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Chapter 1

Health Inequalities and Intestinal Parasitic Infections among Obstetric Fistula Patients in Northern Nigeria: A Socio-Demographic Perspective

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Abstract

Intestinal parasitic infections (IPIs) remain a major public health concern, particularly in resource-limited settings where poverty, poor sanitation, and gender inequality intersect. Women living with obstetric fistula represent one of the most marginalized groups globally, socially isolated, nutritionally deprived, and often neglected by healthcare systems. This chapter examines the prevalence and socio-demographic determinants of intestinal parasitic infections among obstetric fistula patients in Kano, Northern Nigeria. Using a cross-sectional design involving 250 fistula patients, stool samples were examined using direct wet mount and formol-ether concentration techniques. The overall infection prevalence was 16.4%, with Ascaris lumbricoides (5.6%) and Entamoeba histolytica (4.4%) being the most common. Infection was significantly associated with rural residence, unemployment, and open defecation ($p < 0.05$). These findings reveal that health inequality, shaped by socio-economic deprivation and poor sanitation, sustains intestinal parasitic infections among obstetric fistula patients. The chapter highlights how integrating parasitological screening into fistula care and improving water, sanitation, and hygiene (WASH) interventions can help reduce infection burden and promote recovery in this vulnerable group.

Keywords: Health inequality, Obstetric fistula, Intestinal parasites, Gender and poverty, Public health Nigeria.

1. Introduction

Health Diversity and the Burden of Neglected Infections

Health diversity encompasses the biological, social, and environmental factors that contribute to unequal health outcomes across populations. In low- and middle-income countries (LMICs), disparities are magnified by limited healthcare access, gender bias, and persistent neglected tropical diseases (NTDs). IPIs exemplify these inequalities, disproportionately affecting poverty-stricken communities [1–3]. Globally, more than 1.5 billion individuals are infected with soil-transmitted helminths, yet progress toward elimination remains uneven. Recent WHO reports emphasize that while mass drug administration has expanded, sanitation and clean water infrastructure lag behind, especially in sub-Saharan Africa. In Nigeria, the burden of IPIs remains high due to environmental contamination, unsafe water, and inadequate sanitation. New studies from northern states [4] continue to report high infection prevalence. Women of reproductive age are particularly vulnerable, as parasitic infections exacerbate anaemia, malnutrition, and infection risk during pregnancy [5]. Obstetric fistula (OF), a devastating childbirth injury, compounds these inequalities by isolating women socially and medically. This chapter situates IPIs within the broader framework of health diversity, exploring how poverty, gender, and environment interact to shape infection risk among fistula patients in Northern Nigeria.

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2. Materials and Methods

A descriptive cross-sectional study was conducted at Murtala Muhammad Specialist Hospital (MMSH), Kano, Nigeria, between January and June 2024. Two hundred and fifty (250) obstetric fistula patients participated. Socio-demographic data were collected via structured questionnaires. Stool samples were examined microscopically using saline/iodine wet mounts and the formol-ether concentration technique [6]. Data were analyzed using SPSS version 29 with Chi-square tests at $p < 0.05$.

3. Results

Of the 250 participants (aged 15–55 years; mean age 27.4 ± 6.2 years), 71.6% resided in rural areas, 76% were unemployed, and 52.4% practiced open defecation. Most relied on wells (44%) and streams (36%) for domestic water. The overall prevalence of intestinal parasites was 16.4%, with Ascaris lumbricoides (5.6%) and Entamoeba histolytica (4.4%) as the predominant species.

Source: Department of Geography, Bayero University, Kano (2024)

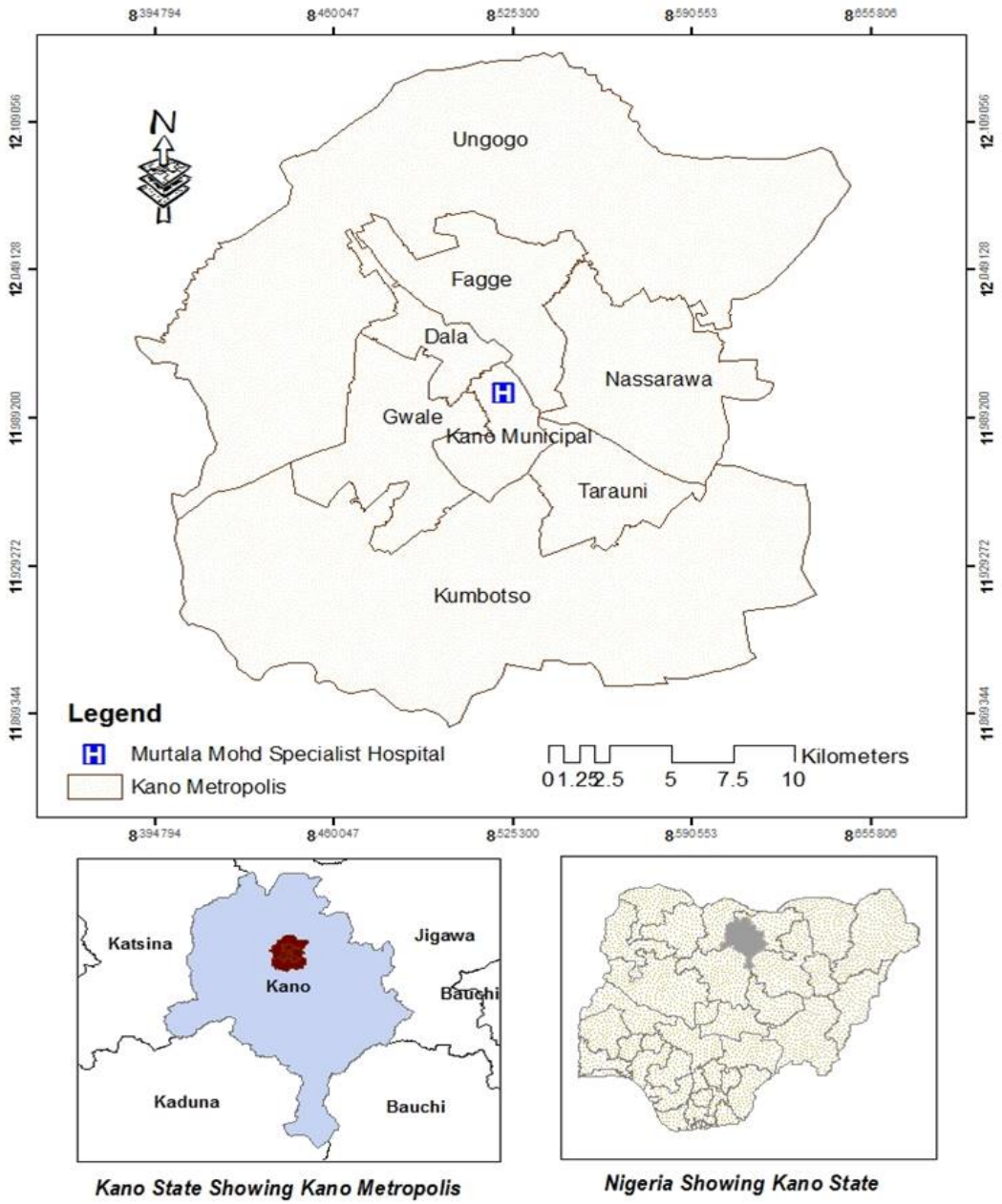

Figure 1: Geographical location of Murtala Muhammad Specialist Hospital within Kano Metropolis, Nigeria

Table 1: Socio-Demographic Characteristics of Obstetric Fistula Patients (n = 250)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	15–25	102	40.8
	26–35	98	39.2
	36–45	37	14.8
	>45	13	5.2
Residence	Urban	71	28.4
	Rural	179	71.6
Occupation	Employed	60	24.0
	Unemployed	190	76.0
Toilet Facility	Open defecation	131	52.4
	Pit toilet	96	38.4
	Modern toilet	23	9.2
Water Source	Well	110	44.0
	Stream/River	90	36.0
	Tap	36	14.4
	Bottle/Sachet	14	5.6
Refuse Disposal	Open farmland	180	72.0
	Dustbin	65	26.0
	Incineration	5	2.0
Mode of Fistula Acquisition	Childbirth	248	99.2
	Genital mutilation	2	0.8

Table 2: Distribution of Intestinal Parasites among Obstetric Fistula Patients (n = 250)

Parasite Species	Number Infected	Prevalence (%)
Ascaris lumbricoides	14	5.6
Entamoeba histolytica	11	4.4
Trichuris trichiura	5	2.0
Strongyloides stercoralis	3	1.2
Schistosoma mansoni	3	1.2
Hookworm	3	1.2
Hymenolepis nana	2	0.8
Total	41	16.4

Table 3: Association between Intestinal Parasitic Infections and Socio-Demographic Variables (n = 250)

Variable	Category	No. Examined	No. Infected	Prevalence (%)	χ^2	p-value	Significance
Age (years)	15–25	102	18	7.2	3.15	0.084	NS
	26–35	98	15	6.0			
	36–45	37	5	2.0			
	>45	13	3	1.2			
Residence	Urban	71	12	4.8	4.62	0.032	Significant
	Rural	179	29	11.6			
Occupation	Employed	60	9	3.6	5.89	0.015	Significant
	Unemployed	190	32	12.8			
Toilet Facility	Open Defecation	131	21	8.4	6.74	0.034	Significant
	Pit Toilet	96	15	6.0			
	Modern Toilet	23	5	2.0			
Water Source	Well	110	13	5.2	2.84	0.092	NS
	Stream/River	90	19	7.6			
	Tap	36	6	2.4			
	Bottle/Sachet	14	3	1.2			
Refuse Disposal	Open/Farmland	180	25	10.0	3.31	0.072	NS
	Dustbin	65	16	6.4			
	Incineration	5	0	0.0			
Mode of Fistula Acquisition	Childbirth	248	41	16.4	1.05	0.307	NS
	Genital Mutilation	2	0	0.0			

4. Discussion

The prevalence of intestinal parasitic infections (16.4%) among obstetric fistula patients in Kano is consistent with previous studies across Nigeria and neighboring regions, indicating a moderate endemicity [7]. The predominance of Ascaris lumbricoides and Entamoeba histolytica underscores the role of fecal contamination and inadequate sanitation. When compared to similar studies in Ethiopia and Sudan, the infection pattern reflects shared environmental and socio-economic determinants [8]. Socio-demographic analysis revealed that rural residence, unemployment, and open defecation had a significant influence on infection prevalence. These associations confirm that intestinal parasitism is closely tied to living standards, hygiene behavior, and access to healthcare. Integrating this with the concept of health diversity, these findings highlight that biological vulnerability intersects with social and economic exclusion, especially among women living with fistula who face multiple forms of marginalization. Health inequality, therefore, amplifies the cycle of infection, malnutrition, and delayed recovery, emphasizing the need for holistic interventions beyond medical treatment.

5. Policy Implications and Future Directions

1. Integrate stool screening and deworming protocols into routine fistula management.
2. Improve WASH infrastructure at fistula centers and rural clinics.
3. Develop gender-sensitive community health education programs addressing hygiene and sanitation.
4. Encourage collaboration between NTD control units and maternal health programs to address overlapping vulnerabilities.
5. Future research should explore longitudinal tracking of infection and nutrition status among fistula patients post-surgery, and investigate the socio-psychological impacts of chronic infections in this population.

6. Conclusion

Intestinal parasitic infections among obstetric fistula patients in Northern Nigeria mirror the intersection of poverty, gender inequality, and inadequate sanitation. While the biomedical dimensions of infection are clear, addressing the broader social determinants of health is essential for sustainable control. Integrating parasitic disease management into maternal and reproductive health services will not only improve recovery outcomes but also advance the goals of health equity and diversity.

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