regression to analyze the data and identify relationships.

Socioeconomic Factors and Statistical Analysis

To investigate the socioeconomic characteristics, descriptive statistics were employed. The relationship between socioeconomic variables and nutritional status was examined through binary logistic regression. Logistic regression is a statistical method used to analyze the association between data and one or more independent variables of nominal, ordinal, interval, or ratio level. Previous studies (Ndemwa et al., 2017; Garti et al., 2018; Farooq et al., 2019) utilized this approach to assess the risk factors associated with nutritional status in relation to socioeconomic characteristics among these particular groups.

$$Y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7 + B_8X_8 + B_9X_9 \quad (2)$$

Where each X_i is a predictor and each B_i is the regression coefficient.

Study Variables

Study variables were categorized into two groups: dependent variable and independent variables.

The dependent variable of this study was the nutritional status of 0–5-year children as indicated by stunting, wasting, and being underweight.

Hence independent variables were Family size, Total family income, mother's level of education, number of births by mother, age of children, marital status, type of family, duration of breastfeeding, health status, have the children have been attacked by diarrhea during the last three months.

$Y = f(X)$ where,

Y = nutritional status, and X = socioeconomic factors

X_1 = Mother's Occupation (MOc)

X_2 = Mother's age at childbirth (years) (Mage)

X_3 = Mother's Education (Med)

X_4 = Type of a family (FT)

X_5 = Family size (FAMSIZE)

X_6 = Children Gender (CG)

X_7 = Duration of breastfeeding (DBF)

X_8 = Eating Habits of Children's (EhabC)

X_9 = Illness Present (ILP)

RESULTS AND DISCUSSION

Descriptive Statistics

There is a clear and positive correlation between family income and various aspects of children's development, such as their overall health and academic achievements. This relationship has been consistently observed across different countries and time periods, indicating its robustness. Moreover, it plays a crucial role in the transmission of socioeconomic status across national borders. This relationship is considered as a key element in comprehending the worldwide distribution of socioeconomic status and has consistently demonstrated its significance across various countries and time period. A significant number, 88.1 percent of working mothers and 89.9 percent of nonworking mothers have their own house. 11.9 percent of non-working mothers and 10.1 percent of working mothers belonged to rented house. In comparison, 91 percent of nonemployed and 83.5 percent of employed mothers were from nuclear system. While the percentage of employed mothers belonging to rented houses was 10.1 and those of non-employed was 18.3 percent. Mothers who are housewives and mothers who work having a family size of more than 5 are 36.7 percent and 12.8 percent, respectively. 63.3 percent of non-working mothers and a major proportion of working mothers, i.e., 87.2, have a family size of less than 5. Based on the number who were interviewed and participated in the study. Mean Body Mass Index (BMI) of non-working mother= 15.07 ± 4.94 . mean BMI of working mother= 16.19 ± 5.52 .

Comparison of Body Mass Index (BMI) of employed and unemployed mothers' children. About 37.6 and 21.1 percent of kids whose mothers are working were underweight. About 43.1 percent and 27.5 percent of children were normal. Almost 6.4 percent and 17.4 percent of children whose mothers do not work and working mothers as well were seen as overweight. Almost 29.4 and 17.4 percent were obese, respectively. Table 2 explains non-working and working mothers' socioeconomic characteristics (monthly household income, house ownership, family type, family size and Body mass index).

Table 2. Descriptive statistics of socioeconomic characteristics.

Socioeconomic characteristics	Non-working Mothers (N= 109)		Working mothers (N= 109)	
	No. of Respondents	Percentage	No. of Respondents	Percentage
<i>Monthly household income</i>				
30 - 80	63	41.3	37	33.9
81 - 131	19	30.3	33	30.3
132 - 182	7	5.5	15	13.8
183 -233	12	4.6	13	11.9
234 -284	0	0	2	1.8
285 -335	7	6.4	3	2.8
336 -386	1	0.9	2	1.8
≥ 387	0	0	4	3.7
<i>House ownership status</i>				
Own	96	88.1	98	89.9
Rented	13	11.9	11	10.1
<i>Family type</i>				
Nuclear	79	72.5	91	83.5
Joint	20	18.3	18	16.5
<i>Family Size</i>				
More than 5	40	36.7	14	12.8
Less than 5	69	63.3	95	87.2
<i>Body Mass Index</i>				
Underweight ($\leq 5^{\text{th}}$ percentile)	41	37.6	23	21.1
Healthy weight (5^{th} percentile to 85^{th} percentile)	30	27.5	47	43.1
Over weight (85^{th} to $\leq 95^{\text{th}}$ percentile)	19	17.4	7	6.4
Obese ($\geq 95^{\text{th}}$ percentile)	32	29.4	19	17.4

Research studies have also demonstrated a connection between women's empowerment and improved nutritional outcomes for both themselves and their children. This relationship is reciprocal, indicating a mutually beneficial association (Bhagowalia et al., 2012; Quisumbing, 2003; Smith & Haddad, 2000).

Results of Binary Logistic Regression Model

When the dependent variable is binary and dichotomous, logistic regression emerges as the optimal method for regression analysis. Its purpose is to both characterize the data and elucidate the relationship between a single dependent binary variable and one or more independent variables of nominal, ordinal, interval, or ratio level.

H₀: Nutritional status of children affected by all the selected independent variables.

H₁: The selected independent variables demonstrate any influence on the nutritional status of children.

Hence, H₀ is our Null Hypothesis, While H₁ is our Alternative Hypothesis.

Table 3. Results of binary logistic regression model.

Variables in the Equation	B	S.E.	Wald	df	Sig.	Exp(B)
Occupation (Working)	.282	.372	.577	1	.447	1.326
Mother Age	-.067	.031	4.842	1	.028	.935
Family Size	-.03a7	.052	.505	1	.477	.963
Breastfeeding duration	.137	.034	16.233	1	.000	1.147
Illness	-.079	.240	.108	1	.743	.924
Education	-.055	.052	1.083	1	.298	.947
Gender (Female)	-.037	.242	.023	1	.879	.964
Family type	.256	.312	.675	1	.411	1.292
Eating habits	.243	.139	3.054	1	.081	1.276
Constant	1.016	1.139	.795	1	.372	2.762

Note: Variable(s) entered on step 1: occupation, mother age, family size, Breastfeeding duration, illness, education, gender, family type, and eating habits.

It gives results on the regression coefficients (B), Wald statistics (similar to the t-test in multiple regression), sig value of the Wald test, and Exp B (odds ratio) for all variables. Table-3 revealed that among nine explanatory variables, two of them are significant, i.e., mother age, and duration of breastfeeding, even though mother age is negatively significant, and duration of breastfeeding is positively significant. Hence the binary logistic regression can be interpreted as:

$$Y = 1.016 + 0.282Moc - 0.067MAge - 0.055Med + 0.256FT - 0.037FS - 0.037CG + 0.137DBF + 0.243 EhabC - 0.079ILP + \mu \tag{3}$$

Hence Mage (Mother Age) is statistically significant at 95 percent confidence of interval since its p-value = 0.028, i.e., less than 0.05 and its Wald statistics is 4.84 at 1 df. The regression coefficient of the binary logistics regression does not state the magnitude; rather, their signs (either positive or negative) talk about the most or less likelihood of the predicted, such as, regression coefficient B of Mage (Mother Age) is -0.067, which shows that children of older age mothers are less likely to secure their nutritional status. As a matter of fact, the magnitude is explained by the odds ratio, i.e., Exp (B) is 0.935, which shows this likelihood is 6.5 percent. Hence it can be interpreted that Mage (Mother Age) reduces the likelihood of children’s nutritional status (1-0.935). Furthermore, breastfeeding duration also exhibits statistical significance with a confidence interval of 98 percent, as indicated by a p-value of 0.001 and a Wald statistic of 16.233 with 1 degree of freedom. The regression coefficient DBF is 0.137, which shows an increase in the nutritional status of children. The odd ratio of DBF, i.e., Exp(B), is 1.147, which shows this likelihood is 1.147 times or

85.3 percent. Hence it can be interpreted that an increase in the duration of breastfeeding increases the chances of nutritional status of children by 85.3 percent.

Working women are those who regularly engage in employment outside their homes, earning a salary, wage, or other forms of income. The research findings highlight that a mother's employment has a negative influence on her child's nutritional status. This can be attributed to the lack of time the mother has to adequately monitor and ensure the child's proper food intake, resulting in a gradual decline in their nutritional well-being over time. Bold et al. (2013) have established a correlation between women's empowerment and its impact on nutrition. They argue that women's empowerment not only serves as a valuable objective in itself but also brings about positive societal outcomes, including poverty alleviation and the enhancement of human capital encompassing nutrition, health, and education.

Smith et al. (2003) contend that enhancing the social status and empowerment of women, both within society and in their households, can significantly influence the nutritional status of children. The employment of women leads to an increase in household income, thereby positively affecting women's standing and authority. This, in turn, may support women in making decisions to allocate resources toward food and healthcare. In reality, the nutritional status of infants can be influenced by the financial autonomy and decision-making power that mothers possess within their homes (Behrman & Hoddinitt, 2001). Furthermore, certain variables have an impact on health as individuals age. The findings reveal that age has a detrimental effect on a child's nutrition, as both the mother's and child's understanding of nutrition tends to diminish as they grow older and drift apart.

Children who grow up in small homes are likely to be more comfortable among adults at a young age due to the individualized care they receive. The findings from the table of binary logistic regression model indicate that as families expand and more people are involved, individual attention and food distribution decrease. Research has shown that continued breastfeeding beyond six months reduces the risk of disease in children and facilitates faster recovery in case of illness. The findings further demonstrate that breastfeeding contributes to improved nutritional status in children. Regardless of the quantity, illnesses always lead to reduced food intake and increased nutrient loss. The foods we consume and their nutrient content directly impact our nutritional well-being. Sickness can severely jeopardize a malnourished individual's ability to meet their physical, emotional, and social needs. Table number three reveals that illness negatively affects a child's growth, leading to malnutrition. Studies have established a strong correlation between maternal education and children's health. Educated women tend to have fewer children affected by malnutrition, including underweight, wasting, and stunting. Therefore, the findings of binary regression clearly indicate that a lack of education negatively impacts a child's growth.

In examining the factors influencing child malnutrition in Pakistan, Arif et al. (2012) found that maternal education did not show statistical significance in determining a child's nutritional status within a multivariate regression model. However, other research conducted in Pakistan has shown a positive correlation between maternal education and child nutrition, as evidenced by studies conducted by Headey et al. (2016), Fikree et al. (2000), Alderman and Garcia (1994), Hazarika (2000), Di Cesare et al. (2015), Mahmood (2001), and Malhotra et al. (2002).

Inadequate nutrition during early life has detrimental effects on females, impairing their learning abilities, increasing the risks related to maternal and reproductive health, and impacting overall productivity. This situation poses challenges in addressing gender inequality and makes it more difficult for women to access additional resources later in life. Essentially, women who experience inadequate nutrition find themselves trapped in a cycle of malnutrition and poverty. Research findings indicate a consistent preference for boys over girls, with boys receiving more attention in terms of nutritional quality (Oniang'o & Mukudi, 2002).

Families serve as the fundamental social unit through which children interact, fostering connections among family members and inevitably influencing one another.

The findings reveal that children living in nuclear households are more likely to have a nutritious diet compared to those living in joint families. Per capita income, which calculates the total income of all individuals residing in a single household or place of residence, plays a significant role. The results from table number three demonstrate that when the factors equal one, the odds ratio remains unchanged, maintaining the status quo. The results clearly indicate that children who consume nutritious and timely meals exhibit a higher nutritional status. Healthy eating habits promote growth and may reduce immediate and long-term health concerns.

CONCLUSIONS

The findings of this study hold significant importance across multiple aspects. The study discovered the Effect of Maternal Employment on the Nutritional Status of Children in Faisalabad City. The study revealed a significant difference in the composite score of nutritional status of employed and unemployed mothers. Furthermore, the children of working mothers were nutritionally stable as compared to that of non-working mothers. Mothers' work positively affects child nutrition because when both parents are working, they can provide their child with all the necessities of life. Moreover, the study revealed that the mother age and duration of breastfeeding are negatively and positively correlated to the nutritional well-being of the child, respectively. The study recommends that government should provide opportunities for female education and employment so that they contribute in a better way to their children's health and nutritional status.

Logistic regression was used to analyze the data. A significant association was found between the mother employment and the nutritional well-being of the child. At a 95 percent confidence interval mother's age was statistically significant ($p = 0.028$), and its Wald statistics is 4.84 with 1 degree of freedom. The odds ratio, i.e., Exp (B), is 0.935, and regression coefficient B of Mage (Mother Age) is -0.067 which reduces the likelihood of children's nutritional status to 6.5 percent. Duration of breastfeeding (DBF) is significant ($p 0.05$) at a 95 percent confidence of interval, and its Wald statistics is 16.233 at one df. The regression coefficient DBF is 0.137, showing an increase in the nutritional status of children. The study discovered that positive Maternal Employment has a positive effect on the Nutritional Status of Children.

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