



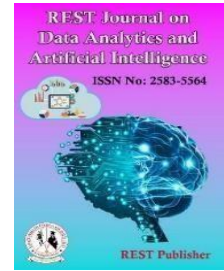
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Bridging the Gaps an Analytical Study of availability and Utilization Patterns in Healthcare Service across Major Three District Hospitals General, Bandipora, and Pulwama in Jammu & Kashmir

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Abstract. Governments around the world are working to improve and expand healthcare. Almost every government in the world accepts these principles. The lack and criticism of healthcare services is that they are in the city, are treated and are only available to a small population. This study presents a comprehensive comparative evaluation of healthcare service utilization across three district hospitals Ganderbal, Bandipora, and Pulwama in Jammu & Kashmir, covering the period from 2016 to 2021. Drawing from extensive hospital statistics and key performance indicators (KPIs) across emergency care, diagnostic imaging, laboratory services, maternal and child health (MCH), and blood bank utilization, the analysis reveals substantial disparities in healthcare access and service delivery based on Indian Public Health Standards (IPHS) 2012. Findings revealed significant inter-district disparities. Pulwama District Hospital met 100% of IPHS requirements, while Bandipora and Ganderbal met 63.6% and 36.4%, respectively. Pulwama served 7% and Bandipora 20% more population than IPHS norms, reflecting higher efficiency. Emergency obstetric care utilization was recorded at 207.0 per 1000 cases. Pulwama led in ambulance trips 1354.33/year and blood units issued 588.17, while Bandipora had the highest patient load and neonatal care utilization 852.5. Ganderbal showed strength in emergency blood usage 20% and Ayushman Bharat participation 35.83%. Maternal care indicators varied, with Pulwama performing the most C-sections 1481 and Bandipora leading in natural deliveries 814.5. Discharge delays in Pulwama and workforce gaps, especially in nursing and paramedical staff, highlighted urgent needs for system strengthening.

Keywords: Public health services, IPHS 2012, healthcare utilization, district hospitals, Jammu & Kashmir, maternal health, emergency services, Ayushman Bharat, HMIS.

1. BACKGROUND OF STUDY

Governments around the world are working to improve and expand healthcare. Almost every government in the world accepts these principles. The lack and criticism of healthcare services is that they are in the city, are treated and are only available to a small population. Today, the goal of both developed and developing countries is not only to provide adequate and appropriate health services to all people, but also to ensure that everyone reaches the level of health by benefiting from primary health care services. It is estimated that this massive infrastructure benefits only 20% of the population, while 80% of healthcare needs are still met by the private sector. Poor access to care leads to unnecessary illness, death, out-of-pocket expenses, and often increases debt. The cycle of poverty, malnutrition, and poor health reinforces each other, especially in rural areas where people

are underserved. WHO has also identified that inequalities in access to health care will be a major public health problem in the future. Therefore, the health system needs to be designed to meet the needs of the whole society.^{i,ii} the entire Indian healthcare industry was worth approximately \$280 billion in 2020, with a compound annual growth rate (CAGR) of 22.9%. Healthcare, which includes hospitals, nursing homes and laboratories as well as pharmaceuticals, accounts for 65% of the total market^{iii,iv}. Utilization of healthcare services refers to the accessibility and affordability of the household to avail services about health, particularly the poor households in the urban slums^v. The healthcare industry is changing rapidly to meet the needs of an increasing number of patients. Hospitals are shifting from viewing patients as uneducated individuals with few treatment options to educating customers about a variety of services and treatment options. Respecting the needs and desires of the patient is the foundation of all human healthcare. Traditionally healthcare has been based on standard practice, but over the past decade, patients' perception of healthcare has become an important measure of healthcare and an important part of improving the efficiency and quality of treatment.

Novelty of The Study: Novelty: This study represents the first comprehensive longitudinal comparative evaluation of healthcare utilization patterns in district hospitals of Jammu & Kashmir, uniquely integrating diverse healthcare indicators and providing region-specific insights aligned with NITI Aayog's healthcare transformation framework.

2. MATERIAL AND METHODS

The data assessed the availability and utilization of selected public health services. Specific key performance indicators of the hospital were used Observational Technique on a record basis retrospectively from 2016 till the year 2021. The formula used in NHM HMIS calculations is:

$$\text{Value} = \frac{\text{Numerator}}{\text{Denominator}} \times \text{Factor}$$

A pilot study, conducted to evaluate the feasibility and accuracy of the tool, obtaining formal administrative permissions from the Directorate of Health Services Kashmir and Medical Superintendents of District Hospital Budgam. Challenges encountered included administrative hurdles in obtaining clearances, staff hesitance in sharing data, geographical dispersion requiring extensive travel. Reliability testing indicated strong internal consistency, evidenced by a Cronbach's alpha of 0.82. The data analysis involved descriptive and inferential statistical methods. The research was structured into five distinct phases: Conceptualization, Design and Planning, Empirical Data Collection, Data Analysis, and Dissemination. Availability of infrastructure was benchmarked against IPHS Norms (2012.)

3. RESULTS

The availability and utilization of healthcare services across three district hospitals: Ganderbal, Bandipora, and Pulwama, spanning from 2016 to 2021, to inform strategic decision-making.

TABLE 1: Frequency and Percentage of Adherence to Public Health Care Services as Per IPHS-2012 Guidelines in Three District Hospitals

Sr. No.	Criteria IPHS- 2012	No. of item	Adherence of IPHS-2012					
			Ganderbal		Bandipora		Pulwama	
			f	%	f	%	f	%
1	Location	4	3	(75.0)	2	(50)	4	(100)
2	Building Status	4	2.5	(62.5)	4	(100)	2	(50.0)
3	Building Requirements	8	5	(62.5)	8	(100)	8	(100)
4	Departments / Clinics	21	11	(52.4)	19	(90.5)	18	(85.7)
5	Diagnostic Services	7	4	(57.1)	5	(71.4)	7	(100)
6	Pharmacy (Dispensary)	5	1	(20.0)	5	(100)	5	(100)
7	Operation Theatre	2	1	(50.0)	1	(50.0)	2	(100)
8	Ancillary and Supportive Services	11	4	(36.4)	8	(72.7)	9	(81.8)
9	Administrative Services	9	1	(11.1)	9	(100)	9	(100)
10	Epidemic Control &Disaster Preparedness	2	0	(0.0)	2	(100)	2	(100)
11	Intermediate Care	2	1	(50.0)	2	(100)	2	(100)
12	Investigative & Laboratory Services	11	4	36.4	7	63.6	11	100

The data presented in Table 1 highlights the availability and adherence of public healthcare services to the Indian Public Health Standards (IPHS-2012) in the three district hospitals of Kashmir in terms of Infrastructure & Location shows that all three hospitals meet the location criteria reasonably well 75%, 50%, and 100% respectively. Building requirements are fully met in Bandipora and Pulwama but lag in Ganderbal 62.5% compliance. Further, the Building status varies, with Bandipora achieving 100%, while Ganderbal and Pulwama are below full adherence. Pulwama excels in Medical & Support Services, with full adherence to Diagnostic Services & Operation Theatre. Bandipora also performs well, particularly in Departments/Clinics 90.5% adherence. Ganderbal, however, faces significant gaps, with Pharmacy services critically low at 20% and Departments/Clinics struggling at 52.4%, highlighting a need for urgent improvement. Ganderbal faces major shortcomings in Administrative Services 11.1% compliance and completely lacks Epidemic Control & Disaster Preparedness, indicating governance challenges. Ancillary and Supportive Services are also inadequate 36.4% compliance, whereas Bandipora and Pulwama perform significantly better across these categories. Pulwama shows in Investigative & Laboratory Services with 100% compliance, ensuring strong diagnostic capabilities. Bandipora performs moderately at 63.6%, while Ganderbal struggles with only 36.4% adherence, indicating a need for significant improvement in diagnostic services. The data reveals Pulwama as the most compliant, consistently meeting 100% of the required standards. Bandipora also demonstrates strong adherence, frequently reaching full compliance or performing well in most categories. Ganderbal, however, lags behind, with lower compliance across multiple service areas. This highlights the need for targeted improvements in infrastructure, administrative efficiency, and essential healthcare services.

TABLE 2: Mean Showing the Utilization of Public Health Care Services between the Years 2016-2021 in Accident and Emergency Services in Three District Hospitals

Accident And Emergency	Ganderbal DH		Bandipora DH		Pulwama DH	
	Total cases	Mean	Total cases	Mean	Total cases	Mean
No. of Emergency cases per 1000 admissions	17.78	2.96	116.2	19.37	26.4	4.40
No. of trips per ambulance	1574.00	262.33	3739	623.17	8126	1354.33
No. of obstetric cases treated per 1000 emergency cases	1242.00	207.00	829	138.17	459	76.50

Table 2 depicts the utilization of public healthcare services between the years 2016-2021 in Accident and Emergency Services in three major district hospitals of Kashmir in terms of total and mean that was collected retrospectively from Hospital Management Information System (HMIS) NHM after availing permission from the Directorate Health Services Kashmir. The study reveals that in Bandipora DH reports the highest emergency case rate Mean: 19.37 per 1000 admissions, suggesting a higher demand for critical care and emergency medical intervention. Pulwama DH follows with a moderate emergency caseload Mean: 4.40, while Ganderbal DH records the lowest utilization Mean: 2.96 indicating lower emergency admissions requiring immediate intervention. Whereas Pulwama DH has the highest ambulance usage Mean: 1354.33 trips, indicating a more active emergency transport system and higher reliance on patient transfers. Bandipora DH records moderate ambulance usage Mean: 623.17 trips, while Ganderbal DH reports the lowest Mean: 262.33 trips, potentially reflecting differences in emergency transport availability or shorter distances to referral centers. On the other hand, Ganderbal DH handles the highest number of obstetric emergency cases Mean: 207 per 1000 cases, indicating higher dependence on emergency obstetric care or limited availability of routine maternal health services. Bandipora DH reports a lower mean 138.17 cases per 1000 suggesting a more stable maternal healthcare infrastructure compared to Ganderbal. Pulwama DH records the lowest obstetric emergency utilization Mean: 76.50 per 1000 cases, potentially reflecting better prenatal care access, leading to fewer emergencies. In conclusion the overall data shows that Accident & Emergency Services utilization 2016–2021 across three district hospitals in Kashmir reveals Bandipora DH as the most burdened facility for emergency cases, Pulwama DH with the highest ambulance utilization, and Ganderbal DH with the greatest reliance on emergency obstetric care, highlighting critical disparities in emergency preparedness, transport efficiency, and maternal healthcare services, necessitating targeted interventions for improved healthcare accessibility and response systems.

TABLE 3: Mean Showing the Utilization of Public Health Care Services between the Years 2016-2021 in Blood Bank Services in Three District Hospitals

Blood Bank	Ganderbal DH		Bandipora DH		Pulwama DH	
	Total cases	Mean	Total cases	Mean	Total cases	Mean
Number of blood unit issued per thousand population	0.27	0.27	17	2.83	3529	588.17
% of units issued for the transfusion at facility	94	94.00	17	2.83	3169	528.17
Number of units supplied to storage units	0	0	56	14.00	83	13.83
Proportion of blood units issued in Emergency cases out of total units issued in the month	20	20.00	17	2.83	25	4.17

Table 3 presents a retrospective analysis of Blood Bank Service utilization 2016–2021 in three major district hospitals of Kashmir. The data was retrieved from the Hospital Management Information System (HMIS) under the National Health Mission (NHM) after obtaining official approval from the Directorate of Health Services Kashmir. The findings, expressed in terms of total cases and mean values, highlight significant trends in blood unit issuance per thousand populations across hospitals. Pulwama DH has the highest number of blood units issued Mean: 588.17, indicating greater demand for transfusion services compared to Bandipora Mean: 2.83 and Ganderbal Mean: 0.27. Whereas the Pulwama DH again leads Mean: 528.17, demonstrating higher dependence on blood transfusion services. Bandipora DH records minimal blood utilization Mean: 2.83, raising concerns about limited transfusion infrastructure or lower demand for blood-based treatments. Bandipora DH supplies the highest number of blood units to storage facilities Mean: 14.00, while Pulwama DH follows closely at 13.83. Ganderbal DH records zero units supplied, possibly due to lack of blood storage infrastructure availability. Ganderbal DH allocates the highest percentage for emergency cases Mean: 20.00, followed by Pulwama Mean: 4.17 and Bandipora Mean: 2.83. In conclusion, the data reveals that Pulwama DH's high blood issuance rate suggests better accessibility, but supply chain efficiency should be assessed. Bandipora DH's low blood utilization raises concerns about transfusion service availability and infrastructure gaps. Ganderbal DH's lack of blood unit storage indicates an urgent need for facility enhancement and supply chain expansion. A standardized blood management system, improved storage facilities, and enhanced emergency readiness could optimize blood bank services across the region.

TABLE 4: Mean Showing the Utilization of Public Health Care Services between the Years 2016-2021 in Radiology Services in Three District Hospitals

Radiology	Ganderbal DH		Bandipora DH		Pulwama DH	
	Total cases	Mean	Total cases	Mean	Total cases	Mean
X-ray done per 1000 OPD patients	294	49.00	534	89.00	663	110.50
X-ray done per 1000 IPD patients	0	0.00	5229	871.50	132605	22100.83
Proportion of X-ray done at night	0.076	0.00	0	0.00%	11035	183916.67
No of dental X-ray per 1000 dental OPD	1470	245.00	90	15.00	273069	45511.50
Ultrasound done per 1000 OPD patients	32680	5446.67	15166	2527.67	65155	10859.17

The table 4 depicts the utilization of public health care services between the years 2016-2021 in three major district hospitals of Kashmir collected retrospectively from Hospital Management Information System (HMIS) NHM after availing permission from the Directorate Health Services Kashmir. Pulwama DH exhibits the highest number of X-rays performed per 1000 OPD patients 110.50, followed by Bandipora DH 89.00 and Ganderbal DH 49.00, indicating Pulwama DH has a higher dependence on radiological investigations for outpatient diagnoses. The number of X-rays done per 1000 IPD patients is significantly higher in Pulwama DH 22100.83, compared to Bandipora DH (871.50), while Ganderbal DH reports no X-ray utilization in IPD cases, suggesting differing patient loads or facility capabilities. Pulwama DH recorded a remarkably high number (183916.67), indicating that radiology services may be operating around the clock to accommodate patient needs, especially emergencies. Bandipora DH reported no X-rays at night, possibly due to operational restrictions. Ganderbal DH recorded a negligible proportion, further reinforcing that its radiology services may not be available for emergency night services. Pulwama DH leads in dental X-rays performed per 1000 dental OPD patients 45511.50, followed by Ganderbal DH 245.00 and Bandipora DH 15.00. This suggests significantly greater reliance on dental radiology in Pulwama DH, likely due to advanced dental services. Pulwama DH again ranks highest 10859.17 per 1000 OPD patients, followed by Ganderbal DH 5446.67 and

Bandipora DH 2527.67, pointing to variations in ultrasound accessibility or patient volume across the three hospitals. In conclusion Pulwama DH exhibits the highest utilization of radiology services, followed by Bandipora DH with moderate usage, while Ganderbal DH shows the lowest engagement, likely due to differences in infrastructure, patient volume, and operational policies.

TABLE 5: Mean Showing the Utilization of Public Health Care Services between the Years 2016-2021 in Routine & Special Laboratory Services in Three District Hospitals

Laboratory	Ganderbal DH		Bandipora DH		Pulwama DH	
	Total cases	Mean	Total cases	Mean	Total cases	Mean
Number of HB test done per 1000 population	22.25	3.71	95.38	15.90	291.41	48.57
Lab test done per 1000 patient to OPD	1016.1	169.35	0	0.00	1870.3	311.72
Lab test done per patients IPD	10.2	1.70	0	0.00	74463	12410.50
Proportion of lab test done for BPL patients	0	0.00	708533	118088.83	1291	215.17
Number of AFB examined done per 1000 population	0	0.00	0	0.00	10.38	1.73
Number of HIV test done per 1000 population	84	14.00	43	7.17	18	3.00
Number of VDRL test done per 1000 population	18	3.00	42.5	7.08	20	3.33

The table 5 depicts the utilization of public health care services between the years 2016-2021 in Accident and Emergency Services in three major district hospitals of Kashmir in terms of total cases and Mean that was collected retrospectively from Hospital Management Information System (HMIS) NHM after availing permission from the Directorate Health Services Kashmir about the utilization of routine and special laboratory services. Pulwama DH conducted the highest number of HB tests per 1000 population 48.57, followed by Bandipora DH 15.90 and Ganderbal DH 3.71. This suggests that Pulwama DH had greater patient engagement in routine anemia screenings, possibly due to better accessibility to lab services. Pulwama DH led in the number of lab tests conducted per 1000 OPD patients 311.72, while Ganderbal DH recorded a lower utilization 169.35. Bandipora DH reported no OPD lab tests, which may indicate a lack of routine lab services for outpatient care. Similarly, inpatient lab test utilization was significantly higher in Pulwama DH 12410.50, whereas Ganderbal DH recorded a much lower average 1.70, and Bandipora DH showed no IPD lab testing. Bandipora DH exhibited the highest proportion of lab tests conducted for BPL patients 118088.83 while Pulwama DH 215.17 and Ganderbal DH 0.00 showed significantly lower engagement. AFB testing which is used for tuberculosis diagnosis was conducted only in Pulwama DH 1.73 per 1000 population while Ganderbal DH and Bandipora DH reported no cases, suggesting limited TB screening services in those locations. HIV testing was highest in Ganderbal DH 14.00 per 1000 population followed by Bandipora DH 7.17 and Pulwama DH 3.00. Ganderbal DH's higher screening rate might be due to specific health programs targeting HIV prevention in the region. VDRL testing (for syphilis diagnosis) showed moderate usage across all three hospitals, with Bandipora DH reporting the highest number 7.08 per 1000 population. This could reflect variations in awareness or prevalence of sexually transmitted infections. In Conclusion Pulwama DH inferred the highest overall utilization of laboratory services in OPD and IPD lab tests, and tuberculosis screening that shows better diagnostic services. Ganderbal DH showed in HIV testing while as Bandipora DH exhibited high tests for BPL patients but overall performed less tests compared to Pulwama. These findings conclude significant disparities in laboratory service availability across the three districts.

TABLE 6: Mean Showing the Utilization of Public Health Care Services between the Years 2016-2021 in MCH Services in Three District Hospitals

MCH Services	Ganderbal DH		Bandipora DH		Pulwama DH	
	Total cases	Mean	Total cases	Mean	Total cases	Mean
No. of normal deliveries	2477	412.83	4887	814.50	2780	463.33
No. of C-section	975	162.50	2272	378.67	8886	1481.00
No. of still Births	0	0.0	65	10.8	73	12.17
Special newborn care provided	133	22.17	5115	852.50	1301	260.20
No of MTP's conducted	37	6.1	0	0.00	1105	184.17
JSSK No. of beneficiaries	3452	575.33	6357	1059.50	2867	477.8
Ayushman Bharat No. of beneficiaries	215	35.83	0	0.00	98	16.33

Table 6 depicts the utilization of public health care services between the years 2016-2021 in major three major district hospitals of Kashmir in terms of total cases and Mean that was collected retrospectively from Hospital Management Information System (HMIS) NHM after availing permission from the Directorate Health Services Kashmir. Bandipora DH recorded the highest

number of normal deliveries 814.50, followed by Pulwama DH 463.33 and Ganderbal DH 412.83 indicating Bandipora DH handled the highest number of vaginal deliveries. Pulwama DH, however, reported the highest number of C-sections 1481.00 significantly more than Bandipora DH (378.67 and Ganderbal DH 162.50. This suggests that Pulwama DH may have a higher rate of complicated deliveries requiring surgical intervention and better surgical facilities. Pulwama DH recorded the highest number of stillbirths 12.17 per year, slightly more than Bandipora DH 10.8, while Ganderbal DH reported no stillbirths. Bandipora DH provided the highest number of special newborn care services 852.50 followed by Pulwama DH 260.20 and Ganderbal DH 22.17. Pulwama DH conducted the highest number of MTPs 184.17, while Ganderbal DH recorded a small number 6.1 and Bandipora DH reported no cases. Bandipora DH had the highest number of JSSK beneficiaries 1059.50 suggesting strong government-backed support for maternal and child healthcare. Pulwama DH and Ganderbal DH showed relatively fewer JSSK beneficiaries, possibly due to differences in program implementation or awareness levels. Ganderbal DH had the highest number of Ayushman Bharat beneficiaries 35.83 followed by Pulwama DH 16.33, while Bandipora DH had none, indicating inconsistent program adoption across hospitals. In conclusion, Bandipora DH excels in normal deliveries and newborn care, Pulwama DH has the highest rate of C-sections and MTPs, while Ganderbal DH shows lower engagement in MCH services but leads in Ayushman Bharat beneficiaries, highlighting regional disparities in maternal healthcare infrastructure and accessibility.

4. DISCUSSION

The present study evaluated public healthcare service availability in Pulwama, Bandipora, and Ganderbal district hospitals, comparing them against the **Indian Public Health Standards (IPHS) 2012**. The findings highlight variations in compliance, infrastructure, and service efficiency, affecting healthcare accessibility and quality. Among the three, Pulwama District Hospital demonstrated the highest compliance, with 100% adherence in diagnostic services, investigative and laboratory facilities, and location feasibility. With 200 beds, it serves a population of 665,000, covering 7% more than the required standards, making it the most comprehensive healthcare facility among the three. Bandipora District Hospital achieved 100% compliance in building requirements, administrative services, and epidemic control measures, ensuring structural adequacy and effective hospital management. However, investigative and laboratory service availability was 63.6%, indicating a need for further development in diagnostic capabilities. With 100 beds, it serves 396,000 people, efficiently covering 20% more of its population than required. Ganderbal District Hospital lagged behind, particularly in investigative and laboratory services, which were only 36.4% available. Despite having 200 beds and serving a larger population of 707,874, it had the lowest overall public healthcare service availability, highlighting significant gaps in diagnostic care and service delivery. The study also assessed hospital capacity relative to population coverage, revealing disparities in bed-to-population ratios. While Pulwama and Bandipora efficiently utilized their resources, Ganderbal struggled with service adequacy, emphasizing the need for urgent infrastructure development and workforce enhancement. These findings underscore the importance of targeted investments in underperforming hospitals, particularly in diagnostic and investigative services, to ensure equitable healthcare access and improved health service delivery across all three districts. Study findings of NITI Ayog, revealed that only 21 hospitals across States/UTs met the criteria for comprehensive diagnostic testing services. Among the states, Karnataka boasted the highest proportion 28.6% of hospitals with all support services, followed by Telangana 19% Andhra Pradesh 14% and Gujarat 9.5%. Meanwhile, Balangir District Hospital in Odisha offers various specialized and non-specialized clinical OPD services along with 24x7 casualty and emergency services.^{vi} The study highlights the critical role of funding in healthcare service availability, infrastructure, and emergency preparedness. Funded CHCs demonstrated superior maternal and child health services, diagnostics, and surgical care, leading to better patient outcomes. In contrast, non-funded CHCs faced significant gaps, particularly in pediatric emergency care, maternal health, and essential diagnostics, limiting access to timely interventions. The absence of imaging facilities and lower bed capacity further constrained service delivery. Additionally, inadequate sanitation in non-funded CHCs raises concerns about infection control. Strengthening under-resourced CHCs with targeted funding for infrastructure, medical equipment, and emergency care is essential to bridging healthcare disparities and improving overall service quality.^{vii}

These results are contrary with the study findings of **V Minutha** on the study of public healthcare facility distribution, where it was observed that the location of the District Hospital was strategically chosen for economic feasibility. The hospital boasts a total bed capacity of approximately 1050 and serves a population of 301,127. It offers specialized departments including general medicine, general surgery, ENT, ophthalmology, urology, plastic surgery, and psychiatry. However, the study also unveiled an unequal distribution of healthcare centers throughout the region, resulting in shortages of infrastructure and workforce availability. The findings emphasized the pressing need for additional attention and resource allocation to address the gaps in healthcare access and delivery within the study area.^{Error! Bookmark not defined.} Another study by **Daniel et al** shed light on the disparities in healthcare infrastructure between rural and urban India,

emphasizing the urgent need for infrastructure development in healthcare institutions. The findings emphasize the necessity of enhancing healthcare delivery in the region, aligning with previous studies advocating for improved infrastructure in healthcare facilities.^{viii} The study highlights Pulwama DH as the leading provider of emergency blood bank services, issuing the highest blood units per population and transfusions 528.17%, while Ganderbal DH allocated the most blood for emergencies 20%. Bandipora DH recorded the highest emergency cases per 1000 admissions, while Pulwama DH had the most ambulance trips, and Ganderbal DH led in obstetric emergency management. These findings reflect distinct emergency care demands and resource allocation gaps, emphasizing the need for optimized emergency services across district hospitals. **In AIIMS-NITI Aayog collaboration study** had shown that the study highlights disparities in healthcare services across district hospitals. Emergency visits accounted for 16% of hospital visits, with varying burdens across hospitals. Challenges include deficiencies in ambulance services, physical infrastructure, human resources, and blood bank facilities. Only 50% of hospitals had a 24/7 functional blood bank. Patient satisfaction with emergency care ranged from 23% to 67%. Belgaum District Hospital's successful blood bank strategy involved donor recruitment and integration with essential services.^{ix} **The findings are consistent with a study conducted by Ranjeeta Kumari et al** on district hospitals with more than 300 beds, where the highest patient burden in both emergency and OPD cases was observed at Indira Gandhi Government General Hospital, Puducherry, while the lowest burden was recorded at District Hospital, Dhamtari.^x The study reveals Pulwama DH as the leading facility in radiology services, recording the highest X-ray, dental X-ray, and ultrasound utilization. X-ray use was significantly higher in Pulwama DH, particularly for IPD patients and night scans, while Ganderbal DH and Bandipora DH showed lower utilization. Ultrasound services were also most utilized in Pulwama DH, followed by Ganderbal and Bandipora. These findings indicate greater diagnostic capacity in Pulwama DH, emphasizing the need for improved radiology infrastructure in other district hospitals to enhance diagnostic efficiency.

A study conducted by **Supriya S. Patil**¹, regarding ECG, X-ray, and ultrasound facilities are the most important investigations during emergencies, which were present in 2 66.67% funded CHCs while all non-funded CHCs/RHs lacked X-ray and ultrasound facilities and only 33.33% CHC/ RH had ECG facility.^{Error! Bookmark not defined.} **On contrary study by Dr Rifat et al** it was found that investigative facilities especially ECG, X-Ray, and USG, at the PHCs, were insufficient.^{Error! Bookmark not defined.} Similar contrary study by **Ankita Chavhan et al.** identifies key factors affecting the utilization of radiology equipment, with the availability of professional radiologists and associated costs being the most significant. The research emphasizes the importance of regularly assessing diagnostic equipment to determine the causes of unavailability, such as obsolescence, limited access, or repair delays. Timely analysis is crucial to prevent resource wastage and ensure optimal equipment utilization, allowing it to operate efficiently without delays.^{xi}

The study highlights disparities in diagnostic capacity across district hospitals, **with** Pulwama DH leading in overall testing and TB screening, Bandipora DH focusing on BPL and STI screening, and Ganderbal DH excelling in HIV testing. These findings emphasize the need for balanced resource allocation and strengthened laboratory infrastructure to ensure equitable healthcare access and improved disease detection. **A study by AIIMS, New Delhi in collaboration with NITI Aayog** revealed that out of all 34 hospitals in the city, only 2 hospitals conduct 40-60% of routine blood tests, free blood sugar, electrolytes, blood urea and serum creatinine, urine ketones and pregnancy test for ED. The rest of the experiment is being done in just a few emergency rooms. Clinical laboratories do not perform the full range of D-dimer, BNP precursor, plasma ketone, toxicology tests – urine, blood osmolality, urine osmolality, TEG and PEF tests, generally the hospital is not used.^{ix} ^{above} the study highlights significant variations in MCH service utilization across district hospitals. Ganderbal DH recorded the highest paediatric and obstetric OPD cases, while Bandipora DH led in normal deliveries and special newborn care, reflecting a stronger maternal and neonatal care infrastructure. Pulwama DH exhibited the highest rates of C-sections and stillbirths, indicating a greater burden of high-risk pregnancies. Additionally, Bandipora DH excelled in JSSK beneficiaries, while Pulwama DH performed the most MTPs. These disparities underscore the need for strategic resource allocation and enhanced obstetric and neonatal care facilities to ensure equitable maternal and child healthcare services. In the study of **Jha, P., Larsson, M., Christensson, K., & Skoog Svanberg A**, a cross-sectional survey using consecutive sampling (n = 1004), conducted from March to May 2015, the satisfaction levels of women who experienced vaginal births (VB) and caesarean births (CB) were assessed that most women were satisfied with the overall childbirth services received, with 68.7% of VB mothers and 79.2% of CB mothers expressing satisfaction. However, women who had VB were least satisfied with the processes surrounding their first meeting with their new-borns, with a low mean subscale score of 1.8 (SD 1.3). On the other hand, women who had CB were least satisfied with the postpartum care they received, which had a mean subscale score of 2.7 SD 1.2.^{xii}

In line with study of **Gulshan Kumar and Reshmi R.S**, regarding Immunization rates correlate with ANC visits and institutional deliveries but suffer from staff shortages. Spatial analysis indicates neighbouring districts influence MCH service usage found that health facility availability boosts maternal and child health service utilization, while staff shortages hinder it.

Socio-economic factors like wealth and literacy positively impact usage, while poverty and certain demographics have negative effects. Janani Suraksha Yojana (JSY) aids MCH services. Regression models highlight facility availability's positive impact on ANC and institutional delivery. Immunization rates correlate with ANC visits and institutional deliveries but suffer from staff shortages. Spatial analysis indicates neighbouring districts influence MCH service usage. Optimal C-section rates are crucial, with Indian district hospitals averaging 20.8%, emphasizing judicious use in line with WHO recommendations.^{xiii}

The global debate on C-section rates prioritizes medical necessity over a specific rate. In Indian district hospitals, C-section averages are 20.8% overall, with smaller hospitals at 16.03%, mid-sized at 25.08%, and large hospitals at 31.3%. This highlights the importance of judicious use aligned with WHO recommendations.^{Error! Bookmark not defined.}

5. RECOMMENDATIONS & CONCLUSION

Nursing researchers should expand this work by evaluating KPIs at Sub-Centers, PHCs, CHCs, other districts, and teaching hospitals post-2022. Policymakers must focus on equitable resource allocation, robust regulatory frameworks, and patient-centered policies. States/UTs should enhance HMIS training, allocate resources for digitization, and institutionalize data management roles. District hospitals must promote smart health tools, improve record-keeping, encourage training, and align data with HMIS standards. The study revealed disparities in infrastructure, staffing, and service utilization across district hospitals Ganderbal, Bandipora, and Pulwama, with Pulwama. Addressing infrastructure, workforce, and service gaps is essential for improving healthcare delivery and outcomes in these regions.

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