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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, e-mail: info@newera.com.np, internet: http://www.newera.com.np/.

The DHS Program assists countries worldwide in the collection and use of data to monitor and evaluate population, health, and nutrition programs. Additional information about The DHS Program can be obtained from ICF, 530 Gaither Road, Suite 500, Rockville, MD 20850 USA; telephone: +1 301-572-0200, fax: +1 301-572-0999, email: info@DHSprogram.com, internet: www.DHSprogram.com.

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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 descriptive presentations of findings, without analytical and statistical methods to ascertain the significance of change, readiness index, and some causative association between variables. Although largely sufficient, the standard report is limited, particularly in providing answers to causation, which are essential in reshaping important policies and programs. After the dissemination of the 2015 NHFS, the Ministry of Health and Population (MoHP) and partners convened and agreed on key areas that are very important for assessing progress and gaps, and ascertaining determinants in MoHP high priority public health programs. In this context, further analyses have been conducted by technical professionals from the MoHP and the partners who are directly working on the focus 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 from the 2015 NHFS. This provides guidance in planning, implementing, refocusing, monitoring, and evaluating health programs in Nepal. The long-term objective of the further analysis is to strengthen the technical capacity of local institutions and individuals to analyze and utilize data from complex national population and health surveys in order to understand specific issues related to country need and situations. The further analysis includes topics on client satisfaction and quality of curative services for sick child, family planning, maternal health and health services availability and readiness in seven provinces of Nepal.

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

I would like to thank the Public Health Administration Monitoring and Evaluation Division (PHAMED) of MoHP for its effort and dedication to the completion of this further analysis of the 2015 NHFS. I 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. My sincere thanks to the New ERA team for the overall management and coordination of the entire process.

Dr. Pushpa Chaudhary
Secretary
Ministry of Health and Population

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The further analysis of the 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 ICF provided technical assistance. Overall coordination, facilitation, administration, and logistic support was provided by New ERA, a local research firm with extensive experience in conducting similar studies.

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 many different stakeholders for their valuable input 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 MoH for their valuable input. I appreciate the leadership of Giri Raj Subedi, senior public health administrator, and the entire team of PHAMED for their contributions during the different phases of the study.

My special gratitude goes to authors Dr. Prakash Dev Pant and Jhabindra Prasad Pandey for their hard work in completing this report. I would also like to express my deep appreciation to the peer reviewers Dilli Raman Adhikari, Family Health Division, Nepal, and Dr. Neeta Shrestha, United Nations Population Fund, Nepal, for their time and efforts.

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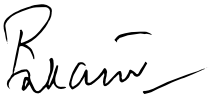

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ABSTRACT

The quality of family planning (FP) services at the health facility and client satisfaction among those served on the day of the survey in Nepal were examined using the Nepal Health Facility Survey 2015 data. The analysis was guided by the structure (staff, guidelines, equipment, medicine, and commodities), process (provider's adherence to the provision of quality FP service) and outcome (client's overall satisfaction with services) framework suggested by Donabedian (1988).

The results showed that about 98% of the health facilities in Nepal are providing at least one FP method in most health facilities for six or more days per week.

The service readiness status of the health facility did not appear to be a significant influencer in determining the quality of FP services or FP client satisfaction. The provider's adherence to the provision of quality FP services did not show differences by most characteristics of clients, providers, and facilities in this study. Clients who were counseled on a FP method, when compared with those not counseled, were more likely to receive quality FP service. Similarly, services received from a provider with the opportunity of promotion were more likely to receive quality FP services. Clients who lived in the hills ecological region were less likely to be satisfied than those living in mountainous regions.

Although 88.5% of clients were satisfied with the FP service they received in the health facility, higher client satisfaction was observed among those who received services from a provider with their job description; those receiving FP services at primary health care centers (PHCCs), health posts (HPs), and urban health centers (UHCs); and those receiving services from a facility with electricity. Clients living in the hills, when compared with mountains, and those living in Province 2 compared with Province 1, were less likely to be satisfied.

This indicates that improving the skills of providers, ensuring job descriptions for all providers, improving the FP service delivery system in the facility, and having electricity in the facility all lead to improved client satisfaction.

Because improved service readiness did not appear as an influencing factor in process as well as outcome measures, there is a clear need to improve the lacking or poor components of FP service readiness at all facility levels.

KEYWORDS: Adherence to provision of quality FP service, client satisfaction, family planning health facilities, infection control, NHFS, quality of care, SARA

EXECUTIVE SUMMARY

Introduction

In 2016, the modem contraceptive prevalence was estimated at 43%, with sterilization the most popular method of family planning (FP) in Nepal. The unmet need for FP between 2011 and 2016 has declined from 27% to 24%. At the same time, the share of public health services as a source of FP has declined from 79% in 1996 to 70% in 2016. However, public health services remain the major source of FP service in the country.

This study utilized NHFS 2015 data to identify the gaps and barriers that must be overcome to achieve quality FP services delivery at health facilities in Nepal.

Methods

This study used bivariate cross-tabulation and multivariate logistic regression of process indicators denoted by "adherence to provision of quality family planning services" and "reported family planning client satisfaction" with selected characteristics of the clients, providers, and health facilities. The analysis used the structure-process-outcome concept suggested by Donabedian (Donabedian 1988).

The service readiness, infection control, and service offered were measured by constructing index variables using the Service Availability and Readiness Assessment (SARA) indicator (WHO 2015) as a guide (See Annex A). Similarly, the quality of FP service delivery measured by adherence to provision of the FP care index variable was constructed from information in the NHFS 2015 data.

For the analysis, the adherence to provision of quality FP services at facility index was dichotomized into good and poor categories, with the median as the cutoff point (Annex A).

Information on client satisfaction with FP services at facility, recorded on a five-point scale, was dichotomized by grouping highly satisfied and satisfied responses to "service satisfaction category" and the remaining responses to "not satisfied category." This variable measures the outcome in the study.

Results

The NHFS 2015 shows that 98% of the health facilities in Nepal provide at least one FP method. The services in most health facilities were available six or more days per week.

Service readiness structure: The service readiness status of the health facility and infection control index did not show significant influence either in determining the quality of the FP service or the client satisfaction with FP.

Further analysis of the components of the service readiness index revealed that guidelines on FP were available in 46% of the facilities. Staff trained in FP were available in 39%, and an FP or counseling kit and other FP visual aids were available in 68% of the facilities at the time of the survey.

The analysis of each component of this index shows that only 3.5% of the facilities had a needle destroyer, 5.9 % had a waste receptacle, and 2.8% had injection safety precaution guidelines.

Process: Data on the provider's adherence to provision of quality FP service did not show differences by most characteristics of clients, providers, and facility. The analysis shows that clients who were counseled on a method, as compared to those not counseled, were significantly more likely to receive quality FP services. Similarly, clients who received services from a provider with the opportunity of promotion were more likely to receive quality FP services. Clients who lived in hills ecological region were less likely to be satisfied than those living in the mountains.

Analysis of the observed provision for quality FP family service adhered to by the FP service provider during service delivery revealed that only 66% of the client's individual cards were reviewed, 84% of the client cards were written after consultation, and discussion of the return visit was completed with only with 62% of the clients. The remaining components were below 55%.

Outcome: The analysis shows that 88.5% of clients reported being satisfied with the FP services they received in the health facility. Higher client satisfaction was observed among those who received services from a provider with their job description, services at primary health care centers (PHCCs), health posts (HPs), and urban health centers (UHCs) facilities compared with district and above hospitals, and services at a facility with electricity. Clients living in hills compared to mountains, and in Province 2 compared to Province 1, were less likely to be satisfied.

Conclusions: Service readiness and infection control do not appear as influencing factors on the provider's adherence to quality FP care. Client satisfaction with FP indicates that there is a clear need to improve the components related to FP service readiness at all facility levels.

Failure to provide counseling to FP clients and a low level of perceived promotional opportunities by service providers were barriers to quality FP service delivery. Those clients who received services from a provider with their job description, at a PHCC, HP, or UHC facility, and from a facility with electricity reported higher client satisfaction with FP service delivery. Therefore, further efforts to improve client satisfaction should focus on ensuring that providers have job descriptions and provide counseling in facilities with a good environment that includes electricity.

1 INTRODUCTION

In Nepal, family planning (FP) services have been a priority sector of the national health system of the Ministry of Health and Population (MOHP) since 1959. The aim is to ensure that individuals and couples can fulfill their reproductive needs by using appropriate FP methods based on informed choices. Since 1959, the government has expressed its promises for FP services in the country's development plans and strategies (MOHP 2010, 2007, 2015a, 2015b, DoHS 2016, NPC 2017, MOH 2017).

1.1 Literature Review

The Nepal FP Program is committed to providing equitable access to voluntary FP services based on informed choices by individuals and couples and particularly poor, vulnerable, and marginalized people. The Program has focused on improving access to FP services, enabling women and couples to attain their desired family size, ensuring healthy spacing of births, reducing unmet need for contraceptives, and increasing contraceptive use to avert unwanted pregnancy. Today, FP in Nepal is one of the successful public health programs that saves the lives of millions of mothers and children through preventing unintended, unwanted, and unplanned pregnancies and reducing maternal mortality. Available data show that utilization of modern FP among married women in Nepal has increased the contraceptive prevalence rate (CPR) from 29% in 1996 (Pradhan et al. 1997) to 43% in 2016 (MOH, New ERA, and ICF 2017). The most popular FP method in the country is sterilization (female 15%; male 6%), followed by injectables (9%), oral contraceptive pills (5%), and male condoms (4%) (MOH, New ERA, and ICF 2017). However, the use of traditional FP methods has increased from 2.5% in 1996 to 10% in 2016.

The unmet need for FP in the country has declined from 27% in 2011 (MOH, New ERA, and ICF 2012) to 24% in 2016 (MOH, New ERA, and ICF 2017). Although the use of public health services as a source of FP in Nepal has declined from 79% in 1996 to 70% in 2016, it remains the major source of FP services in the country (Pradhan et al.. 1997; MOH, New ERA, and ICF 2017).

The Nepal Health Facility Survey (NHFS), conducted for the first time in Nepal in 2015, shows that almost all health facilities in Nepal (98%) offer some type of FP services (MOH et al. 2017). The data reveal that all primary health care centers (PHCCs), health posts (HPs), urban health centers (UHCs), district-level hospitals, and zonal and above hospitals, including private hospitals, offer at least one temporary modern FP method. The data also reveal that a majority (97%) of health facilities in Nepal offer FP services six or more days per week to meet client needs. The NHFS 2015 also found that 97% of the health facilities in Nepal offer services that include providing methods, prescribing methods, or offering counseling on methods selected by clients for at least three temporary modern FP methods. The data also show that hospitals, when compared with lower-level facilities, were offering all seven modern methods, with private facilities offering more methods than public facilities.

Family planning services in Nepal are providing the means for couples to space, limit, and plan their births. Quality FP services help to reduce maternal morbidity and mortality by decreasing the number of pregnancies among all women, reducing the number of pregnancies among high-risk women, reducing the number of unwanted pregnancies that might otherwise end in abortion, and improving child health.

The guiding principle and strategy of National Health Policy 2014 (MOH 2014) has emphasized quality health services as a fundamental right of citizens, ensuring easy access for all citizens (universal health

coverage), and providing basic health services at no cost. Furthermore, the strategy stated that FP, including sexual and reproductive health, is to be included as an integrated form of service (MOHP 2015). The Family Health Division of the Department of Health Services is responsible for implementing the reproductive health care and FP programs (DoHS 2016).

The problem: The 2011 census of Nepal (CBS 2012, 2014) counted 26.5 million people, with the country's population growth rate at 1.35%. The population's median age is 21.6. The 2016 Nepal Demographic and Health Survey (NDHS) shows that about 44% of the Nepalese population is under age 20 (MOH, New ERA, and ICF 2017). The survey also found that half of the marriages of women age 25-49 took place before age 18.

Table 1 Estimated population and selected fertility and family planning indicators, NDHS 1996-2016, Nepal

Population	NFHS 1996	NDHS 2001	NDHS 2006	NDHS 2011	NDHS 2016
% of population age 0-14	44.0	43.7	40.5	37.2	34.0
% of population age 15-19	9.8	9.9	10.6	10.5	10.2
% of population over 6 with secondary or higher education (female)	10.2	12.7	20.1	29.3	34.2
% of population over 6 with secondary or higher education (male)	24.7	26.4	33.9	41.4	46.9
Fertility and family planning					
TFR	4.6	4.1	3.1	2.6	2.3
Current use of modern family planning methods (women in union)	26.0	35.0	44.0	43.0	43.0
Unmet need for spacing (%)	14.3	11.4	9.4	9.6	8.1
Unmet need for limiting (%)	17.1	16.4	15.2	17.4	15.6
Family planning demand satisfied	47.6	58.6	66.1	65.0	68.9
Median age at first marriage (female 25-49)	16.2	16.6	17.0	17.5	17.9
Median age at first marriage (male 25-49)	na	19.7	20.2	21.6	21.7

Source: Pradhan et al. 1997; MOH, New ERA, and Orc Macro 2002; MOH, New ERA, and Macro International, Inc. 2007; MOH, New ERA, and ICF 2012, 2017

The NDHS data also indicate that total fertility in the country between 1996 and 2016 has declined from 4.6 to 2.3 children per woman (Pradhan et al. 1997; MOH, New ERA, and ICF 2017). In contrast, the use of modern FP methods among currently married women between 1996 and 2006 shows growth from 26% to 44%, but has remained stagnant at around 43% between 2006 and 2016 (Pradhan et al. 1997; MOH, New ERA, and Macro International Inc. 2007). This clearly implies that Nepal needs to strengthen its FP program to achieve the commitments to global FP goals and to reach a modern contraceptive prevalence rate of 52% by 2020, the target set by the National Health Sector Strategy 2015-2020 (MOHP 2015b).

Selected issues and constraints on the FP program include disparity in access and use of FP services; limited health facilities that provide five contraceptive methods; high unmet need and unintended pregnancies; high discontinuation rates; stock outs and inadequate FP planning for commodities and equipment; inadequately trained staff on long-acting and permanent family-planning methods **(**LAPM); and inadequate supervision and follow-up of trained human resources (DoHS 2016).

Selected FP indicators and the 2020 targets set by the Nepal Health Sector Strategy Implementation Plan 2016-2021 (MOH 2017) to address the identified constraints of the FP program are:

- Percent of health facilities meeting minimum standards of quality of care at point of delivery (target: 90%)
- Percent of clients provided with quality services as per national standards (target: 90%)
- Percent of health facilities adhering to service delivery standard protocols/guidelines for tracer services (target: 90%)
- Contraceptive prevalence rate (modern methods) (target: 55%)

- Percent of facilities providing all five temporary methods of FP (target: private hospital 60%; public health post 80%)

In this context, it is imperative to understand how the Nepal FP program is functioning in the delivery of quality FP services to the Nepali people. The opportunity to examine this was made possible by the NHFS (MOH et al. 2017), which has collected detailed data on various aspects of FP health care delivery in both public and private health facilities.

Health service delivery system in Nepal: Health posts (HPs) in Nepal are the first public health institutional contact point for basic health services. All public health institutions above the health post are referral points in a network from PHCCs to district, zonal sub-regional and regional hospitals, and tertiary hospitals. This hierarchy provides health services and treatment for the majority of the population. The hierarchy also functions as a support mechanism for lower levels by providing logistical, financial, monitory, supervisory, and technical support (DoHS 2016).

In Nepal, not all FP services are available in all health facilities. In the public health facilities, unlike the private sector, FP service is available free of cost. Health posts and PHCCs regularly provide male condoms, pills, and injectables. Selected hospitals, PHCCs, and HPs with trained staff provide intrauterine contraceptive device (IUCD) and implant services. Static sites or scheduled "seasonal" or mobile outreach services provide sterilization services. Typically, there is at least one health facility in each village development committee (VDC), one primary health care center in each electoral constituency, and one hospital at the district level to provide curative services.

As described in the Annual Report (DoHS 2016), the main institutions that delivered basic health services in Nepal included 104 public hospitals, 303 private hospitals, 202 PHCCs, and 3,803 HPs.

Quality of care: Quality health service in Nepal is envisaged as a fundamental right of the citizens that ensures easy access to services and provision of basic health care at no cost (MOHP 2017). Assessing quality of health care in Nepal requires understanding the gaps in the performance of the health care delivery system and adopting measures that will improve the quality of health care.

Quality health care has been described as doing the right thing, at the right time, in the right way, for the right person, for the best achievable results (Memorial Hospital of Lafayette County 2018). One of the most influential analytic frameworks for quality assessment is the framework developed by the Institute of Medicine (IOM 2001), which suggests that a health system should seek to improve in six areas or dimensions of quality. These dimensions require that health care be:

- **Safe**: Avoiding harm to patients from the care intended to help them.
- **Effective**: Providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit (avoiding underuse and misuse, respectively).
- **Patient-centered**: Providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions.
- **Timely**: Reducing wait time and harmful delays for both those who receive and those who give care.
- **Efficient**: Avoiding waste, including waste of equipment, supplies, ideas, and energy.
- **Equitable**: Providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status (IOM 2001).

Caitlin and Bailey (2014) describe quality of health care services in four broad categories: (1) structure, (2) process, (3) outcome, and (4) patient experience. The structure reflects the care setting with facilities, personnel, and/or policies related to care delivery; process includes the measures for services provided to patients; outcome indicates the patient's health status; and, patient experience includes feedback on patients' experiences of care.

Donabedian (1988) proposed a conceptual model for assessing health care quality based on structures, processes, and outcomes. The model defines structure as the *environment* in which health care is provided, process as the *method* by which health care is provided, and outcome as the *consequence* of the health care provided. The model is based on the concept that improvements in the structure of care should lead to improvements in clinical processes that contribute to improved patient outcomes.

In the Donabedian model, structure includes the characteristics of service delivery facilities and the service providers; process indicates the components of the encounter between health service providers and clients; and, outcome reflects the patient's subsequent health status. The model argues that both process and outcome measures can provide valid information about the quality of care when they are used appropriately.

A different approach for viewing quality in health systems is to differentiate the roles and responsibilities in the various parts of a system. Policy and strategy development engage the whole health system, while the lead responsibilities normally rest at national and regional levels. The decision-makers at these levels keep the performance of the whole system under review, and develop strategies for improving quality outcomes that apply across the whole system (World Health Organization 2006).

Bruce (1990) suggested a framework with six main elements, assessed in the causal pathway model as activities and outputs. Four outcome measures - client knowledge, client satisfaction, client health, and contraceptive use (acceptance and continuation) - evaluate the program impact. The policy and political support, allocated resources, and program management/structure in the framework are considered to be program effort and program input.

The WHO Service Availability and Readiness Assessment (SARA) indicators (WHO 2015) have placed service availability and readiness as a measure of health structure. The guideline provides a set of FP-specific indicators to determine if a health facility has met the minimum criteria for provision of a specific service. The indicators for FP readiness involve assessing the availability of trained staff, relevant up-to-date guidelines, functioning equipment, and essential medicine and commodities.

The literature review in the preceding section identified two frameworks: Donabedian's 1988 structure-process-outcome framework and Bruce's 1990 quality framework that are widely used to guide research on the quality of FP services.

1.2 Research question

For the first time in Nepal, the NHFS 2015 (MOHP et al. 2017) provided an opportunity to conduct detailed analysis of the causal relationship between various factors of interest with selected outcomes at both a public and private facility level. This report includes further analysis that focuses on the quality aspect of FP services delivered by public and private health facilities in the country. This study sought to answer the research question formulated in consultation with the Family Health Division, Ministry of Health: "Is service readiness/quality of family planning service of the health facilities associated with client's satisfaction?" To answer the research question, this study examines the existing level of service readiness, quality of FP services measured by adherence to the provision of quality FP service, and

client satisfaction in Nepal in order to formulate recommendations for improving quality FP service delivery coverage.

This study explores the covariates associated with quality of FP services in order to understand and identify areas that require further attention and improvement. The health facility inventory data, health provider data, FP client exit interview, and FP client observation data collected by the NHFS in 2015 (MOHP et al. 2017) were used to meet the objectives of this study. The analysis used the structure, process, and outcomes model of the 1988 Donabedian framework as a broad guideline for measuring the quality of FP services and client satisfaction.

2 DATA AND METHODS

2.1 The Nepal Health Facility Survey

The data for this study come from the NHFS 2015 (MOHP et al. 2017), which is a representative survey of health facilities (public hospitals, PHCCs, HPs, UHCs, standalone HIV testing and counseling sites (HTCs), and private hospitals) in the country. The survey was conducted to inform the health program about the availability of basic, essential health care services and the readiness of health facilities to deliver improved quality services to clients in accordance with the government's commitment to achieving "universal health coverage" in the 2015 National Health Policy (MOHP 2014) and Constitution of Nepal (CAS 2015). The detailed methodology of the survey is described in the primary report (MOHP et al. 2017).

The NHFS 2015 (MOHP et al. 2017) data show that the government operates 90% of all health facilities in Nepal, with HPs being the most common facility to provide health services at a community level. The private hospitals are profit making, while the standalone HTC facilities are operated by NGO/private not-for-profit agencies. The survey included 940 facilities, of which 919 (88%) were providing at least one FP method. The survey interviewed 4,057 providers from a sample frame of 6,562 providers, and interviewed/observed 768 female FP clients who were among the 1,132 FP clients present on the day of the survey. The sample size for the analysis includes 768 female clients interviewed at the health facility.

The FP section of the health facility survey has collected information on five key areas related to FP services at health facilities in Nepal: availability of services, service readiness, adherence to provision of quality FP service, as well as opinion, basic management, and administrative systems.

2.2 Methods

This study uses the Donabedian (1988) framework: structure, process, and outcome as a broad guideline to examine the quality of FP services in health facilities in Nepal. The model includes three boxes to represent structure, process, and outcome that are connected by unidirectional arrows in that order (Figure 1). Figure 2 describes the analytical framework of this study.

Figure 1 Donabedian (1988) framework

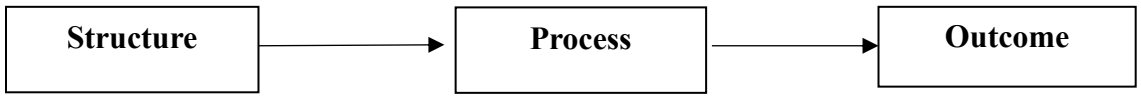
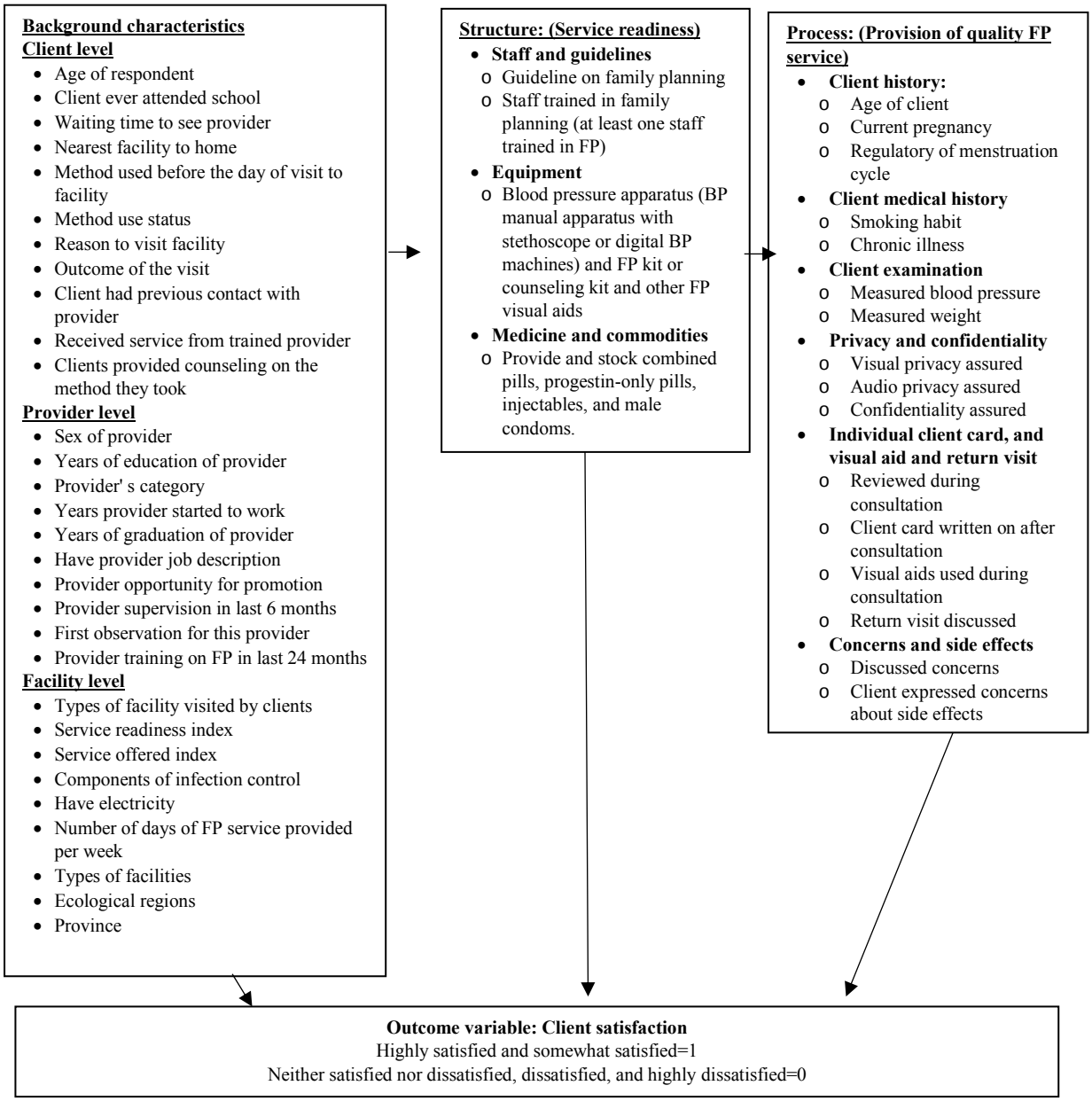


Figure 2 Conceptual framework



Note: None of these explanatory variables was highly correlated with each other.

The model proposes that improvements in the structure of health care should lead to improvements in clinical processes that contribute to improved patient outcomes. In the model, structure describes the health care delivery context (hospital buildings, staff, financing, and equipment). The service readiness index in this study represents the structure. Process denotes the transactions between patients and providers throughout the delivery of health care represented by adherence to the components of quality service delivery a provider should deliver to clients at a facility. Outcomes refer to the dependent variables represented by client's reported level of satisfaction with the FP services they received at the health facility.

Construction of family planning structure variables

Three indices that represent service availability and readiness were constructed for the analysis: a service readiness index, service offered index, and an infection control index (See Annex A).

The FP service readiness index was constructed as suggested in the WHO Service Availability and Readiness Assessment (SARA) reference manual (WHO 2015). The WHO (2015) SARA manual provides a list of indicators and divides them into components of service readiness: the staff and guideline component of the readiness index (presence of an FP guideline and at least one staff member in the facility with FP training), an equipment component (a functioning blood pressure machine), and availability of different types of modern contraceptive methods (oral contraceptive pills, injectables, and male condoms).

Only facilities with unexpired modern contraceptive methods were identified as having the method available in the facility. The data collected in the health provider module of the survey were used to construct the staff trained in FP. Those facilities where providers reported FP training in the 24 months before the survey were considered a facility with a trained FP staff.

The service offered index was constructed with the information on the selected FP methods prescribed or provided in the facility, along with counseling. The FP methods used to construct the service offered index included oral contraceptives, Depo-Provera, condoms, IUCD, implants, male sterilization, female sterilization, and emergency contraceptive services provided by the facilities.

The infection control index was constructed with the information on the presence of selected items such as soap, water or alcohol, gloves, safety box, needle destroyer, waste receptacle, and injection safety precaution guidelines in the areas where FP services are provided.

The service readiness and service offered indices were then divided into terciles that represented poor, medium, and good levels. The infection control index was divided into two categories: poor and good.

Construction of family planning process index

During an FP visit, an FP service provider is expected to elicit information about a client's personal and health history that will help the provider then make an informed choice about contraceptive use. The NHFS, through direct observation of the FM clients when they were receiving FP services at the facility, recorded information on the provider's adherence to various components of quality FP service delivery. The components of quality FP health service recorded were client history (age, current pregnancy status of the client, regularity of menstruation cycle); client medical history (smoking habit, if client has any chronic illnesses); client examination (measurement of blood pressure and weight); status of privacy and confidentiality (assurance of visual privacy, audio privacy, confidentiality); information on individual client card (reviewed individual client card during consultation, client card written on after consultation, use of visual aids, and discussed return visit); and side effects (discussed concerns, side effects) (Annex A). For the analysis, this index was divided into binary categories of poor and good adherence, with the median as the cut-off point. This variable measured the process component of the model, and provided insights to understand the relationship of the selected background characteristics of the clients, providers, and facilities with the provider's adherence to the provision of quality FP service.

Construction of family planning outcome variable

The FP outcome variable is a binary variable identified as "client satisfaction with FP services." This variable comes from the client's reported satisfaction with FP services received at the health facility and recorded in a client exit interview that used a five-point scale for responses: very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, and very dissatisfied. Of these five scales, the very satisfied and satisfied responses were coded as "1" to measure client services satisfaction, while the

remaining categories of the scales were coded as "0" to measure client dissatisfaction with the service they received during their facility visit. The service satisfaction in the analysis is an outcome variable that examines the relationship of the selected background characteristics of the clients, providers, and facilities with FP client satisfaction, which can also be interpreted as the impact of the health care service delivery.

Covariates of process and outcome

Annex B shows the independent variables used to examine their relationship with the process and outcome. The independent variables are divided into three sections: (1) background characteristics of the client, (2) background characteristics of provider and, (3) characteristics of the facilities. Provider characteristics used in this study come from the health provider interview. Similarly, the client's characteristics come from the observation of FP consultations and exit interviews.

For the client's age, 11 clients who responded that they do not know their age were placed in the oldest group, based on the assumption that relatively older groups of people are more likely to forget their exact age. Two clients who did not know how long they waited to see a provider were placed with the largest waiting category of two hours or more, based on the assumption that those who had to wait a long time might not remember exactly how long they had waited.

Data analysis

This study used bivariate cross-tabulation and multivariate logistic regression for data analysis. There are two dependent variables examined in this study: (1) Adherence provision of quality FP service, which is divided into the binary categories of good compliance with the component of care and poor compliance and (2) client satisfaction, which is divided into satisfied (very satisfied and satisfied responses) and not satisfied (neither satisfied nor dissatisfied, dissatisfied, and very dissatisfied responses). The unit of analysis for this study is the female FP client (interviewed and observed) among those who received services on the day of the survey.

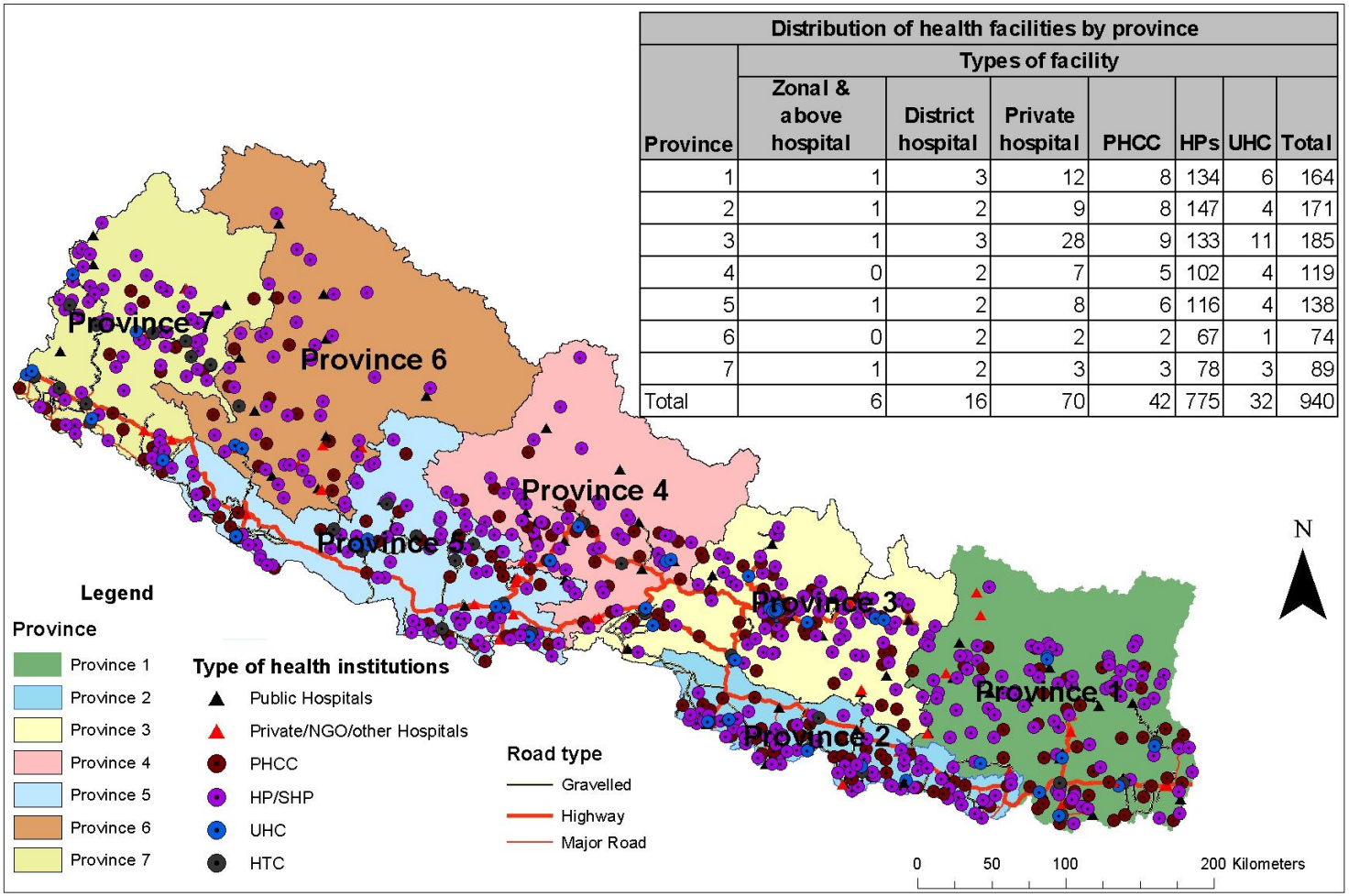
Correlations between the independent variables were examined before embarking on the data analysis. The analysis also controlled for the sample design and sample weight.

3 RESULTS

3.1 Health Facilities

The map (Figure 3) shows the distribution of health facilities sampled in the NHFS 2015 by types of facilities and provinces. The facilities shown in the maps are public hospitals, private hospitals, PHCCs, HPs, UHCs, and HTCs covered by the NHFS 2015 (MOH, New ERA, and ICF 2017).

Figure 3 Distribution of health institutions by province, NHFS 2015



Distribution of health facilities by province							
	Types of facility						
Province	Zonal & above hospital	District hospital	Private hospital	PHCC	HPs	UHC	Total
1	1	3	12	8	134	6	164
2	1	2	9	8	147	4	171
3	1	3	28	9	133	11	185
4	0	2	7	5	102	4	119
5	1	2	8	6	116	4	138
6	0	2	2	2	67	1	74
7	1	2	3	3	78	3	89
Total	6	16	70	42	775	32	940

Table 2 shows the distribution of the health facilities that provide FP services by selected background characteristics of the facility. In this table, the distribution refers to the sampled health facilities where FP services are available. The facility types refer to the types of facilities that provide FP services in Nepal. Of the total sample, the share of the zonal and above hospital category is less than 1% and the share of HPs is 82%.

Table 2 Distribution of health facilities by their characteristics, NHFS 2015

Background characteristics of the facilities	%	n=940	95 % CI lb, ub
Facility types			
Zonal & above hospital	0.6	6	0.4, 0.9
District hospital	1.7	16	1.5, 1.9
Private hospital	7.4	70	6.7, 8.2
PHCC	4.5	42	4.2, 4.8
HPs	82.4	775	81.4, 83.4
UHC	3.4	32	3.0, 3.8
Ecological regions			
Mountains	12.6	118	11.9, 13.3
Hills	51.2	482	49.5, 53.0
Terai	36.2	340	34.5, 37.9
Province			
Province 1	17.4	164	15.6, 19.4
Province 2	18.2	171	16.1, 20.5
Province 3	19.7	185	18.0, 21.5
Province 4	12.7	119	10.4, 15.4
Province 5	14.7	138	12.3, 17.4
Province 6	7.9	74	6.4, 9.7
Province 7	9.5	89	8.4, 10.8

Note: All tables in this analysis exclude stand-alone HTC sites and Sukra Raj and Kanti hospitals.
n= health facility

Of the total sampled health facilities, 13% belongs to Mountains ecological region, 51% belong to hills, and the remaining 36% belongs to the Terai. By province, the distribution of the sampled health facilities ranges from 7.9% in Province 6 to 19.7% in Province 3 (Table 2).

Table 3 Percentage distribution of health facilities that offer family planning services by types of family planning services, NHFS 2015

Types of family planning services offered	N=940 Percent	95 % CI lb, ub
Any temporary modern method	97.7	96.9, 98.4
Counseling on periodic abstinence/rhythm	62.2	57.6, 66.5
Male sterilization	35.5	31.3, 39.8
Female sterilization	34.8	30.7, 39.2
Combined oral contraceptives pills	96.8	95.5, 97.8
Progestin only pills	12.2	9.6, 15.4
Condoms	97.3	96.5, 98.0
Depo-Provera	96.1	94.6, 97.1
Implants	47.6	43.2, 52.0
IUCD	48.8	44.3, 53.3
Any modern method	97.8	96.9, 98.4

Note: n= 940 health facilities

Table 3 shows the types of FP services offered by health facilities in Nepal. Those health facilities that provide, prescribe, or counsel clients on combined oral contraceptive pills, progestin-only injectables (Depo), implants, intrauterine contraceptive devices (IUCDs), male condoms, female sterilization, or male sterilization are considered FP service-providing facilities. The data reveal that 97.7% of the total sampled health facilities in this study provide at least one method of FP service.

3.2 Provider's Adherence to Provision of Quality Family Planning Service

Table 4 shows the association of the adherence by providers to the provision of quality FP services with the selected background characteristics of the clients, provider, and facilities.

Table 4 Association between selected background characteristics and provider's adherence to provision of quality family planning services delivery, NHFS 2015

Background characteristics	Adherence to provision of quality FP services (% good)	95 % CI	P-Value
Age of respondent			**0.035**
Adolescent age 15-24	59.6	48.6, 69.3	
Adults age 25 and over	46.4	38.2, 54.4	
Client ever attended school			0.093
Ever attended school	54.0	44.3, 63.1	
Never attended school	44.4	36.3, 52.8	
Status of client as visitor to this facility			0.394
First visit	48.3	41.0, 55.7	
Repeated visit	57.3	37.9, 74.7	
Waiting time to see provider			0.390
Saw provider immediately	47.1	38.5, 55.9	
Have to wait to see provider	52.3	42.7, 61.8	
Nearest facility to home			0.151
Yes	49.0	41.7, 56.3	
No	62.5	44.7, 77.5	
Method used before the day of visit to facility			**<0.001**
None	66.9	52.3,78.9	
Pills	52.5	38.24, 66.4	
Condoms	77.1	48.28, 92.4	
Depo	42.8	35.2, 50.8	
IUCD/Implant	77.7	62.8, 87.9	
Method use status			**<0.001**
Current users	46.03	38.7, 53.5	
Non or former user	69.4	57.1, 79.4	
Reason to visit facility			**<0.001**
Resupply or routine follow-up	43.1	35.3, 51.4	
Others	70.2	60.4, 78.4	
Outcome of the visit			**<0.001**
Users continued with the method	43.0	35.2, 51.2	
Users method switch and others	73.3	54.9, 86.1	
Non-users accepted to start method	69.6	57.1, 79.8	
Client had previous contact with provider			**0.023**
Yes	47.1	39.6, 54.7	
No or do not know	60.7	49.5, 71.0	
Received service from trained provider			0.446
No	50.8	43.0, 58.6	
Yes	44.6	31.2, 58.8	
Clients provided counseling on the method they took			**<0.001**
No	34.96	25.9, 45.3	
Yes	61.86	53.7, 69.4	
Provider sex			0.539
Male	43.9	25.0, 64.8	
Female	50.8	43.6, 58.0	
Years of education of the provider			0.780
Less than age 11	51.7	25.4, 77.0	
Age 11 to 15	50.2	42.9, 57.5	
Age more than 15	42.0	25.9, 60.0	
Provider' category			0.299
Doctor, medical officer, and nurse	51.8	44.2, 59.4	
Health assistant and others	43.2	29.4, 58.1	
Year provider started to work			0.385
Before 2000	42.8	27.6, 59.5	
Year 2000 and after	50.9	43.3, 58.5	
Years of graduation of provider			0.854
Before 2000	50.7	39.6, 61.8	
Year 2000 and after	49.4	41.0, 57.8	
Have provider job description			0.417
Yes, observed	44.7	32.6, 57.4	
No job description	50.9	42.8, 58.9	

Background characteristics	Adherence to provision of quality FP services (% good)	95 % CI	P-Value
Provider opportunity of promotion			0.239
Yes	56.9	41.1, 71.4	
No, uncertain	46.6	39.8, 53.6	
Provider supervision in last 6 months			0.435
Supervision in last 6 months	48.2	39.7, 56.7	
No supervision	54.0	42.2, 65.3	
First observation for this provider			0.561
Yes	48.4	41.5, 55.4	
No	51.8	40.7, 62.7	
Provider training on FP in last 24 months			0.405
No	51.0	43.1, 58.9	
Yes	44.4	31.6, 58.0	
Facility type			**0.006**
Zonal & above hospital	70.2	56.8, 80.8	
District hospital	58.6	41.0, 74.3	
Private hospital	57.4	32.3, 79.2	
PHCC	66.3	57.8, 73.8	
HPs	45.5	36.2, 55.2	
UHC	33.8	18.4, 53.5	
Service readiness			0.638
Poor	47.1	35.1, 59.4	
Medium	49.3	39.9, 58.7	
Good	56.3	40.3, 71.0	
Service offered index			0.116
Poor	43.6	33.3, 54.5	
Medium	60.7	46.3, 73.4	
Good	52.4	40.6, 63.9	
Infection control index			0.314
Poor	49.0	41.4, 56.7	
Good	57.2	43.4, 70.0	
Have electricity			0.878
No	48.8	36.2, 61.5	
Yes	50.0	41.7, 58.3	
Number of days FP service provided per week			0.529
Less than 6 days in a week	41.5	19.3, 67.8	
6 or more days in a week	50.4	43.2, 57.5	
Ecological regions			**0.016**
Mountain	68.4	53.5, 80.3	
Hills	54.2	43.5, 64.6	
Terai	39.9	30.3, 50.3	
Province			**0.058**
Province 1	53.4	38.1, 68.0	
Province 2	26.1	15.3, 40.8	
Province 3	59.8	45.2, 72.8	
Province 4	45.3	19.6, 73.9	
Province 5	45.7	32.4, 59.6	
Province 6	65.6	28.1, 90.3	
Province 7	50.6	38.0, 63.0	

Notes: Population= Exit clients interviewed and observed during FP service delivery.
Bold figures in final column indicate statistical significance.

Age of respondent, method used before the day of visit to facility, method use status of client, reason for visiting facility, outcome of the visit, previous contact of client with provider, and counseling provided to client on method selected were the characteristics significantly associated with the provider's adherence to provision of quality FP service. Similarly, types of facility, ecological regions, and province were the facility level characteristics significantly associated with the provider's adherence to the provision of quality FP service (Table 4). None of the provider's characteristics were found to be significantly associated with the provider's good adherence to provision of quality FP services.

Table 5 shows the adjusted effect of selected background characteristics of clients, providers, and facility on provider's good adherence to the provision of quality FP service. Most of the characteristics of clients, providers, and facility-level variables did not show significant differences on the provider's

good adherence to the provision of quality FP service while providing FP services to clients at facility. In the multivariate analysis, method use status, reason for visiting facility, and provider's category were excluded due to multi-collinearity or redundancy.

Table 5 Effect of selected background characteristics of clients, providers, and facility on provider's good adherence to provision of quality family planning service, NHFS 2015

Characteristics of clients	Adjusted Odds Ratio	P-value
Age of respondent		
Adolescent age 15-24	1.0	
Adults age 25 and over	0.9	0.604
Client ever attended school		
Ever attended school	1.0	
Never attended school	0.8	0.507
Status of client as visitor to this facility		
First visit	1.0	
Repeated visit	0.6	0.357
Waiting time to see provider		
Saw provider immediately	1.0	
Have to wait to see provider	1.3	0.411
Nearest facility to home		
Yes	1.0	
No	1.3	0.700
Method used before the day of visit to facility		
None	1.0	
Pills	0.9	0.772
Condoms	1.7	0.525
Depo	0.6	0.219
IUCD/Implant	1.5	0.517
Outcome of the visit		
Users continued with the method	1.0	
Users method switch and others	2.4	0.060
Non-users accepted to start method	1.7	0.175
Client had previous contact with provider		
Yes	1.0	
No or do not know	0.9	0.840
Received service from trained provider		
No	1.0	
Yes	1.0	0.970
Clients provided counseling on the method they took		
No	1.0	
Yes	2.9	**<0.001**
Provider sex		
Male	1.0	
Female	1.2	0.740
Years of education of the provider		
Less than 11 years	1.0	
11 to 15 years	1.2	0.798
More than 15 years	0.4	0.306
Years provider started to work		
Before 2000	1.0	
Year 2000 and after	1.3	0.631
Years of graduation of provider		
Before 2000	1.0	
Year 2000 and after	0.9	0.823
Have provider job description		
Yes observed	1.0	
No job description	1.4	0.303
Provider opportunity of promotion		
Yes	1.0	
No uncertain	0.5	**0.038**
Provider supervision in last 6 months		
Supervision in last 6 months	1.0	
No supervision	1.3	0.364
First observation for this provider		
No	1.0	
Yes	1.0	0.882
Provider training on FP in last 24 months		
No	1.0	
Yes	0.8	0.790
Type of facility		
District and above hospitals	1.0	

Characteristics of clients	Adjusted Odds Ratio	P-value
Private hospitals	0.6	0.490
PHCC HP and UHC	0.5	0.087
Service readiness		
Poor	1.0	
Medium	1.3	0.400
Good	1.9	0.098
Service offered index		
Poor	1.0	
Medium	1.9	0.054
Good	1.4	0.469
Infection control index		
Poor	1.0	
Good	1.3	0.474
Have electricity		
No	1.0	
Yes	0.8	0.665
Number of days FP service provided per week		
Less than 6 days in a week	1.0	
6 or more days in a week	2.4	0.125
Ecological regions		
Mountain	1.0	
Hills	0.4	**0.040**
Terai	0.4	0.097
Province		
Province 1	1.0	
Province 2	0.4	0.086
Province 3	1.8	0.148
Province 4	0.9	0.946
Province 5	0.8	0.672
Province 6	1.2	0.846
Province 7	0.6	0.279

Note: Population: Exit clients interviewed/observed during service delivery

The adjusted results in Table 5 show that clients who were counseled on the method they selected, provider opportunity of promotion, and ecological regions had significant influence on the provider's good adherence to provision of quality FP service at the health facility.

The odds of a provider's good adherence to provision of quality FP service (quality service) was 2.9 times higher when counseling was provided to clients on method compared to when counseling was not received. Similarly, clients who received services from a provider who reported having the opportunity for promotion were more likely to provide good quality services to their clients as opposed to those who received services from a provider who did not perceive any opportunity for promotion. Furthermore, those clients who lived in the hills were less likely to receive quality FP services compared to those who lived in the mountains and the difference was statistically significant (Table 5). All other client and facility characteristics that were significant in the associations shown in Table 4 lost significance in the adjusted regression model.

The difference of the provider's adherence to provision of quality FP service at a health facility according to types of facility, service readiness index, service offer index, infection control index, and province did not appear to have significance influence on a provider's adherence to provision of good quality FP service.

3.3 Client Satisfaction with Family Planning Services at Facility

Figure 4 shows the distribution of FP clients by their response to satisfaction with FP service received at facility. This serves as the measurement of the outcome variable in the analysis. The distribution in Figure 4 shows that close to 89% of the clients interviewed at the facility said they were satisfied with the FP service they received.

Figure 4 Percentage distribution of family planning clients by their satisfaction with family planning service received at facility, NHFS 2015

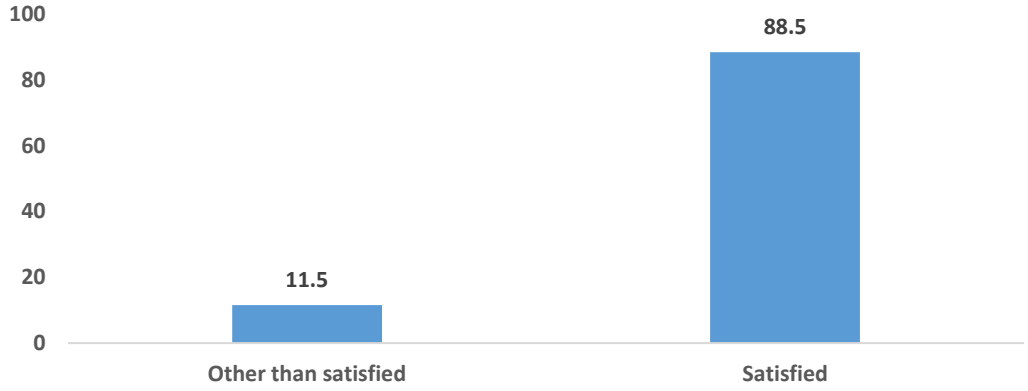


Table 6 shows the association of client satisfaction with selected background characteristics of the clients, providers, and facilities. The analysis shows that only facility type, infection control index, and province were significantly associated with client satisfaction. Provider's adherence to the provision of quality FP service, service readiness status of the facility, and service offered index did not appear to be important factors in influencing the client's satisfaction with the FP service.

Table 6 Association between selected background characteristics of respondents by their reported service satisfaction, NHFS 2015

Background characteristics	% Satisfied	95 % CI lb, ub	P-value
Age of respondents			0.302
Adolescent age15-24	90.8	85.9, 94.0	
Adults age 25 and over	87.7	82.5, 91.5	
Client ever attended school			0.067
Ever attended school	91.3	86.8, 94.4	
Never attended school	84.9	77.4, 90.2	
Status of client as visitor to facility			0.564
First visit	88.8	84.1, 92.3	
Repeated visit	86.6	78.2, 92.0	
Waiting time to see provider			0.548
Saw provider immediately	89.5	83.0, 93.7	
Have to wait to see provider	87.5	82.3, 91.3	
Nearest facility to home			0.166
Yes	89.0	84.8, 92.1	
No	79.7	59.5, 91.3	
Method used before the day of visit to facility			0.895
None	88.8	80.1, 94.0	
Pills	86.5	72.8, 93.8	
Condoms	87.7	66.2, 96.3	
Depo	89.1	83.9, 92.8	
IUCD/Implant	85.3	71.3, 93.1	
Method use status			0.976
Current users	88.5	83.9, 91.8	
Non or former user	88.6	81.2, 93.3	
Reason to visit facility			0.358
Resupply or routine follow-up	89.2	84.5, 92.6	
Others	86.3	79.4, 91.1	

Background characteristics	% Satisfied	95 % CI lb, ub	P-value
Outcome of the visit			0.484
Users continued with the method	89.1	84.3, 92.5	
Users method switch and others	83.6	70.3, 91.6	
Non-users accepted to start method	88.4	80.9, 93.2	
Client had previous contact with provider			0.279
Yes	89.3	84.8, 92.6	
No or do not know	85.1	75.8, 91.3	
Received service from trained provider			0.309
No	87.8	83.1, 91.4	
Yes	91.7	84.1, 95.8	
Clients provided counseling on the method they took			0.203
No	86.5	79.9, 91.1	
Yes	90.1	85.8, 93.2	
Provider sex			0.594
Male	85.9	70.1, 94.0	
Female	88.9	84.7, 92.1	
Years of education of the provider			0.546
Less than 11 years	91.5	72.8, 97.7	
11 to 15 years	88.7	84.2, 92.0	
More than 15 years	81.6	61.0, 92.6	
Provider' category			0.847
Doctor, medical officer, and nurse	88.7	84.3, 92.0	
Health assistance and others	87.8	76.1, 94.2	
Year provider started to work			0.861
Before 2000	87.7	74.5, 94.6	
Year 2000 and after	88.6	84.3, 91.8	
Years of graduation of provider			0.050
Before 2000	82.5	72.8, 89.3	
Year 2000 and after	90.5	86.0, 93.6	
Have provider job description			0.105
Yes observed	94.5	85.2, 98.1	
No job description	87.1	82.4, 90.7	
Provider opportunity of promotion			0.823
Yes	89.1	80.3, 94.3	
No uncertain	88.2	83.2, 91.9	
Provider supervision in last 6 months			0.905
Supervision in last 6 months	88.3	83.4, 92.0	
No supervision	88.8	80.3, 93.9	
First observation for this provider			0.356
No	87.4	82.4, 91.2	
Yes	90.1	84.5, 93.9	
Provider training on FP in last 24 months			0.236
No	87.7	82.8, 91.3	
Yes	92.0	85.0, 95.9	
Facility type			**0.030**
Zonal & above hospital	73.3	52.8, 87.1	
District hospital	87.9	79.6, 93.1	
Private hospital	65.0	24.5, 91.4	
PHCC	89.0	84.0, 92.5	
HPs	90.3	84.9, 94.0	
UHC	86.3	79.6, 91.0	
Service readiness			0.168
Poor	90.9	84.9, 94.7	
Medium	84.5	76.6, 90.1	
Good	90.9	83.6, 95.2	
Service offered index			0.942
Poor	88.0	81.3, 92.5	
Medium	89.0	81.5, 93.7	
Good	89.1	81.6, 93.8	
Infection control index			**0.037**
Poor	89.5	85.2, 92.6	
Good	78.5	63.8, 88.3	
Have electricity			0.121
No	83.1	71.5, 90.5	
Yes	90.0	85.8, 93.1	
Number of days FP service provided per week			0.884
Less than 6 days in a week	87.7	73.5, 94.9	
6 or more days in a week	88.5	84.2, 91.8	
Ecological regions			0.201
Mountain	94.6	86.4, 97.9	
Hills	89.8	83.1, 94.0	

Background characteristics	% Satisfied	95 % CI lb, ub	P-value
Terai	85.5	78.6, 90.4	
Province			**0.048**
Province 1	93.4	87.6, 96.6	
Province 2	75.7	61.6, 85.8	
Province 3	92.0	83.3, 96.4	
Province 4	87.8	62.6, 96.9	
Province 5	92.6	80.8, 97.4	
Province 6	83.1	47.9, 96.3	
Province 7	85.5	76.2, 91.5	
Adherence provision of quality FP service			0.549
Poor	89.5	84.1, 93.2	
Good	87.5	81.3, 91.8	

Note: Population: Exit clients interviewed/observation during service delivery

Table 7 summarizes the estimates from the adjusted model of client satisfaction. The table shows that most characteristics of clients, providers, and facility level variables did not show significant difference on FP client satisfaction. The variables that showed significance influence after controlling for the effect of other variables in the model on client satisfaction were provider having job description, facility type, presence of electricity in the facility, ecological regions, and province.

Table 7 Effect of selected background characteristics of clients, providers and facility on response to client service satisfaction, NHFS 2015

Characteristics of clients	Adjusted Odds Ratio	P-value
Age of respondent		
Adolescent age15-24	1.0	
Adults age 25 and over	0.7	0.418
Client ever attended school		
Ever attended school	1.0	
Never attended school	0.5	0.058
Status of client as visitor to this facility		
First visit	1.0	
Repeated visit	1.2	0.779
Waiting time to see provider		
Saw provider immediately	1.0	
Have to wait to see provider	0.6	0.120
Nearest facility to home		
Yes	1.0	
No	1.0	0.984
Method used before the day of visit to facility		
None	1.0	
Pills	0.5	0.355
Condoms	1.0	0.992
Depo	0.9	0.887
IUCD/implant	0.8	0.617
Reason to visit facility		
Resupply or routine follow-up	1.0	
Others	1.0	0.926
Client had previous contact with provider		
Yes	1.0	
No or do not know	0.6	0.247
Received service from trained provider		
No	1.0	
Yes	0.5	0.588
Clients provided counseling on the method they took		
No	1.0	
Yes	1.1	0.689
Provider sex		
Male	1.0	
Female	0.9	0.783
Years of education of the provider		
Less than 11 years	1.0	
11 to 15 years	0.5	0.318
More than 15 years	0.2	0.054
Years provider started to work		
Before 2000	1.0	

Characteristics of clients	Adjusted Odds Ratio	P-value
Year 2000 and after	0.9	0.883
Years of graduation of provider		
Before 2000	1.0	
Year 2000 and after	2.3	0.052
Have provider job description		
Yes observed	1.0	
No job description	0.3	**0.035**
Provider opportunity of promotion		
Yes	1.0	
No uncertain	1.3	0.588
Provider supervision in last 6 months		
Supervision in last 6 months	1.0	
No supervision	1.2	0.604
First observation for this provider		
No	1.0	
Yes	1.1	0.703
Provider training on FP in last 24 months		
No	1.0	
Yes	2.6	0.427
Facility Type		
District and above hospitals	1.0	
Private hospitals	0.2	0.123
PHCC HP and UHC	3.4	**0.009**
Service readiness		
Poor	1.0	
Medium	0.6	0.177
Good	1.6	0.403
Service offered index		
Poor	1.0	
Medium	1.2	0.706
Good	1.5	0.408
Infection control index		
Poor	1.0	
Good	0.5	0.132
Have electricity in the facility		
No	1.0	
Yes	2.7	**0.048**
Number of days FP service provided per week		
Less than 6 days in a week	1.0	
6 or more days in a week	1.4	0.578
Ecological regions		
Mountain	1.0	
Hills	0.3	**0.046**
Terai	0.3	0.102
Province		
Province 1	1.0	
Province 2	0.2	**0.009**
Province 3	1.4	0.612
Province 4	0.6	0.568
Province 5	1.2	0.736
Province 6	0.9	0.895
Province 7	0.4	0.139

Note: Population: Exit clients interviewed/observation during service delivery

The analysis reveals that FP clients who received services from providers who have a job description had greater odds of being satisfied compared to their counterparts who received FP service from a provider with no job description.

Similarly, the clients who received services at PHCCs, HPs, and UHCs had more than three times greater odds of being satisfied with the FP service they received compared to those who received services from the district and above hospitals.

The FP clients who received services in a facility with electricity had almost three times greater odds of being satisfied compared to those who received FP service from a facility with no electricity.

Among FP clients from different ecological belts, those who live in the hills had lower odds of being satisfied with the FP service they received compared to those who live in the mountains. The analysis also reveals that client satisfaction among clients from Province 2 is lower compared with those from Province 1 (Table 7).

4 DISCUSSION

The purpose of this analysis was to assess the quality of FP service delivery at health facilities and FP client service satisfaction in Nepal, and to identify gaps so that quality FP services and client satisfaction can be improved through appropriate, effective intervention. Improvements in the quality of care in FP services and service satisfaction also contribute to an increase in the contraceptive prevalence rate (CPR) (Gizachew et al. 2016, Katherine 2015, RamaRao and Mohanam 2003).

The first round of the NHFS data explores the covariates associated with quality of FP services received by FP clients at a facility in order to understand and identify areas that require further attention and improvement. The health facility inventory data, health provider data, FP client exit interview, and FP client observation data collected by the NHFS in 2015 (MOHP et al. 2017) were used to meet the objectives of this study. The analysis uses the structure, health provider's process in providing FP service at facility, and client reported FP service satisfaction as outcomes described in the Donabedian framework for measuring quality of health care (Donabedian 1988) as a broad guideline for data analysis. A systematic review of factors associated with quality of FP care in Africa shows that FP quality of care and client satisfaction are influenced by multiple factors (Gizachew et al. 2016).

4.1 Provider's Adherence Provision of Quality Family Planning Service

The data reveal that 98% of the health facilities in Nepal provide at least one modern FP method.

Most characteristics of clients, providers, and facility level did not show significant difference on the provider's adherence to the provision of quality FP service delivery at the facilities. In the analysis of each component of the process indicator (provision for good quality FP service adhered by the FP service provider) observed during the client consultation, only 66% of the client's individual card were reviewed; 84% of the client's cards were written after consultation, and discussion of a return visit was held only with 62 % of the clients (Annex A). The remaining components of provision for quality FP services adhered by the providers were below 55%. No difference in the provider's adherence to good quality FP service delivery across client or facility characteristics was observed in Table 5. This indicates that the quality of services across the facilities is of similar level for all types of clients in general, irrespective of their background. There is evidence that a FP program without good infrastructure, supplies, and trained personnel may not provide good quality of care (RamaRao and Mohanam, 2003), although this was not found in our results.

The clients who received counseling on the method they selected, as compared to those who were not counseled, were more likely to receive higher quality FP service, as defined by the provider's adherence to the provision of quality FP service at the health facility. Similarly, services received from a provider with the opportunity of promotion and those living in the mountain ecological belt, as compared to those from other ecological belts, were more likely to receive quality FP services.

Counseling clients is one of the components of high quality service delivery. Those clients who received counseling on the FP method they selected received good quality service compared to clients who did not receive such counseling from the provider. A positive association between clients' receiving adequate counseling on side effects and contraceptive continuation was found in Gambia and Niger (Cotten et al. 1992)

The association between good quality services and a provider who perceives the opportunity of promotion could be due to the provider's motivation to provide better services to their clients that might ensure their promotion. Furthermore, those providers who have an opportunity for promotion may be equipped with better knowledge and skills for providing good quality services to their clients.

Among all facilities, the percentage of facilities in the mountains, as compared to the hills and the Tarai, that offer sterilization service that requires higher level of skill and a more developed infrastructure is higher. Similarly, the percentage of facilities where FP services are offered five or more days is higher in the mountains than in other ecological belts. Furthermore, most of the components of quality FP service delivery were also higher in the mountains than in other ecological regions (MoHP et al. 2017). All these could have placed mountain compared to other regions in the position of good quality FP service delivery zone.

The types of facility, service readiness index, service offer index, infection control index, and province did not appear to be important factors in the provider's adherence to the provision of quality FP service at a health facility. Similarly, adherence to the provision of quality FP service and the service readiness index did not appear to influence the client's satisfaction to FP service.

Examination of each component of the service readiness index revealed that guidelines on FP (46%), staff trained in FP (39%), and a FP counseling kit and other FP visual aids (68%) at the facility at survey were poor. This could be one of the reasons that service readiness did not explain the differences in the quality FP service, as well as client service satisfaction by the service readiness status of the facility.

Similarly, the analysis of each component of the infection control index shows that only 3.5% of the facility had a needle destroyer, 5.9% had a waste receptacle, and 2.8% had injection safety precaution guidelines. This indicates that further effort is necessary to improve the status of these components at facilities in order to improve the quality of service delivery.

4.2 Client Satisfaction with Family Planning Services

The distribution of the client satisfaction scores show that almost 9 of every 10 clients reported being satisfied with the FP service they received at the health facility.

Components of infection control were significantly associated with client satisfaction, although the effect disappears after controlling for the effect of other variables.

Only FP clients who received service from a provider with job description, from the PHCC, HP and UHC, and from a facility with electricity were significantly more likely to be satisfied with the FP service they received, as compared to their counterparts after controlling for the effects of other variables. Clients from Province 2, as compared to clients residing in Province 1, and clients from the hills as compared to the mountains were significantly less likely to be satisfied. Client satisfaction has been found to be associated with the geographic location of health facilities (Agha and Mai 2009, Assaf, Wang and Mallick 2015).

Higher client satisfaction among those receiving service from a provider with a job description could be due to these providers' understanding of rendering good service to their clients. Checklists and other job aids can help providers in various ways such as screening clients, ensuring that all steps in a process are implemented, and ensuring good quality of services (WHO/RHR and CCP 2018).

Clients who were more satisfied with the service they received from PHCCs, HPs and UHCs may be more satisfied because the waiting time to receive service at these facilities is lower at these facilities (MoHP et al. 2017). Receiving care at a hospital was associated with lower client satisfaction in a similar study in Kenya (Agwanda, Anne and Maureen 2009, Agha and Mai 2009).

Similar proportions of providers reporting training related to FP during the 24 months before the survey across the facility and relatively higher personal supervision during the 6 months before the survey (MoHP et al. 2017) could have resulted better client satisfaction in the PHCC, HP and UHC compared to other than these facilities. Provider training on FP in the last three years was also found to be important factor in increasing satisfied clients in Kenya. The same study also found that facilities that had a supervisor's support would help improve their performance and increase satisfied clients (Agha and Mai 2009).

4.3 Key Findings

This study has examined the FP service readiness, provider adherence to the provision of quality FP service, and FP client's service satisfaction using the NHFS 2015 data (MOHP et al. 2017). The Donabedian (1988) framework served as the conceptual framework for data analysis. Two outcome variables, provider's adherence to provision of quality FP service and client satisfaction, were examined by selected characteristics of clients, providers, and health facility to assess the differences in outcome variables. Most characteristics of clients, providers, and facility level variables did not show statistical significance in the differences across categories of the variables on both outcome variables.

Key findings: Provider's adherence to provision of quality family planning service

- The effects of respondent age, method used before the day of visit to facility, outcome of the visit, previous contact with provider, and facility type were important in influencing the provider's adherence to provision of quality FP service, but these effects disappeared after controlling for the other variables of interest. Only the effects of clients being provided with counseling on the method they selected and ecological regions were important factors in influencing the provider's adherence to provision of quality FP service irrespective of whether the effects of other variables were controlled or not. Furthermore, the effects of provider opportunity of promotion on the provider's adherence to provision of quality FP service were not important in the bivariate analysis after controlling for the other variables in the model.

- FP clients who received counseling on the method they selected had 2.9 higher odds of receiving quality FP services as compared to those who did not receive such counseling.

- The provider's adherence to the provision of quality FP service was better in the mountains than in hills and the Terai.

- FP clients who received services from providers categorized as having an opportunity for promotion had 2.04 higher odds to receive quality FP services.

- The service readiness of the health facility, service offered index, infection control index, and province did not appear to be important factors in influencing the quality of FP services.

Key findings: Client's satisfaction on family planning service

- 88.5% of clients reported satisfaction with the FP service they received in the health facility.
- FP client satisfaction was almost 3 times higher among those who received FP services from a provider who reported having a job description compared to those who did not.
- FP client satisfaction was almost 3 times higher among those who received FP services in PHCC, HP, and UHC compared to those who received services from district and above hospitals. There was no difference in FP service satisfaction among those who received FP service from district and above public hospitals and private hospitals.
- FP client satisfaction was almost 3 times higher among those who received FP services in a facility that had electricity compared to those that did not have electricity in the facility.
- Lower odds of satisfaction were found for clients who resided in Province 2 compared to Province 1 and for clients living in the hill areas compared to the mountains.
- Almost all components of service readiness, infection control, and the provider's adherence to provision of quality FP service require improvement to achieve the desired delivery of quality FP service and client satisfaction.

4.4 Limitations

Many factors in this study come from the observation of providers and clients while the provider was rendering FP services. It is likely that the provider might perform differently when they know that they are being observed, as explained in research on the Hawthorne effect (Mayo 2003; McCambridge, Witton, and Elbourne 2014).

Another limitation is the client satisfaction measured as an outcome in this study. Client satisfaction may be subjective when one respondent receiving the same service will express satisfaction while the other expresses no satisfaction. Clients' perceptions are formed from factors such as socio-cultural values, norms, previous experiences, and interactions with providers and the health care system (Creel, Sass, and Yinger 2002). Thus, there are issues with validity and measurement of this subjective variable. Similarly, since there is no clear definition for provider's adherence to the provision of quality FP service, the median of the index is used as the cut-off point to measure provider compliance to the quality services.

4.5 Conclusions

This study has examined the provider's adherence to the provision of quality FP service as an intermediate outcome measure (process) and FP client satisfaction as the outcome level variable. Selected background characteristics of facility, providers, and clients were examined to detect the barriers to quality FP health care delivery as well as the differentials in the level of client satisfaction by selected explanatory variables. The analysis has employed the structure, process, and outcome model where the structure represents the "service readiness index" suggested by WHO (2015).

Most of the characteristics of clients, providers, and facility level variables used in the analysis did not show significant difference on the process (service provider's adherence to provision of quality FP service) as well as outcome (FP client satisfaction) variables.

Three variables (clients provided counseling on the method they selected, ecological regions, and provider opportunity of promotion) appear to be important influencers of a provider's compliance with the provision of quality FP. Similarly, providers with their job description, type of health facility, electricity in the facility, ecological region, and province were influential factors in determining the FP client satisfaction.

Service readiness of the health facility and service offered index did not appear to be influencing determinants of compliance to provision of quality FP services as well as the FP client satisfaction. The components used to create this index show that only 46% of the facilities had FP guidelines, 38% had at least one provider with FP training, 91% had an apparatus with stethoscope or digital blood pressure machines, and over 95% had FP commodities (pills, injectables, and condoms). This indicates that additional effort is necessary to increase the number of facilities with staff trained on FP and the number of facilities with FP guidelines and a BP apparatus.

The analysis suggests that failure to provide counseling for FP clients and the low level of potential promotional opportunities among providers are barriers to the provision for quality FP service delivery. Increasing the number of FP clients who receive counseling and providing more opportunity for provider's promotion can improve the provider's compliance with the provision of FP service delivery.

Higher client satisfaction among clients who received services from providers with their job description and those receiving FP services at PHCCs, HPs and UHCs indicates that ensuring the job description of all providers and improving the FP service delivery system in the facility leads to improved client satisfaction. Improved service readiness did not appear as a influencing factors at process as well as outcome level measures, and this indicates there is a clear need to improve the lacking or poor components related to FP service readiness at all facility level.

The characteristics of the tracers used to construct service readiness, the service offer index, and the infection index could not capture the differences in the provision of quality FP quality services. The same could be the reasons for not detecting differences in the provider's adherence to provision of quality FP service by the selected predictor variables.

This shows that almost all components of the provision of quality FP services need improvement (Annex A).

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ANNEX

Annex A Construction of family planning service delivery readiness, adherence to provision of quality family planning service, infection control, and service offered indexes

Three domains used to construct the service readiness index			Status at survey
Domain	**Tracer indicator**	**Definitions**	
Staff and guidelines	Guideline on family planning	Country adopted guidelines are required/accepted	46.2
	Staff trained in family planning	At least one staff with FP training	37.9
Equipment	Blood pressure apparatus	BP manual apparatus with stethoscope or digital BP machines	90.8
Medicine and commodities	Provide and stock	• combined pill • progestin-only pills • injectable • male condoms	98.7 3.4 99.5 99.7
Service offered index is created using the information on the following services offered by the facilities:			**Status at survey**
Domain	**Tracer indicator**		
Service offered index	• Combined oral contraceptives • Depo-Provera • Condoms • IUCD • Implants • Male sterilization • Female sterilizations • ECP		99.9 99.8 99.8 63.0 62.8 38.2 38.1 37.5
Infection control index was created with whether a facility has the following:			**Status at survey**
Domain	**Tracer indicator**		
Infection control index	• Soap water or alcohol • Glove • Box • Needle destroyer • Waste receptacle • Injection safety precaution guideline		62.0 90.1 93.9 3.5 5.9 2.8
Domains used to construct the adherence to provision of quality FP service (Process)			**Status at survey**
Domain	**Tracer indicator**		
Client history	Provider asked		
	• Age of client		37.8
	• Talked about current pregnancy		28.7
	• Regulatory of menstruation cycle		37.0
Client medical history	Ask about		
	• Smoking habit		1.1
	• Chronic illnesses		7.8
Client examination	Measurement of		
	• Blood pressure		52.4
	• Weight		38.0
Privacy and confidentiality	• Visual privacy assured		47.8
	• Audio privacy assured		39.9
	• Confidentiality assured		7.3
Individual client card, visual aid, and return visit	• Reviewed during consultation		66.3
	• Client card written on after consultation		83.6
	• Visual aids were used during consultation		5.8
	• Return visit discussed		61.6
Side effects	• Discussed concerns		19.6
	• Client expressed concerns about side effect		23.2

Annex B Distribution of family planning clients by selected background characteristics, NHFS 2015

Characteristics of clients	Percent	Confidence interval lb, ub	Number
Age of respondent			
Adolescent age 15-24	25.3	21.1, 30.0	194
Adults age 25 and over	74.7	70.1, 78.9	574
Client ever attended school			
Ever attended school	55.8	49.9, 61.6	429
Never attended school	44.2	38.4, 50.1	339
Status of client as visitor to this facility			
First visit	84.2	77.6, 89.2	647
Repeated visit	15.8	10.8, 22.4	121
Waiting time to see provider			
Saw provider immediately	49.3	42.6, 56.0	379
Have to wait to see provider	50.7	44.0, 57.4	389
Nearest facility to home			
Yes	94.3	91.4, 96.2	724
No	5.7	3.8, 8.6	44
Method used before the day of visit to facility			
None	13.4	10.2, 17.4	103
Pills	14.1	10.4, 18.8	108
Condoms	1.7	0.9, 3.2	13
Depo	65.9	60.5, 70.9	506
IUCD /Implant	5.0	3.5, 7.2	39
Method use status			
Current users	84.1	80.2, 87.4	646
Non user	15.9	12.6, 19.8	122
Reason to visit facility			
Resupply or routine follow-up	75.5	70.9, 79.6	580
Others	34.5	20.4, 29.1	188
Outcome of the visit			
Users continued with the method	75.8	71.1, 79.9	582
Users method switch and others	8.6	5.9, 12.3	66
Non-users accepted to start method	15.7	12.4, 19.6	120
Client had previous contact with provider			
Yes	80.6	76.7, 84.0	619
No or do not know	19.4	16.1, 23.3	149
Received service from trained provider			
No	82.4	75.7, 87.6	633
Yes	17.6	12.4, 24.3	135
Clients provided counselling on the method they took			
No	45.0	39.2, 51.0	346
Yes	55.0	49.0, 60.8	422
Sex of provider			
Male	15.3	10.3, 22.2	118
Female	84.7	77.8, 89.7	650
Years of education of provider			
Less than 11 year	11.6	6.3, 20.4	89
11 to 15 year	80.9	72.9, 87.0	621
More than 15 year	7.5	5.1, 10.8	57
Provider' s category			
Doctor, medical officer, and nurse	75.8	67.3, 82.6	582
Health assistance and other	24.3	17.5, 32.7	186
Years provider started to work			
Before 2000	14.3	9.7, 20.6	110
Year 2000 and after	85.7	79.4, 90.3	658
Years of graduation of provider			
Before 2000	25.0	19.4, 31.7	192
Year 2000 and after	75.0	68.3, 80.6	576
Have provider job description			
Yes observer	18.6	13.5, 25.2	143
No job description	81.4	74.8, 86.5	624
Provider opportunity of promotion			
Yes	30.4	23.0, 39.1	234
No uncertain	69.6	60.9, 77.0	534
Provider supervision in last 6 months			
Supervised in last 6 months	73.0	66.1, 79.1	560
No supervision	27.1	20.9, 33.9	207
First observation for this provider			
Yes	60.8	55.6, 65.7	467
No	39.2	34.3, 44.4	301

Characteristics of clients	Percent	Confidence interval lb, ub	Number
Provider training on FP in last 24 months			
No	81.2	74.5, 86.4	623
Yes	18.8	13.6, 25.5	145
Facility type visited by clients			
Zonal & above hospital	4.7	2.5, 8.6	36
District hospital	8.1	6.0, 10.9	62
Private hospital	2.2	1.1, 4.4	17
PHCC	10.5	9.0, 12.2	81
HPs	70.6	66.7, 74.3	542
UHC	3.8	2.8, 5.1	29
Service readiness			
Poor	41.8	34.3, 49.8	321
Medium	38.4	31.1, 46.3	295
Good	19.7	14.0, 26.0	151
Service offered index			
Poor	53.4	45.3, 61.3	410
Medium	24.6	18.2, 32.4	189
Good	22.0	16.1, 29.3	169
Components of Infection control			
Poor	91.1	87.0, 94.0	700
Good	8.9	6.0, 13.0	68
Have electricity			
No	22.0	16.6, 28.7	169
Yes	78.0	71.3, 83.4	598
Number of days FP service provided per week			
Less than 6 days in a week	6.8	3.7, 12.4	52
6 or more days in a week	93.2	87.6, 96.3	715
Ecological regions			
Mountain	9.7	7.9, 11.9	74
Hills	49.5	44.3, 54.7	380
Terai	40.8	36.0, 45.8	313
Province			
Province 1	18.6	14.4, 23.8	143
Province 2	16.3	12.6, 21.0	125
Province 3	33.9	27.9, 40.5	261
Province 4	7.4	4.4, 12.3	57
Province 5	11.5	8.0, 16.2	88
Province 6	3.2	1.8, 5.6	24
Province 7	9.0	7.4, 11.0	69

Note: n= Family planning clients interviewed/observed
Source: NHFS client exit interview/observation