

## ANEMIA IN CHILDREN AGED 12-59 MONTHS PRESENTING WITH HISTORY OF PICA

ZAEEM SOHAIL JAFAR<sup>1</sup>, MUHAMMAD UZAIR<sup>2</sup>, MUHAMMAD ALI<sup>3</sup>

<sup>1</sup>Medical Officer, Rural Health Center, Kot Qazi, Tehsil Lawa, District Chakwal, <sup>2</sup>Assistant Professor, Pediatrics, Sahara Medical College, Narowal, <sup>3</sup>Professor, Pediatrics, Sahara Medical College, Narowal

### ABSTRACT

**Background:** Anemia, being a major public health problem has affected both developed and underdeveloped countries. Pica is common presentation of iron deficiency anemia.

**Objective:** To determine the frequency of anemia in children aged 12-59 months presenting with history of pica

**Methods:** This was a cross sectional study conducted at RHC Kot Qazi, Tehsil Lawa, District Chakwal, Punjab, and Pediatrics department, Sahara Medical College, Narowal over a 4-month period. After taking ethical approval, 219 children aged 12-59 months with history of pica were enrolled. One cc of heparinized blood sample was collected and sent to laboratory for complete blood count. Data was entered in SPSS and presented as frequency and percentages.

**Results:** Of the 219 patients with history of pica, 153 (69.9%) were male and 66 (30.1%) were females. (**Table 01**) The overall mean age of the sample was  $47.23 \pm 6.169$  months. Out of 219 children, 76 (34.7%) were mildly 99 (45.2%) were moderately anemic, while 32 (14.6) were severely anemic.

**Conclusion:** Moderate Iron deficiency anemia is found in children aged 12-59 months with history of pica.

**Key words:** Anemia, Children, Pica

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*Correspondence to: Zaeem Sohail Jafar,  
Medical Officer,  
Rural Health Center, Kot Qazi, Tehsil Lawa, District  
Chakwal, Pakistan.*

*Email: [zaeemsohailjafar9@gmail.com](mailto:zaeemsohailjafar9@gmail.com)*

### INTRODUCTION

Pica is defined as the persistent consumption of non-nutritive substances for a minimum period of at least 1 month which is inappropriate to the development level and is not a part of cultural or social practice of the community.<sup>1</sup> The nature of the ingested items can be sand, dirt, raw starches, paper, chalk, ice, ash, cloth, baby powder, grass, paint, toys, eggshells and coffee

grounds. pica is thought to be related to mineral deficiency and psychiatric illnesses in some individuals. Two theories namely nutritive theory and physiological theory predicts a possible pathophysiology. The nutritive theory suggests that mineral deficiencies chiefly iron or zinc alters the appetite specific brain enzymes in pica patients which triggers specific non-nutritive food cravings and these food items not necessarily supply the deficient minerals. The Physiological theory, on the other hand suggests that clay and dirt consumption in such patients relieves the patients from nausea and diarrhea, removes toxins and alters bad taste sensations of pregnancy.<sup>2</sup> Worldwide, 25- 33% pica cases involve children, and 10-15% are individuals with learning

disabilities<sup>3</sup>. Pica is more prevalent among lower socio-economic classes<sup>4</sup>. Iron deficiency anemia (IDA) is mostly found in preschool children and in reproductive age regardless of geographic region or economic status<sup>5</sup>. Anemia is an increasingly recognized problem in children of our region. Therefore, this study was planned in order to determine the frequency of anemia in children aged 12-59 months presenting with history of pica.

## METHODS

This was a cross sectional study conducted at RHC Kot Qazi, Tehsil Lawa, District Chakwal, Punjab and Pediatrics department, Sahara Medical College, Narowal over a 4 month period. Sample size was calculated using Raosoft calculator. After taking ethical approval, 219 children aged 12-59 months, of either gender, presenting with history of pica were enrolled. Informed consent was taken from the parents of the participants and a structured questionnaire was designed for data collection. Information gathered included duration of pica, substances consumed and perceived as pica, a detailed dietary history including age at time of weaning and amount of milk consumed per day. The diagnostic criteria of pica were taken from Diagnostic and Statistical Manual of Mental Disorders 5 (DSM-5). DSM-5 criteria for pica are, "Persistent eating of nonnutritive, nonfood substances over a period of at least 1 month. Such substances are inappropriate to the developmental level of the individual and are not part of a culturally supported or socially normative practice"<sup>1</sup>. Children with congenital anemia, hemolytic anemia, mental disabilities, as available from record were excluded. One cc of heparinized blood sample was collected and sent to laboratory for complete blood count. For children 12 - 59 months of age, mild anemia was defined as Hb levels of 100-109 g/l, moderate anemic was defined as Hb levels of 70-99 g/l and severe anemia was defined as Hb levels lower than 70 g/l. Data was entered in SPSS and presented as frequency and percentages.

## RESULTS

Of the 219 patients with history of pica, 153 (69.9%) were male and 66 (30.1%) were females. (**Table 01**) The overall mean age of the sample was  $47.23 \pm 6.169$  months. Out of 219 children, 76 (34.7%) were mildly 99 (45.2%) were moderately anemic, while 32 (14.6%) were severely anemic. (**Table 02**)

Table 1: Gender distribution of children presenting with history of pica (n=219)

Gender	Number	Percent
Male	153	69.9 %
Female	66	30.1 %
Total	219	100.0 %

Table 02: Anemia in children presenting with history of pica (n=219)

Degree of Anemia	Number	Percentage
Severe anemia	32	14.6
Moderate anemia	99	45.2
Mild anemia	76	34.7
No anemia	12	5.5
Total	219	100

## DISCUSSION

Our findings of male predominance with history of pica was similar to a study conducted by Gupta et al<sup>6</sup>. A similar study conducted by Hartmann et al also showed pica behavior greater in boys than girls<sup>7</sup>. Our study showed a higher frequency of moderate anemia among children with history of pica. A study conducted by Diana Miao et al also showed that pica is significantly associated with low levels of hemoglobin. Such individuals are 2.35 times more likely to be anemic<sup>8</sup>. Our results are comparable to Al-Joborae *et al*<sup>9</sup> where authors found anemia in children presenting with history of pica.

This study has been conducted in community rural health center and a tertiary care center. If this study had been conducted in larger scale, the results might have been different.

## CONCLUSION

Moderate Iron deficiency anemia is found in children aged 12-59 months with history of pica. Pica should not be taken as a normal behavior among children. Educational programs must be planned to highlight the importance of nutrition and parents of such patients must be educated regarding the treatment of this condition to avoid complications.

## ETHICAL APPROVAL

The study was approved by the Internal Review Board, Sahara Medical College, Narowal, vide Reference No.SMC/0976 Dated 01.06.2022.

## REFERENCES

1. Najeeb S, Shah S, Aalia B, Sarwar S, Khan A, Hussain E. Assessment of children presenting with history of pica for iron deficiency anaemia by serum ferritin estimation. *Pak J Physiol* 2020;16(2):48–51.
2. Goddard AF, James MW, McIntyre AS, Scott BB; British Society of Gastroenterology. Guidelines for the management of iron deficiency anemia. *Gut* 2011;60(10):1309–1316.
3. Bharat JP, Jwal D, Ruhi, Ashmita, Danu. Iron deficiency: beyond anemia. *Acad J Ped Neonatol* 2017;2(4):555-592.
4. Khan Y. Pica in iron deficiency: a case series. *J Med Case Reports* 2014;2086.
5. Kassebaum NJ, Jasrasaria R, Naghavi M, Wulf SK, Johns N, Lozano R, et al. A systematic analysis of global anemia burden from 1990 to 2010. *Blood*. 2014;123(5):615-624.
6. Lopez A, Cacoub P, Macdougall IC, Peyrin-Biroulet L. Iron deficiency anaemia. *Lancet*. 2016;387(10021):907-916.
7. Hartmann A, Poulain T, Vogel M, Hiemisch A, Kiess W, Hilbert A. Prevalence of pica and rumination behaviors in German children aged 7–14 and their associations with feeding, eating, and general psychopathology: a population-based study. *Eur Child Adolesc Psychiatry* 2018;27: 1499-1508.
8. Miao D, Young SL, Golden CD. A meta-analysis of pica and micronutrient status. *Am J Hum Biol* 2015;27(1):84-93.
9. Al-Joborae SF, Mousa Al-Malikey ZA. Comparison of pica in breastfeeding versus artificial feeding in children 2 years of age or younger. *Med J Babylon* 2018;15:357–362.