Quality of Care and Client Satisfaction with Maternal Health Services in Nepal

Further Analysis of the 2015 Nepal Health Facility Survey

DHS Further Analysis Reports No. 112

Government of Nepal
Ministry of Health
and Population

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July 2018

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Editor: Bryant Robey
Document Production: Joan Wardell

This report presents findings from a further analysis undertaken as part of the follow-up to the 2015 Nepal Health Facility Survey (2015 NHFS). This study was carried out with support provided by the United States Agency for International Development (USAID) through The DHS Program (#AID-OAA-C-13-00095). The views expressed are those of the authors and do not necessarily reflect the views of USAID or the United States Government.

Additional information about the 2015 NHFS may be obtained from the Ministry of Health and Population, Ramshah Path, Kathmandu; telephone: +977-1-4262543/4262802, internet: http://www.mohp.gov.np, and New ERA, Rudramati Marg, Kalopul, P.O. Box 722, Kathmandu, Nepal; telephone: +977-1-4413603, email: info@newera.com.np, internet: http://www.newera.com.np/.

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Recommended citation:

Acharya, S., S. Sharma, B. Dulal, and K. Aryal. 2018. *Quality of Care and Client Satisfaction with Maternal Health Services in Nepal: Further Analysis of the 2015 Nepal Health Facility Survey.* DHS Further Analysis Reports No. 112. Rockville, Maryland, USA: ICF.

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FOREWORD

The 2015 Nepal Health Facility Survey (NHFS) is the first nationally representative comprehensive survey conducted as part of the worldwide Demographic and Health Surveys (DHS) project in the country. It combines the components of the Service Provision Assessment (SPA) survey of the Demographic and Health Surveys (DHS) Program, supported by the United States Agency for International Development (USAID); the World Health Organization (WHO) Service Availability and Readiness Assessment; the United Nations Population Fund (UNFPA) Facility Assessment for Reproductive Health Commodities and Services; and the Nepal-specific Service Tracking Survey, funded by the UK Department for International Development (DFID).

The standard format of the main report includes only a descriptive presentation of findings, without using analytical statistical methods to ascertain the significance of change, readiness index, and some causative association between variables. Though largely sufficient, the standard report is limited, particularly in providing answers to "why" questions, which are very essential in reshaping important policies and programs. Hence, following the dissemination of the 2015 NHFS, the Ministry of Health and Population (MoHP) and partners have convened and agreed on key areas that are very important to assess progress and gaps, and ascertain determinants, in high-priority public health programs that MoHP is implementing. In this context, further analysis has been carried out by relevant technical professionals from MoHP and partners who are directly working on the given areas, with technical support and facilitation from research agencies.

The primary objective of the further analysis of the 2015 NHFS is to provide more in-depth knowledge and insights into key issues that emerged based on the data of the 2015 NHFS, and this provides guidance in planning, implementing, refocusing, monitoring, and evaluating health programs related to these issues in Nepal. The long-term objective of the further analysis is to strengthen the technical capacity of the local institutions and individuals to analyze and use data from complex national population and health surveys to better understand specific issues per country need and situation. The further analysis includes topics of client satisfaction and quality of curative services for sick children, family planning, maternal health, and health services availability and readiness in seven provinces in Nepal.

The further analysis of the 2015 NHFS is the concerted effort of various individuals and institutions, and it is with great pleasure that I acknowledge the work that has gone into producing this useful document. The participation and cooperation that were extended by the members of the Technical Advisory Committee in the different phases of the survey are highly regarded.

I would like to thank the Public Health Administration Monitoring and Evaluation Division (PHAMED) of MoHP for its effort and dedication in the completion of this further analysis of 2015 NHFS. I would also like to extend my appreciation to USAID/Nepal for providing financial support for the further analysis. I would also like to acknowledge ICF for its technical assistance at all stages. Similarly, my sincere thanks go to the New ERA team for the overall management and coordination of the whole process.

Dr. Pushpa Chaudhary
Secretary
Ministry of Health and Population

ACKNOWLEDGMENTS

The further analysis of 2015 Nepal Health Facility Survey (NHFS) was conducted under the aegis of the Public Health Administration Monitoring and Evaluation Division (PHAMED) of the Ministry of Health and Population (MoHP). The United States Agency for International Development (USAID) provided financial support, and technical assistance was provided by ICF. Overall coordination, facilitation, and administrative and logistic support were provided by New ERA, a local research firm with extensive experience in conducting such studies in the past.

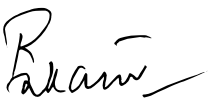
The further analysis series of the 2015 NHFS is intended to meet information gaps in the areas of quality of care for maternal, child, and family planning services. The main report of the 2015 NHFS only presented a descriptive analysis of the service availability and readiness of all the basic health services offered at the health facilities and information on quality of care for sick child, family planning, and maternal health services. The further analysis reports will examine relationships of health facility, health worker, and client-related factors with client's satisfaction and identify areas for improving client's satisfaction.

I would like to express my deep sense of appreciation for the contributions of a number of different stakeholders in the various phases of the study and in finalizing the report. My sincere gratitude goes to all members of the National Monitoring and Evaluation Technical Advisory Group at MoHP for their valuable input. I appreciate the leadership of Dr. Dipendra Raman Singh, former chief, Mr. Giri Raj Subedi, senior public health administrator, and the entire team of PHAMED for their contribution during the different phases of the study.

My special gratitude goes to the authors, Dr. Sunil Kumar Acharya, Dr. Sharad Kumar Sharma, Mr. Bishnu Prasad Dulal, and Dr. Krishna Kumar Aryal, for their hard work in completing this report. I would also like to express my deep appreciation to the peer reviewers, Dr. Shilu Adhikari and Dr. Suresh Mehta, for their time and efforts.

The technical support provided by ICF is highly appreciated and acknowledged. My special thanks go to Dr. Wenjuan Wang and Dr. Shireen Assaf for their technical support throughout the period.

My appreciation also goes to the staff of New ERA, Mr. Yogendra Prasai, and the entire team of New ERA for excellently managing the further analysis activities.



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ACRONYMS AND ABBREVIATIONS

ANC	antenatal care
CBS	Central Bureau of Statistics
CI	confidence interval
DFID	Department for International Development
DHS	Demographic and Health Surveys
DoHS	Department of Health Services
FHD	Family Health Division
GoN	Government of Nepal
MoH	ministry of health
MoHP	Ministry of Health and Population
HP	health post
NGO	non-governmental organization
NHFS	Nepal Health Facility Survey
NHP	national health policy
OR	odds ratio
PHAMED	Public Health Administration Monitoring and Evaluation Division
PHCC	primary health care center
PPC	postpartum care
SBA	skilled birth attendant
SLC	school leaving certificate
SPA	Service Provision Assessment
SARA	service availability and readiness assessment
UHC	urban health clinic
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development
QoC	quality of care
WHO	World Health Organization

ABSTRACT

This report presents further analysis of the 2015 Nepal Health Facility Survey. Data analysis is based on the Donabedian framework for assessing quality of care in health services, which divides the indicators into three groups: structure, process, and outcome. The World Health Organization Service Availability and Readiness Assessment (SARA) indicator guideline was used to assess facility service readiness, service quality and client satisfaction with maternal health services. The study performed both bivariate and multivariate regression analysis to examine the association of maternal health service readiness and quality indicators with client satisfaction.

The analysis revealed that 38% of antenatal care clients were very satisfied with the services provided at the health facility. Aspects such as nonpayment of service fees, sex of service provider, and regularity of conducting facility management committee meetings were significant predictors for client satisfaction with antenatal care services. Antenatal care clients were more satisfied if the facility had high service readiness and if they were not required to pay for the services received in the visit. Clients of Terai/Madhesi and other castes reported a higher level of satisfaction compared with the Brahmin/Chhetri.

About half of postpartum clients were very satisfied with the services provided. Postpartum clients had 3.4 times higher odds of being satisfied with postpartum care if the facility had a protected client waiting area available compared with facilities without a protected waiting area. However, client satisfaction with postpartum care was not significantly associated with the service readiness indicator.

KEYWORDS: Client satisfaction, quality of services, Service Provision Assessment, SARA, health facilities, antenatal care, postpartum care, maternal health, Nepal

1 INTRODUCTION

The provision of good-quality maternal health services, leading to higher levels of client satisfaction, is an important goal of health institutions that provide maternal care. In recent years, the importance of client satisfaction has gained considerable momentum and has become one of the prime concerns of health programmers and managers. Client satisfaction with service provision has been used for measuring quality of service both within and outside the health system (Abodunrin2014). A number of studies have indicated that good-quality services lead to higher levels of client satisfaction, which in turn can ensure continued uptake of services by clients. Thus, client satisfaction is taken as an important indicator of quality of care in service delivery (Souza et al. 2013; Aldana, Piechulek, and al-Sabir 2001; Mehata et al. 2017).

This paper presents further analysis of data from the 2015 Nepal Health Facility Survey (NHFS) on client satisfaction with maternal health services provided by health facilities in Nepal (MOH et al. 2017). The analysis focuses on the determinants of clients' satisfaction with maternal health services being provided. The broad objective of the analysis is to examine the association of maternal health service readiness and service quality with client satisfaction. In light of this objective, the analysis seeks to answer the following questions:

- Is service readiness associated with client satisfaction?
- Is service quality associated with client satisfaction?
- Which factors—service readiness, service quality, or sociodemographic and geographical factors—are most important for client satisfaction?

The analysis explores factors that have had a positive impact on maternal satisfaction and identifies those that need further improvement.

2 LITERATURE REVIEW

2.1 The Context

The total population of Nepal enumerated in 2011 was 26.5 million, with an average annual growth rate of 1.35% between 2001 and 2011, which represents a sharp decline from 2.25% over the previous decade, 1991-2001(CBS 2014a). The decline is attributed to a gradual fall in fertility levels and an increasing trend of youth emigration. In 2011, the female population comprised a slightly higher percentage of the total population, at 51.5%, compared with the male population, at 48.5%, with a sex ratio of 94.2 men per 100 women. Broadly, by age groups, nearly 35% of the population were under age 15, 57% were of working age, 15-59, and 8% were age 60 and above. In 2011, Terai zone accounted for 50% of the total population, whereas Hill and Mountain zones accounted for approximately 43% and 7% of the total population, respectively (CBS 2014a). Nepal is a multi-ethnic and multi-cultural society. Based on the 2011 population census, the various castes/ethnicities have been recategorized into 126 broad groups (CBS 2014b).

Politically, Nepal was previously divided into five development regions and 75 districts. But after a decade-long armed conflict and a peace accord among major political parties, a political system of secular democratic republic state was adopted in Nepal's new constitution, which came into effect in 2015. The new constitution provides for the division of the country into 7 federal provinces, 77 districts, and 753 local-level bodies (Palikas) (GoN 2015).

2.2 Health Policy and Health System

Nepal has a long history of health policy development, which started in the 1950s. The National Health Policy (NHP), adopted in 2014, is based on the national health policy of 1991 and the 2007 interim constitution of Nepal. The current policy has placed health as a central component of overall development by building partnerships and multisector collaboration. The vision of the policy is to ensure quality lives for the Nepali people, with the highest levels of physical, mental, social, and emotional wellbeing. The mission of the policy is to "ensure citizens' fundamental right to stay healthy by utilizing available resources optimally and through strategic cooperation among service providers, service users, and other stakeholders" (DoHS 2016).

The new constitution of Nepal, promulgated in 2015, states that "every citizen shall have the right to free basic health services from the State, and no one shall be deprived of emergency health services; every woman shall have the right to safe motherhood and reproductive health" (GoN 2015, 21-22). In light of this development, the government has drafted a new health policy in 2017 that encompasses the federal structure of the governing system and the spirit of the new constitution. The draft policy is yet to be finalized and officially launched.

2.3 The Health Services Delivery System

In Nepal, health services are delivered by both the public and private sectors. Services from the private sector are provided mainly by standalone hospital/nursing homes, private clinics, and drug shops, which are confined to major cities and selected urban areas. The public sector, however, has a nationwide network of health facilities and delivers services at the primary, secondary, and tertiary levels. Health services at the primary level are at the community level and mainly delivered by health posts and primary healthcare centers. These facilities provide basic health services, including family planning,

safe motherhood, and immunization. Secondary-level services are delivered by district hospitals, which are first referral points from the primary-level health facilities. Tertiary-level services are provided by zonal, sub-regional, and regional hospitals, which are also second-level referral points for districts. The central hospitals, in addition to a broad range of advanced or specialized services, also offer professional training, conduct research, and provide support to the districts (MoH et al. 2017).

2.4 Maternal Health Situation in Nepal

The use of maternal health care has increased in Nepal over the last few decades. The percentage of women making the recommended number of four or more antenatal care (ANC) visits has steadily increased, from 14% in 2001 to 69% in 2016. This percentage, however, differs by place of residence, at 76%for urban women compared with 62% for rural women. There has also been progress on health facility delivery. The 2016 Nepal Demographic and Health Survey (NDHS) shows that 57% of births in the 5 years preceding the survey were delivered in a health facility. Of the total institutional deliveries, nearly half (43%) were in government health facilities, while only 10% were in private facilities. Fifty-eight percent of deliveries were attended by a skilled provider—31% doctors and 27% nurses or auxiliary nurse midwives. Regarding postnatal care (PNC), 57% of women received a checkup in the first 2 days after childbirth, with most checkups occurring within 4 hours after delivery. This is an increase of 12 percentage points from 2011, when the proportion of women reporting a postnatal checkup within 2 days after delivery was 45%. Still, the 2016 NDHS shows that 42% of women did not receive any postnatal checkups (MoH, New ERA, and ICF 2017).

Nepal has achieved considerable progress in reducing pregnancy-related mortality rates, from 543 maternal deaths per 100,000 live births in 1996 to 281 per 100,000 in 2006, but there have not been significant changes in recent years (MoHP, New ERA, and Macro international 2007). The World Health Organization (WHO) estimated MMR in Nepal for 2015 at 258 maternal deaths per 100,000 live births (WHO et al. 2015). The most recent estimate for the period 2009-2016 derived by the 2016 NDHS is 239 deaths per 100,000 live births (MoH, New ERA, and ICF 2017).

2.5 Quality of Care and Client Satisfaction

In recent years, in both developed and developing countries, health care professionals increasingly focus on quality of health care and client satisfaction. In 2009, the Nepal MoHP drafted a Quality Assurance Policy to ensure the quality of services provided by governmental, non-governmental, and private sectors according to set standards. The Nepal government has also emphasized good quality of care in maternal health. A quality of care (QoC) strategy was adopted in the National Safe Motherhood Plan (2002-2017). As part of this strategy, the plan advocated for establishing functional QoC units at national and regional levels and defining quality of care in safe motherhood services. The strategy also aimed to facilitate adoption of the QoC model and implementation as per districts' needs by hospitals and PHCCs, to conduct QoC training, and to develop and implement strategy for monitoring quality of care at the district level (DoHS/FHD 2002).

The Nepal Health Sector Strategy 2016-2021 (NHSS) is recognized as the strategy that provides guidance to the health sector and also embodies the essence of the National Health Policy 2014. The strategy recognized that challenges related to providing quality of care remain in the health sector, with such problems as deficit (and absence) of qualified health workers at facilities, stock-out of drugs and commodities, non-functioning equipment, and poor physical and utility infrastructure. In order to ensure that quality standards are developed, introduced, and employed across all types of public and private sector providers, NHP 2014 envisioned the establishment of a new quality assurance body in the form

of an autonomous authority. This body is to work closely with professional associations and existing regulatory authorities for ensuring high standards of health services across the sector and promoting safe and good medical practices. Outcome 2 of this strategy focuses on improved quality of care at the point of delivery and has identified two outputs as: quality health services delivered as per protocols/guidelines, and quality assurance system strengthened (MoHP 2015).

The concept of quality of health care, however, is difficult to define and to measure due to its subjective nature (Wang et al.2014). The difficulty may also arise since the term quality may be differently understood by health service providers and their clients, and may vary in the context of a country or society. According to WHO, the concept of quality needs to take a whole system perspective that characterizes quality in health care and health systems (WHO 2006). This approach proposes a working definition of quality that seeks to improve health care and health systems by focusing on six dimensions of quality: ensuring that services are effective, efficient, accessible, acceptable/patient centered, equitable, and safe. Other definitions of quality also have included various characteristics of the health care system, such as efficacy, equity, comprehensiveness, timeliness, appropriateness, continuity, privacy, and confidentiality (Abodunrin, Adeomi, and Adeoye 2014). In discussing quality, Aldana, Piechulek, and Al-Sabir (2001) argued that judgments of quality are highly individualistic and dynamic since the criteria or elements used for judging quality at one moment may not be the same at the next, and hence client satisfaction may only partially reflect the quality of health care process. Hulton, Matthews, and Stones (2000) proposed that the issue of quality be seen as two constituent parts of service delivery—quality of the provision of care within the institution, and quality of care as experienced by users. According to the authors, the division of quality into two components attempts to consider both the quality of care provided at the health facility and women's experience of the care received (Hulton, Matthews, and Stones 2000).

The pioneer of developing quality assessment of health services is Donabedian (1966; 1988), who identified three themes of health care services that could be considered for assessing quality: (1) structure, which includes the attributes of material, human resources, and organizational structure; (2) process, which includes patient's activities in seeking care and practitioner's activities in making a diagnosis and recommending or implementing treatment; and (3) outcome, which includes the effects of care on the health status of patients and populations. According to Donabedian, the three-part approach to quality assessment is possible only because "good structure increases the likelihood of good process, and good process increases the likelihood of a good outcome." He further argues that the three categories of quality measures are not independent but are linked in an underlying framework, in that good structure is expected to promote good process, which in turn is expected to promote the desired outcomes (Donabedian 1966; 1988). Researchers have widely used this approach in assessing quality of care of health services. Although researchers have looked at various dimensions of quality of care, most dimensions can be included within structure, process, or outcome as proposed by Donabedian (Assaf, Wang, and Mallick 2015).

Many studies have focused on quality of maternal health services and client satisfaction. It is argued that good quality of care leads to a higher level of client satisfaction, which is one of the principal determinants of continued uptake of maternal health services by clients. Based on the findings of a WHO multi-country study, Souza et al. (2013) argued that access to and availability of medical care are both necessary but not sufficient factors in getting desired maternal health outcomes. Access and availability do not guarantee increased use of services or improved client satisfaction. Good service quality plays an important role in client satisfaction, which in turn ensures continued uptake of services (Souza et al. 2013). Client satisfaction may also be looked upon as a subjective judgment of the quality

of care because of its multidimensional nature that relates to both technical and interpersonal aspects of quality of care including access, behavior/perception of service provider, waiting time, environment/cleanliness of the facility, provider skills, and equipment. In a study carried out in Bangladesh, aspects of health care such as length of time of facility being open/closed, client waiting time for receiving service, and provider respect and politeness were some key factors that determined client satisfaction (Aldana, Piechulek, and Al-Sabir 2001). The study found that provider's behavior toward the patient, particularly showing respect and politeness, was a powerful predictor of client satisfaction with government health services. This aspect was much more important than the provider's technical competence, as characterized by elements such as explaining the nature of the problem, physical examination, and giving advice. The other powerful predictors for client satisfaction were respect for privacy and short waiting times. Similar findings were observed in a study conducted in 13 districts of Nepal among women who had recently delivered or who had experienced obstetric complications, where longer waiting time and overcrowding resulted in client dissatisfaction, while opportunity of having interactions (asking questions) with the service provider led to client satisfaction (Mehata et al. 2017).

Available literature shows that some other aspects, such as the cost of care and the background of clients (income, age, and education), may also have a bearing on client satisfaction. Cost of care, though important, may not have much influence on client's level of satisfaction as long as other aspects of care are good. A study conducted in Nigeria observed that clients may be willing to accept higher costs if they believe that services are of high quality. The study suggested that good provider-client relationships can be therapeutic and may be the single most important aspect of care that not only helps in identifying problems quickly and clearly but also helps establish trust between provider and client (Nwaeze et al. 2013). A number of other studies have found that client satisfaction also depends on the background of the care seeker, including age, education, and income (Chirdan et al. 2013; Melese et al. 2014; Andaleeb 2001; Das et al.2010; Amdemichael, Tafa, and Fekadu 2014; Hutchinson, Do, and Agha 2011). Thus the literature suggests that in addition to other elements, quality of care, including client satisfaction, needs to be considered as an important aspect of health service delivery. This analysis uses the Donabedian (1988) framework for assessing quality of care and client satisfaction in maternal health care in Nepal.

3 DATA AND METHODS

3.1 Nepal Health Facility Survey 2015

This analysis uses data from the 2015 Nepal Health Facility Survey (NHFS), which is the first nationally representative comprehensive survey of health facilities operating both in public and private sectors in Nepal. The survey collected information from facilities managed by the government, private, and NGO sectors. It included information on the service readiness of the facilities, observation of services being delivered to clients, and clients' views and opinions on the services provided. The survey report containing general findings has already been published (MOH et al. 2017). The present report presents further analysis of the findings of the 2015 NHFS on maternal health outcomes.

3.1.1 Data collected in the NHFS

The 2015 NHFS used five main types of data collection tools. Of the five tools, this analysis uses information collected through three tools: the facility inventory questionnaire; observation protocols for antenatal care; and client exit interview questionnaires for both antenatal care (ANC) and postpartum care (PPC). While exit interviews were conducted for both ANC and PPC clients, observation of service delivery was carried out only for ANC clients. Overall, the NHFS collected information that is needed to assess *general service readiness* and *service specific readiness* of the surveyed health facilities. General service readiness includes information related to availability of basic amenities, equipment, medicines, and guidelines. Service-specific readiness includes availability of essential equipment and supplies, staff with recent training, service guidelines, medicines and commodities, and laboratory capacity for essential tests.

3.2 Data Analysis

3.2.1 Data reduction and unit of analysis

The survey interviewed a total of 1,509 ANC clients, of whom 507 clients were first-time visitors for ANC. The unit of analysis considered for this report is clients who visited the facility for the first time to get ANC services. Similarly, the survey interviewed a total of 309 PPC clients. In this case, all 309 clients were considered as the unit of analysis. Weighted data have has been used throughout the analysis.

3.2.2 Variables included in the analysis

This analysis is guided by the Donabedian framework for assessing quality of care for health services, which broadly classifies the assessment variables under three categories: structure, process, and outcome. Thus the analysis has included variables in each category for analyzing service readiness, service quality, and client satisfaction with services provided by the surveyed facilities. The selection of variables was based on the WHO Service Availability and Readiness Assessment (SARA) Reference Manual (WHO 2013).

3.2.3 Constructions of variables

Our outcome variables are client satisfaction with ANC services and client satisfaction with PPC services. We categorized satisfaction in two categories: satisfied and unsatisfied. A client's response in the exit interview of *very satisfied* was considered as satisfied, while the rest of the possible client

responses in the exit interview (fairly satisfied, neither satisfied nor dissatisfied, fairly dissatisfied, and very dissatisfied) were considered as unsatisfied.

Two composite indices were generated for the analysis—one for service readiness and the other for service quality. The indices involved the use of several variables that are grouped together, as described below. Separate service readiness indices were generated for ANC and PPC services, as they require different items of equipment and commodities (see Appendix 1). These items were traced as per the availability of data. The service quality index could only be generated for ANC services, as the required variables for the quality analysis were not available in the PPC questionnaire.

Service readiness index variables were generated from a composite score based on the availability of different tracer items at the facility, as shown in Appendix 1. As per the SARA guideline, readiness indicators for ANC service include a) availability of staff, guidelines, and job-aids; (b) availability of equipment; (c) availability of diagnostic tests; and (d) medicine and commodities. Service readiness indicators for PPC service include: (a) availability of guidelines and job-aids; (b) availability of equipment; and (c) medicine and commodities. All the variables were dichotomized as whether the item is available or not. The items were then added together, with equal weights, to generate a readiness score, and this score was divided into three equal groups—low, medium, and high—for both ANC and PPC service readiness.

Based on the NHFS report, a service quality related index variable was generated for ANC services. This variable is a composite score computed from (a) client received ANC services from an SBA; (b) client reported being counseled on at least three danger signs of pregnancy complications; (c) client recommended facility to others; and (d) client reported no problems regarding waiting time. As with the readiness score, all the items were dichotomized and then added together with equal weights to generate a score. The score was then divided into two categories: high quality and low quality.

Variables related to health service management were also included in the analysis. The variables of interest included: need to pay for services within the facility; water supply; availability of a protected client waiting area; 24-hour staff availability; external supervision in the health facility; regularity of facility management meeting; officially recorded quality assurance activities; and a system for collecting opinion from clients. Waiting time for service was examined independently. These variables were generated by recoding of each variable, for both ANC and PPC services.

This analysis also examined the effects of provider characteristics on service satisfaction, for both ANC and PPC clients. Provider characteristics included sex of the provider, provider category, and provider personally supervised by the supervisor in the last 3 months. Background variables of health facilities and clients were also included in the analysis. Facility variables included managing authority, ecological zones, and provinces. Client variables included age, educational status, and caste/ethnicity.

3.2.4 Methods of data analysis

Bivariate association of service readiness, service quality, and other background variables was examined with the client's satisfaction for ANC and PPC, using cross-tabulations. Multivariate binary logistic regression was used to examine the effect of facility service readiness as well as service quality with client satisfaction for ANC and PPC, adjusting for other potential confounding factors. Multivariate analysis was chosen because the study objective was to examine effects of service readiness as well as service quality on client satisfaction and to explore other potential determinants. Moreover, before running the model, multicollinearity between the independent variables was also

examined and the correlated variables were dropped from the multivariate analysis. The results are shown in adjusted OR with 95% confidence interval (CI).

4 RESULTS

The analysis presented in this section is on service readiness and quality of maternal health services leading to client satisfaction from the ANC and PPC services they received at the health facility. The section first presents the background characteristics of health facilities and of ANC and PPC clients, then analysis of findings on ANC services, followed by findings on PPC services.

4.1 Characteristics of Health Facilities and Clients

Overall, almost all (98%) facilities included in the analysis provided ANC care, with high coverage in all ecological zones and all provinces. By facility type, the percentage of hospitals in the private sector providing ANC services was slightly lower compared with other health facilities, at 90%. PPC care—including services to all clients who visited a facility for antepartum, intrapartum, and postpartum care—were provided by about half (49%) of the surveyed facilities. All district hospitals and 96% of PHCCs in the public sector provided PPC services, but the percentages of other categories of public health facilities providing PPC services were lower, especially UHCs, at just 2.6%. About two-thirds (64%) of private hospitals provided PPC services. By ecological zone, 57% of facilities in Mountain and Hill zones and 33% of facilities in Terai zone provided PPC services. By province, the highest percentage of facilities providing PPC services was in Province 6, at 83%, and the lowest was in Province 2 (23%) (Table 1).

Table 1 Distribution of facilities offering antenatal care and postpartum care services according to background characteristics

	ANC			PPC		
Description	**Percent**	**CI**	**N**	**Percent**	**CI**	**N**
Facility types						
Zonal and above hospital	93.2	[76.5,98.3]	6	75.4	[49.8,90.4]	6
District hospital	98.7	[91.1,99.8]	16	100.0	-	16
Private hospital	90.0	[83.0,94.3]	70	64.2	[53.5,73.7]	70
PHCC	100.0		42	96.1	[92.5,98.0]	42
HPs	98.8	[96.2,99.6]	775	45.3	[40.5,50.1]	775
UHC	96.8	[79.8,99.6]	32	2.6	[0.5,11.9]	32
Ecological zone						
Mountain	100.0	-	118	57.2	[47.1,66.7]	118
Hill	99.4	[98.7,99.8]	482	57.3	[50.8,63.6]	482
Terai	95.5	[90.7,97.8]	340	33.4	[27.9,39.3]	340
Provinces						
Province 1	99.3	[95.2,99.9]	164	47.4	[37.3,57.6]	164
Province 2	94.3	[83.8,98.1]	171	23.1	[16.2,31.8]	171
Province 3	98.8	[96.9,99.5]	186	44.4	[35.2,54.0]	186
Province 4	99.1	[94.0,99.9]	119	55.3	[40.3,69.3]	119
Province 5	97.7	[95.5,98.8]	138	45.7	[35.8,56.1]	138
Province 6	99.4	[97.9,99.9]	74	83.3	[69.8,91.5]	74
Province 7	99.5	[98.3,99.9]	89	75.4	[63.0,84.7]	89
Total	98.1	[96.4,99.0]	940	48.6	[44.6,52.7]	940

Table 2 presents background characteristics of the health facilities offering ANC and PPC services. For ANC services, the large majority of surveyed health facilities (87%) were in the public sector. Nearly two-thirds of the facilities were in Terai zone. Eighty-two percent of the facilities offering ANC services were in areas not affected by the 2015 earthquake. By province, the highest percentages of surveyed offering ANC services were in Province 2, at 29%, and Province 3, at 22%. Regarding PPC, more than two-thirds of health facilities providing PPC services (69%) were in the public sector, and 59% were located in Hill zone. Province 3 had the highest percentage of facilities providing PPC, at 36% (Table 2).

Table 2 Background characteristics of health facilities among those offering antenatal care and postpartum care services

	ANC			PPC		
Characteristics	**%**	**CI**	**N**	**%**	**CI**	**N**
Managing authority						
Public	86.9	[83.6,89.6]	441	68.7	[59.7,76.5]	212
Private	13.1	[10.4,16.4]	66	31.3	[23.5,40.3]	97
Ecological zone						
Mountain	3.0	[2.2,4.0]	15	3.7	[2.6,5.3]	11
Hill	33.2	[29.3,37.4]	168	58.8	[51.9,65.4]	182
Terai	63.8	[59.5,67.9]	324	37.5	[31.2,44.2]	116
Earthquake affected districts						
Not affected	81.8	[78.2,84.9]	415	65.0	[55.8,73.2]	201
Affected	18.2	[15.1,21.8]	92	35.0	[26.8,44.2]	108
Provinces						
Province 1	15.5	[11.5,20.7]	79	7.9	[4.9,12.3]	24
Province 2	28.5	[21.8,36.2]	145	14.8	[10.0,21.3]	46
Province 3	21.7	[17.6,26.5]	110	35.7	[27.1,45.4]	110
Province 4	4.9	[3.3,7.3]	25	12.4	[8.0,18.9]	38
Province 5	18.2	[14.5,22.6]	92	15.6	[10.4,22.9]	48
Province 6	4.1	[2.7,6.1]	21	6.2	[3.1,12.0]	19
Province 7	7.0	[5.5,8.9]	36	7.3	[4.5,11.7]	23

Table 3 presents background characteristics of clients who received ANC or PPC services. For ANC, nearly half of clients (45%) were age 20-24. Only 30% had completed 10 (SLC) or more years of schooling, while another 30% had never been to school. By ethnicity, the highest percentage of ANC clients (32%) belonged to Terai/Madhesi/other caste groups. More than half (55%) of clients had experienced more than one pregnancy. Regarding PPC, nearly half of clients (46%) were age 25 or older. Nearly half (48%) had completed 10 (SLC) or more years of schooling, while 15% had never been to school. By ethnicity, the highest percentage of PPC clients (40%) belonged to Brahmin/Chhetri caste group.

Table 3 Background characteristics of antenatal care and postpartum care clients

	ANC			PPC		
Description	**Percent**	**CI**	**Number**	**Percent**	**CI**	**Number**
Age group						
15-19	21.9	[16.5,28.5]	111	11.6	[8.3,16.1]	36
20-24	45.4	[38.8,52.2]	230	42.2	[34.2,50.5]	130
25 or older	32.7	[26.5,39.6]	166	46.2	[37.5,55.1]	143
Education						
Never been to school	29.9	[24.0,36.6]	152	15.4	[11.0,21.1]	47
Less than 10 years of schooling	40.3	[34.8,46.0]	204	36.6	[30.6,43.1]	113
SLC and above	29.8	[24.5,35.6]	151	48.0	[40.6,55.5]	148
Caste group						
Brahmin/Chhetri	20.1	[16.2,24.6]	102	39.6	[33.4,46.1]	122
Janajati	27.3	[22.7,32.4]	138	30.3	[23.7,37.8]	94
Terai/Madhesi other caste	31.8	[25.1,39.5]	162	16.7	[11.8,22.9]	51
Dalit	12.6	[8.8,17.7]	64	8.0	[5.2,12.0]	25
Muslim/others	8.2	[5.1,13.0]	42	5.5	[3.2,9.2]	17
Pregnancy history						
First pregnancy	45.2	[39.0,51.6]	229			
Not first pregnancy	54.8	[48.4,61.0]	278			

4.2 Antenatal Care Services

4.2.1 Health facility readiness and quality of antenatal care services

Table 4 presents the characteristics of ANC service providers. The great majority of ANC providers were female (91%). Nearly 80% of providers were in the nurse/health assistant category. Half of providers were personally supervised by the supervisor in the last 3 months.

Table 4 Distribution of antenatal care clients according to provider's sex, category, and status of supervision of the provider by the supervisor

Description	Percent	CI	Number
Sex of service provider			
Male	9.4	[6.0,14.4]	48
Female	90.6	[85.6,94.0]	459
Provider category			
Gynecologist/obstetrician	16.3	[11.8,22.2]	83
MDGP/medical officer (MBBS, BDS)	4.5	[2.1,9.2]	23
Nurse/health assistant	79.2	[73.3,84.0]	401
Personally supervised by the supervisor in the last 3 months			
Yes	49.9	[41.3,58.5]	253
No	50.1	[41.5,58.7]	254

Overall, more than half of ANC clients (57%) reported having a problem at the health facility on the day of their visit. Figure 1 presents the distribution of ANC clients according to the type of problems encountered. The problem that clients reported most frequently was waiting time for seeing a provider, with 34% of clients saying it was either a major or minor problem. About 20% of clients reported encountering a problem in *discussing concerns/problems* about the pregnancy with the provider, and 20% cited *inadequate explanation given* by the service provider on the problems or concerns they had in pregnancy.

Figure 1 Distribution of antenatal care clients according to problem encountered on the day of visit at the health facility

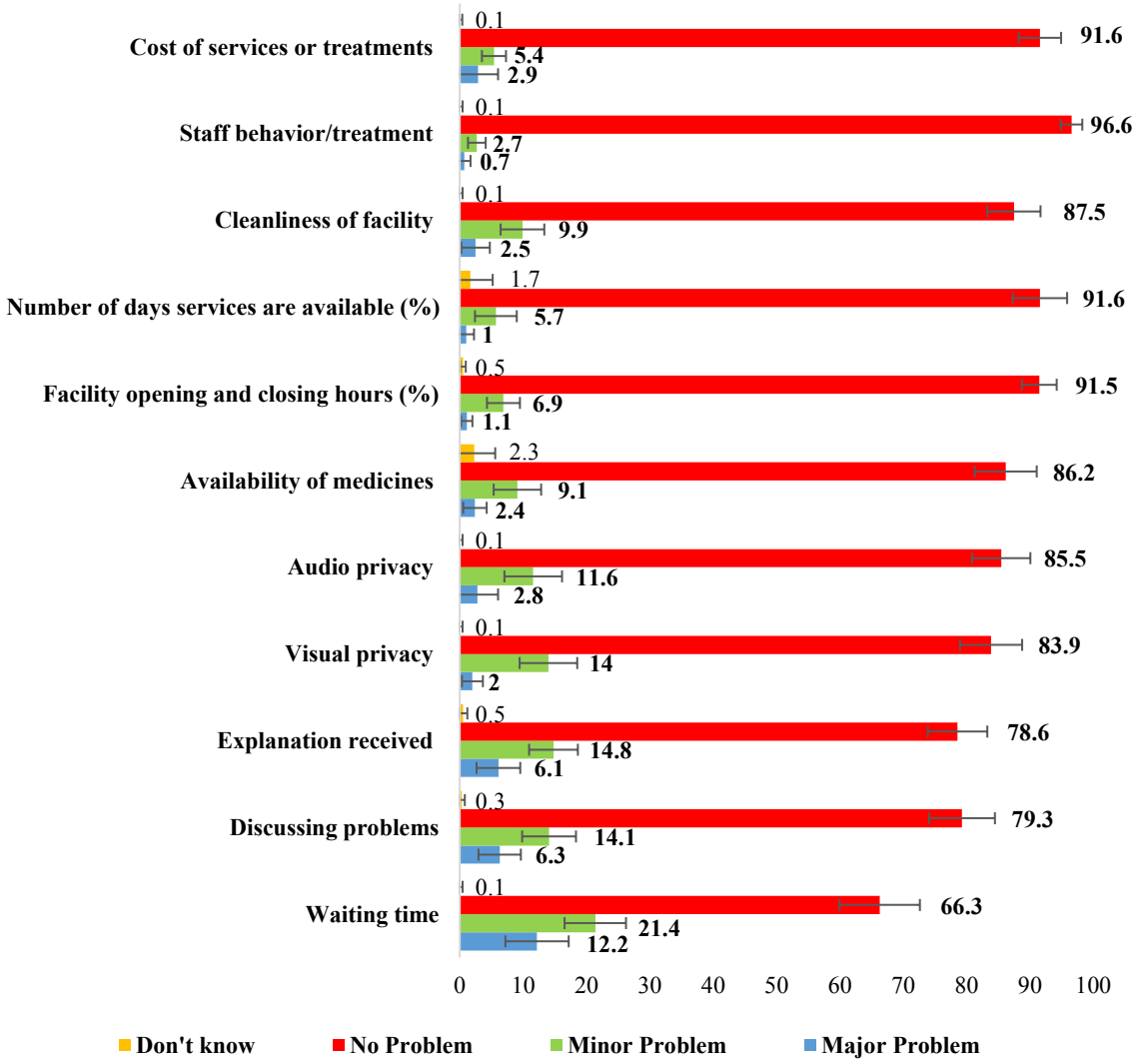


Figure 2 presents information on availability of tracer items among facilities that ANC clients visited. A low percentage of facilities (23%) had the national ANC guideline available. Visual job-aids for client education, however, were available in over three-fourths of facilities (79%), while 95% had the necessary equipment available. The diagnostic items (any of the items of hemoglobin testing in working condition and urine dip stick for protein) were available in slightly more than half of the health facilities. Iron and folic acid tablets were available in 68% of facilities, while tetanus toxoid injection was available in 36% of facilities.

Figure 2 Distribution of antenatal care clients according to availability of tracer items at the health facilities

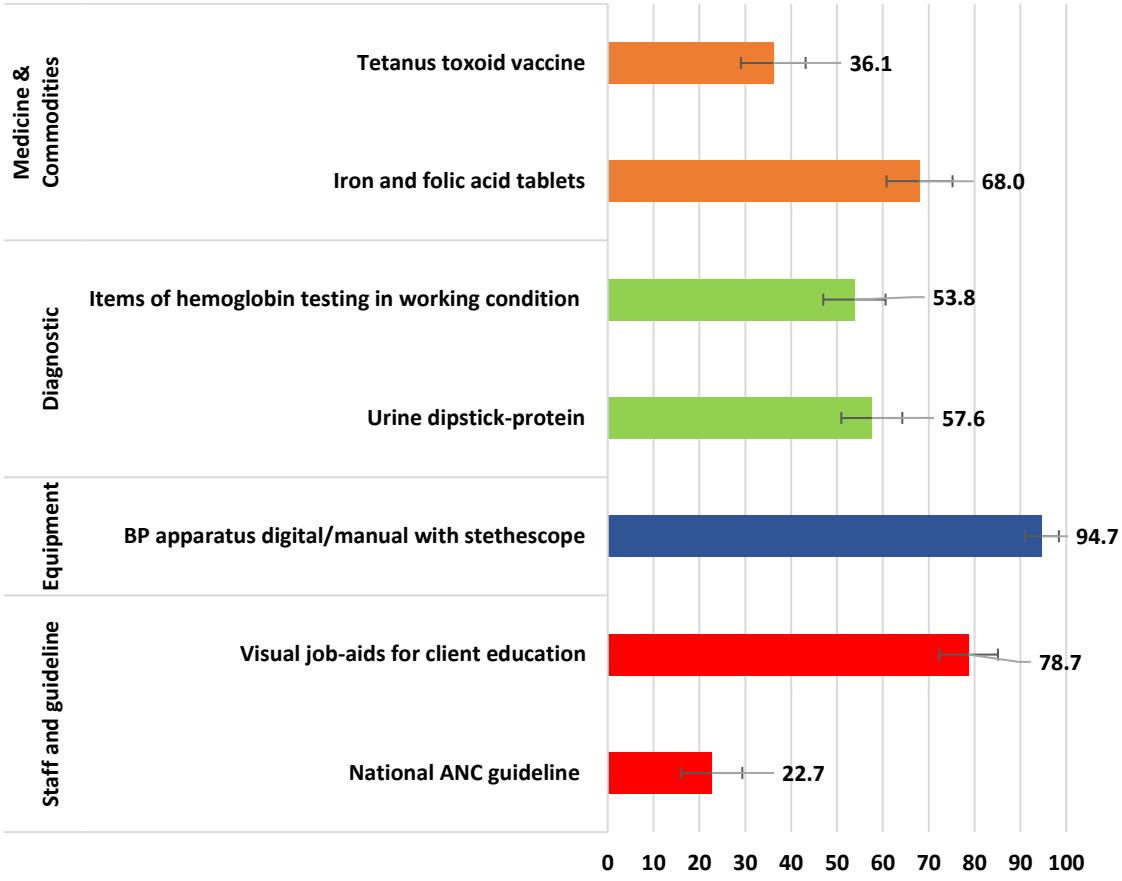


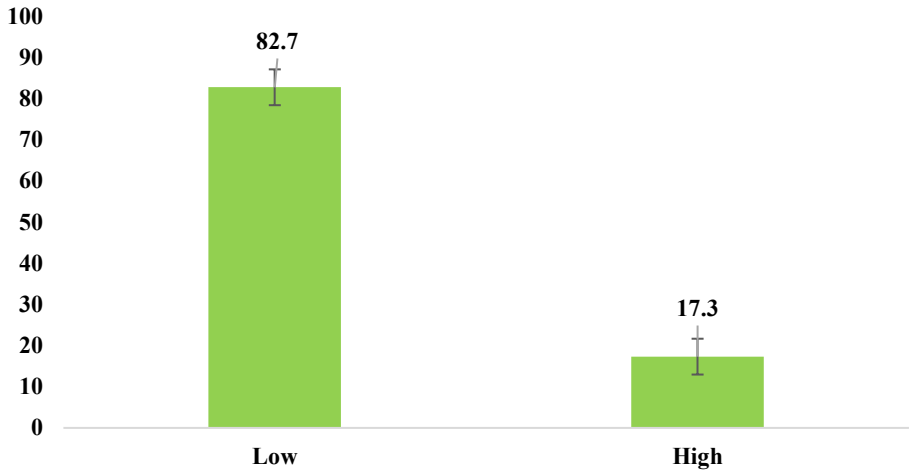
Table 5 presents information on selected aspects of services received by ANC clients. Almost all clients (97%) received service from a skilled birth attendant (SBA). A high percentage of clients (95%) also recommended the facility to other people. However, the percentage of clients who reported receiving counseling on at least three danger signs of pregnancy complications was comparatively low, at 26%. Two-thirds of ANC clients reported having no problem regarding waiting time to get services.

Table 5 Distribution of antenatal care clients by service delivery status

Description	Percent	CI	Number
Clients who received ANC services from an SBA	97.2	[94.2,98.7]	493
Clients who reported being counseled on at least three danger signs	25.5	[21.0,30.6]	129
Clients who recommended facility to others	95.0	[90.2,97.5]	482
Clients who reported no problems regarding waiting time	66.4	[59.8,72.5]	337

Figure 3 shows that the overall index of ANC service quality was high for just 17% of the facilities, while it was low for 83% of the facilities. As described in the methods section, the ANC quality service quality index was generated from identifying whether the client received ANC services; received ANC services from an SBA; was counseled on at least three danger signs of pregnancy complications; recommended facility to others; and whether the client reported no problems regarding waiting time.

Figure 3 Quality of antenatal care services



As Table 6 shows, the proportion of facilities with high ANC service readiness was greater in Mountain zone (53%) compared with Hill and Terai zones (40% and 29% respectively). Among different categories of facilities, service readiness was highest in public hospitals (63%) and PHCCs (61%). By provinces, service readiness was highest in Province 4 (63%) and Province 5 (57%). The differences by type of health facility and province were found to be significant factors for service readiness, while the differences by ecological zone were not significant.

Table 6 Distribution of antenatal care clients according to service readiness by health facility characteristics

	Low		Medium		High			
Description	**%**	**CI**	**%**	**CI**	**%**	**CI**	**N**	**P-value**
Ecological zone								0.054
Mountain	39.3	[19.0,64.1]	7.8	[1.0,42.3]	52.9	[36.2,69.0]	15	
Hill	24.6	[17.2,33.9]	35.7	[24.2,49.0]	39.7	[29.3,51.2]	168	
Terai	41.9	[31.6,52.9]	28.7	[19.7,39.8]	29.4	[21.8,38.2]	324	
Types of health facilities								0.001
Public hospital	8.2	[2.9,21.1]	30.3	[17.6,46.9]	61.5	[45.8,75.1]	146	
Private hospital	38.7	[19.2,62.5]	36.5	[17.2,61.4]	24.9	[11.2,46.6]	66	
PHCC	24.0	[15.0,36.0]	22.3	[14.0,33.8]	53.7	[41.2,65.8]	82	
HP/UHC	59.1	[45.3,71.7]	31.7	[20.4,45.7]	9.1	[3.9,19.8]	212	
Provinces								0.002
Province 1	36.0	[18.4,58.4]	27.7	[11.7,52.7]	36.3	[20.5,55.6]	79	
Province 2	61.1	[42.8,76.7]	24.6	[12.3,43.2]	14.3	[7.4,26.0]	145	
Province 3	27.9	[17.2,41.8]	36.5	[20.9,55.5]	35.6	[21.1,53.4]	110	
Province 4	11.6	[2.8,37.1]	30.9	[10.2,63.9]	57.5	[34.4,77.7]	25	
Province 5	15.3	[8.2,26.8]	29.8	[17.6,45.7]	54.9	[39.7,69.2]	92	
Province 6	40.2	[17.1,68.7]	34.4	[13.3,64.3]	25.4	[11.6,46.9]	21	
Province 7	28.9	[14.1,50.3]	40.1	[23.4,59.3]	31.0	[17.8,48.3]	36	
Total	36.1	[28.8,44.1]	30.4	[23.3,38.7]	33.5	[27.3,40.4]	507	

Regarding quality of ANC services, the highest level of quality index was observed in Hill zone (23%). Among the categories of facilities, the highest service quality was for HP/UHCs (23%). By province, the highest levels were for Province 6 (44%) and Province 4 (39%) (Table 7).

Table 7 Distribution of antenatal care clients according to service quality by health facility characteristics

	Service quality					
	Low		High			
Description	%	CI	%	CI	N	P-value
Ecological zone						0.083
Mountain	87.4	[67.3,95.9]	12.6	[4.1,32.7]	15	
Hill	76.7	[67.7,83.8]	23.3	[16.2,32.3]	168	
Terai	85.6	[79.3,90.2]	14.4	[9.8,20.7]	324	
Types of health facility						0.084
Public hospital	86.8	[80.5,91.3]	13.2	[8.7,19.5]	146	
Private hospital	83.9	[73.2,90.8]	16.1	[9.2,26.8]	66	
PHCC	87.9	[80.9,92.5]	12.1	[7.5,19.1]	82	
HP/UHC	77.4	[67.6,84.9]	22.6	[15.1,32.4]	212	
Provinces						0.037
Province 1	85.6	[74.8,92.3]	14.4	[7.7,25.2]	79	
Province 2	88.2	[77.8,94.1]	11.8	[5.9,22.2]	145	
Province 3	80.6	[67.0,89.5]	19.4	[10.5,33.0]	110	
Province 4	61.1	[31.4,84.3]	38.9	[15.7,68.6]	25	
Province 5	83.2	[70.4,91.2]	16.8	[8.8,29.6]	92	
Province 6	55.7	[29.7,78.9]	44.3	[21.1,70.3]	21	
Province 7	89.5	[78.3,95.2]	10.5	[4.8,21.7]	36	
Total	82.7	[77.9,86.6]	17.3	[13.4,22.1]	507	

4.2.2 Satisfaction with antenatal care services

Examining client satisfaction, only the *very satisfied* group was taken as an indicator of client satisfaction with the ANC services, while all other client responses were treated as unsatisfied. By this definition, the analysis shows that just over a third of clients (38%) were satisfied with the ANC services provided (Figure 4).

Figure 4 Distribution of antenatal care clients by level of satisfaction with services provided

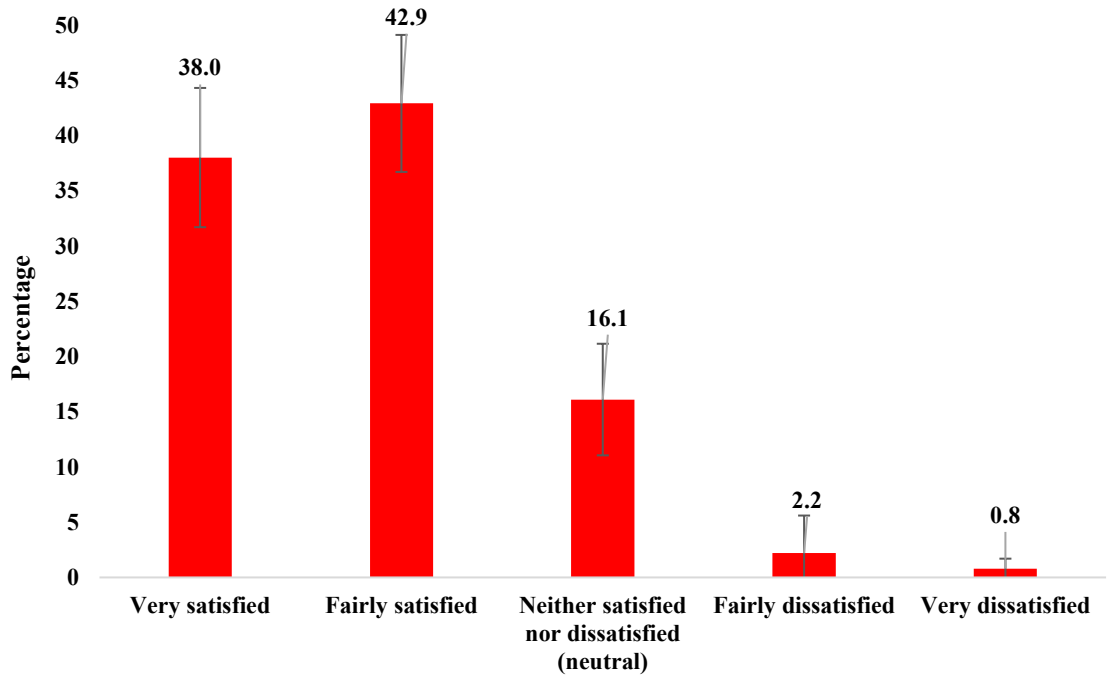


Table 8 presents information on satisfaction of clients with ANC services according to general service readiness and service quality. Overall, the indices of both service readiness and service quality do not show a significant association with client satisfaction for ANC.

Table 8 Distribution of clients who are very satisfied with antenatal care services according to general service readiness and service quality of the health facility

Description	%	CI	N	P-value
Service readiness				0.106
Low	37.7	[27.0,49.8]	183	
Medium	28.4	[17.5,42.8]	154	
High	46.9	[37.9,56.1]	170	
Service quality				0.369
Low	36.5	[29.6,44.1]	419	
High	44.8	[30.0,60.6]	88	
Total	38.0	[31.9,44.5]	507	

In Table 9 we see that a few facility management factors appeared to be associated with client satisfaction for ANC. The analysis found that such aspects as non-payment of service fees and regularity of conducting facility management committee meetings were significantly associated with client satisfaction with ANC services. Sex of service provider also was found significantly associated with client satisfaction. However, the other aspects of service management, including waiting time at the facility, water supply, protected client waiting area, 24-hour staff availability, staff category, and system of collecting opinion, were not significant factors for client satisfaction with ANC services.

Table 9 Percentage distribution of antenatal care clients who are very satisfied with antenatal care services by management-related factors

Description	Percent	CI	Number	P-value
Need to pay for services				0.012
Yes	28.1	[21.0,36.4]	163	
No	42.7	[34.7,51.1]	344	
Waiting time for service				0.735
Immediately	40.5	[29.0,53.1]	150	
Up to 30 minutes	38.6	[29.6,48.5]	237	
More than 30 minutes	33.6	[22.5,46.9]	120	
Water supply				0.174
Yes	34.9	[28.0,42.4]	341	
No	44.3	[33.0,56.3]	166	
Protected client waiting area available				0.606
Yes	38.3	[32.0,45.1]	478	
No	32.4	[15.6,55.5]	29	
24-hour staff availability				0.362
Yes	35.2	[27.8,43.4]	272	
No	41.2	[31.5,51.6]	235	
Facility received external supervision in the last quarter				0.756
Yes	37.2	[30.5,44.4]	340	
No	39.6	[27.3,53.3]	167	
Facility management committee meeting				0.034
Never/no	39.2	[25.1,55.4]	59	
Sometimes	21.7	[12.5,35.1]	85	
Regularly/monthly	41.6	[33.9,49.7]	363	
System for collecting opinion				0.917
Yes	38.2	[30.6,46.6]	308	
No	37.6	[28.1,48.0]	199	
Quality assurance activities officially recorded in past year				0.782
Yes	36.9	[27.2,47.8]	225	
No	38.8	[31.0,47.2]	282	
Sex of service provider				0.049
Male	23.1	[12.7,38.2]	48	
Female	39.5	[32.9,46.6]	459	

(Continued…)

Table 9—*Continued*				
Description	**Percent**	**CI**	**Number**	**P-value**
Provider category				0.138
Gynecologist/obstetrician	39.5	[23.8,57.8]	83	
MDGP/medical officer(MBBS,BDS)	11.7	[4.3,28.0]	23	
Nurse/health assistant	39.2	[32.5,46.3]	401	
Personally supervised by the supervisor in the last three months				0.452
Yes	35.5	[27.4,44.6]	253	
No	40.4	[31.5,50.1]	254	

As Table 10 shows, there is little variation by client's age, client's education, and client's pregnancy history in satisfaction with ANC, all with non-significant associations. There appeared to be a small variation by caste/ethnicity, with a higher percentage of satisfied ANC clients from Dalit (43%) and Terai/Madhesi other caste (44%) than the other caste/ethnic groups compared with Muslim (20%), but these differences were not statistically significant.

Table 10 Distribution of antenatal care clients who are very satisfied with antenatal care services by background characteristics

Description	Percent	CI	Number	P-value
Age groups				0.586
15-19	40.9	[29.5,53.5]	111	
20-24	34.7	[26.0,44.4]	230	
25 or older	40.6	[30.8,51.2]	166	
Education				0.852
Never been to school	35.6	[23.0,50.5]	152	
Less than 10 years of schooling	38.0	[29.4,47.4]	204	
SLC and above	40.4	[29.6,52.2]	151	
Caste/ethnic groups				0.235
Brahmin/Chhetri	32.1	[21.1,45.6]	102	
Janajati	37.8	[27.9,48.9]	138	
Terai/Madhesi other caste	44.4	[33.4,56.0]	162	
Dalit	43.1	[26.8,61.0]	64	
Muslim	19.9	[7.6,42.8]	42	
Pregnancy history				0.788
First pregnancy	37.1	[28.7,46.4]	229	
Not first pregnancy	38.7	[30.8,47.2]	278	

Table 11 shows that the percentages of clients who are very satisfied with ANC services were higher among those who attended facilities in the public sector compared with the private sector, and those living in Hill (37%) and Terai (39%) compared with Mountain zone. Little difference was observed by whether or not districts were affected by the 2015 earthquake. Satisfaction with ANC was higher among clients attending PHCCs (45%) of ANC services compared with hospitals, HPs, and UHCs, and it was higher among clients in Province 3 (44%) and Province 5 (45%) compared with other provinces. These differences were not statistically significant.

Table 11 Distribution of antenatal care clients who are very satisfied with antenatal care services by facility characteristics

Description	Percent	CI	Number	P-value
Managing authority				0.224
Private	29.6	[18.3,44.2]	66	
Public	39.2	[32.5,46.4]	441	
Ecological zone				0.770
Mountain	27.1	[9.8,56.0]	15	
Hill	37.6	[26.8,49.8]	168	
Terai	38.7	[31.2,46.7]	324	
Type of health facilities				0.510
Public hospital	35.8	[24.7,48.7]	146	
Private hospital	29.6	[18.3,44.2]	66	
PHCC	44.9	[34.3,55.9]	82	
HP/UHC	39.4	[29.1,50.8]	212	
Earthquake affected districts				0.834
Not affected	37.6	[31.3,44.3]	415	
Affected	39.7	[23.2,59.0]	92	
Provinces				0.411
Province 1	41.7	[29.1,55.4]	79	
Province 2	32.8	[21.2,46.9]	145	
Province 3	44.0	[28.6,60.7]	110	
Province 4	34.0	[20.0,51.5]	25	
Province 5	44.5	[31.4,58.3]	92	
Province 6	27.4	[13.5,47.5]	21	
Province 7	24.4	[15.1,36.9]	36	
Total	**38.0**	**[31.9,44.5]**	**507**	

The association between service readiness, service quality, service management, and other related factors and client satisfaction with ANC services was also assessed using logistic regression analysis. As Table 12 shows, the odds of client satisfaction with ANC services were 1.9 times higher (OR: 1.9, CI: 1.0 - 3.6) among ANC clients receiving ANC from facilities with a high level of service readiness compared with facilities with a low level of readiness. However, service quality for ANC was not significantly associated with client satisfaction. ANC clients who did not need to pay for service had 2.5 times higher odds of being very satisfied with ANC services compared with clients who had to pay. Similarly, clients from Terai/Madheshi/other castes had 3.3 times higher odds of being very satisfied than clients from Brahman/Chhettricaste.

Table 12 Results from logistic regression with odds ratio (95% confidence intervals) of selected contributing factors for client satisfaction with antenatal care services

Description	OR	CI
Service readiness		
Low	1.0	
Medium	0.8	0.4 - 1.6
High	1.9*	1.0 - 3.6
Service quality		
Low	1.0	
High	1.4	0.6 - 3.0
Service management-related factors		
Need to pay for services		
Yes	1.0	
No	2.4*	1.2 - 4.8
Waiting time for service		
Immediately	1.0	
Up to 30 minutes	0.9	0.5 - 1.6
More than 30 minutes	1.0	0.5 - 2.4
Water supply		
No	1.0	
Yes	0.6	0.3 - 1.1

(Continued…)

Table 12—*Continued*		
Description	**OR**	**CI**
Protected client waiting area available		
No	1.0	
Yes	1.7	0.5 - 5.6
Facility received external supervision in the last quarter		
No	1.0	
Yes	0.9	0.5 - 1.9
Conducted facility management meeting		
Never	1.0	
Sometimes	0.4*	0.2 - 1.0
Regularly/monthly	1.3	0.6 - 2.5
System for collecting opinion		
No	1.0	
Yes	1.2	0.7 - 2.2
Quality assurance activities officially recorded in the past year		
No	1.0	
Yes	1.0	0.5 - 1.8
Service provider's characteristics		
Sex of service provider		
Male	1.0	
Female	1.3	0.6 - 3.1
Personally supervised by the supervisor in the last three months		
No	1.0	
Yes	0.6*	0.4 - 1.0
Women's individual factors		
Women's age		
15-19	1.0	
20-24	0.7	0.4 - 1.2
25 or older	1.0	0.5 - 1.9
Women's education		
Never been to schooling	1.0	
Less than 10 years of schooling	1.1	0.5 - 2.5
SLC and above	2.0	0.9 - 4.5
Caste group		
Brahman/Chhettri	1.0	
Janajati	1.4	0.7 - 2.7
Terai/Madhesi other castes	2.4*	1.2 - 5.1
Dalit	2.0	0.9 - 4.4
Muslim/others	0.6	0.2 - 2.0
Background characteristics of facility		
Managing authority		
Public	1.0	
Private	0.9	0.4 - 2.1
Ecological zone		
Mountain	1.0	
Hill	1.1	0.3 - 4.3
Terai	1.2	0.3 - 4.3

* p<0.05, ** p<0.01, *** p<0.001

4.3 Postpartum Care Services

4.3.1 Service readiness

Figure 5 shows service readiness of health facilities in availability of tracer items such as equipment/job-aids, medicine, medical standard guidelines, and provider training. A high percentage (77%) of facilities had visual job-aids for client education, and slightly more than half (52%) of facilities had equipment for basic obstetric and newborn care. Comparatively low percentages of facilities had other recommended items such as national medical standard guidelines (7%) and medicine and commodities for basic obstetric and newborn care (12%).

Figure 5 Distribution of available tracer items at the health facilities

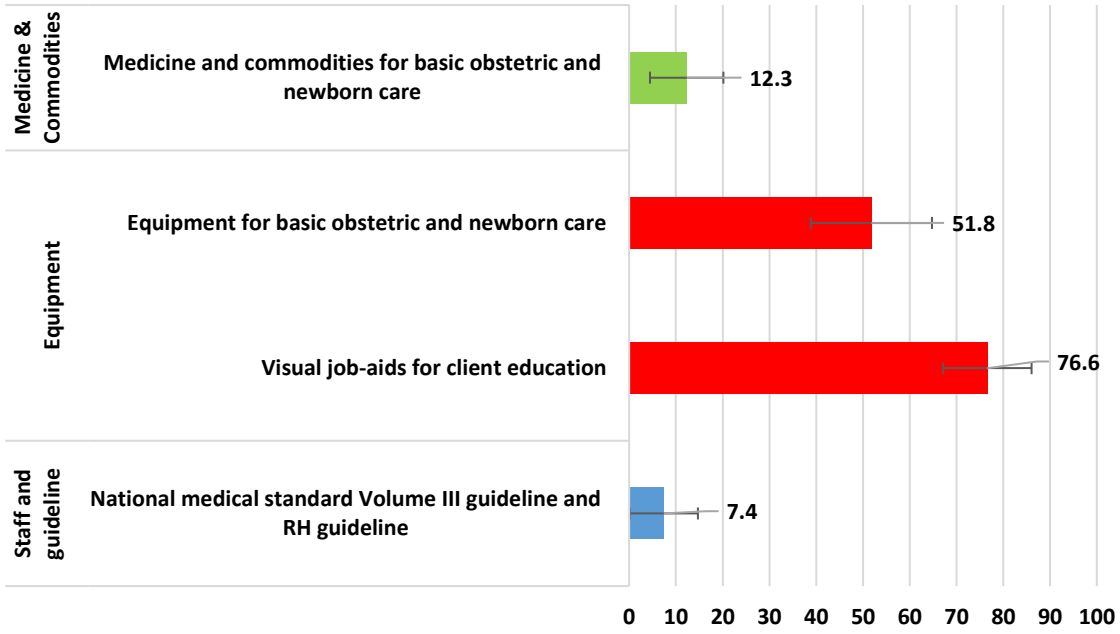


Table 13 shows the distribution of PPC clients by service readiness of health facilities according to managing authority and ecological zone. About three-quarters (76%) of public health facilities had a high level of service readiness compared with only about one-third (34%) of the private health facilities. By ecological zone, nearly three-fourths (72%) of facilities in Terai zone had a high level of service readiness. The associations of managing authority and ecological zone with service readiness for PPC clients were significant. The percentage of facilities with a high level of PPC service readiness is relatively lower in facilities in Hill (58%) and Mountain (44%) zones.

Table 13 Distribution of postpartum care clients by service readiness of health facilities according to managing authority and ecological zone

	Low		Medium		High			
Description	**%**	**CI**	**%**	**CI**	**%**	**CI**	**N**	**P-value**
Managing authority								0.010
Private	25.2	[12.0,45.4]	41.1	[16.9,70.6]	33.7	[15.2,59.0]	97	
Public	8.7	[3.6,19.4]	15.4	[7.9,27.7]	75.9	[62.5,85.6]	208	
Ecological zone								0.028
Mountain	8.9	[1.9,33.5]	46.7	[18.5,77.2]	44.3	[16.4,76.4]	11	
Hill	10.6	[5.0,21.2]	31.5	[15.4,53.7]	57.9	[39.2,74.6]	182	
Terai	19.8	[9.6,36.4]	8.3	[3.2,19.5]	71.9	[55.7,83.9]	112	
Total	13.9	[8.3,22.4]	23.5	[13.0,38.8]	62.5	[49.4,74.0]	305	

The distribution of PPC clients according to service management-related factors is presented in Appendix 2. Slightly more than half (56%) of PPC clients were able to see the service provider immediately on arrival. Twenty-nine percent of clients had to wait for up to 30 minutes, however, while another 14% had to wait for more than half hour. A high percentage of the facilities had a water supply (89%), protected client waiting area (97%), 24-hour staff availability (98%), and a system of collecting client opinions (81%). Nearly two-thirds of facilities had received external supervision in the last quarter (62%), while a facility management committee meeting was held regularly at 68% of facilities, and 58% of facilities had quality assurance activities officially recorded in the past year.

Table 14 presents information on services received by the PPC clients before being discharged from the health facility. For two-thirds of PPC clients, delivery was assisted by a nurse/ANM, and more than half (56%) of the mothers and 60% of the babies had a checkup by a doctor before leaving the facility. About 90% of the PPC service providers were women.

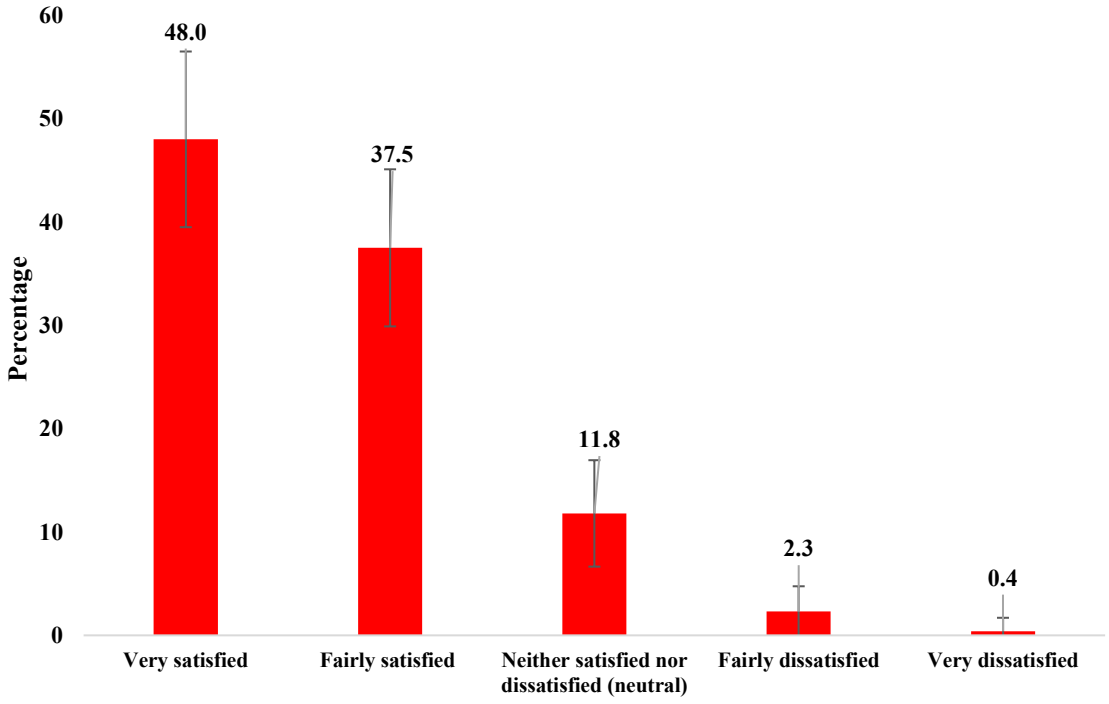
Table 14 Distribution of postpartum care clients by services received before being discharged from the health facility

Description	Percent	CI	Number
Delivery assisted by			
Doctor	34.5	[27.4,42.4]	106
Nurse/ANM	65.5	[57.6,72.6]	201
Checkup of mother before leaving HF by			
Doctor	56.2	[48.0,64.1]	172
Nurse/ANM	43.8	[35.9,52.0]	134
Checkup of baby before leaving HF by			
Doctor	60.6	[51.1,69.3]	175
Nurse/ANM	39.4	[30.7,48.9]	114
Sex of service provider			
Male	8.4	[5.5,12.6]	26
Female	91.6	[87.4,94.5]	283

4.3.2 Service satisfaction

Nearly half (48%) of PPC clients were very satisfied with the services provided at the health facility and more than one-third (38%) were fairly satisfied (Figure 6).

Figure 6 Distribution of postpartum care clients by level of satisfaction with services received at the health facility



As mentioned earlier, the analysis considered only the *very satisfied* group as an indicator of client satisfaction, while *fairly satisfied* and all other responses were considered as unsatisfied. As Appendix

3 shows, 79% of PPC clients expressed satisfaction with information received from the provider, 73% with the provider's level of skill, 74% with the politeness of the facility staff, 75% with cleanliness of the facility, and 73% with the level of privacy (73%) during their PPC checkup or treatment.

Table 15showsthat associations between the background variables of clients and of health facilities were not statistically significant with client satisfaction with PPC services.

Table 15 Distribution of postpartum care clients who are very satisfied with postpartum care services according to background characteristics of the clients

Description	Percent	CI	Number	P-value
Age group				0.303
15-19	39.8	[24.6,57.2]	36	
20-24	52.8	[42.5,62.8]	130	
25 or older	45.6	[34.5,57.1]	143	
Education				0.575
Never been to school	50.7	[35.0,66.1]	47	
Less than 10 years of schooling	43.6	[33.2,54.7]	113	
SLC and above	50.4	[38.6,62.1]	148	
Caste/ethnic group				0.550
Brahmin/Chhetri	41.8	[30.8,53.7]	122	
Janajati	53.4	[41.4,65.0]	94	
Terai/Madhesi/other caste	54.4	[34.6,73.0]	51	
Dalit	45.9	[23.8,69.7]	25	
Muslim/others	45.7	[25.6,67.2]	17	
Managing authority				0.132
Private	58.2	[41.3,73.4]	97	
Public	43.3	[33.8,53.3]	212	
Ecological zone				0.924
Mountain	51.8	[34.0,69.1]	11	
Hill	47.5	[36.2,59.1]	182	
Terai	48.2	[34.8,61.9]	116	
Earthquake affected districts				0.836
Not affected	48.6	[38.1,59.3]	201	
Affected	46.7	[32.9,61.1]	108	
Provinces				0.350
Province 1	42.2	[25.7,60.6]	24	
Province 2	58.8	[33.7,80.0]	46	
Province 3	51.0	[36.1,65.6]	110	
Province 4	28.9	[14.8,48.9]	38	
Province 5	52.5	[30.3,73.7]	48	
Province 6	61.2	[22.2,89.7]	19	
Province 7	29.1	[18.0,43.3]	23	

Table 16 shows the distribution of client satisfaction with PPC services according to the service readiness and management-related factors of the facility. Half of the PPC clients who were able to see the service provider immediately on their arrival were very satisfied with the services received, although waiting time was not significantly associated with client satisfaction. There were no significant associations found for the other variables shown in Table 16. However, less than half of the PPC clients expressed satisfaction with the facility's water supply (46%).

Table 16 Distribution of postpartum care clients by satisfaction with postpartum services according to service readiness status and service management-related factors

Description	Percent	CI	Number	P value
Service readiness				0.551
Low	55.2	[33.4,75.2]	42	
Medium	53.7	[36.7,69.9]	72	
High	44.5	[33.7,55.8]	191	
Service management-related factors				
Waiting time for service				0.669
Immediately	50.1	[40.3,59.9]	174	
Up to 30 minutes	45.2	[32.0,59.2]	90	
More than 30 minutes	45.0	[31.4,59.4]	44	
Water supply				0.238
Yes	46.3	[37.4,55.4]	276	
No	62.2	[36.8,82.3]	33	
Total	48.0	[39.5,56.5]	309	
Need to pay for delivery service in Aama program implemented facility				0.144
Yes	62.2	[40.6,79.9]	40	
No	42.4	[31.8,53.8]	192	
Aama program not implemented	54.4	[40.2,67.9]	78	

The association of service readiness, service management, and other related factors with client satisfaction with postpartum services was also assessed using logistic regression analysis. As Table 17 shows, the odds ratio of client satisfaction with postpartum services was not significantly associated with the facility's service readiness status. Result from the logistic regression analysis showed that the only significant predictor of client satisfaction with PPC services was having a protected client waiting area available. Clients had 3.5 times higher odds (OR: 3.5, CI: 1.3- 9.6) of being very satisfied with postpartum services if the facility had a protected client waiting area available than if no waiting area was available.

Table 17 Results of logistic regression with odds ratio (and 95% confidence intervals) of selected contributing factors for client satisfaction with postpartum care services

Description	OR	CI
Service Readiness		
Low	1.0	
Medium	1.4	0.4 - 4.8
High	0.8	0.3 - 2.6
Service management-related factors		
Waiting time for service		
Immediately	1.0	
Up to 30 minutes	0.6	0.3 - 1.3
More than 30 minutes	0.7	0.4 - 1.5
Water supply		
No	1.0	
Yes	0.7	0.2 - 2.8
Protected client waiting area available		
No	1.0	
Yes	3.5*	1.3 - 9.6
24-hour staff availability		
No		
Yes	0.2	0.0 - 2.0
Facility received external supervision in the last quarter		
No	1.0	
Yes	0.8	0.3 - 1.8
Conducted facility management meeting		
Never	1.0	
Sometimes	0.4	0.2 - 1.3
Regularly/monthly	1.7	0.7 - 4.2
System for collecting opinion		
No	1.0	
Yes	0.5	0.2 - 1.4
Quality assurance activities official recorded in past year		
No	1.0	
Yes	1.5	0.6 - 3.3
Service provider-related factors		
Sex of service provider		
Male	1.0	
Female	2.4	0.8 - 7.2
Checkup of mother before leaving HF by		
Doctor	1.0	
Nurse/ANM	0.9	0.5 - 2.0
Women's individual factors		
Women's age		
15-19	1.0	
20-24	1.5	0.6 - 3.5
25 or older	1.1	0.4 - 2.9
Women's education		
Never been to school	1.0	
Less than 10 years of schooling	0.8	0.3 - 1.8
SLC and above	1.1	0.4 - 3.0
Caste/ethnic groups		
Brahman/Chhettri	1.0	
Janajati	1.8	0.8 - 3.9
Terai/Madhesi/other caste	2.0	0.6 - 6.4
Dalit	1.4	0.4 - 4.5
Muslim/others	1.7	0.5 - 6.6
Background of facility		
Managing authority		
Public	1.0	
Private	0.6	0.2 - 1.5
Ecological zone		
Mountain	1.0	
Hill	0.7	0.2 - 2.1
Terai	0.7	0.2 - 2.8

* p<0.05, ** p<0.01, *** p<0.001

5 DISCUSSION

5.1 Antenatal Care Services

5.1.1 Health facility readiness on antenatal care services

ANC services are widely available in all levels of health facilities in Nepal. However, service quality measured in terms of service availability, service readiness, and the level of client satisfaction has not been well explored. The analysis presented in this report was based on the WHO Service Availability and Readiness Assessment (SARA) indicators. Overall, the results showed a mixed situation in terms of availability and readiness for ANC and PPC services at health facilities. Most facilities had necessary equipment and visual job-aids, but diagnostic items and some medicines were only available in a relatively low percentage of facilities. For example, the national ANC guideline was available in less than one-quarter of facilities. Only about one-third of facilities had a high level of ANC service readiness. This indicates the need for adequate supplies of diagnostic items, medicines, and up-to-date staff guidelines in the health facilities.

In terms of service availability and provision, a high percentage of ANC clients said they had faced problems, particularly long waiting times to see the provider, lack of discussion concerning the client's concerns/problems, and inadequate explanation given on problems or concerns they had about pregnancy. Only about one-quarter of clients received counseling on at least three danger signs of pregnancy complications. Weaknesses in these aspects of service delivery might have contributed to the relatively low percentage of facilities with a high service quality index score. The results also indicate that the availability of service varies across ecological zones and provinces, and among facility management authorities. Type of health facility and province were associated with service readiness. This finding suggests the need for addressing readiness issues in facilities of selected provinces in Nepal.

5.1.2 Client satisfaction with antenatal care services

The bivariate analysis suggested that only about four in every 10 ANC clients were satisfied with the services received at the facility. These findings call for health facilities to improve their readiness for offering ANC services to achieve higher levels of client satisfaction, which in turn could increase the use of ANC services.

Some facility management-related factors also appear to have positive associations with client satisfaction. Specifically, the logistic regression analysis found that service readiness, service quality, service management, and other factors were associated with client satisfaction with ANC services. ANC clients who did not need to pay for service had 2.4 times higher odds of being very satisfied with ANC services compared with clients who paid for services. Similar results were found in a systematic review conducted by Srivastava et al. (2015), which found significant associations between health services cost and maternal satisfaction and the use of care in institutional births in studies conducted in several developing countries including Nigeria, Zambia, Kenya, India, Pakistan, and Gambia. Similarly, a study conducted in Malaysia found that women who did not have to spend any money at the facility were 1.9 times more likely to be highly satisfied with antenatal care. The study concluded that a no-fee charges policy for antenatal care services in Malaysia should be maintained (Rahman, Ngadan, and Arif 2016). In addition, our study found that regularly conducting facility management committee meetings had a significant association with level of client satisfaction with ANC services received. Client satisfaction

in these facilities may be because of the close monitoring of operation/management of the facility by the committee on a regular basis. This finding suggests placing more emphasis on ensuring regularity of conducting management committee meetings.

We also found that clients from Terai/Madheshi other caste group had 3.3 times higher odds of being very satisfied with ANC than clients from Brahman/Chhettri caste group. Clients in Province 2 and in Province 7 were less likely to be satisfied with ANC service than clients in Province 1. Perhaps more effort toward service availability and readiness needs to be concentrated in these provinces to increase levels of satisfaction.

5.2 Postpartum Care Services

5.2.1 Health facility readiness on postpartum care services

Less than half of the surveyed health facilities were providing PPC services. Visual job-aids for client education were commonly available in the facilities but only about half of facilities had equipment for basic obstetric and newborn care. A comparatively low percentage of facilities had other recommended items such as the national medical standard guideline and medicine and commodities for basic obstetric and newborn care. The analysis showed that both managing authority and ecological zones were significant factors for service readiness. This finding calls for improving availability of tracer items (Appendix 1) in selected facilities in specific ecological zones and provinces.

5.2.2 Client satisfaction with postpartum care services

About half of PPC clients were satisfied with the services provided at the health facility. Overall, more than 7 in every 10 clients expressed their satisfaction with the information received from the provider, as well as with the provider's level of skill, politeness of the staff, cleanliness of the facility, and level of privacy. Half of the PPC clients who were able to see the service provider immediately upon their arrival were satisfied with the services received. The proportion of clients who were satisfied with PPC services was higher in facilities with water supply, availability of visual job-aids for client education, equipment for basic obstetric and newborn care, and available medicines and commodities for basic obstetric and newborn care.

The PPC service readiness and availability status of the facility was not significantly associated with the odds of client satisfaction with services provided. Other background variables used in the analysis were also not associated with the odds of client satisfaction with PPC except for availability of a protected waiting area. Result from logistic regression analysis showed that PPC clients had 3.4 higher odds of being very satisfied with postpartum care if the facility had a protected waiting area. This finding is consistent with findings of studies carried out in Ethiopia (Amdemichael, Tafa and Fekadu, 2014) and Bangladesh (Aldana, Piechulek and Al-Sabir 2001) that highlight the importance of providing a waiting area for all clients visiting the facility for PPC services. In addition, clients visiting a facility with availability of a female service provider had 2.4 times higher odds of being satisfied with the PPC services received.

5.3 Conclusion

The fact that only about 4 in every 10 ANC clients were satisfied with the ANC services received at the facility suggests a need for a higher level of facility readiness and service quality to improve client satisfaction. The analysis identified several areas where improvements are needed. To address the issue, health facilities need to have an adequate supply of diagnostic items, medicine and commodities, and

guidelines. Improvement in these areas can help to improve the readiness of health facilities for ANC. To improve the level of ANC client satisfaction, facilities should adopt appropriate mechanisms to improve the service delivery process and to provide an adequate level of counseling to the clients, creating an enabling environment for clients to discuss their problems and concerns and to receive adequate explanations from providers.

Our study found that clients from Terai/Madheshi other caste group were comparatively more satisfied with ANC services. Understanding why this caste group was more satisfied may help in achieving a higher level of satisfaction among other caste groups as well. A higher level of service readiness of facilities is a significant predictor of client satisfaction in ANC. Even after controlling for service quality and background characteristics, service readiness remained the most important predictor for client satisfaction. Therefore, improving the service readiness of a facility may help to improve quality of care, which in turn could contribute in higher level of client satisfaction.

Neither service readiness nor availability of quality service was associated with client satisfaction with PPC services. Having a protected client waiting area was the only variable that significantly predicted client satisfaction. Clients receiving PPC in facilities with a protected waiting area were more likely to be very satisfied with the service. It is therefore suggested that the waiting and examination area should be protected and confidential. Other areas for improvement include water supply, availability of visual job-aids for client education, appropriate equipment, and availability of medicines and commodities for basic obstetric and newborn care.

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APPENDIX

Appendix Table 1 Variables included in service readiness and service quality analysis

Service readiness for ANC	**Variables (tracer items)**
Equipment	• BP apparatus digital/manual with stethoscope
Diagnostic	• Items of hemoglobin testing in working condition • Urine dipstick-protein
Medicines and commodities	• Iron and folic acid tablets • Tetanus toxoid vaccine
Staff and guidelines	• National ANC guideline • Visual job-aids for client education
ANC service quality	
	• Client received ANC services from an SBA • Client reported being counseled on at least three danger signs • Client recommended facility to others • Client reported no problems regarding waiting time
Service readiness for PPC	
Equipment	• Emergency transportation • Sterilization equipment • Examination light • Delivery pack • Suction apparatus • Manual vacuum extractor • Vacuum aspirator or D&C kit • Neonatal bag and mask • Delivery bed • Pantograph • Gloves • Infant weighting scale • Blood pressure apparatus • Soap and running water or alcohol based hand rub • Equipment for basic obstetric and newborn care
Diagnostic	
Medicines and commodities	• Tetracycline eye ointment for newborn • Injectable antibiotic • Injectable uterotonic • Magnesium sulphate • iv solution (ringer lactate) with infusion set • Skin disinfectant
Staff and guidelines	• National medical guideline volume III • RH guideline
Management-related variables (independent/control variables)	
• Need to pay for services • Water supply • Availability of protected client waiting area • 24-hour staff availability • External supervision in the health facility • Regularity of facility management meeting • Officially recorded quality assurance activities • System for collecting opinion from clients • Waiting time for service (examined independently)	

Appendix Table 2 Distribution of postpartum care clients according to service management related factors

Description	Percent	CI	Number
Waiting time for service			
Immediately	56.4	[47.0,65.4]	174
Up to 30 minutes	29.2	[21.9,37.8]	90
More than 30 minutes	14.3	[10.4,19.5]	44
Water supply			
Yes	89.3	[80.9,94.3]	276
No	10.7	[5.7,19.1]	33
Protected client waiting area available			
Yes	97.4	[89.9,99.3]	301
No	2.6	[0.7,10.1]	8
24 hour staff availability			
Yes	98.1	[94.7,99.3]	303
No	1.9	[0.7,5.3]	6
Facility received external supervision in the last quarter			
Yes	61.5	[47.6,73.7]	190
No	38.5	[26.3,52.4]	119
Facility management committee meeting			
Never/no	15.2	[8.0,27.0]	47
Sometimes	16.3	[7.3,32.7]	50
Regularly/monthly	68.4	[54.5,79.7]	211
System for collecting opinion			
Yes	80.6	[69.1,88.6]	249
No	19.4	[11.4,30.9]	60
Quality assurance activities officially recorded in past year			
Yes	58.2	[45.0,70.3]	180
No	41.8	[29.7,55.0]	129
Need to pay for delivery service in Aama program implemented facility			
Yes	62.1	[50.6,72.3]	192
No	12.8	[7.8,20.4]	40
Aamaprogram not implemented	25.1	[15.2,38.5]	78
Received incentives for delivery services from Aama implemented facility			
Yes	55.0	[44.2,65.4]	170
No	19.9	[13.0,29.1]	61
Aama program not implemented	25.1	[15.2,38.5]	78

Appendix Table 3 Distribution of postpartum care clients by level of satisfaction with selected aspects of services provided at the health facility

Level of satisfaction	Information received from the provider		Level of skill the provider had		Politeness of the staff		Cleanliness of the facility		Level of privacy	
	%	CI	%	CI	%	CI	%	CI	%	CI
Very satisfied	78.6	[67.3,86.8]	72.6	[61.6,81.4]	74.0	[63.4,82.4]	75.0	[63.8,83.7]	72.6	[59.2,82.9]
Fairly satisfied	29.4	[20.2,40.5]	24.3	[13.9,39.0]	25.8	[15.1,40.4]	42.9	[29.7,57.2]	37.2	[27.1,48.6]
Neither satisfied nor dissatisfied	23.8	[11.2,43.6]	20.0	[6.1,49.0]	18.1	[6.8,39.9]	26.4	[13.5,45.2]	14.4	[6.2,29.9]
Fairly dissatisfied	8.9	[1.1,46.8]	0.0		0.0		11.8	[3.7,31.8]	0.0	
Very dissatisfied	0.0		0.0		9.7	[1.1,51.3]	25.1	[4.4,71.0]	14.3	[1.7,61.3]