Original Research

Assessing Service Readiness for Quality Antenatal Care Servicein Public Health Institutions of Lumbini Province, Nepal: A Study from Service Providers Perspective

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Abstract

Background: Health service readiness is a crucial factor in delivering high-quality antenatal care (ANC). Health facilities must be equipped with the necessary tools, medications, and adequately trained personnel to provide effective ANC services. Inadequate service readiness can lead to decreased utilization of ANC services, potentially increasing the risk of complications and maternal morbidity. Ensuring a high standard of care is essential in reducing maternal and newborn mortality and achieving the health-related targets of the Sustainable Development Goals.

Materials and Methods: An institution-based cross-sectional study was conducted in 30 public health facilities in Lumbini Province, Nepal, using a 30-cluster sampling method. Face-to-face interviews with ANC service providers were carried out using a pretested structured questionnaire to assess service readiness. A validated observation checklist was used to evaluate the availability of drugs, equipment, and other essential items.

Results: Among the 30 ANC service providers surveyed, 23.3% of the surveyed providers do not supply folic acid supplements and 10.0% of the institutions do not provide Tetanus Diphtheria (TD) vaccination. 33.0% of the health facilities lack appropriate Information Education and Communication (IEC) and Behavior Change Communication (BCC) materials and 43.3% of the providers reported that their health institutions lack Reproductive Health (RH) clinical protocols and related guidelines and 44.7% of health institutions surveyed do not have quality assurance activities.

Conclusion: This study identified significant gaps in service readiness within health institutions in Lumbini Province, affecting the delivery of effective and standardized care to pregnant women. To address these issues, it is essential that health institutions in Lumbini province need to ensure the resources are consistently available, enable healthcare providers to deliver more comprehensive, standardized, and high-quality care.

Keywords: Antenatal care, readiness, pregnancy, health institutions

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Introduction

Antenatal care (ANC) involves routine checkups for healthy pregnant women to diagnose potential complications and provide information on lifestyle, pregnancy, and delivery[1, 2]. Good care during pregnancy is crucial for both maternal and fetal health, promoting healthy behaviors and parenting skills. Inadequate ANC disrupts the continuum of care, negatively impacting both mothers and babies[3]. Nepal has pledged to significantly reduce maternal and newborn deaths by 2030, and improving the quality of delivery services will be essential to achieving this goal[4].There is a global drive to promote facility deliveries but unless coupled with health system strengthening to improve quality of care within facilities, the increased access will not likely translate into reduction in maternal, fetal and newborn deaths[1]. Maternal mortality remains a significant public health issue in developing countries, largely due to inadequate care before, during, and after childbirth[3]. Annually, around 3 million newborns die within their first month, with most deaths occurring within the first days of life-coinciding with many maternal deaths[5]. Contributing factors include low utilization of antenatal, delivery, postpartum, and neonatal care services, limited provider knowledge and skills, inadequate health facility capacity, and insufficient community awareness about maternal and neonatal care[6].

The National Demographic Health Survey (NDHS) 2022 shows significant declines in child mortality rates since 1996, with under-5 mortality dropping from 118 to 33, infant mortality from 78 to 28, and neonatal mortality from 50 to 21 deaths per 1,000 live births. However, neonatal mortality remained unchanged between the 2016 and 2022 NDHS surveys[7] In the fiscal year 2075/76 (2019) the pregnant women received 4th ANC was 56% at National level[8]. In Lumbini province the provincial average of fourth ANC visits (as per protocol) as a percentage of expected live births was 65% in 2018/19 (BS2075/76). Out of twelve districts, eight districts had fourth ANC visit as a percentage of expected live birth below the provincial level. The proportion of institutional deliveries was 75.% percent and the proportion of mothers attending three postnatal care (PNC) visits as per the protocol is declined from 22 percent in 2074/75 to 19% in 2075/76 at province level[9].

Low resource setting is major factors for poor maternal health[10]. Availability of essential medicine, standard precaution and guidelines are the important components for quality of health service. Studies show that health systems in Nepal experience shortages in fundamental resources for essential health services[11]. Recently conducted study shows that women are increasingly visiting private health facilities for maternal and child health care in Nepal[12]. It is because of belief and satisfaction towards the service provided by health facilities. The lack of confidence in services being provided by public health facilities is a reason for underutilization of services[13]. Service readiness of health facilities provides impetus for improving quality of care[14]. A study conducted in Ethiopia respondents who knew the presence of appropriate medicines and free ambulance transportation service were more than 8 times more likely to deliver in health institution[15]. Facility readiness to provide quality maternal and newborn care is low in this rural area of Nepal[16]. The ANC service providers to be updated with ANC guidelines and receive in-service training is most essential for the provision of quality ANC service. Studies suggested that providing refresher training for ANC providers increased the average number of obstetric service provision by 37%[17]. A national survey of birthing centers in Nepal reported only half of the nursing staff of birthing centers are certified Skilled Birth Attendant (SBA) and the infection prevention practices are considerably low among the staffs[18].Public health facilities needs to improve their service readiness offering quality antenatal service[19]to achieve higher levels of client satisfaction, which in turn could increase the use of maternal health services.

Methods

Study design and setting: We carried out an institution-based cross-sectional study among

public health institutions in Lumbini Province, Nepal, comprising 12 districts with diverse terrains, including hilly, plains and mountain regions. We selected six districts representing all geographic areas, these districts consist of a total of 151 health facilities from which sample was taken.

Sample size and sampling technique: The sample size for our study was 30 health facilities**.** A multi-stage cluster random sampling method was used to select health facilities. The 12 districts of Lumbini Province were grouped into two clusters, and six districts were randomly chosen. These districts contained 151 public health facilities; each considered a cluster. In the second stage, the 30-cluster method was applied to select required number of facilities.

Data Collection tools: Data collection was done during July- December 2023. We conducted face to face interview with ANC service provider regarding service readiness using pretested structured questionnaire and validated observation checklist. The key parameters used in the questionnaire and observation checklist were service provision, availability of drugs and equipment, laboratory service, quality assurance activities and training update by service providers.

Data Analysis: We analyzed the data using SPSS version 25. Frequencies and percentages were used to analyze the type of service provision, availability of materials and the status of training obtained by service providers.

Inclusion and exclusion criteria: The study included those health institutions which provide antenatal care (ANC) services with nursing staff available for service provision.

Ethical approval: The study received ethical approval from the Nepal Health Research Council, Kathmandu, Nepal. Written permission was taken from province government, local level government and respective public health facilities of respective districts. Additionally, verbal consent was secured from the healthcare providers at the respective health facilities before proceeding with the study.

Results

Among 30 surveyed ANC providers, 23.3% do not supply folic acid supplements, and 10% of institutions lack tetanus diphtheria (TD) vaccination services. Additionally, 33% of health facilities lack adequate Information Education and Communication (IEC) and Behavior Change Communication (BCC) materials for ANC, while 43.3% lack RH clinical protocols and guidelines essential for standardized care. Nearly half of the institutions cannot provide key screening services, including urine tests for sugar and protein, hemoglobin, and blood sugar tests (Table 1).

Among 30 health facilities 76.7% of ANC providers reported that their health institutions lack digital blood pressure apparatus, while 20% stated that they do not have adult weighing machines and measuring tapes for fundal height measurement. Sixteen percent of providers stated that their institutions lack examination lights. More than half of the service providers surveyed reported that their health institutions do not have plain folic acid tablets, while 36% reported a lack of plain iron tablets. However, combined iron and folic acid tablets were found in all health institutions (Table 2).

Regarding quality assurance activities, it was found that 44.7% of health institutions surveyed do not keep any records of quality assurance-related activities, while 33.3% do not have a quality assurance action plan, and 23.3% do not have quality assurance guidelines in their facilities (Table 3).

Table 4 shows that out of 30 ANC providers most of them were engaged in providing both antenatal and postnatal services (80%). Updated training on ANC screening was received by less than half 46 % of the ANC providers and 13% of the providers were with updated training on counseling for ANC. Similarly, 53.3 % of the provider received updated training on complications of pregnancy and their management and with 46.7% of the provider with nutritional assessment of the pregnant women.

Table 1: Service readiness for Antenatal Care

Variables	Yes		No	
	Number (n)	Percent (%)	Number (n)	Percent (%)
Provide iron supplementation	28	93.3	2	6.7
Provide folic acid	23	76.7	7	23.3
Provide TD vaccination	27	90.0	3	10.0
Provide albendazole tablets	30	100.0	-	-
Counseling on 4ANC visit	29	96.7	1	3.3
Counseling on birth preparedness package	30	100.0	-	-
Counseling on HIV/AIDS	30	100.0	-	-
Have IEC/BCC materials like danger sign poster, BPP flip charts, pamphlets, etc.,	20	66.7	10	33.3
Have RH clinical protocol and related guidelines	17	56.7	13	43.3
Test related characteristics				
Provide facility of urine protein test	18	60.0	12	40.0
Provide facility of urine glucose test	18	60.0	12	40.0
Provide facility of hemoglobin test	16	53.3	14	46.7
Provide facility of syphilis rapid diagnostic test	16	53.3	14	46.7
Provide facility of blood glucose test	17	56.7	13	43.3
Provide facility of blood grouping test	16	53.3	14	46.7
Provide facility of urine pregnancy test	25	83.3	5	16.7

Table 2: Availability of drugs and equipment

Items related characteristics				
Variables	**Yes**		**No**	
	Number (n)	**Percent (%)**	**Number (n)**	**Percent (%)**
Availability of digital BP apparatus	7	23.3	23	76.7
Availability of manual BP apparatus	29	96.7	1	3.3
Availability of stethoscope	30	100.0	-	-
Availability of examination light	25	83.3	5	16.7
Availability of fetal stethoscope (fetoscope)	30	100.0	-	-
Availability of adult weighing scale	24	80.0	6	20.0
Availability of examination bed	30	100.0	-	-
Availability of measuring tape for fundal height	24	80.0	6	20.0
Availability of thermometer	30	100.0	-	-
Availability of iron tab (individual)	19	63.3	11	36.7
Availability of folic acid tab (individual)	14	46.7	16	53.3
Availability of iron folic combine tab	30	100.0	-	-

Table 3: Quality assurance related activities

Variables	Yes		No	
	Number (n)	Percent (%)	Number (n)	Percent (%)
Routinely carry out quality assurance activities	17	56.7	13	43.3
Have official record of any quality assurance activities	16	53.3	14	46.7
Have the quality assurance guidelines	23	76.7	7	23.3
Have a quality assurance action plan	20	66.7	10	33.3

Table 4: ANC related training received by service provider.

Variables	Attributes	Number (n)	Percent (%)
Type of service provider provides	Antenatal Care	6	20.0
	Both antenatal and post-natal care	24	80.0
Provider received training on ANC screening	Yes within 24 months	14	46.7
	Yes over 24 months	7	23.3
	No in service training for updates	9	30.0
Provider received training on counseling for ANC	Yes within 24 months	15	50.0
	Yes over 24 months	4	13.3
	No in service training for updates	11	36.7
Provider received training on complications of pregnancy and their management	Yes within 24 months	16	53.3
	Yes over 24 months	3	10.0
	No in service training for updates	11	36.7
Provider received training on nutritional assessment of the pregnant women	Yes within 24 months	14	46.7
	Yes over 24 months	3	10.0
	No in service training for updates	13	43.3

Discussion

Our study revealed that approximately one-quarter (23%) of the health institutions surveyed lack the provision of folic acid supplements for pregnant women. A similar issue was identified in a study conducted in Ethiopia, where iron supplementation was unavailable in 31% of the surveyed facilities[20]. This finding closely aligns with our results. However, the study in Ethiopia also reported that 33% of health facilities lacked the provision of tetanus toxoid (TT) vaccination, a significantly higher percentage compared to our findings, where only 10% of health institutions were without tetanus-diphtheria (TD) vaccination services. The availability of standardized protocols and guidelines is essential for ensuring the delivery of high-quality antenatal care (ANC) services. According to a 2014 Service Provision Assessment Plus Survey, the presence of ANC guidelines at health facilities was associated with a significant 24% increase in the number of obstetric danger signs women were informed about during counseling sessions (95% CI: 12–35%)[21]. Additionally, studies conducted in six sub-Saharan African countries indicated that healthcare providers working in facilities equipped with ANC guidelines were 26% more likely to deliver optimal clinical care (AOR = 1.26; 95% CI, 1.08–1.48) [22]. However, our study found that 43.3% of health facilities in Lumbini province lack reproductive health protocols and ANC guidelines. This gap can lead to inconsistent care, poor adherence to standards, and limited distribution of essential health information to pregnant women.

Screening services, including laboratory diagnostics, are crucial for comprehensive antenatal

care (ANC). However, our study found that nearly half of the surveyed health institutions lack these essential services, limiting the detection and management of pregnancy complications. A similar issue was observed in southern rural Nepal, where proteinuria and hemoglobin testing were not consistently performed, despite the availability of lab services[16]. These findings highlight a significant gap in the availability and use of quality diagnostic services in Nepal's health institutions.

In our study, 20% of health facilities lacked adult weighing machines and measuring tapes for fundal height measurement, while 16% did not have examination lights. Similarly, another study found a low availability of essential medicines such as misoprostol tablets (17.1%) and equipment like digital blood pressure monitors[23]. These findings indicate a deficiency in essential medicines and equipment necessary for providing antenatal care (ANC) services in certain health facilities. Ensuring that all facilities are adequately equipped and provisioned is imperative to guarantee that pregnant women receive high-quality ANC services. Trained healthcare personnel are essential for ensuring quality antenatal care (ANC). A 2015 survey in Nepal found only 13.8% of nursing staff were trained in ANC screening[23]. Our study revealed less than half of ANC providers in public health institutions had received training in screening, although 53% had training in managing pregnancy complications. Similar findings were reported in studies from China and Nigeria, where 55.24% of healthcare providers were trained in managing complications, but workers noted inadequate in-service training and a need for more training in postnatal care, hands-on practice, and supervision[17]. In our survey of 30 health facilities, 23% lacked quality assurance (QA) guidelines, and 44.7% did not conduct any QA activities, such as planning, monitoring, audits, or evaluations. This reveals a significant gap in the institutional framework for ensuring high-quality antenatal care (ANC) and underscores the need for improvements in QA processes.

Our study highlights gaps in the quality of antenatal care (ANC) services in Nepal, including shortages of essential medicines, equipment, diagnostic services, and updated training for nursing staff. These resource deficits stem from inadequate funding, disproportionate focus on tertiary care, and geographic barriers, particularly in remote areas. This compromises ANC quality, increasing maternal and infant mortality and discouraging health-seeking behavior, especially in rural communities. Addressing these challenges requires investing in skilled healthcare workers, ensuring consistent resource availability, strengthening supply chains, and fostering public-private partnerships. Local governments must prioritize targeted interventions, policy reforms, and sustainable financing to enhance community health facilities and improve health outcomes.

Conclusion

Health service readiness, encompassing infrastructure, availability of medicines, equipment, and trained nursing staff, is fundamental to delivering quality antenatal care (ANC) services. This study identified several gaps in these critical aspects of service readiness in the health institutions of Lumbini province. These deficiencies directly impact the ability of healthcare providers to deliver effective, timely, and standardized care to pregnant women. Health institutions in Lumbini must ensure adequate resources for high-quality ANC care. With proper guidelines, providers can follow best practices to improve maternal health. Provincial and local stakeholders should strengthen service readiness by improving infrastructure, ensuring medicine and equipment availability, and enhancing staff training to address identified gaps.

Limitations of the Study

This study was limited to six districts of Lumbini Province and did not include all districts, which may affect the generalizability of the findings. Additionally, the questionnaires were designed with predetermined options, which may have restricted participants from fully expressing their views and opinions. We recommend future studies to include all districts of the province and to develop questionnaires that incorporate qualitative methods to capture more comprehensive and nuanced information.

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