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Food Taboos, Herbal Treatment and Infant Mortality in Katsina State, Nigeria

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Abstract: This study examines the relationship between selected food-related cultural practices, herbal treatment, and infant mortality in Katsina State, Nigeria. The analysis is based on a descriptive survey involving women of child-bearing age and health-care providers drawn from Katsina, Daura, and Funtua. A sample of 384 participants was planned, while 302 completed questionnaires were retrieved and used for the quantitative analysis. Questionnaire and key-informant interview data were used to explore feeding practices and the use of traditional medicines in infant care. Regression results indicate that the item measuring traditional liquid feeding was statistically associated with the infant-mortality outcome ($p = .003$). For herbal treatment, the reported influence of traditional medicine and perceived side effects were also statistically significant ($p < .001$). The findings should be interpreted as associations rather than proof of causation because the study used a cross-sectional descriptive design and self-reported measures. The results remain important in a setting where Nigeria continues to experience a high burden of infant and under-five mortality. The paper recommends culturally sensitive nutrition counselling, stronger communication between families and health workers, and evidence-based regulation and pharmacovigilance for herbal products used in maternal and infant care.

Keywords: *Infant Mortality; Food Taboos; Complementary Feeding; Herbal Medicine; Cultural Practices; Katsina State.*

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I. INTRODUCTION

Infant mortality refers to the death of a child before reaching one year of age and remains a widely used indicator of population health, living conditions, and the performance of health systems. Nigeria has recorded long-term improvement, but the burden remains substantial. The 2024 Nigeria Demographic and Health Survey reported 63 infant deaths per 1,000 live births and 41 neonatal deaths per 1,000 live births during the five years preceding the survey; the under-five mortality rate was 110 deaths per 1,000 live births (Federal Ministry of Health and Social Welfare [FMoHSW], National Population Commission [NPC], & ICF, 2025). These figures show progress compared with earlier surveys, while also indicating that preventable child deaths remain an urgent public-health and social-development concern.

Infant survival is shaped by interacting biological, socioeconomic, environmental, and health-system factors. Nutrition, infection, sanitation, timely care-seeking, household resources, maternal education, and access to quality health services all matter. Culture also influences how families interpret illness, decide what mothers and infants should eat, select caregivers, and combine biomedical and traditional forms of treatment. Cultural practices are therefore best understood neither as automatically harmful nor automatically protective; their health effects depend on the specific practice, the context in which it occurs, and the quality of available evidence.

Feeding practices are particularly important during infancy. The World Health Organization recommends exclusive breastfeeding for the first six months, followed by safe, adequate, and age-appropriate complementary foods while breastfeeding continues (World Health Organization [WHO], 2023a, 2023b). Introducing other liquids or foods too early may increase exposure to contamination and may displace breast milk, while delayed or nutritionally inadequate complementary feeding can contribute to nutrient deficiencies and poor growth. In settings where food restrictions are culturally meaningful, counselling that simply dismisses local beliefs may be less effective than respectful engagement that distinguishes safe traditions from practices that carry avoidable risk.

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Traditional and herbal medicines also remain important in many health systems. WHO's Global Traditional Medicine Strategy 2025–2034 emphasizes that traditional, complementary, and integrative medicine should be approached through evidence, safety, quality assurance, appropriate regulation, and people-centred care (WHO, 2025a). In Nigeria, herbal medicines and related products are subject to regulation by the National Agency for Food and Drug Administration and Control (NAFDAC), including requirements relating to registration, quality, safety, and efficacy (NAFDAC, 2024). The key concern is therefore not the cultural origin of a treatment itself, but whether the product, dose, preparation, indication, and route of administration are safe and supported by reliable evidence.

Against this background, the present study revisits field data from Katsina State to examine whether selected food practices and herbal-treatment variables are statistically associated with infant mortality. The updated discussion places the original findings within current national mortality estimates, contemporary infant-feeding guidance, and recent policy on traditional medicine.

➢ *Problem Statement*

Nigeria's child-survival indicators have improved, yet mortality remains high and unevenly distributed. The persistence of infant deaths cannot be explained by medical causes alone because care is embedded in household decisions, social norms, economic constraints, beliefs about illness, and the accessibility of formal health services. In Katsina State, families may rely on both biomedical and traditional systems of care, while infant-feeding choices can be shaped by local knowledge and intergenerational advice.

The research problem is therefore to determine whether the selected food-related practices and herbal-treatment measures captured in the study are associated with the reported infant-mortality outcome. Establishing such associations can help identify areas for health education and further investigation, but the design does not establish that a particular cultural practice directly causes infant death.

➢ *Objectives of the Study*

- Examine the association between selected food-related cultural practices and infant mortality in the study area.
- Assess the association between selected herbal-treatment practices and infant mortality.
- Identify culturally responsive implications for infant-feeding counselling, herbal-medicine safety, and health-service use.

II. CONCEPTUAL REVIEW

➢ *Infant Mortality*

Infant mortality is commonly expressed as the number of deaths of children under one year of age per 1,000 live births in a specified period. It reflects more than the immediate clinical cause of death; it is also sensitive to maternal health, nutrition, poverty, sanitation, service coverage, and the broader social environment. The 2024 NDHS documents a decline in Nigeria's infant mortality from 100 deaths per 1,000 live births in 2003 to 63 in the 2024 survey, but the level remains high in relation to the Sustainable Development Goal agenda for child survival (FMoHSW et al., 2025).

➢ *Food Taboos and Infant Feeding*

Food taboos are socially shared rules that restrict or discourage the consumption of particular foods in specific circumstances, including pregnancy, lactation, and infancy. Their effects vary. Some restrictions may have little nutritional consequence, whereas others may reduce dietary diversity or delay access to nutrient-dense foods. For infants, the timing, safety, texture, and nutritional quality of complementary foods are critical. WHO (2023a) recommends introducing complementary foods at about six months and stresses hygienic preparation, responsive feeding, dietary adequacy, and continued breastfeeding.

➢ *Herbal Treatment and Infant Care*

Herbal medicines include preparations in which plant materials or combinations of plant materials constitute active ingredients. Their use may be rooted in family experience, cultural identity, affordability, availability, or dissatisfaction with formal care. However, infant safety requires particular caution because young children are physiologically vulnerable to dosing errors, contamination, product variability, and delayed referral for serious illness. WHO's current approach supports research and culturally respectful use while insisting on evidence, quality, regulation, and safety monitoring (WHO, 2025a, 2025b).

III. METHODOLOGY

The study adopted a descriptive cross-sectional survey design. The target population comprised women of child-bearing age and health workers, including doctors, nurses, midwives, and traditional birth attendants, across the three senatorial zones of Katsina State. The original study estimated a target population of 3,058,499 and selected a planned sample of 384 participants using the Krejcie and Morgan approach. A multistage procedure was used to select one local government area from each senatorial zone—Katsina, Daura, and Funtua—followed by purposive selection of one health facility in each location. Respondents were then selected through judgemental/purposive sampling.

Questionnaires were administered to women of child-bearing age, while interviews were conducted with health-care providers. Of the 384 questionnaires distributed, 302 were retrieved, representing a response rate of approximately 78.6%. The quantitative analysis reported descriptive frequencies, linear-regression coefficients, and chi-square tests. Because the measures are based on a non-probability component and cross-sectional self-report data, statistical significance should not be interpreted as causal proof.

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Table 1 Selected Local Government Areas and Health Facilities

S/N	LGA	Health facility	Planned sample
1	Funtua	General Hospital Funtua	128
2	Katsina	Turai Yar'Adua Child and Maternity Hospital, Katsina	128
3	Daura	General Hospital Daura	128
	Total		384

Source: Researcher's Fieldwork (2023).

IV. RESULTS

The results below reproduce the substantive quantitative findings reported in the original study while improving the wording of the interpretation. The response categories are presented as recorded in the field instrument.

Table 2 Food-Practice Variables

Variable	Response	Frequency
Early solid food	Strongly agree	77
	Agree	79
	Disagree	74
	Strongly disagree	72
Traditional liquid foods	Strongly agree	80
	Agree	91
	Disagree	70
	Strongly disagree	61
Feeding bottle	Strongly agree	66
	Agree	78
	Disagree	89
	Strongly disagree	69
Spoon as feeding instrument	Strongly agree	75
	Agree	77
	Disagree	76
	Strongly disagree	74
Beverages and infant health	Strongly agree	75
	Agree	87
	Disagree	63
	Strongly disagree	77

Source: Researcher's Fieldwork (2023).

Table 3 Regression Coefficients for Food-Practice Variables

Variable	Coefficient	t	p
SFET	-0.199	-0.568	.570
TLF	0.545	2.960	.003
FB	0.121	0.619	.536
FF	-0.187	-0.513	.608
B	-0.068	-0.248	.804

Only the traditional-liquid-food variable (TLF) was statistically significant at the 5% level (b = 0.545, t = 2.960, p = .003). The positive coefficient indicates that higher scores on this item were associated with higher scores on the infant-mortality outcome as coded in the study. The remaining food-practice variables were not statistically significant. This result supports an association within the sample; it does not demonstrate that traditional liquid foods, by themselves, caused infant deaths.

Table 4 Herbal-Treatment Variables

Variable	Response	Frequency
Traditional treatment versus hospital treatment	Strongly agree	73
	Agree	91
	Disagree	72
	Strongly disagree	66
Traditional medicine influences infant mortality	Strongly agree	97
	Agree	76

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	Disagree	68
	Strongly disagree	61
Traditional medicine has no specific side effect	Strongly agree	79
	Agree	75
	Disagree	76
	Strongly disagree	77
Traditional medicine does not require dosage	Strongly agree	93
	Agree	104
	Disagree	57
	Strongly disagree	48
Traditional medicine lacks scientific validation	Strongly agree	111
	Agree	86
	Disagree	49
	Strongly disagree	56

Source: Researcher's Fieldwork (2023).

Table 5 Regression Coefficients for Herbal-Treatment Variables

Variable	Coefficient	t	p
TMI	0.327	6.531	<.001
TMSE	0.616	16.416	<.001
TMD	0.016	0.304	.761
TMC	-0.003	-0.055	.956

Two herbal-treatment predictors were statistically significant: TMI ($b = 0.327$, $t = 6.531$, $p < .001$) and TMSE ($b = 0.616$, $t = 16.416$, $p < .001$). The dosage-related and concoction/validation items shown in the model were not statistically significant. The findings indicate relationships between respondents' reported perceptions/practices and the outcome measure, but they should not be generalized to all herbal medicines or interpreted as evidence that every traditional remedy is harmful.

Table 6 Cross-Tabulation of Cultural Food Practices and Herbal Treatment with Infant Mortality

Predictor	Response	SA	A	D	SD	χ^2	p
Cultural food practices	Strongly agree	30	13	13	21	65.480	<.001
	Agree	26	23	20	10		
	Disagree	15	32	18	9		
	Strongly disagree	4	9	25	34		
Herbal treatment	Strongly agree	29	11	13	20	67.521	<.001
	Agree	29	29	22	11		
	Disagree	15	28	20	9		
	Strongly disagree	2	9	21	34		

The cross-tabulation shows statistically significant associations for cultural food practices ($\chi^2 = 65.480$, $p < .001$) and herbal treatment ($\chi^2 = 67.521$, $p < .001$) with the infant-mortality response categories. The table supports association, not temporal ordering or causation.

V. DISCUSSION

The study suggests that some feeding and treatment practices deserve closer attention in infant-health programmes in Katsina State. The significant traditional-liquid-food item is consistent with contemporary guidance that infants should be exclusively breastfed for the first six months and that complementary foods introduced thereafter should be safe, nutritionally adequate, and hygienically prepared (WHO, 2023a, 2023b). The relevant public-health issue is not simply that a food or liquid is 'traditional'. Risk may arise from timing, nutritional composition, unsafe water, contaminated utensils, poor storage, or displacement of breast milk. This distinction is important because culturally respectful counselling is more likely to support behaviour change than blanket condemnation.

The herbal-treatment findings likewise require a careful interpretation. Respondents' reports concerning the influence and side effects of traditional medicine were significantly associated with the study outcome. These results reinforce the need for safe dosing, product-quality control, clear indications, adverse-event monitoring, and timely referral of sick infants. They do not justify treating all herbal knowledge as unsafe. WHO's current traditional-medicine strategy explicitly combines respect for cultural knowledge with stronger evidence, safety, regulation, and integration where appropriate (WHO, 2025a).

Interview evidence in the original fieldwork also indicated that some women combine hospital care with traditional practices and that financial constraints and distance can shape place-of-delivery decisions. This highlights a broader point: health behaviour is rarely a

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simple choice between 'culture' and 'medicine'. Families make decisions within practical constraints. Interventions should therefore improve access to respectful maternal and child health services while engaging community leaders, traditional birth attendants, caregivers, and health professionals in two-way communication.

The updated national context strengthens the importance of these issues. Although infant mortality in Nigeria has declined, the 2024 NDHS estimate of 63 deaths per 1,000 live births remains high (FMoHSW et al., 2025). UNICEF's recent situation analysis similarly identifies newborn survival, nutrition, poverty, and unequal access to essential services as continuing challenges for Nigerian children (Federal Ministry of Budget and Economic Planning & UNICEF, 2026). Cultural practices should therefore be addressed as one part of a wider social and health-system environment rather than as a stand-alone explanation for infant mortality.

VI. LIMITATIONS

Several limitations should guide interpretation. First, the cross-sectional design cannot establish temporal sequence or causality. Second, the study relied partly on judgemental/purposive sampling, which limits statistical generalization beyond the selected facilities and respondents. Third, the variables are based on self-reported attitudes and practices and may be affected by recall or social-desirability bias. Fourth, the regression tables available in the original manuscript do not report model-fit statistics, confidence intervals, coding details, or adjustment for major confounders such as maternal age, education, household wealth, parity, birth weight, infection, and access to care. Finally, the original interview excerpts and questionnaire fieldwork were recorded at different dates in the manuscript; future versions should harmonize the fieldwork chronology and provide a fuller account of ethical approval and informed-consent procedures.

VII. CONCLUSION

This study found statistically significant associations between selected cultural practices and the infant-mortality outcome among respondents in Katsina State. Traditional liquid feeding was the only food-practice predictor that reached statistical significance in the reported regression model, while two herbal-treatment measures were significant. The results point to the importance of safe infant feeding, careful use and regulation of herbal products, and timely engagement with formal health services. At the same time, the findings should not be used to stigmatize Hausa culture, traditional healers, or herbal medicine as a whole. A stronger public-health response is one that distinguishes specific risks from cultural identity and works with communities to promote practices that are safe, evidence-informed, and locally acceptable.

RECOMMENDATIONS

- Maternal and child-health programmes should provide culturally sensitive counselling on exclusive breastfeeding for the first six months and safe, adequate complementary feeding from about six months onward.
- Health workers should discuss food restrictions with mothers and families in a respectful way, identifying which practices are harmless, which may reduce dietary adequacy, and which may expose infants to contamination or inappropriate early feeding.
- Herbal products intended for maternal or infant use should comply with NAFDAC requirements for registration, quality, safety, and efficacy; suspected adverse effects should be reported through appropriate pharmacovigilance channels.
- Traditional birth attendants and community-based caregivers should be included in referral, hygiene, newborn-care, and danger-sign training so that cultural trust can support rather than delay appropriate care.
- Future research should use probability sampling where feasible, clearly define and validate outcome measures, control for socioeconomic and clinical confounders, report full regression diagnostics, and distinguish neonatal from post-neonatal mortality.
- State and local health authorities should combine health education with practical measures that reduce barriers to care, including distance, cost, transport, and respectful treatment at health facilities.

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