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Assessment of Pediatric Preventive Healthcare Services in Tikrit City, Iraq

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Abstract. Background: Primary health care plays an essential role in child health promotion, immunization, early detection and prevention of communicable diseases. Measurement of service quality and providers and caregivers' perspectives can pinpoint obstacles to effective pediatric preventive care.
Objectives: To evaluate the level of pediatric preventive healthcare services from the eyes of healthcare providers and caregivers in Tikrit city.
Methods: The study was cross sectional descriptive study conducted from 20/11/2025 to 25/12/2025 at Tikrit Teaching Hospital and Primary healthcare centers. The number of participants was 140, who were selected and included as a convenience sample: 25 doctors, 30 community medicine staff, 85 caregivers. An Arabic structured questionnaire and direct interview were used to gather data. Data were analyzed using descriptive statistics, chi-square test in SPSS version 25 with $p<0.05$ considered statistically significant.
Results: Negative or neutral attitudes towards the service delivery were common, with more negative attitudes expressed regarding essential equipment, medicines in case of emergencies, infection-control policies, and health-awareness activities. In the Teaching-center group among doctors, 47.36% were not satisfied with the equipment they were using, and 50% of the community medicine staff at sub-centers were not satisfied. Among doctors, 75% of the community medicine staff at the sub-centers were not satisfied with the equipment they were using. Ventilation, waiting areas and times, instruments and supplies, diagnostic investigations, medicines, school health education, and preventive monitoring were identified for concern. Communication with staff was comparatively well rated and all 85 caregivers said that they would go back to the same center.
Conclusions: The results indicate that the primary issues are the lack of functional capacity, supplies, preventive monitoring and community outreach. Increased availability of equipment and medicines, more school health activities, periodic pediatric screening, and targeted health education can help improve pediatric preventive services in Tikrit.

Keywords: Primary healthcare; pediatric preventive healthcare; caregiver satisfaction; health awareness; Tikrit; Iraq.

1. Introduction

Primary healthcare (PHC) is a community-based strategy that aims to make vital health services more available and accessible to the people and promote health and wellbeing across the lifespan [1]. It utilizes integrated services, action on the broader determinants of health and empowering individuals, families and communities [2]. Child health and immunization are integral components of PHC, along with prevention and control of communicable diseases, nutrition and health education [3].

Preventive care for children focuses on immunizations, growth and developmental screening, age-appropriate screening, and caregiver counseling. These can be used to detect health problems at an early stage and to prevent unnecessary complications [4]. They are effective only if they are integrated within a facility, have trained staff, and equipment that is in good working order, medicines available, referral systems in place, and community awareness [5,6].

Structural and operational issues within the primary healthcare system are a long-standing

challenge in Iraq, and were previously highlighted during the evaluation process that primary healthcare system organization and service quality should be reinforced [7,8]. This study aims to assess the services of pediatric preventive healthcare services from the viewpoint of the healthcare providers and the caregivers in Tikrit city, with the aim of finding the obstacles that are hindering the provision of these preventive services and suggesting solutions to improve them.

2. Materials and Methods

2.1 Study design and setting

A cross-sectional descriptive study was carried out in the selected primary health care centers in Tikrit city and Tikrit teaching hospital in the month of January and May 2025, from 20 January to 25 May 2025. This study focused on the structure of the services and perceived quality based on the feedback received from the healthcare providers and caregivers.

2.2 Participants and sampling

Documents were obtained through convenience sampling of a total 140 participants; 25 doctors, 30 community medicine staff and 85 caregivers (parents/guardians) who accompanied children to the selected facilities. Participants eligible to attend were adults attending for preventative health services, health care workers who are currently working in a pediatrics or community health care setting, and parents/guardians who accompany children. The study was voluntary and consented to by the participants. Responses that were either not completed or not clear and no healthcare personnel were excluded.

2.3 Data collection

An Arabic structured questionnaire was used to gather the data by direct interview. The questionnaire included questions about demographics, professional characteristics, service use, and satisfaction/experience, perceived barriers, and suggestions for improvement. An exploratory study was done with a small sample of 10 persons outside the main sample. Free-form answers from the health care providers were analyzed for common themes.

2.4 Statistical analysis and ethics

The data were obtained and analyzed using SPSS 23. Categorical variables were expressed as frequencies and percentages and selected associations explored using chi-square testing. P value < 0.05 was considered statistically significant. Consent was obtained and responses were anonymous and personal identifiers were removed from the data set.

3. Results

3.1 Participant characteristics

A total of 25 doctors, 30 community medicine staff and 85 caregivers in the primary healthcare centers were included in the study. Demographic, workplace distribution and level of healthcare attendance are summarized for the participants in Table 1. Most of the people involved in the care of the children visiting the health clinics were parents of the children and the most common reason for attendance was vaccination. Visits were also reported in the past, more than half of whom had two or three prior visits.

Table 1. Demographic and General Characteristics of the Study Participants

Characteristic	Category	n (%)
Doctors (n = 25)	Female	14 (56.0)
	Working at Tikrit Teaching Hospital	19 (76.0)
	Residing in Tikrit	20 (80.0)
Community medicine staff (n = 30)	Female	17 (56.7)
	Working in sub-centers	20 (66.7)
Caregivers (n = 85)	Female, as reported by count	62 (72.9)
	Parent of the child	70 (82.4)
Age of caregivers/participants, as originally reported	Younger than 18 years	17 (20.0)
	18–35 years	55 (64.7)
	Older than 35 years	13 (15.3)

Main reason for attendance (n = 85)	Vaccination	50 (58.8)
	Treatment	20 (23.5)
	Health consultation	15 (17.6)
Previous visits (n = 85)	First visit	22 (25.9)
	2–3 visits	45 (52.9)
	More than 3 visits	18 (21.2)

3.2. Doctors' Satisfaction with Primary Healthcare Services

Doctors evaluated several aspects of primary healthcare services, including the healthcare center's location, infrastructure, pediatric services, emergency drugs, equipment, preventive activities, working hours, government support, communicable-disease policies, health-awareness campaigns, and immunization schedules. The responses of doctors working at Tikrit Teaching Hospital are presented in Table 2.

Table 2. Doctors' Satisfaction with Primary Healthcare Services at the Teaching Center (n = 19)

Assessment item	Very dissatisfied n (%)	Dissatisfied n (%)	Neutral n (%)	Satisfied n (%)	Very satisfied n (%)
Location of the center	0 (0.0)	1 (5.3)	12 (63.2)	3 (15.8)	3 (15.8)
Infrastructure	0 (0.0)	1 (5.3)	11 (57.9)	1 (5.3)	6 (31.6)
Pediatric services	0 (0.0)	4 (21.1)	10 (52.6)	3 (15.8)	2 (10.5)
Availability of emergency drugs	0 (0.0)	0 (0.0)	13 (68.4)	5 (26.3)	1 (5.3)
Necessary equipment	0 (0.0)	9 (47.4)	5 (26.3)	3 (15.8)	2 (10.5)
Preventive health-awareness activities	1 (5.3)	10 (52.6)	7 (36.8)	0 (0.0)	1 (5.3)
Working hours	7 (36.8)	3 (15.8)	2 (10.5)	5 (26.3)	2 (10.5)
Government support	0 (0.0)	8 (42.1)	10 (52.6)	1 (5.3)	0 (0.0)
Workplace policies for communicable diseases	0 (0.0)	13 (68.4)	5 (26.3)	1 (5.3)	0 (0.0)
Health-awareness campaigns	0 (0.0)	8 (42.1)	10 (52.6)	1 (5.3)	0 (0.0)
Immunization schedule	0 (0.0)	6 (31.6)	8 (42.1)	3 (15.8)	2 (10.5)

Health workers in the Primary Healthcare sub-centers also evaluated the availability of resources and the organization of services. The answers they give are summarized in Table 3.

Table 3. Doctors' Satisfaction with Primary Healthcare Services in Sub-Centers (n = 6)

Assessment item	Very dissatisfied n (%)	Dissatisfied n (%)	Neutral n (%)	Satisfied n (%)	Very satisfied n (%)
Location of the center	0 (0.0)	1 (16.7)	3 (50.0)	2 (33.3)	0 (0.0)
Infrastructure	0 (0.0)	2 (33.3)	3 (50.0)	1 (16.7)	0 (0.0)
Pediatric services	0 (0.0)	1 (16.7)	4 (66.7)	1 (16.7)	0 (0.0)
Availability of emergency drugs	1 (16.7)	4 (66.7)	1 (16.7)	0 (0.0)	0 (0.0)
Necessary equipment	1 (16.7)	3 (50.0)	2 (33.3)	0 (0.0)	0 (0.0)
Preventive health-awareness activities	0 (0.0)	4 (66.7)	2 (33.3)	0 (0.0)	0 (0.0)
Working hours	1 (16.7)	4 (66.7)	1 (16.7)	0 (0.0)	0 (0.0)
Government support	1 (16.7)	4 (66.7)	1 (16.7)	0 (0.0)	0 (0.0)
Workplace policies for communicable diseases	0 (0.0)	5 (83.3)	1 (16.7)	0 (0.0)	0 (0.0)
Health-awareness campaigns	0 (0.0)	3 (50.0)	2 (33.3)	1 (16.7)	0 (0.0)
Immunization schedule	0 (0.0)	2 (33.3)	4 (66.7)	0 (0.0)	0 (0.0)

3.3. Community Medicine Staff Satisfaction

The primary healthcare services were assessed regarding their organization and resources by community medicine staff. Their evaluations covered the infrastructure, pediatric services, emergency drugs, equipment, preventive health activities, working hours, government support, communicable-disease policies, health-awareness campaigns, and immunization schedules. The responses of staff working at the main center are summarized in Table 4.

Table 4. Satisfaction Among Community Medicine Staff at the Main Center (n = 10)

Assessment item	Very dissatisfied n (%)	Dissatisfied n (%)	Neutral n (%)	Satisfied n (%)	Very satisfied n (%)
Location of the center	0 (0.0)	2 (20.0)	7 (70.0)	1 (10.0)	0 (0.0)
Infrastructure	0 (0.0)	0 (0.0)	8 (80.0)	2 (20.0)	0 (0.0)
Pediatric services	0 (0.0)	4 (40.0)	5 (50.0)	1 (10.0)	0 (0.0)
Availability of emergency drugs	0 (0.0)	5 (50.0)	4 (40.0)	1 (10.0)	0 (0.0)
Necessary equipment	0 (0.0)	4 (40.0)	5 (50.0)	1 (10.0)	0 (0.0)
Preventive health activities	0 (0.0)	5 (50.0)	3 (30.0)	2 (20.0)	0 (0.0)
Working hours	0 (0.0)	0 (0.0)	10 (100.0)	0 (0.0)	0 (0.0)
Government support	0 (0.0)	5 (50.0)	5 (50.0)	0 (0.0)	0 (0.0)
Workplace policies for communicable diseases	0 (0.0)	8 (80.0)	2 (20.0)	0 (0.0)	0 (0.0)
Health-awareness campaigns	0 (0.0)	6 (60.0)	2 (20.0)	1 (10.0)	1 (10.0)
Immunization schedule	0 (0.0)	0 (0.0)	8 (80.0)	2 (20.0)	0 (0.0)

The assessment results of the community medicine staffs in the sub-centers are shown in Table 5.

Table 5. Satisfaction Among Community Medicine Staff in Sub-Centers (n = 20)

Assessment item	Very dissatisfied n (%)	Dissatisfied n (%)	Neutral n (%)	Satisfied n (%)	Very satisfied n (%)
Location of the center	0 (0.0)	3 (15.0)	12 (60.0)	5 (25.0)	0 (0.0)
Infrastructure	3 (15.0)	10 (50.0)	5 (25.0)	2 (10.0)	0 (0.0)
Pediatric services	2 (10.0)	3 (15.0)	10 (50.0)	5 (25.0)	0 (0.0)
Availability of emergency drugs	2 (10.0)	3 (15.0)	10 (50.0)	5 (25.0)	0 (0.0)
Necessary equipment	0 (0.0)	15 (75.0)	5 (25.0)	0 (0.0)	0 (0.0)
Preventive health-awareness activities	0 (0.0)	5 (25.0)	12 (60.0)	3 (15.0)	0 (0.0)
Working hours	5 (25.0)	10 (50.0)	5 (25.0)	0 (0.0)	0 (0.0)
Government support	5 (25.0)	10 (50.0)	5 (25.0)	0 (0.0)	0 (0.0)
Workplace policies for communicable diseases	5 (25.0)	7 (35.0)	5 (25.0)	3 (15.0)	0 (0.0)
Health-awareness campaigns	0 (0.0)	13 (65.0)	7 (35.0)	0 (0.0)	0 (0.0)
Immunization schedule	0 (0.0)	3 (15.0)	10 (50.0)	5 (25.0)	2 (10.0)

3.4. Comparison of Healthcare Providers' Responses by Workplace

For selected service domains, comparison was reported between the HCPs working at the teaching center and HCPs working at the sub-centers. The statistics provided in the provided materials are summarized in Table 6.

Table 6. Reported Comparisons of Healthcare Providers' Satisfaction by Workplace

Variable	Reported test statistic (χ^2)	Reported p-value	Interpretation
Emergency drug availability	15.22	<0.001*	Statistically significant difference reported
Working hours	11.45	0.003*	Statistically significant difference reported
Workplace location	Not available	>0.05	No statistically significant difference reported
Infrastructure	Not available	>0.05	No statistically significant difference reported

3.5. Caregivers' Experience and Satisfaction

Caregivers assessed a variety of primary health care services including the physical setting, waiting time, access to health care professionals, equipment facilities, preventive services, health education, immunization and communication with staff. Details of responses are summarized in Table 7.

Table 7. Caregivers' Experience and Satisfaction with Primary Healthcare Services (n = 85)

Service domain	Response category	n (%)
Location of the center	Very dissatisfied	10 (11.8)
	Dissatisfied	12 (14.1)
	Neutral	50 (58.8)
	Satisfied	11 (12.9)
	Very satisfied	2 (2.4)
Cleanliness	Very dissatisfied	18 (21.2)
	Dissatisfied	27 (31.8)
	Neutral	40 (47.1)
Waiting area and chairs	Very dissatisfied	22 (25.9)
	Dissatisfied	36 (42.4)
	Neutral	22 (25.9)
	Satisfied	5 (5.9)
Ventilation	Very dissatisfied	23 (27.1)
	Dissatisfied	60 (70.6)
	Neutral	2 (2.4)
Accessibility	Very dissatisfied	12 (14.1)
	Dissatisfied	2 (2.4)
	Neutral	57 (67.1)
	Satisfied	11 (12.9)
	Very satisfied	3 (3.5)
Waiting time for consultation	Very dissatisfied	26 (30.6)
	Dissatisfied	38 (44.7)
	Neutral	21 (24.7)
Waiting time for investigations	Very dissatisfied	22 (25.9)
	Dissatisfied	41 (48.2)
	Neutral	17 (20.0)
	Satisfied	5 (5.9)
Waiting time for medicines	Dissatisfied	10 (11.8)
	Neutral	75 (88.2)
Comprehensive healthcare services	Very dissatisfied	10 (11.8)
	Dissatisfied	30 (35.3)
	Neutral	40 (47.1)
	Satisfied	3 (3.5)
	Very satisfied	2 (2.4)
Availability of doctors	Very dissatisfied	33 (38.8)
	Dissatisfied	22 (25.9)
	Neutral	30 (35.3)

Other healthcare personnel	Neutral	17 (20.0)
	Satisfied	15 (17.6)
	Very satisfied	53 (62.4)
Instruments, equipment, and supplies	Very dissatisfied	44 (51.8)
	Dissatisfied	22 (25.9)
	Neutral	19 (22.4)
Accuracy of investigations	Very dissatisfied	50 (58.8)
	Dissatisfied	12 (14.1)
	Neutral	13 (15.3)
	Satisfied	5 (5.9)
	Very satisfied	5 (5.9)
Availability of medicines	Very dissatisfied	60 (70.6)
	Dissatisfied	21 (24.7)
	Neutral	4 (4.7)
Cost of services	Very dissatisfied	3 (3.5)
	Dissatisfied	12 (14.1)
	Neutral	70 (82.4)
Preventive protocols in schools	Very dissatisfied	20 (23.5)
	Dissatisfied	45 (52.9)
	Neutral	20 (23.5)
Protocols for monitoring children's health	Very dissatisfied	70 (82.4)
	Dissatisfied	15 (17.6)
Periodic check-ups	Very dissatisfied	23 (27.1)
	Dissatisfied	41 (48.2)
	Neutral	21 (24.7)
Health-education materials	Very dissatisfied	11 (12.9)
	Dissatisfied	55 (64.7)
	Neutral	19 (22.4)
Health education and advice provided by staff	Very dissatisfied	18 (21.2)
	Dissatisfied	12 (14.1)
	Neutral	45 (52.9)
	Satisfied	7 (8.2)
	Very satisfied	3 (3.5)
Immunization schedule	Very dissatisfied	13 (15.3)
	Dissatisfied	39 (45.9)
	Neutral	20 (23.5)
	Satisfied	11 (12.9)
	Very satisfied	2 (2.4)
Communication with healthcare staff	Neutral	9 (10.6)
	Satisfied	66 (77.6)
	Very satisfied	10 (11.8)
Health education in schools	Very dissatisfied	39 (45.9)
	Dissatisfied	40 (47.1)
	Neutral	6 (7.1)
Health-awareness campaigns	Very dissatisfied	25 (29.4)
	Dissatisfied	50 (58.8)
	Neutral	10 (11.8)
Appointment for the next visit	Very dissatisfied	15 (17.6)
	Dissatisfied	10 (11.8)
	Neutral	40 (47.1)
	Satisfied	20 (23.5)
Willingness to return to the same center	Yes	85 (100.0)

3.6. Participants' Suggestions and Recommendations

Participants also rated the services provided and identified areas that need to be improved in the delivery of primary health services. The key themes and recommendations are summarized in Table 8.

Table 8. Main Areas for Improvement Identified by Participants

Identified area	Suggested improvement
Availability of medicines and essential supplies	Ensure regular provision of essential medicines, equipment, and medical supplies.
Physical environment and waiting areas	Improve ventilation, cleanliness, seating, and the general environment of healthcare centers.
Waiting times	Improve patient flow and organize consultation, investigation, and medicine-dispensing procedures.
Preventive healthcare	Strengthen preventive services, routine child-health monitoring, and periodic check-ups.
School health services	Expand school-based health education and preventive health activities.
Health-awareness campaigns	Increase community outreach and awareness activities.
Immunization services	Maintain reliable immunization schedules and improve communication with caregivers about vaccination.
Government support and workplace resources	Improve institutional support, equipment provision, and the resources available to healthcare staff.
Communication with caregivers	Maintain effective communication between healthcare personnel and families and provide clear health advice.

4. Discussion

This study outlines the existence of perceived gaps in pediatric preventive healthcare in Tikrit, and their viewpoints from the provider and caregiver perspectives. The most obvious distinction is between the more neutral sentiments about place or infrastructure and greater discontent with functional facilities needed to provide care. There were limited supplies of equipment and emergency medicines, and medicines and diagnostic supplies, ventilation, waiting arrangements, and preventive monitoring were reported as caregiver factors. The results showed that as well as there being care facilities, the quality of services is also dependent on operational readiness.

Results indicate that the PHC system in Iraq faces similar obstacles as reported in the previous studies, such as limited resources and weak organization of the services [9,10]. Al-Ramadi also reported that there are some deficiencies in the equipment and staffing and differences in client's satisfaction and perceived service quality [11]. While settings and measures vary, caution should be taken in making direct comparisons, both studies highlight the need for good supply, staffing and services delivery in practice.

There was low satisfaction with health-awareness activities among both providers and caregivers. Open-ended responses indicated that families may have low awareness and low income, which could result in low regular use of preventive services and high use of services when their child is ill. Specific education for parents/caregivers may focus on the importance of vaccination schedules, regular consultations, growth monitoring and early consultation. Study participants suggested some strategies such as digital communication and school-based activities.

This dissatisfaction with medicines and equipment can impact the facilities' ability to assess and manage medicines and equipment in a timely manner. Specialized neonatal and pediatric equipment items were identified as a need by the providers, such as CPAP machines, neonatal isolation areas and pediatric dialysis equipment. These are gaps as reported by providers and not verified by equipment audit. During a follow up assessment, the availability, function and distribution of the equipment and medicines should be recorded.

These are important contextual findings as communication with staff is good with some wanting to return to the same center. They show that if a person is unhappy about resources and the care environment, this doesn't always mean that they are not going to use the care again. But consideration of

the convenience sample, descriptive design, should be taken into account with satisfaction results. This is not a causal study and this study is not representative of all caregivers and facilities in Tikrit.

Limitations include convenience sampling and perceived measures as the main data collection tools and a relatively short data collection period. A few of the figures and category labels in the original result tables are inconsistent with one another, and the clearest descriptive results in the original result tables have been highlighted, but this condensed report does not re-calculate the original data. Future studies should involve a more representative sample, check on the validity of data obtained from the questionnaires with audit of the facilities, and provide complete statistical tables.

5. Conclusion

The assessment reveals the weaknesses in the care of children for preventive health in Tikrit, including the availability of medicines and equipment, environmental conditions, preventive monitoring, and health awareness activities. Communication with staff and willingness to return were positive and do not negate a need to enhance functional capacity and preventive outreach.

6. Recommendations

- Provide regular access to and maintenance of necessary pediatric equipment, medicines and diagnostic supplies.
- To look at ventilation, waiting spaces, seating and patient flow to minimize unnecessary discomfort and delays.
- Expand community outreach and school health units, such as targeted health-awareness campaigns for parents/caregivers.
- Encourage periodic growth monitoring, immunization follow-up and timely preventive screenings for children as they age.
- Perform regular facility audits and re-satisfaction surveys with a larger and more representative sample.

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