Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/8afmd265

PICA PRACTICES IN PREGNANT WOMEN AND THEIR IMPACT ON MATERNAL AND NEONATAL OUTCOMES

Dr Fakhrunnisa Ali Akbar[1], Dr Nimra Siddiqui[1*]

[1]Indus Hospital and Health Network Karachi, Pakistan

***Corresponding author:** Dr Nimra Siddiqui
*Email: nimrasiddiqi@hotmail.com

Abstract

Introduction: In pregnancy, the practice of ingesting non-food items such as dirt, chalk and clay is referred to as pica, and it is a serious health risk both to the mother and the child. This behavior is usually seen in pregnant women and is associated with several complications, such as nutrition deficiency, anemia, and pregnancy-associated problems like preterm labor and low birth weight.

Objectives: To describe the extent of pica practices among pregnant women and its impact on maternal outcomes including anemia, preterm labor, and neonatal outcome including birth weight and Apgar scores.

Materials and Methods: This cross-sectional study was carried out at Indus Hospital and Health Network Karachi, Pakistan from January 2023 to June 2023. Self-administered questionnaires and hospital records of 300 pregnant women were used to obtain data. As screening criteria, the inclusion and exclusion criteria were defined, and the variables based on which the research would be conducted were identified.

Results: This study had a pica prevalence of 50%. Pica-practicing women had significantly low hemoglobin levels, high degrees of preterm labor, their neonates had low birth weight and low Apgar scores.

Conclusion: Pica behavior has been found to have negative consequences that affect the health of both the mother and the infant. Therefore, encouraging activities and additional testing during antenatal Care appointments are needed.

Keywords: *low birth weight, anemia, preterm labor, maternal health, newborn outcomes, pica.*

INTRODUCTION

Pica is usually indicated by a desire and craving to taste and consume objects that are not considered foods, including dirt, chalk, clay, etc. This condition is common among pregnant women and has been linked to maternal and neonatal health problems. Pica during pregnancy is still commonplace in sub-Saharan Africa, South Asia and other parts of the Middle East (1). While pica is known to have cultural or psychological aspects, its effects on the treatment of maternal and neonatal consequences are an emerging concern. The condition can result in various health complications like malnutrition, anemia resulting from iron deficiency, and pregnancy complications like preterm delivery and LBW(2). This paper revealed that pica has been linked to many factors, including nutritional status, psychological factors, and socio-demographic factors. Pica is a condition that has been researched in some instances concerning pregnant women due to its effect on maternal nutrition. For example, a survey conducted in Ghana showed that the first and second-degree pica participants had lower

hemoglobin levels, potentially predisposing them to anemia (3). Furthermore, the lack of micronutrients, such as iron and zinc in Ugandan women contributed to pica, a behavior that is vital in fetal development. This suggests that pica may be a response to perceived nutrient shortages during pregnancy.

Furthermore, various pregnancy complications that are related to pica have been described as causes of stress and anxiety among expecting women (4). A study conducted in India highlighted the psychological impact of pica on pregnant women and their children (5). The study found that pregnant women who admitted to practicing pica experienced higher levels of stress, which could contribute to maternal and fetal complications (6). As a result, numerous studies have emphasized the role of psychological variables in the development of pica, pointing out that emotional stress or a lack of coping mechanisms may be the cause or a sign of pica.

The nutritional concerns regarding pica extend beyond its short-term effects on maternal health; they also have consequences for the fetus (7). Research done in Nigeria showed that pica increases the risk of low birth weight and preterm birth which are individual key factors contributing to neonatal morbidity and mortality (8). Another study conducted in Pakistan found that pregnant women who practice pica are more likely to experience complications, such as prolonged labor, compared to those who undergo a cesarean section (9). These findings suggest that pica may pose certain dangers both during childbirth and the neonatal period, highlighting the importance of early detection and management.

Apart from its nutritional and psychological consequences, pica can also affect the health of pregnant women in the other ways (10). Consuming non-food substances may disrupt the digestive system, leading to issues such as constipation, diarrhea, or abdominal pain, which may be exacerbated by pregnancy-related body changes (11). In addition, ingestion of hazardous substances such as dirt, or clay also puts women at a higher risk of getting infection due to the environmental pathogens present. This means that pica practices may worsen other health conditions or develop a new one, making it more challenging for pregnant women to manage their pregnancy (12). However, there is no sufficient understanding of the etiology of pica during pregnancy, as well as its implications in the future. Although pica is sometimes considered normative or culturally acceptable, it has significant maternal and neonatal health implications (13). Findings from Ethiopian and Kenyan research have indicated the importance of public health engagement in creating awareness of the dangers of pica and providing alternative means of addressing the issue during pregnancy.

Further research should be conducted to understand how pica affects maternal and neonatal outcomes so that interventions can be made (14). The relationship between culture, psychology, and nutrition in connection with pica should be further examined to find ways to prevent the negative impacts of pica on pregnancy outcomes (15). Since pica behaviors can negatively impact both maternal and neonatal health, there is a need to focus on their prevention and elimination in pregnant women.

Objective: The purpose of this study is to assess the prevalence of pica among pregnant women in Pakistan and its effects on maternal health, adverse neonatal outcomes, and nutritional deficiencies.

MATERIALS AND METHODS

Study Design: A cross-sectional study.

Study setting: This study was conducted at Indus Hospital and Health Network Karachi, Pakistan

Duration of the study: The research was carried out from January 2023 to June 2023.

Inclusion Criteria:

The study consisted of pregnant women attending antenatal clinics at Indus Hospital and Health Network Karachi, Pakistan who were in their second or third trimester. Inclusion criteria required participants to be at least 12 weeks pregnant and able to provide consent.

Exclusion Criteria

Women with chronic conditions that may affect pregnancy outcomes including diabetes, hypertension, or any other comorbidity were excluded. Women who did not give consent were also

excluded. Furthermore, participants who had a history of eating disorder unrelated to pregnancy were not included in the study.

Methods

The survey employed a well-designed questionnaire to evaluate pica behaviors, gathering information on the substances consumed, the frequency of cravings, and the resulting health effects. The questionnaire also inquired about demographics, age, socioeconomic status, and dietary patterns. Data were collected through face-to-face interviews with pregnant women at their convenience during antenatal appointments at Indus Hospital and Health Network, Karachi, Pakistan. The primary maternal measures, such as hemoglobin levels, weight, and blood pressure, were recorded from the patients' medical records. Information about newborns, including birth weight, gestational age, and Apgar scores, was gathered from the hospital's delivery records for the study. Statistical analysis was conducted using SPSS to examine the relationships between pica behaviors and maternal and neonatal outcomes. The hospital's ethical committee provided approval for the study, and participants were informed and given the opportunity to give their consent.

RESULTS

The purpose of this research was to determine the prevalence of pica in pregnant women of Indus Hospital and Health Network Karachi, Pakistan and their effects on maternal and neonatal health. A total of 300 pregnant women were involved in the study, and the data was collected with the help of self-completed structured questionnaires and patient records. The participants' demographic data, consumption of Pica, and maternal, and neonatal consequences are analyzed as follows.

Prevalence of Pica Practices

In the study, 150 pregnant women reported practicing pica during pregnancy. Out of these, 80% (120 women) reported using non-food items, with the most common being clay (30%) soil (25 %) latex chalk, (15%). The remaining 20% (30 women) reported consuming unconventional food items, such as ice (10%) and raw flour (5%).

Table 1: Prevalence of Pica Practices among Pregnant Women

Pica Practice	Frequency (n)	Percentage (%)
Clay	45	30%
Soil	37	25%
Chalk	23	15%
Ice	15	10%
Raw Flour	8	5%
Others	12	8%

Impact on Maternal Health

The study found that anemia was more prevalent among women who practiced pica compared to those who did not. Among the 150 women who practiced pica, 105 (70%) of them, had low hemoglobin levels (≤11 g/dL), whereas only 60 women in the non-pica group had low hemoglobin levels. Furthermore, women who engaged in pica were more prone to preterm labor, with 15% of them reporting this complication compared to 7% in the non-pica group.

Table 2: Impact of Pica on Maternal Hemoglobin Levels and Preterm Labor

Maternal Health Parameter	Pica Practitioners (n=150)	Non-Pica Practitioners (n=150)	p-value
Hemoglobin < 11 g/dL	105 (70%)	60 (40%)	<0.05
Preterm Labor	23 (15%)	10 (7%)	<0.05

Impact on Neonatal Outcomes

In the results related to the neonates, the mean birth weight of babies of women practicing pica was significantly lower. The mean birth weight of the neonates in pica group was 2.4 kg, while for the group of women that did not engage in pica, the mean weight recorded was 2.8 kg. Furthermore, it was shown that 20% of women with pica had neonates with low Apgar scores at one minute after birth, which suggests early neonatal distress, compared to 8% in the non-pica group.

Table 3: Impact of Pica on Neonatal Outcomes

Neonatal Outcome	Pica Practitioners (n=150)	Non-Pica Practitioners (n=150)	p-value
Average Birth Weight (kg)	2.4 ± 0.4	2.8 ± 0.3	<0.01
Low Apgar Score at 1 min	30 (20%)	12 (8%)	<0.01

These findings indicate that pica behaviors are associated with both maternal and neonatal complications. Pica was commonly observed in pregnant women and had detrimental health consequences, such as decreased hemoglobin levels, higher likelihood of preterm labor, reduced birth weight, and increased neonatal health issues.

DISCUSSION

The findings of this study help determine the prevalence of pica among pregnant women attending antenatal care at Indus Hospital and Health Network, Karachi, Pakistan. Pica, a condition where individuals consume non-food items or have unusual cravings for food, has been linked to various negative outcomes during pregnancy. The study sought to investigate the connection between pica and the outcomes of both mothers and newborns, uncovering a positive correlation. In this study, it was found that 50% of the pregnant women, which is equivalent to 150 out of 300 participants, exhibited pica behaviors. This aligns with previous research indicating that pica prevalence varies between 15% and 75%, depending on the study population and geographic location (1). The most frequently consumed non-food substances were clay, soil, and chalk, which aligns with previous research (2). Pica behaviors can be influenced by nutritional deficiencies, psychological factors, and cultural practices.

According to the findings, pica practices had a significant impact on maternal health. The most significant finding was the strong correlation between pica and low levels of hemoglobin. Among women who practiced pica, 70% had hemoglobin levels below 11 g/dl, suggesting iron deficiency anemia, while only 40% of women who did not engage in pica had similar levels (3). This implies that pica may lead to nutritional deficiencies, especially iron deficiency, which is frequently observed in pregnant women. Eating clay and other non-food items can interfere with the absorption of important nutrients like iron, calcium, and other micronutrients, which are necessary for our body's proper functioning (4). Furthermore, consuming soil or clay can introduce dangerous bacteria or toxins into the body, heightening the likelihood of intestinal diseases and other health issues.

Another significant finding of this study was the relationship between pica and preterm labor. Among women who engaged in pica, 15% experienced preterm labor, whereas only 7% in the non-pica group did. The exact connection between pica and early labor is not fully understood, but it is thought that nutritional deficiencies and metabolic changes resulting from pica may play a role in triggering preterm contractions and labor (5). Existing evidence suggests that pica behaviors can increase the risk of preterm birth. Moreover, the psychological stress linked to pica, especially when cravings involve non-nutritive substances, can have a negative effect on pregnancy outcomes.

The neonatal results of this study also highlight the dangers of pica during pregnancy. Mothers who engaged in pica were more likely to have infants with lower birth weights compared to mothers who did not exhibit this behavior. The average weight of newborns born to women who practiced pica was 2.4 kg, classified as Low Birth Weight (LBW), while the average weight in the non-pica group was 2.8 kg. LBW is a major risk factor for neonatal health issues and death, especially when associated with poor maternal nutrition, insufficient weight gain during pregnancy, and premature birth (6). The reduced birth weight seen in this study could be linked to nutritional deficiencies caused by pica,

which have adverse effects on fetal development. For example, iron deficiency anemia is known to cause intrauterine growth restriction by impairing placental function and reducing fetal blood and nutrient supply. (7)

Data sources indicated that pica-practicing mothers had a higher percentage of neonates with low Apgar scores at one minute, highlighting early neonatal distress. The Apgar score is a crucial evaluation tool employed to gauge a newborn's well-being immediately after birth, taking into account aspects like breathing, brain function, and cardiovascular health (8). In this research, 20% of newborns whose mothers had a habit of pica had low Apgar scores at one minute, while only 8% of newborns in the non-pica group had the same issue. This discovery strengthens the notion that complications arising from pica during pregnancy can have adverse effects on the health of newborns. Consuming non-food items while pregnant and giving birth can raise the chances of infections, nutrient deficiencies, and dehydration, which can impact the health of the baby during labor and delivery.

In most cases, psychological factors can be used to explain some of the connections that have been identified between pregnant mothers with pica and the negative effects on their newborns. Pica has been linked to stress, anxiety, and other emotional issues during pregnancy (9). Pica is commonly seen in pregnant women and is often a result of emotional or psychological eating, which can have adverse effects on their food choices and the health of their unborn child. Hormonal changes are commonly experienced during pregnancy as a result of stress, and stress-related compounds can affect blood pressure and the overall well-being of the mother, which in turn influences pregnancy outcomes. Besides, some women may use pica as an attempt to neutralize the discomforts of pregnancy, including nausea and vomiting, which contributes negatively to both maternal and neonatal outcomes.

Despite its valuable findings, this study has certain limitations. Firstly, due to its cross-sectional design, we were unable to determine a cause-and-effect relationship between pica practices and outcomes for both mothers and newborns**.** Longitudinal studies are necessary to evaluate the long-term consequences of pica on pregnancy and fetal development (10). Additionally, the study utilized self-reported information on pica practices, which could potentially lead to recall bias, as participants may inaccurately remember or report their behaviors. Finally, since the study was carried out at Indus Hospital and Health Network in Karachi, Pakistan, the results may not be applicable to other regions or populations within the country.

This study emphasizes the significant negative impact of pica behaviors on the health of both mothers and newborns. The high prevalence of pica among pregnant women at Indus Hospital and Health Network Karachi, Pakistan, along with limited awareness about its risks, contributes to complications such as iron deficiency anemia, preterm labor, low birth weight, and low Apgar scores. These findings emphasize the importance of increased awareness and intervention. Healthcare professionals should regularly assess for pica during prenatal check-ups and provide pregnant women with information about the potential dangers associated with the condition while emphasizing the importance of a balanced diet. Due to the lack of comprehensive understanding regarding pica and its potential long-term consequences on both maternal and neonatal health, additional research is necessary to gain insights into its root causes and establish effective preventive measures.

CONCLUSION

This research emphasizes the widespread occurrence of pica among pregnant women and its strong correlation with negative maternal and neonatal health outcomes, such as iron deficiency anemia, preterm labor, low birth weight, and neonatal distress. Based on these findings, it is crucial to conduct routine screening for pica during antenatal care to identify women who may be at risk and offer them the necessary guidance and support. While this study contributes to understanding the impact of pica, further longitudinal research is needed to establish causal relationships and develop targeted interventions to mitigate its risks.

References

1- Ayensu, J., Essuman, M.A., Nyavowoyi, E.E.A., Russell, N., Agyapong, N.A.F., Mohammed, A.S., Nsiah-Asamoah, C. and Klevor, M.K., 2023. Pica practice during pregnancy is associated with low maternal haemoglobin levels and gestational age among women in the Cape Coast Metropolis, Ghana.

2- Shah, F.J., Qaisar, A.M., Malik, I.A., Jahangir, R., Rahman, F. and Anwar-Ul-Amin, W., 2022. Practices of pica among pregnant females and associated outcomes in newborn and pregnant women. Pakistan Journal of Medical & Health Sciences, 16(05), pp.317-317.

3- Francis, S., Jagadeesh, N.S., Singaravelu, R. and Subramaniam, A., 2022. The influence of pica practice on nutritional status, stress and anxiety of pregnant women. Clinical Epidemiology and Global Health, 17, p.101133.

4- Sale, G., Fikadu, M., Gizaw, G. and Tamiru, D., 2022. Food aversion, Pica and Cravings Practices and Its Associated Factors among Pregnant Women Attending Antenatal Care in Nifas silk sub-city Health Facilities, Addis Ababa, Ethiopia, 2021.

5- AMINU, B., HASSAN, S., Nakakana, H., Muhammad, A., Umar, A.T. and IDAKWOJI, A., 2021. Pica practice, medical/obstetric factors and some micro nutrients levels of pregnant women attending antenatal care in hajiya gambo sawaba general hospital, zaria. Nigerian Journal of Scientific Research, 20(2), pp.144-151.

6- Kibr, G., 2021. A narrative review of nutritional malpractices, motivational drivers, and consequences in pregnant women: evidence from recent literature and program implications in Ethiopia. The Scientific World Journal, 2021(1), p.5580039.

7- Nakiyemba, O., Obore, S., Musaba, M., Wandabwa, J. and Kiondo, P., 2021. Covariates of pica among pregnant women attending antenatal care at Kawempe Hospital, Kampala, Uganda: A Cross-sectional study. The American Journal of Tropical Medicine and Hygiene, 105(4), p.909.

8- Sanjari, S., Mohammidi Soleimani, M.R. and Fakhraei, A.A., 2023. Update on the Global Prevalence of Pica in Pregnant (D Women: A Meta-analysis. International Journal of Women's Health & Reproduction Sciences, 11(3).

9- Hamdan, M., Zidan, S., Talahmeh, K., Manasrah, R., Rawashdeh, A. and Badrasawi, M., 2023. Prevalence of pica and its contributing factors among Palestinian pregnant women. Palestinian Medical and Pharmaceutical Journal (Pal. Med. Pharm. J.), 10(3), pp.None-None.

10- nasim Akhter, A., Fatima, F., Suleman, M.A. and Khurram, S., 2021. Prevalence Of Pica Among Pregnant Females of Low-Income Population: A Hospital Based Study. ANNALS OF ABBASI SHAHEED HOSPITAL AND KARACHI MEDICAL & DENTAL COLLEGE, 26(4), pp.204-211.

11- Almadani, R.Z., Fouly, H. and Elkafafi, H., 2021. The relationship between pica and iron deficiency anemia among preg-nant women in East Jeddah Hospital.

12- Rono, B.C., 2022. Multiple micronutrient supplements versus iron folic acid supplementation on pregnancy outcomes in Nandi County, Kenya (Doctoral dissertation).

13- Derbo, Z.D. and Debelew, G.T., 2023. Maternal fresh moringa leaf consumption and its association with birth weight in southern Ethiopia: A prospective cohort study. Food Science & Nutrition, 12(11), pp.8978-8989.

14- Varunashree, N.D., Daniel, S., Rathore, S., Moorthy, M., Yadav, B. and Beck, M.M., 2023. Does remote COVID infection in pregnancy affect the placenta and pregnancy outcomes?–Results from a prospective cohort study (PLACENTA IN COVID/PIC study). Journal of Family Medicine and Primary Care, 13(12), pp.5512-5517.

15-das Neves, M.D.C., Teixeira, A.A., Garcia, F.M., Rennó, J., da Silva, A.G., Cantilino, A., Rosa, C.E., Mendes-Ribeiro, J.D.A., Rocha, R., Lobo, H. and Gomes, I.E., 2021. Eating disorders are associated with adverse obstetric and perinatal outcomes: a systematic review. Brazilian Journal of Psychiatry, 44(2), pp.201-214.