

International Journal of Agriculture Extension and Social Development

Volume 8; Issue 5; May 2025; Page No. 726-730

Received: 22-02-2025

Accepted: 23-03-2025

Indexed Journal

Peer Reviewed Journal

Examining healthcare infrastructure and inequality in rural Punjab: An overview

¹Dr. Nishu Sharma, ²Dr. Gaganpreet Kaur, ³Dr. Devinder Tiwari and ⁴Dr. Shalini Sharma

¹Ph.D. Research Scholar, Punjab Agricultural University, Ludhiana, Punjab, India

²Assistant Professor, Punjab Agricultural University, Ludhiana, Punjab, India

³Extension Scientist, Punjab Agricultural University, Ludhiana, Punjab, India

⁴Professor, Punjab Agricultural University, Ludhiana, Punjab, India

DOI: <https://www.doi.org/10.33545/26180723.2025.v8.i5j.1972>

Corresponding Author: Dr Nishu Sharma

Abstract

Aim: Healthcare infrastructure played a crucial role in determining the accessibility and quality of healthcare services in rural regions. This research focused in rural Punjab and examined the healthcare infrastructure across its three cultural zones: Majha, Malwa, and Doaba. Despite economic advancements, rural Punjab faced significant disparities in healthcare access, quality, and infrastructure.

Methodology: A combination of field research, interviews, and data analysis, the study explored the availability, distribution, and adequacy of healthcare facilities in these regions. Data was collected through stratified simple random sampling method. Major challenges were identified included inadequate healthcare facilities, shortages of medical professionals, poor infrastructure, financial constraints, and social barriers.

Results: The study highlighted disparities in healthcare access between Scheduled Castes (SCs) and Non-Scheduled Castes (Non-SCs), with SCs reporting lower regular access to doctors, usual staff behavior, and average infrastructure conditions. Moreover, socioeconomic factors like poverty, low literacy, and transportation issues exacerbated healthcare access. The research also emphasized the potential of digital health technologies, such as telemedicine, to improve healthcare delivery in these underserved areas. The paper recommended a multi-faceted approach to address these issues, including increased investment in healthcare infrastructure, incentivizing medical professionals to work in rural areas, and improving community health services. The findings aimed to provide valuable insights to inform policy reforms and strategies for improving healthcare delivery in rural Punjab and similar regions.

Keywords: Healthcare infrastructure, rural Punjab, healthcare inequality

Introduction

Healthcare infrastructure plays a crucial role in determining the accessibility and quality of healthcare services in any region. In rural areas, where access to healthcare is often limited, the condition of health infrastructure becomes even more critical in addressing public health challenges. In rural areas Punjab, a predominantly agrarian region in India, faces unique challenges in providing adequate healthcare services to its population. Despite the state's significant economic growth and advancements in urban healthcare, rural Punjab still struggles with disparities in healthcare access, quality, and infrastructure. This research paper seeks to explore the healthcare infrastructure in rural Punjab, focusing on the availability, distribution, and adequacy of healthcare facilities. The study was conducted in three cultural zones of Punjab. Through a combination of field research, interviews, and data analysis, this study intends to provide a comprehensive overview of the healthcare landscape in rural Punjab. It was explored issues such as inadequate healthcare facilities, shortages of medical professionals, poor infrastructure, financial constraints, and social barriers that contribute to the region's healthcare challenges.

The accessibility and quality of healthcare in rural regions are heavily influenced by the healthcare infrastructure available. In rural areas, this infrastructure often faces significant constraints, including limited facilities, inadequate healthcare personnel, and a lack of medical equipment. A large body of literature suggests that such gaps in healthcare infrastructure result in significant health disparities between rural and urban populations. Inadequate infrastructure often led to poor quality healthcare services, which were harmful to the health and well-being of the community as a whole.

According to Rao *et al* (2020) ^[7], rural India struggles with insufficient healthcare facilities, including Primary Health Centers (PHCs), which are often underfunded and understaffed. Mohanan *et al* (2016) ^[6] examined that improving the quality of health care at the system level required a focus on governance issues, including enhancing public-sector management, building institutional capacity and promoting a culture of data-driven policies. Ideally, state and local governments along with local health facilities, used data from administrative sources and household surveys for quality improvement efforts and for accountability in health care delivery.

Punjab, which is often seen as one of India's more affluent states, is no exception to the challenges faced by rural areas in accessing quality healthcare. Despite the state's overall economic development, rural Punjab suffers from a disproportionate lack of healthcare infrastructure. Kaur and Bansal (2018) ^[2] highlighted that rural areas in Punjab continue to experience shortages of healthcare facilities, which results in overcrowding at the few available centers. Moreover, the shortage of healthcare professionals—doctors, nurses, and specialists—further compounds the problem, as many medical professionals prefer to practice in urban areas due to better facilities and opportunities. In their study, Kaur and Bansal (2018) ^[2] noted that rural Punjab is heavily reliant on a limited number of government hospitals, with many PHCs either non-functional or ill-equipped. Moreover, rural healthcare in Punjab is marked by chronic underinvestment.

Singh (2022) ^[8] observed that access to basic civic amenities played a crucial role in enhancing the quality of life and addressing various health-related issues. The aim of the study was to explore caste-based discrimination concerning access to these amenities and healthcare services in rural Punjab. The findings revealed that Scheduled Castes (SC) households had significantly lower access to essential services such as safe drinking water, sanitation, and toilet facilities compared to Non-SC households. Additionally, SC households were at a disadvantage when it came to ownership of durable household assets, including entertainment items, household utilities, communication tools, and means of transportation.

Furthermore, transportation issues further exacerbate the barriers to healthcare. In many rural parts of Punjab, healthcare facilities are located far from the residents' homes, and the lack of proper roads and reliable transportation makes it difficult for rural residents to reach these services, especially in the event of emergencies (Kaur & Bansal, 2018) ^[2]. One area where healthcare in rural Punjab can be significantly improved is through the use of technology. Digital health solutions such as telemedicine, mobile health apps, and e-health platforms have the potential to bridge some of the gaps in rural healthcare access. According to Maroju (2023) ^[4] to many parts of India lacked adequate medical infrastructure. Telemedicine was the practice of diagnosing and treating patients from a distance using communication networks. As more patients gained access to telemedicine, physicians became aware of its advantages, and payers became more aware of how much less expensive it was compared to traditional medicine. Telemedicine proved to be a more advantageous technology that increased access to preventive care and potentially improved long-term health.

Kumar and Singh (2020) ^[3] revealed economic and social development can be achieved by improving the health conditions of people which, in turn, depend upon the development and provision of health infrastructure facilities in any region or society. Better and sound health infrastructure is of paramount importance to support the health conditions of people in any region. Also, it was attempted to examine the inter-district disparities in health infrastructure in Punjab. The study detected the presence of inter-district disparities in health infrastructural facilities in Punjab. Mishra and Tripathi (2020) ^[5] the diverse population of India faced challenges with receiving comprehensive and accessible healthcare. Regional differences, inadequate

infrastructure, a lack of qualified workers and cultural issues all impacted how easily accessible healthcare was in India. Gender norms, social shame, religious views and language problems could all affect how people sought healthcare, functioning as barriers to access. In India, clinical governance was challenged by a disjointed healthcare system and insufficient regulatory frameworks.

Building upon the existing literature, various researchers suggest several recommendations for improving healthcare infrastructure in rural Punjab. Verma *et al* (2020) suggest that improving healthcare worker training, incentivizing doctors to work in rural areas, and increasing financial support for rural healthcare facilities are key steps toward addressing healthcare infrastructure gaps. Additionally, Kaur and Bansal (2018) ^[2] advocate for strengthening the public-private partnership model to improve infrastructure and ensure more sustainable healthcare delivery systems in rural Punjab.

The healthcare system in the state of Punjab was analyzed at the community, village, and district levels. In this chapter, an attempt was made to review the literature related to various aspects, such as organizational structure, institutions, infrastructure, service delivery, and healthcare expenditure. This review allowed the reader to examine the past trends and the current functioning of the healthcare system in the state. It also provided insights that could guide future research in potential areas of improvement and development. In rural areas, health services for women are often limited due to factors such as inadequate infrastructure, lack of trained healthcare personnel and cultural barriers. Many women face challenges in accessing maternal care, reproductive health services and general healthcare, which can lead to poor health outcomes.

To improve the availability of health services for rural women, remedial measures could include establishing mobile health clinics to reach remote areas, training community health workers to provide basic care and education and enhancing transportation options for women to access healthcare facilities. Additionally, implementing awareness campaigns that address cultural stigmas and promote the importance of women's health can help encourage.

1. Respondents according to availability of doctors

The availability of doctors is crucial in determining women's health outcomes, as it affects their access to timely and appropriate medical care. In many areas, particularly in rural or underdeveloped regions, a shortage of healthcare providers, including doctors, can restrict women's ability to obtain the medical attention they need. This lack of access frequently results in delayed diagnoses, insufficient treatment and worse health outcomes, especially for women with chronic conditions or those requiring maternal care.

Data in Table 1 revealed that in 65.00 percent of SCs reported regular access to doctors, compared to 75.00 percent of Non-SCs in Majha. However, in Malwa, only 40.00 percent of SCs indicated regular availability of doctors, while 71.25 per cent among Non-SCs respondents. It was seen that, 55.00 percent of SCs reported regular access, significantly lower than the 87.5 percent of Non-SCs. Overall, half of SCs and 76.25 percent of Non-SCs had regular access to doctors, illustrating a disparity in healthcare accessibility between the two groups. Conversely, irregular availability of doctors was more

reported among SCs. In Majha, 35.00 percent of SCs reported irregular access of doctors, while only 25 percent of Non-SCs did. In Malwa, the situation was more concerning, with 60 percent of SCs experiencing irregular availability of doctors, compared to 28.75 percent of Non-

SCs. In Doaba, 45.00 percent of SCs reported irregular access, while only 12.5 percent of Non-SCs did. Overall, half of SCs faced irregular availability of doctors, indicating significant barriers in accessing healthcare services

Table 1: Distribution of respondents according to availability of doctors

Availability of doctors	Majha (n ₁ - 80)		Malwa (n ₂ -160)		Doaba (n ₃ - 80)		Total (n-320)	
	SCs n=40	Non-SCs n=40	SCs n=80	Non-SCs n=80	SCs n=40	Non-SCs n=40	SCs n=160	Non-SCs n=160
Regular	26 (65.00)	30 (75.00)	32 (40.00)	57 (71.25)	22 (55.00)	35 (87.50)	80 (50.00)	122 (76.25)
Irregular	14 (35.00)	10 (25.00)	48 (60.00)	23 (28.75)	18 (45.00)	5 (12.50)	80 (50.00)	38 (23.75)
Availability of staff								
Regular	33 (82.50)	38 (95.00)	63 (78.75)	70 (87.50)	29 (72.50)	36 (90.00)	125 (78.13)	144 (90.00)
Irregular	7 (17.50)	2 (5.00)	17 (21.25)	10 (12.50)	11 (27.50)	4 (10.00)	35 (21.87)	16 (10.00)

(Figures in parenthesis indicate percentages)

2. Behavior of staff

It was examined from the Table 2 that a large number i.e. 65.62 per cent SCs found behavior of doctors as average. On the other hand, more than half of Non-SCs found the behavior of doctors with patient as good in total sample. In some cases, 3.13 per cent SCs and only 1.25 per cent Non-

SCs were found as behavior of doctors as bad. As majority of Non-SCs were visiting private health centers. In the total sample 54.37 per cent SCs found the behavior of staff included nurse and attendants as good whereas, 7.50 per cent SCs reported bad behavior of staff with them.

Table 2: Distribution of respondents according to behaviors of healthcare providers

Behaviour of doctor	Majha (n ₁ - 80)		Malwa (n ₂ -160)		Doaba (n ₃ - 80)		Total (n-320)	
	SCs n ₁ =40	Non-SC n ₂ =40	SCs n ₁ =80	Non-SCs n ₂ =80	SCs n ₁ =40	Non-SCs n ₂ =40	SCs n=160	Non-SCs n=160
Good	13(32.50)	23 (67.50)	21 (26.25)	32 (40.00)	16 (40.00)	30 (75.00)	50 (31.25)	85 (53.12)
Average	26 (65.00)	17 (42.50)	56 (70.00)	46 (57.50)	23 (57.50)	10 (25.00)	105 (65.62)	73 (45.63)
Bad	1 (2.50)	-	3 (3.75)	2 (2.50)	1 (2.50)	-	5 (3.13)	2 (1.25)
Behavior of staff (Nurses, attendants)								
Good	20 (50.00)	29 (72.50)	19 (23.75)	24 (30.00)	22 (55.00)	29 (72.50)	61 (38.12)	82 (51.25)
Average	16 (40.00)	10 (25.00)	55 (68.75)	54 (67.50)	16 (40.00)	11 (27.50)	87 (54.37)	75 (46.88)
Bad	4 (10.00)	1 (2.50)	6 (7.50)	2 (2.50)	2 (5.00)	-	12 (7.50)	3 (1.87)

Note: Figures in parenthesis indicate percentages

3. Cleanliness in health centres

Maintaining a clean healthcare environment is vital to prevent infections, uphold hygiene standards and foster trust and comfort among patients. Conversely, poor hygiene, such as dirty floors, improper waste disposal, or insufficient sanitization in treatment areas, can facilitate the spread of diseases. Regular attention to cleanliness in healthcare settings goes beyond mere appearance; it is a fundamental aspect of providing safe, effective and compassionate care. It was revealed in Table 3 in overall sample 31.87 per cent of SCs perceived cleanliness as good whereas, 51.87 per

cent of Non-SCs felt so. Also, 63.13 per cent SCs and 44.37 per cent Non-SCs stated cleanliness as average, suggesting a general dissatisfaction among SCs compared to their Non-SCs counterpart indicating a significant gap in the perceived as good whereas more than half i.e. quality of healthcare environments. In Majha region 65.00 per cent of SCs found the cleanliness to be average, while 40.00 per cent of Non-SCs shared this experienced. In Malwa, 62.50 per cent of SCs considered cleanliness average compared to 56.25 per cent of Non-SCs. Most respondents rated cleanliness as average.

Table 3: Distribution of respondents according their observation towards cleanliness in health centre

Cleanliness	Majha (n ₁ - 80)		Malwa (n ₂ -160)		Doaba (n ₃ - 80)		Total (n-320)	
	SCs n ₁ =40	Non-SC n ₂ =40	SCs n ₁ =80	Non-SCs n ₂ =80	SCs n ₁ =40	Non-SCs n ₂ =40	SCs n=160	Non-SCs n=160
Good	6 (15.00)	23 (57.50)	19 (23.75)	32 (40.00)	10 (25.00)	28 (70.00)	35 (31.87)	83 (51.87)
Average	26 (65.00)	16 (40.00)	50 (62.50)	45 (56.25)	25 (62.50)	10 (25.00)	101 (63.13)	71 (44.37)
Bad	8 (20.00)	1 (2.50)	11 (13.75)	3 (3.75)	5 (12.50)	2 (5.00)	24 (15.00)	6 (3.76)

Note: (Figures in parenthesis indicate percentages)

4. Waiting period in health centre

Table 4 illustrated the waiting time in health centre. It was observed that a higher percentage of SCs 50.00 per cent and 70.00 per cent Non-SCs had a waiting time of less than 30 minutes in Majha region, while 42.50 per cent of SCs and 25.00 per cent of non-SCs waited for one hour. Overall,

72.50 per cent of people across all regions and social categories waited less than 30 minutes, 23.13 per cent waited for one hour and 4.37 per cent waited for more than an hour. The overall, pattern suggests that Non-SCs were more likely to have their needs met promptly, while SCs experienced slightly longer waits.

Table 4: Distribution of respondents according to waiting period in health service they availed

Waiting period	Majha (n ₁ - 80)		Malwa (n ₂ -160)		Doaba (n ₃ - 80)		Total (n-320)	
	SCs n ₁ =40	Non-SC n ₂ =40	SCs n ₁ =80	Non-SCs n ₂ =80	SCs n ₁ =40	Non-SCs n ₂ =40	SCs n=160	Non-SCs n=160
Less than 30 min	20 (50.00)	28 (70.00)	50 (62.50)	57 (71.25)	23 (57.50)	31 (77.50)	93 (58.12)	116 (72.50)
1 hour	17 (42.50)	10 (25.00)	23 (28.75)	19 (23.75)	15 (37.50)	8 (20.00)	55 (34.38)	37 (23.13)
More than an hour	3 (7.50)	2 (5.00)	7 (8.75)	4 (5.00)	2 (5.00)	1 (2.50)	12 (7.50)	7 (4.37)

Note: (Figures in parenthesis indicate percentages)

5. Ranking according to facilities available

The ranking of facilities available in the health centres was done and the data shows that the care in pregnancy and childbirth received the highest mean score of 2, indicating it was well-supported, while neonatal and infant health care services ranked third. Family planning and reproductive health care services followed closely in second place.

Conversely, services such as mental health screening and management had the lowest i.e. tenth indicating a significant gap in manpower for this area. Overall, the data highlighted the disparities in available resources, with essential maternal and child health services being prioritized, while areas like mental health and elderly care remained under-resourced.

Table 5: Ranking according to facilities available in study area.

Primary Health Centre			
S. No	Facilities	Mean Score	Rank
1.	Availability of supplements (Iron Folic Acid, Calcium)	2	1
2.	Availability of family planning/contraceptive measures	1.81	3
3.	Emergency medical services	1.40	6
4.	Janani Suraksha Yojna	1.87	2
5.	Lab Facilities	1.56	5
6.	Availability of specialised doctors	1.13	7
7.	Ambulance facility	1.80	4
8.	Screening and Basic Management of Mental Health Ailment	0.60	8

6 Visits by Asha worker

It was depicted from table 6 that the visit by Asha worker was found regular among majority i.e. 75.00 per cent of SCs house and it was 67.50 per cent among Non-SCs. In further dissection of data it was seen that regular visits were 85.00 per cent among SCs as it was 75.00 per cent among Non-SCs respondents. Also, it was 72.50 per cent among SCs and 65.00 per cent in Non-SCs. Overall, the findings illustrated a trend where SCs households generally benefited

from regular visits more than Non-SC households in certain regions, particularly among Non-SCs. In overall the findings underscore that the more uniformity in ASHA worker visits in both the castes groups, but still they majorly visit SCs houses as in the pregnancy stage, Asha workers were found more inclined to have more personal gains whereas, Non-SCs were majorly visiting private facilities for health care facilities.

Table 6: Distribution of respondents according to visits by Asha worker

Visits by Asha worker	Majha (n ₁ - 80)		Malwa (n ₂ -160)		Doaba (n ₃ - 80)		Total (n-320)	
	SCs n ₁ =40	Non-SC n ₂ =40	SCs n ₁ =80	Non-SCs n ₂ =80	SCs n ₁ =40	Non-SCs n ₂ =40	SCs n=160	Non-SCs n=160
Regular	34 (85.00)	30 (75.00)	57 (71.25)	52 (65.00)	29 (72.50)	26 (65.00)	120 (75.00)	108 (67.50)
Irregular	6 (15.00)	12 (30.00)	23 (28.75)	28 (35.00)	11 (27.50)	14 (35.00)	40 (25.00)	52 (32.50)

Note: (Figures in parenthesis indicate percentages)

Table 6 illustrated the distribution of respondents' perceptions regarding the availability and sufficiency of health infrastructure across various facilities. The data revealed that a significant majority of respondents perceived

primary health center beds as sufficient, with one third of respondents 75.00 per cent confirming their availability, while only one fourth of respondents 25.00 per cent considered them insufficient. Ambulance availability was

high, with 90.00 per cent of respondents indicating sufficiency, whereas 10.00 per cent disagreed. In terms of essential equipment, 65.63 per cent confirmed sufficient inverters, while more than one third of respondents 34.37 per cent did not and 59.37 per cent of respondents felt oxygen availability was adequate and 40.63 per cent of respondents feeling it was insufficient. The availability of labor tables was a concern, as only 37.50 per cent considered them sufficient, while 62.50 per cent found them inadequate. For separate washrooms, 55.93 per cent of respondents confirmed sufficiency, whereas 44.07 per cent of respondents disagreed. Bio-waste management was perceived positively by 69.69 per cent of respondents, while 30.31 per cent of respondents indicated insufficiency.

Conclusion

It can be revealed from overall perspective that significant disparities in healthcare access and experiences between Scheduled Castes (SCs) and Non-Scheduled Castes (Non-SCs) across different regions. SCs generally had less regular access to doctors compared to Non-SCs, with only half of SCs reporting consistent doctor access, compared to 76.25 per cent of Non-SCs. Irregular doctor access was notably higher among SCs, especially in regions like Malwa and Doaba. Cleanliness in healthcare facilities was another concern, as only 31.87 per cent of SCs rated cleanliness as better compared to 51.87 per cent of Non-SCs. Waiting times were also longer for SCs, with a higher percentage reporting delay of one hour or more. Despite these challenges, SC households benefited from more regular visits by ASHA workers, particularly during pregnancy, indicating a stronger presence of community health initiatives. However, Non-SCs were more likely to seek healthcare from private facilities. Finally, maternal and child health services were prioritized, while mental health and elderly care services were under-resourced.

Recommendations

To address these disparities, it is recommended that healthcare access be improved by enhancing infrastructure and ensuring regular access to doctors. Training programs for healthcare staff should focus on improving behavior and fostering respect for all patients, regardless of caste. The cleanliness of healthcare facilities should be prioritized through regular inspections and maintenance. Efforts should be made to reduce waiting times by optimizing service delivery and increasing healthcare capacity.

References

1. Kaur M, Singh B. A review of the healthcare system in the state of Punjab, India. In: Handbook of Research on Interdisciplinary Studies on Healthcare, Culture, and the Environment. 2022;87-103. Available from: <https://orcid.org/0000-0001-5044-8581>
2. Kaur S, Bansal P. Healthcare access and infrastructure in rural Punjab: A gap analysis. Punjab J Public Health. 2018;32(4):45-59.
3. Kumar G, Singh J. Health infrastructure disparities in Punjab: An inter-district analysis. J Infrastruct Dev. 2020;12(1):25-38. <https://doi.org/10.1177/0974930620902311>
4. Maraju RG, Choudhari SG, Shaikh MK, Borkar SK,

Mendhe H. Role of telemedicine and digital technology in public health in India: A narrative review. Cureus. 2023;15(3). doi:10.7759/cureus.35986

5. Mishra A, Tripathi R. Family dynamics and social support: A study on scheduled castes in India. J Soc Issues. 2020;74:130-45. doi:10.1177/09720634221109307
6. Mohanan M, Rao KD, Rani M. Improving healthcare quality through governance and data-driven policies in India: Institutional capacity and evidence-based decision making. J Health Pol Mgmt. 2016;34:225-35. doi:10.1377/hlthaff.2016.0676
7. Rao P, Shankar R, Yadav N. Healthcare infrastructure in rural India: An overview of challenges and opportunities. Indian J Rural Health. 2020;28(3):45-57. doi:10.3390/healthcare10050757
8. Singh H. Caste and premarket discrimination: Access to civic amenities and healthcare facilities in rural Punjab. Contemp Voice Dalit. 2022. doi:10.1177/2455328X221106908
9. Taqi M, Bidhuri S, Sarkar S, Ahmad WS, Wangchok P. Rural healthcare infrastructural disparities in India: A critical analysis of availability and accessibility. J Manag Res Humanit. 2017;3(2). doi:10.15415/jmrh.2017.32011