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Original Article

Correlation of Socioeconomic Status And Anemia in Children Under Five Years of Age

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ABSTRACT

Objective: To find the correlation between socioeconomic status and anaemia in children under five years of age.
Study Design: Cross-sectional study.
Place and Duration of Study: Tertiary Care Hospital Mirpur Khas, Pakistan from Jan to Oct 2021.
Methodology: The study included 500 subjects. Children who were less than 5 years old and presented to the hospital along with one of their parents were included. Demographic and socioeconomic data were measured.
Results: The study involved 500 children aged 1–5 years, with 44.6% male and 55.4% female. The majority were aged 0–1 years, and 16.8% were aged 3-5 years. The socioeconomic status of the participants varied, with 63.6, 20.6, and 15.8% having low, medium, and high levels. The frequency of anaemia (haemoglobin <11 g/dl) was 66.2% among participants, with 50.2% from low socioeconomic status, 11.2% from medium and high status, and higher rates among males.
Conclusion: The results of this study highlighted the disparities between socioeconomic status and health issues, underscoring the need for targeted interventions aimed at improving communities' economic status and mitigating the factors that increase population vulnerability.

Keywords: Anaemia, haemoglobin, RBCs, socioeconomic status

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INTRODUCTION

"Anaemia is a state in which the haemoglobin (Hb) level in the blood is decreased. For children under 5 years of age, anaemia is labelled when Hb is < 11.0 g/dl. It has been revealed to be a global issue affecting high-, middle-, and low-income countries. It has been linked to serious health issues, as well as negative effects on social and economic growth.[1] Anaemia affects approximately 1.3 billion people worldwide, and approximately 9.6 million of the world's young children suffer from a severe form of the illness.[2] Anaemia has increased in developing countries, affecting at least 30 to 40% of preschool children, compared to more than 50% of youngsters in deprived countries.[3] Lower- and middle-class areas are particularly common places to find anaemia, with Southeast Asia as well as African countries having the highest frequency rates.[4] According to a World Health Organisation (WHO) survey, kids younger than the age of five years are most likely to experience anemia.[5] Childhood anaemia is a serious global public health issue because it can lead to potentially lethal consequences such as stunted growth, delayed motor and cognitive development, and increased morbidity and mortality rates.[6] Anaemia in children under five years old can be caused by a variety of factors, including poor food intake, infections, and hereditary conditions. A child's anaemia cannot permanently impair growth and development; thus, prompt diagnosis and adequate treatment are essential.[7] Anaemia in young children can be decreased with careful nutritional monitoring, access to high-quality healthcare, and preventive efforts like getting pregnant women the right prenatal treatment.[8] Conversely, the lowest percentage of Hb is found among parents with barely an elementary education who work for the government. Families with significant levels of overcrowding exhibited the lowest Hb rate. Their socioeconomic standing was thus poor. There was a significant relationship between the child's age, place of residence, mother's educational level, father's job, social standing, and the degree of anemia.[9,10] It is not well understood whether children under five years have persistently high levels of anaemia throughout their entire developmental trajectory, which includes their early childhood, toddler years, and preschool years. The relationship between children's anaemia and social inequality has

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never been proven. Therefore, the current study has been designed to find the correlation between socioeconomic status and anaemia in children less than five years of age.

METHODOLOGY

The cross-sectional study was conducted at a Tertiary Care Hospital, Mirpur Khas, Pakistan from January to October, 2021 after receiving approval from the Institutional ERB. The data was collected using a convenient sampling technique, and the sample size was calculated using Open EPI application based on the frequency of anaemia in children in Pakistan.[2]

Inclusion Criteria: Children of either gender, aged less than 5 years and presented to the hospital along with one of their parents were included.

Exclusion Criteria: Children with co-morbid disease were excluded.

We obtained written informed consent from each subject prior to data collection. The demographic and socioeconomic status were measured using a questionnaire, with additional data taken from the patients' medical records.

Statistical Package for Social Sciences (SPSS) version 22.0 was used for the data analysis. Quantitative variables with normal distribution were expressed as Mean±Sd and qualitative variables were expressed as frequency and percentages. Pearson's correlation test was applied to measure the strength of the linear relationship between variables. The p-value lower than or up to 0.05 was considered as significant.

RESULTS

In the present study, 500 children were selected, 223(44.6%) being males and 277(55.4%) female participants. The current study included children between 1 and 5 years old, with 40.2% aged between 0 and 1 year and 16.8% aged 3-5 years, as shown in Table-I. Moreover, Table-II highlights the socioeconomic status of the individuals: 63.6%, 20.6%, and 15.8% of the participants have low, medium, and high socio-economic levels.

Table-III represents the of socioeconomic status with anemia. The overall frequency of anaemia among the study participants was 66.2%, with 251(50.2%) of the anaemic children belonging to low socioeconomic status (r = 0.69), 56(11.2%), and 24(4.8%) representing medium and high socioeconomic status, respectively. Furthermore, Table-IV shows a gender comparison of anemia. The frequency of anaemia among males was higher 69(95%) as compared to female participants 63(15%).

Table-I: Demographic Distribution of Study Participants (n=500)

Age (years)	Frequency	Percentage
0-1	201	40.2%
1-3	215	43%
3-5	84	16.8%
Gender		
Male	223	44.6%
Female	277	55.4%

Table-II: Socio-Economic Status of Study Participants (n=500)

	Frequency	Percentage
Low	318	63.6%
Medium	103	20.6%
High	79	15.8%

Table –III: Correlation of Socio-Economic Status With The Presence Of Anemia (n=500)

Socioeconomic Status	Anemia	r (correlation coefficient)
Low	251(50.2%)	0.69
Medium	56(11.2%)	0.49
High	24(4.8 %)	0.184

Table-IV: Gender Distribution With The Presence of Anemia (n=500)

Gender	Anemia	No-anemia
Male	156(69.95 %)	67(30.04 %)
Female	175(63.17 %)	102(36.82 %)

DISCUSSION

The lower concentration of haemoglobin in preschoolers is associated with the location of daycare centres in an area of socioeconomic vulnerability. Children attending these daycare centres face adverse family conditions such as low-income, working mothers, and mothers with low schooling, though they receive social benefits and monitoring by public health services.[11,12] Preschoolers' decreased haemoglobin concentration is linked to daycare facilities being situated in socioeconomically vulnerable areas. While these daycare centres provide social advantages and public health services monitor the children, they nevertheless face challenging family circumstances like low income, working mothers, and mothers with little education.[13] In the current study, children from 1–5 years of age were included, in which 40.2% of them were aged 0–1 year and 16.8% of them were aged 3-5 years of age; furthermore, 63.6%, 20.6%, and 15.8% of the participants had low, medium, and high socio-economic levels. The overall frequency

of anaemia among the study participants was 66.2%, with 251 (50.2%) of the anaemic children belonging to a low socioeconomic status (r = 0.69), 56(11.2%), and 2 24(4.8%) representing medium and high socioeconomic statuses. The current study's findings are consistent with a study conducted by Sumarlan *et al*.[14] in which concluded that houses in the higher quartile accounted for 33.5% of the children, while houses in the lower percentile accounted for nearly 46.9% of the children. 64% of the sample's children were made up of 10 mothers who had at least a secondary education, while only 6% had no formal education at all. There was a significant level of vitamin A supplementation (86%). However, only 48% of the subjects had taken a deworming drug. Of the children, 23% were stunted, 8% were wasted, and 14% were underweight. Of all sociodemographic characteristics, boys had the highest average weighted percentage of anaemia (52.7%). Another study revealed that the lowest socioeconomic groups had the highest frequency of severe anaemia (59.80% [95% CI, 9.01%–60.58%]. Similarly, this study found that, at a 95% confidence level, anaemia was present in nearly 50% of children from low socioeconomic backgrounds.[15] The current study revealed that the frequency of anaemia among males was higher (69.95%) as compared to female participants (63.15%). A similar study revealed that preschoolers had a 19.3% frequency of iron deficiency anaemia, per the report. Children from daycare facilities with greater socioeconomic vulnerability had lower Hb concentrations than children from non-vulnerable areas (p<0.05). While children from low-income families tend to have higher rates of anaemia, the current study's results are also consistent with previous findings.[16-18]

CONCLUSION

The overall frequency of anaemia is higher in people of low socioeconomic status. In summary, this study's findings underscore the significant differences between socioeconomic status and health-related problems. Therefore, it requires specific intervention to improve communities' economic status and alleviate the determinants that make populations more vulnerable. It also emphasises the development of policies to investigate and mitigate health's overall well-being across various socio-economic strata.

Conflict of Interest: None.

Authors Contribution

Following authors have made substantial contributions to the manuscript as under:

SN & AB: Data acquisition, data analysis, drafting the manuscript, critical review, approval of the final version to be published.

MM & IQ: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

RA,&SI: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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