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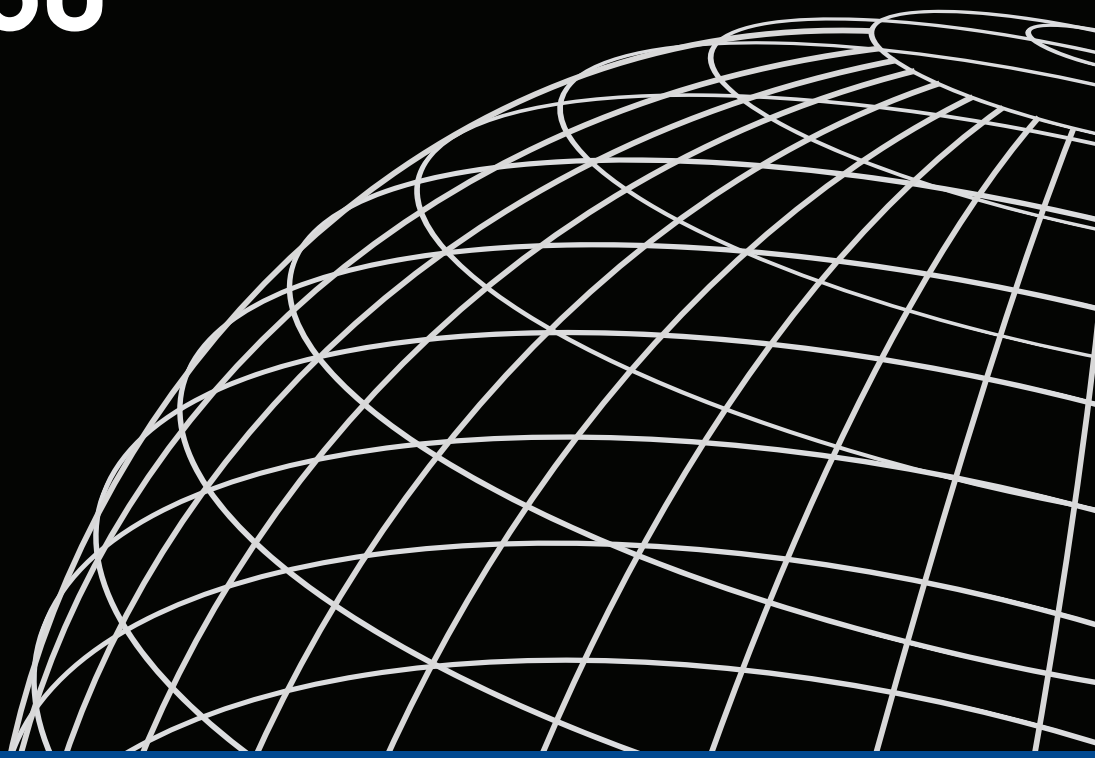
PROVIDER COUNSELING AND KNOWLEDGE TRANSFER IN HEALTH FACILITIES OF HAITI, MALAWI, AND SENEGAL

DHS ANALYTICAL STUDIES 60



August 2016

This publication was produced for review by the United States Agency for International Development. It was prepared by Shireen Assaf, Wenjuan Wang, and Lindsay Mallick of ICF International.

DHS Analytical Studies No. 60

Provider Counseling and Knowledge Transfer in Health Facilities of Haiti, Malawi, and Senegal

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August 2016

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Acknowledgment:
The authors are grateful for the comments provided by Suresh Mehata on an earlier version of the report. Special thanks also goes to Paul Ametepi for his support on general questions related to SPA surveys.

Editor: Bryant Robey
Document Production: Natalie La Roche

This study was carried out with support provided by the United States Agency for International Development (USAID) through The DHS Program (#GPO–C–00–08–00008–00). The views expressed are those of the authors and do not necessarily reflect the views of USAID or the United States Government.

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Recommended citation:

Assaf, Shireen, Wenjuan Wang, and Lindsay Mallick. 2016. *Provider Counseling and Knowledge Transfer in Health Facilities of Haiti, Malawi, and Senegal.* DHS Analytical Studies No. 60. Rockville, Maryland, USA: ICF International.

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Preface

The Demographic and Health Surveys (DHS) Program is one of the principal sources of international data on fertility, family planning, maternal and child health, nutrition, mortality, environmental health, HIV/AIDS, malaria, and provision of health services.

One of the objectives of The DHS Program is to analyze DHS data and provide findings that will be useful to policymakers and program managers in low- and middle-income countries. DHS Analytical Studies serve this objective by providing in-depth research on a wide range of topics, typically including several countries, and applying multivariate statistical tools and models. These reports are also intended to illustrate research methods and applications of DHS data that may build the capacity of other researchers.

The topics in the DHS Analytical Studies series are selected by The DHS Program in consultation with the U.S. Agency for International Development.

It is hoped that the DHS Analytical Studies will be useful to researchers, policymakers, and survey specialists, particularly those engaged in work in low- and middle-income countries.

Sunita Kishor
Director, The DHS Program

Abstract

Effective counseling by health care providers can increase client's knowledge and improve health outcomes. This study uses data from the Service Provision Assessment (SPA) surveys in Haiti (2013), Malawi (2013-14), and Senegal (2012-2013 and 2014) to examine levels of counseling and the extent to which observations of counseling given by providers agree or disagree with client reports of counseling received. The analysis focuses on counseling during antenatal care (ANC), family planning, and sick child visits in health care facilities of the three countries studied. The results reveal overall low levels of counseling observed for many of the counseling topics during ANC, family planning, and sick child visits. Overall, agreement in five counseling topics related to ANC is generally low. For family planning, estimates reveal a fair level of agreement between observed and client-reported counseling in all three countries. Agreement was low to fair for most topics related to sick child counseling, with the highest level of agreement when both the observation and client report agreed that counseling did *not* occur. Regression analysis revealed that the strongest predictor of client knowledge related to ANC was when both observed counseling and client reports agreed that counseling occurred. Results of this study indicate a need for improvement in the quality of counseling, suggested by the lack of overall counseling, the low level of client-observation agreement that counseling occurred, and the finding that a key factor in increasing client knowledge is for the client to acknowledge having received the counseling provided.

KEYWORDS: provider-client interaction, antenatal care counseling, danger signs, preparation for delivery, family planning counseling, knowledge of methods, sick child counseling, child care counseling, Haiti, Malawi, Senegal

Executive Summary

Introduction

If conducted effectively, provider counseling during health care visits can increase client's knowledge of their health risks and responsibilities. Previous studies have found that counseling provided during antenatal care (ANC), family planning, and sick child visits can improve related maternal and child health outcomes. This study explores the level of counseling and knowledge transfer from the provider to the client during ANC, family planning, and sick child visits in health care facilities of Haiti, Malawi, and Senegal. The analysis considered both the observation of whether counseling was performed and the client's report of whether counseling was received.

Methods

The analysis used data from four Service Provision Assessment (SPA) surveys in three countries: Haiti 2013, Malawi 2013-2014, Senegal 2012-2013, and Senegal 2014. For each type of visit—ANC, family planning, or sick child—and for several counseling topics, the observation and client's report were combined to examine the level of agreement. Cohen's kappa statistics and percent agreement estimates were produced for each counseling item. In addition, regression analysis was performed on the number of danger signs during pregnancy known by the client and the number of ways to prepare for delivery. The regression included the combined counseling variable as well as client, provider, and facility characteristics. No regressions on family planning and sick child knowledge were performed, since there was little variability in the family planning knowledge outcomes and there were no questions asked to test clients (caretakers) on sick child knowledge.

Results

ANC:

Eight different counseling topics were observed during the ANC visit: danger signs during pregnancy, nutrition during pregnancy, how to prepare for delivery, where to deliver, exclusive breastfeeding, family planning after delivery, how to take iron bills, and side effects of iron pills. All three countries had low levels of counseling observed for exclusive breastfeeding, family planning after delivery, and side effects of iron pills. With a few exceptions, both Haiti and Malawi had low levels of agreement between the observation and client's report. Senegal had higher levels of agreement on five of the eight counseling items, indicating a moderate level of agreement according to the kappa estimates. However, Senegal also had the lowest levels of observed counseling. In both Senegal and Haiti, the lowest level of agreement was for counseling on danger signs during pregnancy. The level of positive agreement (both observation and client agree) on counseling for danger signs was 17% in Haiti, 23% in Senegal, and 33% in Malawi. The level of positive agreement for pregnancy preparation was 7% in Haiti, 18% in Senegal, and 55% in Malawi.

Two knowledge variables related to ANC were analyzed: the number of danger signs known and the number of ways the client knows to prepare for delivery. Regression results for both outcomes revealed no statistical difference between the knowledge of clients who agreed with the observation that no counseling was given and the knowledge of clients who reported not being counseled but the provider was observed to have given the counseling. For both outcomes it was the client's report that the counseling occurred that was significantly associated with increased knowledge, and the highest estimates were when both observation and the client's report agreed that the counseling occurred.

Family planning:

Family planning providers were observed as to whether they provided counseling to clients who had questions or concerns about their current method, how to use a method provided or prescribed during the visit, side effects of the method, and when to return for follow-up services. In all three countries counseling on client's questions on current method and how to use the method was more commonly observed than counseling on side effects and follow-up services. The kappa estimates showed a fair level of agreement for all the counseling items in all three countries. When combined with the client's report on whether counseling occurred, high levels of positive agreement (client and observation agree) were found in Haiti for counseling on how to use method, and in Malawi and Senegal for counseling on problems with current method and how to use the method.

In all three countries client's knowledge on method use was very high. Client's knowledge on their method's protection from STIs was high in Haiti and Malawi, at 85% or more, while in Senegal 58% of clients had correct knowledge of their method's protection from STIs.

Sick child care:

There were four different types of counseling observed during the sick child visit: whether or not the provider told the client what illness the child had, whether the provider informed the child's caretaker about the signs or symptoms for which they should bring the child back immediately, whether the child's weight or growth was discussed, and whether the provider asked about feeding the child when the child is sick. The highest level of counseling observed was on feeding when the child is sick (15%-25%), except for Malawi, where the highest level of counseling was observed for informing the caretaker of the child's illness (41%). There was almost no agreement or only a fair level of agreement between the observation of counseling provided and the client's report, for all four counseling items. In contrast, the level of agreement was high between the observation and client's report that the counseling did *not* occur, in all countries and for all counseling items except in Malawi for counseling about the nature of the child's illness.

Conclusions

Quality of counseling is generally poor in all three of the study countries. Health workers provided inadequate counseling on important elements related to ANC, family planning, and sick child issues, and the limited counseling given did not appear to transfer efficiently to client's knowledge. The study provides evidence for the need to provide better training in counseling for health providers. Caution should be taken when using self-reported data from clients, because clients tend to over-report receipt of services.

1. Introduction and Rationale

Counseling delivered to clients during health care visits can contribute to the increased knowledge of the client's health risks and responsibilities and in turn can have an effect on improving health outcomes. However, this depends on the quality of the counseling and whether the information and health messages provided are effectively communicated and understood by the client. This study explores the level of counseling and knowledge transfer from the provider to the client during antenatal care (ANC), family planning, and sick child visits in health care facilities of Haiti, Malawi, and Senegal. The main questions of interest are whether providers gave specific counseling related to these services and whether the client reported that they received the counseling. Ideally, there should be no difference between the observation of counseling and the client's report of it, with both agreeing that the counseling took place. In order for clients to be aware that counseling was provided, however, the counseling must be effective and understood. The study analyzes data from three countries with Service Provision Assessment (SPA) surveys that contain both observation of provider counseling and client exit interviews in ANC, family planning, and sick child services. Further analysis on the knowledge of clients in topics related to recognizing danger signs that could lead to pregnancy complications and preparation for delivery is conducted to show whether the counseling provided in these areas improved client knowledge after controlling for selected background characteristics of clients, providers, and facilities.

1.1. Literature Review

Many studies have demonstrated the importance of counseling during health care visits. Studies show that counseling provided during ANC visits can increase the likelihood of delivery by a skilled birth attendant, birth preparedness, newborn care, breastfeeding, and using contraception after delivery (Ahmad et al. 2012; Baqui et al. 2007; Dunlop et al. 2013; Mpembeni et al. 2007; Nikiéma, Beninguisse, and Haggerty 2009; Soliman 1999; Sonalkar, Mody, and Gaffield 2014). Specific counseling on danger signs that could lead to complications during pregnancy is important as this could help expecting mothers to recognize these danger signs and respond in a timely manner. Delays in seeking health care for pregnancy complications increase the risk of maternal mortality and morbidity; recognizing and acting on danger signs of pregnancy complications can help reduce these risks (Duysburgh et al. 2013; Mbalinda et al. 2014). In addition, women who are knowledgeable about danger signs during pregnancy are better prepared for delivery (Kabakyenga et al. 2011; Mbalinda et al. 2014). Counseling provided during family planning visits can increase the likelihood of contraceptive use and continuation (Kamhawi et al. 2013; Lee et al. 2011). In addition, Judith Bruce's framework on quality of family planning services highlights the importance of the provider-client relationship in ensuring a high quality of family planning services (Bruce 1990). Studies have found that women who are more satisfied with the quality of family planning services are more likely to continue using contraceptive methods and to have higher modern contraceptive prevalence compared with women who are less satisfied with the quality of family planning services (Arends-Kuenning and Kessy 2007; Blanc, Curtis, and Croft 2002; Mariko 2003; RamaRao et al. 2003; Sanogo et al. 2003). Finally, counseling given to mothers on nutrition and feeding practices during child care visits can increase the knowledge of mothers and caregivers as well as improve the child's growth and nutritional status (Santos et al. 2001; Zaman, Ashraf, and Martines 2008).

For counseling to be effective in improving health outcomes for visiting clients and/or their children, it must be of good quality, and knowledge must be successfully communicated by the provider and retained by the client. Having an effective counseling session during a health facility visit can be related to the provider-client interpersonal relationship as well as the provider's technical competency and attitude towards counseling, which is linked to the measurement of quality of care (Bruce 1990; Donabedian 1988; Hutchinson, Do, and Agha 2011; Vickers et al. 2007). It can also be linked to the type of counseling provided. A study in Egypt found that offering client-centered family planning counseling versus physician-

centered counseling significantly increased the likelihood of contraceptive method continuation (Abdel-Tawab and Roter 2002). Client-centered counseling includes not only the provider's communication of technical information but also a mutual understanding and collaboration between provider and client (Abdel-Tawab and Roter 2002; Clift 2001). In Benin another study found that the use of job aids as counseling materials significantly improved the number of counseling items provided, as well as the improving clients' knowledge compared with a control group that did not use job aids (Jennings et al. 2010). Time constraints can also have an impact on the quality of counseling because they may prevent the provider from having enough time to transfer the required information to the client effectively (Magoma et al. 2011; von Both et al. 2006). Finally, language barriers may play a role in the effectiveness of provider-client communication, particularly in countries with multiple local and national languages (Groh et al. 2011).

Measuring quality of care at health facilities often relies on either observations of provider-client interaction during consultations or on client reports from exit interviews. However, there is limited research assessing the consistency or agreement between observations and client reports. This is particularly important when only one tool can be implemented because of resource constraints. Bessinger and Bertrand (2001) examined the comparability of data from observations and exit interviews at health facilities in Ecuador, Uganda, and Zimbabwe. They found that agreement on a majority of the indicators studied was good to excellent and was relatively higher on the indicators of interpersonal relationships but lower on those measuring information given to clients. Tumlinson and colleagues (2014) compared agreements between simulated client data with data from client interviews and observations of client-provider interaction. They found that observations more accurately measured indicators related to method choice and provider competence but less so for indicators related to information given. Client interviews also yielded low agreement on indicators of information given during consultations.

As mentioned, the current report focuses on three countries with available SPA data on counseling during ANC, family planning, and sick child visits in health facilities in Haiti, Malawi, and Senegal. Table 1 shows the main indicators reported in the most recent Demographic and Health (DHS) surveys in these countries related to use of ANC, family planning, and sick child services. Less than half of women had four or more ANC visits in Malawi and Senegal, and less than half were informed of pregnancy complications in Senegal. Fertility rates were relatively high, especially in Malawi and Senegal, and modern contraceptive use was especially low in Senegal. Care-seeking behavior for symptoms of acute respiratory infections (ARI), fever, and diarrhea was higher in Malawi than in the Senegal and Haiti.

Table 1. Selection of indicators from the DHS surveys of the countries included in the analysis

	Haiti 2012	Malawi 2010	Senegal 2014
	%	%	%
ANC indicators			
Four or more ANC visits for the last pregnancy*	67.3	45.5	48.1
Informed of signs of pregnancy complications*	65.0	79.5	44.0
Family planning indicators			
Total fertility rate for the three years preceding the survey	3.5	5.7	5.0
Modern contraceptive use among currently married women	31.3	42.2	20.3
Knowledge of modern methods among married women	100.0	99.7	96.5
Informed about side effects or problems with method among women currently using a method	73.4	78.7	80.2
Informed about what to do if experienced side effects with method among women currently using a method	63.7	74.9	76.6
Sick child indicators			
Under-five mortality rate (per 1,000 live births) in the 10 years preceding the survey	88	112	54
Knowledge of ORS packets*	98.2	95.9	73.4
Children under age 5 with ARI symptoms taken to a health facility	37.9	70.3	42.2
Children under age 5 with fever symptoms taken to a health facility	40.1	64.6	45.8
Children under age 5 with diarrhea symptoms taken to a health facility	33.9	62.1	32.9

* Among women with a live birth in the five years preceding the survey
Source: STATcompiler

Of particular relevance to this report is the proportion of women who reported that they know or have received information on particular topics. As Table 1 shows, almost all married women have knowledge of modern contraceptive methods but not all reported receiving information about the side effects or problems of the methods or know what to do if they experience side effects. The percentage of women who reported receiving information on signs of pregnancy complications ranged from a high of 80% in Malawi to just 44% in Senegal. Almost all women in Haiti and Malawi and almost three-fourths (73%) of women in Senegal have heard of ORS packages. These data suggest a need for improving the level of counseling or information provided to women about family planning as well as recognizing pregnancy complications. Further analysis of the counseling provided in health facilities can shed more light on the quality of the counseling in these areas and whether it is effective in transferring knowledge to clients visiting the facilities for ANC, family planning, and sick child services.

2. Data and Methods

2.1. SPA Data

The Service Provision and Assessment (SPA) surveys conducted by The DHS Program are designed to assess the delivery of services in the health care facilities of a country, taking a national sample of the country's formal-sector health facilities or in some countries a census of all the health facilities in the country. The SPA surveys include a health facility inventory, which collects information on the infrastructure, equipment, commodities, and medicines available in the health facility and, if applicable, whether they are valid or functioning. The SPA survey also collects data on service providers and may include an observation checklist of providers during client consultations as well as exit interviews with the observed clients.

This study is based on data from the SPA surveys in Haiti 2013, Malawi 2013-2014, Senegal 2012-2013, and Senegal 2014. For Haiti and Malawi, the SPA was a census, including all formal-sector health facilities in the country. The two Senegal SPA surveys are part of the Senegal continuous survey project, which began in 2012 and is expected to end in 2017. Each year or round of the Senegal continuous survey contains an SPA component and a DHS component. In the 2012-2013 Senegal SPA, observation and exit interviews were performed for family planning and sick child services but not for ANC, and in 2014 there were observation and exit interviews for ANC and sick child services but not for family planning. The Haiti and Malawi SPAs contained observation and exit interviews for all three components. Table 2 summarizes the number of facilities and observations included in the SPA surveys analyzed in this study.

Table 2. Number of facilities interviewed and consultations observed in SPA surveys included in this report

	Haiti 2013	Malawi 2013-2014	Senegal 2012-2013	Senegal 2014
Number of facilities included in the SPA	905	977	364	363
Number of ANC consultations observed	1,620	2,068	NA	1,211
Number of family planning consultations observed	1,302	1,499	968	NA
Number of sick child consultations observed	2,442	3,329	1,311	1,212

NA = data not available

2.2. Measures

The analysis was divided into three main components of ANC, family planning, and sick child services. The variables constructed for the analysis of each of these components are described below.

2.2.1. ANC measures

Counseling variables:

The ANC observation checklist contained several observations of counseling during the client's ANC visit. These included counseling on danger signs of pregnancy complications, nutrition during pregnancy, how to prepare for delivery, where to deliver, exclusive breastfeeding, family planning after delivery, how to take iron bills, and side effects of iron pills. For each of these observations the checklist indicated whether the provider asked about, advised, or discussed these topics. The client exit interview included questions

on whether the counseling items listed above were performed by the provider, with five possible responses: 1) yes, this visit only; 2) yes, this and previous visit; 3) previous visit only; 4) no; and 5) don't know. In order to match the client's report on the counseling with the observation of whether the provider gave the counseling (i.e. asked about, advised, or discussed the topic), only the responses that included the current visit (i.e. responses 1 and 2) were combined to indicate that the client reported that counseling was provided during this visit. A variable was then created to combine the observation of the counseling and the client's report of whether the counseling took place. This combined variable has four categories: 1) both agree that counseling was not provided; 2) the provider was not observed to give the counseling but the client reported receiving it; 3) the provider was observed to give the counseling but the client did not report receiving it; and 4) both agree that the counseling was given. For this combined variable (categories 1 and 4), the agreement is between the observation checklist and the client's report.

In addition to the questions on the counseling items, clients were also asked about specific advice they received from the provider during their ANC visit. One of these questions about the advice that the provider gave if the client experienced any signs of pregnancy complications. The responses were: 1) seek care at a facility; 2) reduce physical activity; 3) change diet; 4) other; and 5) provider did not advise. Only the response "seek care at facility" was considered to be the correct advice and was therefore used as a measure of the quality of the counseling provided. Another question on exclusive breastfeeding asked of the client was how many months the provider recommended exclusive breastfeeding. Only the response of six months was considered to be the correct advice.

Knowledge variables and their associated counseling variables:

Three main questions in the ANC exit interview tested client knowledge related to danger signs of pregnancy complications, how to prepare for delivery, and side effects of iron pills. For the question that tested the client's knowledge of danger signs of pregnancy complications, the possible responses included: vaginal bleeding; fever; swollen face or hands; tiredness or breathlessness; headache or blurred vision; seizures or convulsions; reduced or no fetal movement; other; and don't know—for a total of seven possible signs that the client could report. The danger signs in the client exit interview were largely the same as those in the observation checklist for counseling on danger signs of pregnancy complications, except that the question on seizure or convulsions replaced a question about cough or difficulty breathing in the observation checklist.

For the exit interview question testing client knowledge on how to prepare for delivery, the possible responses included: emergency transport; money; disinfectant; sterile blade or scissors to cut the cord; other; and don't know—for a total of four main ways to prepare for delivery that the client could report. In the observation checklist, counseling on preparation for delivery included whether the provider advised the client to prepare for delivery and whether the provider discussed with the client what items to have on hand or at home for emergencies. These two observations were combined to create the variable for provider's counseling on preparation for delivery.

The responses to the exit interview question testing client knowledge on the side effects of iron pills included: nausea; black stools; constipation; other; and don't know. The providers were also observed as to whether they counseled clients on side effects of iron pills.

2.2.2. Family planning measures

Counseling variables:

Family planning providers were observed during the counseling process as to whether they asked clients if they had questions or concerns regarding their current contraceptive method; whether they counseled on how to use the method; whether they discussed side effects of the method; and whether they gave advice

on when to return for follow-up services. Counseling on problems with the current method and how to use the method were observed for all contraceptive method users, while discussion on side effects and when to return were observed only for clients who were provided or prescribed the pill, injectable, IUD, or implant. In the exit interview family planning clients were asked if the provider had covered each of these counseling elements. Combing observation data and client reports data, four variables were created, one for each counseling item, to measure agreement between the observations and client reports. These variables, which are measured specifically for the method provided or prescribed to the client, have four categories: 1) both agree that counseling was not provided; 2) the provider was not observed to give the counseling but the client reported receiving it; 3) the provider was observed to give the counseling but the client did not report receiving it; and 4) both agree that the counseling was given.

Knowledge variables:

Based on exit interview data, two variables were created to assess client's knowledge on contraceptive methods. The first is client's general knowledge on the method they are using or intend to use. For example, pill users were asked "how often do you take the pill?" Clients who reported "once a day" were considered to have correct knowledge on pill use. Questions asked for users of other methods are listed in Appendix 4. The other knowledge variable is whether clients had correct understanding about STI protection of their method. This variable was created based on client's response to the question "does your method protect against sexually transmitted infections (STIs), including HIV/AIDS". Users of male or female condoms who reported "yes" and users of other methods who reported "no" are considered to have correct knowledge of method protection against STIs.

2.2.3. Sick child measures

Counseling variables:

The observation of sick child visits included a number of items for counseling of the caretaker (client) regarding diagnosis or care for the child. The observer recorded whether or not the provider told the client what illness the child had, whether the provider informed the caretaker of the signs or symptoms for which they should bring the child back immediately, whether the child's weight or growth was discussed, and whether the provider asked about feeding the child when he or she is ill. In the exit interview clients also were asked if the provider spoke to them about the above topics. For the signs and symptoms that indicate a caretaker should immediately bring the child back, the client was asked if the provider told them of any signs or symptoms for which they must immediately bring the child back. This question included several response options listing different signs or symptoms, including: fever, breathing problems, becomes sicker, blood in stool, vomiting, poor eating, and poor drinking. If the client reported that the provider mentioned at least one of these signs or symptoms, a variable was created to indicate that the client reported receiving the counseling. For the other three items, whether the provider told the client what the illness was, whether the provider discussed the child's weight and growth, and whether the provider discussed feeding the child when sick, responses of "yes" or "no" were coded as a dichotomous variable. Missing responses or responses of "don't know" or "cannot remember" were treated as no response.

Consistent with the methodology for creating variables related to the ANC and family planning analyses, a variable for each counseling topic related to child illness was created that combined the observation of the provider and the client's report of receiving counseling on that topic, to assess the level of agreement between provider and client. As described above, the categories were 1) both agree that counseling was not provided; 2) the provider was not observed to give the counseling but the client reported receiving it; 3) the provider was observed to give the counseling but the client did not report receiving it; and 4) both agree that the counseling was given.

The sick child exit interview did not contain any questions that could qualify as testing the knowledge of the caregivers. Therefore, no knowledge variables were constructed.

2.2.4. Independent variables

Characteristics related to the client, provider, and facility were used to construct independent variables for the analysis. For the client, this included client's age (<20, 20-29, 30-35, 36 and above, and don't know), and client's education (none, primary/post primary, and secondary or more) for analysis of ANC, family planning and sick child services. For ANC analysis, the number of ANC visits (first visit, 2, 3, 4 or more) and client's first pregnancy (yes, no) were also included. For the family planning analysis, whether the client is a new or returning client and client's contraceptive method type (pill, progestin injectable, or other) were also included. For the sick child analysis, the caretaker relationship (mother or other), and child's sex, child's age (under age 1, one up to age 3, and age 3-6) were included. The provider variables used in the analysis included the provider category (categories varied by ANC, family planning, and sick child analysis), years of education (<16, 16-18, 19 or more), provider received training in counseling within 24 months (yes, no) for the ANC and family planning analysis, and within 36 months for the sick child analysis, and the number of items on which they were supervised (none, 1-5, 6). Finally, the facility-related independent variables included the managing authority (private/faith/NGO/other or government), health facility type (hospital, health center, other, which includes health posts, health huts, etc.), location (urban, rural), and region. For Haiti, regional departments were grouped into North (North, Northeast and Northwest regions), Center (Artibonite and Center regions), South (South, Southeast, Grand-Anse, and Nippes regions) and West (West region). Malawi only contained three regions and so no grouping of regions was necessary. For Senegal, provinces were grouped as Northern (Louga, Matam, and Saint Louis regions), Dakar, Theis, Central (Diourbel, Fatick, Kaffrine and Kaokack regions), East (Kedougou and Tambacounda regions) and South (Kolda, Sediou, and Ziguinchor regions). In addition to the characteristics of client, provider, and facility, the duration of the consultation in minutes was also included as an independent variable.

2.3. Analysis

Cohen's kappa statistic and percent agreement was used to measure the level of agreement between observation of the provider giving the counseling and the client's report of whether the counseling occurred. This procedure was conducted for the counseling measures in ANC, family planning, and sick child services, as described above. A kappa estimate between 0.81-1.0 indicates perfect agreement and a kappa of zero or less indicates no agreement (McHugh 2012; Viera and Garrett 2005). Between these two extremes, a kappa between 0.21-0.40 is considered fair agreement, between 0.41-0.60 is moderate agreement, and between 0.61-0.80 is substantial agreement (McHugh 2012; Viera and Garrett 2005). Cohen's kappa can be low when there is a substantial imbalance in the marginal totals of a cross-tabulation between two variables or if the component examined is a rare event (Feinstein and Cicchetti 1990; Viera and Garrett 2005). However, the kappa statistic has the advantage over the percent agreement statistic in that it takes into account that the agreement is not due to chance (Viera and Garrett 2005). Therefore, the study reports both the kappa and the percent agreement in the results. A cutoff point of at least 80 percent agreement is recommended and is considered acceptable (McHugh 2012); however, this depends on the study discipline. In addition, cross tabulations and chi-square tests of independence were performed between the counseling variables, which combined the observation and the client's report and independent variables related to the client, provider and facility. For the duration of consultation, an F-test was performed to test the independence of the mean duration times with the consultation variables.

To examine the level of knowledge in ANC-related topics, the outcome variables were the number of danger signs during pregnancy the client reported and the number of ways the client knew to prepare for delivery. As these outcomes are count data, they were modeled using either Poisson or negative binomial regression.

A client could report up to a total of seven danger signs and four ways to prepare for delivery. To determine whether to use Poisson or negative binomial regression, a test of the goodness of fit of the Poisson model was used as well as a likelihood ratio test of the overdispersion parameter. A significant p-value in both cases would indicate that a Poisson regression model is not appropriate and a negative binomial regression model should be used instead. For these regressions, one model was fit for all clients and a separate model was fit for clients with their first pregnancy. In addition, separate models were fit to include the counseling variable on whether the provider gave the counseling related to the knowledge and another model to include the counseling variable that combined the observation of counseling and the client's exit interview report.

For the analysis of family planning knowledge, levels of correct knowledge on method use and STI protection were described for each of the three countries. Multivariable regression analysis was not performed since most women, 85% or higher (Figure 5), had correct knowledge, except in Senegal for knowledge on STI protection. In Senegal only 58% of women correctly identified whether their method protects against STIs, but it is not possible to model the transfer of knowledge because the Senegal SPA did not ask clients whether they received such counseling during the visit. In Senegal, Assaf, Wang, and Mallick (2015) analyzed the effect of whether counseling provided information on method's protection from STIs (obtained for the observation checklist) improved the client's knowledge on method protection against STI. The study showed that counseling did not significantly improve client's knowledge.

All analyses took into consideration the cluster and weights for each survey. For Haiti and Malawi the SPA was a census and therefore no stratification was required. For the Senegal SPA surveys the stratification was achieved by combining facility type and region.

3. Results

3.1. Antenatal Care

3.1.1. Provider-Client Counseling in ANC

The ANC observation checklist includes eight different types of counseling: counseling on danger signs of pregnancy complications, nutrition during pregnancy, how to prepare for delivery, where to deliver, exclusive breastfeeding, family planning after delivery, how to take iron bills, and side effects of iron pills. Figure 1 shows the percentage of providers who were observed offering these different types of counseling during the ANC consultation. In general, in all three countries little counseling was provided on these topic, especially counseling on exclusive breastfeeding, family planning after delivery, and the side effects of iron pills. Counseling on how to prepare for delivery was also relatively infrequent in Haiti and Senegal. Malawi had the highest percentages of counseling observed, compared with Haiti and Senegal, in all areas except nutrition during pregnancy, where it was a close second after Haiti. In Malawi over 50% of providers were observed to offer counseling on the danger signs of pregnancy complications, how to prepare for delivery, where to deliver, and how to take iron pills.

Figure 1. Percent of providers observed to offer counseling on the following items during ANC visits

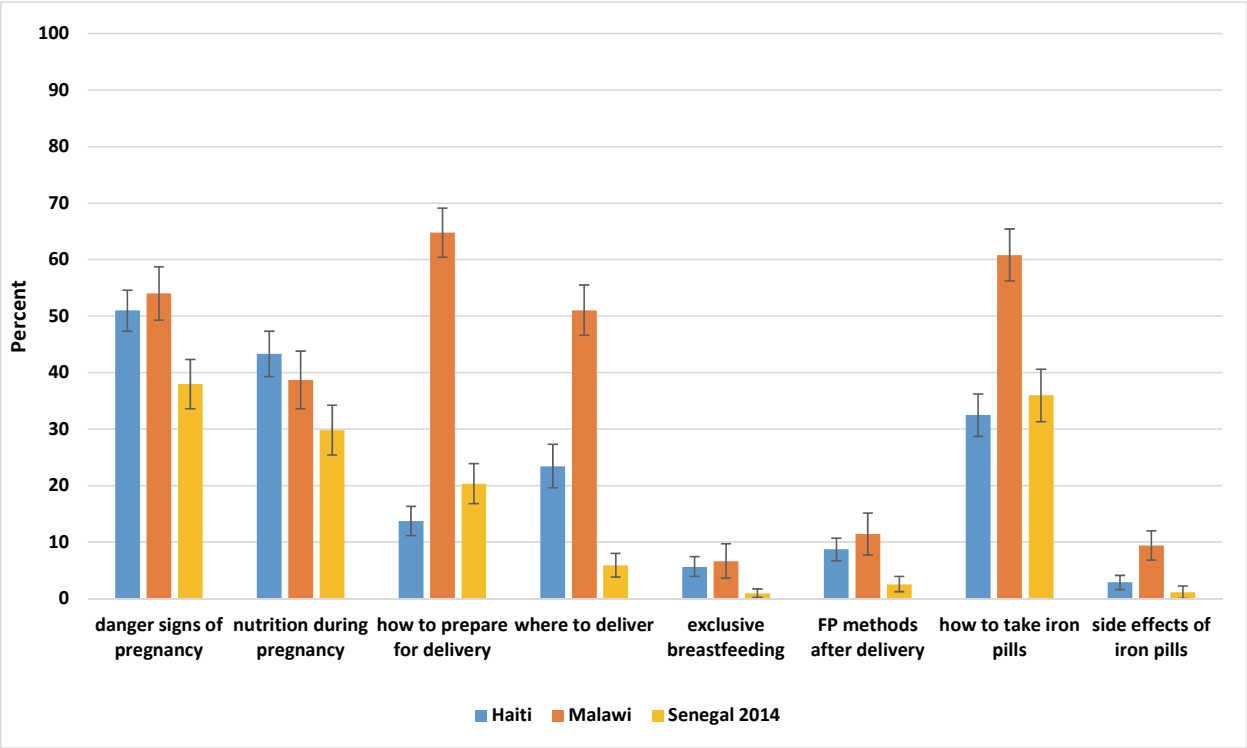


Table 3 includes the client's reports of whether counseling was provided in all eight ANC counseling items during the visit observed for the survey. In general, with a few exceptions such as counseling on danger signs, clients reported a higher level of receiving counseling than was observed during the ANC visit. In addition, Cohen's kappa statistics of agreement were performed between the observation of the provider offering counseling and the client's report of having received the counseling. All of the kappa estimates were significant and most did not show a high level of agreement, especially for Haiti and Malawi.

Table 3. Percentage of providers observed to offer counseling on the following ANC items and the percentage of clients reporting receiving the counseling, with reported percent agreement and kappa statistics

	Haiti						Malawi						Senegal 2014					
	Provider observed		Client reported		Percent agree-ment	Kappa	Provider observed		Client reported		Percent agree-ment	Kappa	Provider observed		Client reported		Percent agree-ment	Kappa
	%	C.I.	%	C.I.	%		%	C.I.	%	C.I.	%		%	C.I.	%	C.I.	%	
Danger signs of pregnancy complications																		
Any signs	51.0	[47.3,54.6]	30.3	[26.8,33.8]	52.3	0.053	54.0	[49.3,58.7]	51.3	[47.5,55.1]	60.1	0.200	38.0	[33.6,42.3]	51.3	[46.8,55.9]	56.4	0.134
Maintaining a health pregnancy																		
Nutrition during pregnancy	43.3	[39.3,47.3]	33.7	[30.3,37.0]	69.9	0.370	38.7	[33.6,43.8]	49.3	[45.0,53.7]	70.2	0.401	29.8	[25.4,34.2]	28.2	[24.1,32.3]	88.5	0.720
Preparing for delivery																		
How to prepare for delivery	13.7	[11.1,16.3]	17.4	[14.8,20.0]	82.7	0.342	64.8	[60.4,69.1]	74.5	[71.2,77.7]	71.1	0.324	20.3	[16.8,23.9]	23.0	[19.3,26.8]	91.6	0.752
Where to deliver	23.4	[19.6,27.3]	29.2	[25.6,32.8]	77.7	0.426	51.0	[46.6,55.5]	55.5	[51.4,59.5]	63.1	0.261	5.9	[3.8,8.0]	9.7	[7.2,12.1]	91.7	0.428
Newborn and postpartum recommendations																		
Exclusive breastfeeding	5.6	[3.9,7.4]	22.9	[19.9,25.9]	78.9	0.188	6.6	[3.6,9.7]	35.7	[32.1,39.3]	68.1	0.152	0.9	[0.2,1.7]	3.6	[2.0,5.1]	96.7	0.264
Family planning methods after delivery	8.7	[6.7,10.7]	19.2	[16.7,21.8]	83.8	0.340	11.4	[7.7,15.1]	31.0	[27.6,34.4]	72.0	0.208	2.5	[1.2,3.9]	5.7	[3.9,7.5]	96.1	0.504
Iron																		
How to take iron or folic-acid pills	32.5	[28.7,36.2]	59.3	[55.7,62.9]	59.9	0.247	60.8	[56.2,65.4]	82.8	[79.6,86.1]	71.8	0.342	36.0	[31.3,40.6]	54.5	[49.9,59.1]	75.5	0.522
Side effects of iron pills	2.9	[1.6,4.1]	13.9	[11.3,16.4]	85.1	0.063	9.4	[6.8,12.0]	12.8	[10.6,15.1]	83.7	0.178	1.1	[0.0,2.2]	3.1	[1.6,4.7]	97.3	0.367

The significance of the kappa estimates indicates that the reported estimates are not due to chance. In Haiti the kappa estimate was less than 0.41 (the threshold for moderate agreement) in all the counseling items except for where to deliver, with the lowest agreement for counseling on danger signs (0.053) and side effects of iron pills (0.063). The percent agreement in Haiti was above 80% for counseling on how to prepare for delivery, family planning after delivery, and side effects of iron pills. The low kappa but high percent agreement found in Haiti for counseling on family planning after delivery, exclusive breastfeeding, and side effects of iron pills is due to the low levels of counseling provided in these areas, making them rare events (Viera and Garrett 2005).

In Malawi the kappa estimates were also below 0.41 for all counseling items but with counseling on nutrition during pregnancy very close to the 0.41 threshold (kappa of 0.401). The lowest kappa was found for counseling on exclusive breastfeeding (0.152). Only counseling on side effects of iron pills had a percent agreement above 80%; this counseling had a kappa 0.178, and the discrepancy between these two measures is again due to the low level of counseling provide in this area. Four counseling items had a percent agreement above 70%: nutrition during pregnancy, how to prepare for delivery, family planning after delivery, and how to take iron pills. The kappa estimates for these counseling items indicate a fair level of agreement.

Senegal had the highest kappa estimates of the three countries, with five of the eight counseling items having a kappa above 0.41, two of which were above 0.61, for counseling on nutrition during pregnancy and how to prepare for delivery, indicating substantial agreement for these two counseling items. The lowest kappa estimate in Senegal was found for counseling on danger signs of pregnancy complications (0.134), and this was also the counseling item with the lowest kappa estimate in Haiti (0.053). While Senegal had the highest level of agreement among the three countries, it was the country with the lowest levels of observed counseling. Therefore, most of the agreement was due to both the observation and client's report indicating that no counseling was performed in these areas.

Figures 2-4 show the distribution of the combination of the provider observation and client's report on the counseling items for Haiti, Malawi, and Senegal. The combined counseling variables were not produced for counseling on exclusive breastfeeding, family planning after delivery, and the side effect of iron pills due to the low percentages of counseling in these areas. In Haiti the level of positive agreement between observation and the client's report that the counseling took place (both agree, yes) was relatively low for all counseling items. The level of disagreement between the observation and client was over 40% for counseling on danger signs and how to use iron pills. While over 50% of the providers were observed to give counseling on danger signs of pregnancy complications (Table 3), there was only 17% agreement between the observation of counseling and the client's report that the counseling occurred. Moreover, there was 76% agreement between the observation and client's report that no counseling was provided on preparation for pregnancy.

Figure 2. Agreement between observation and client's report on ANC counseling items, Haiti

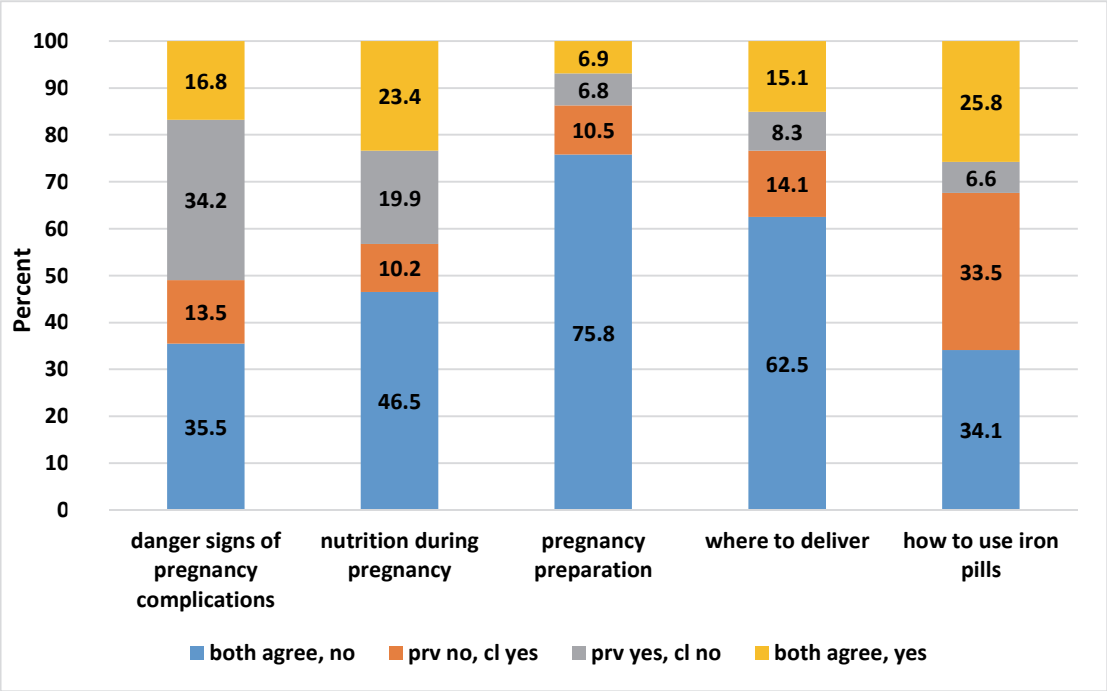


Figure 3. Agreement between observation and client's report on ANC counseling items, Malawi

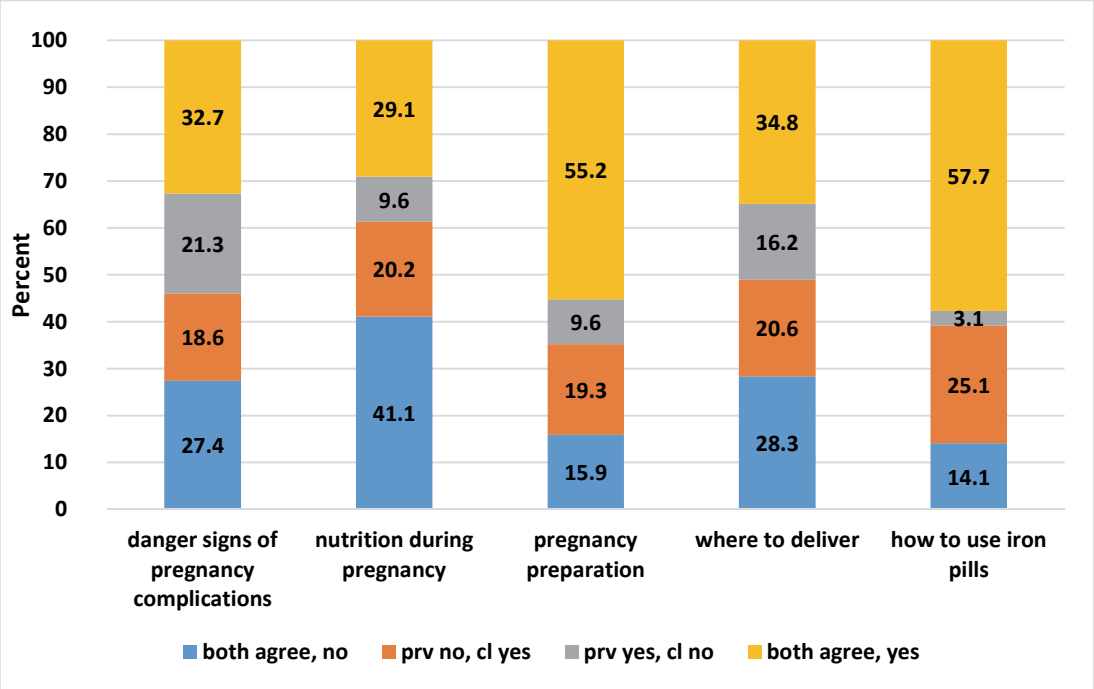
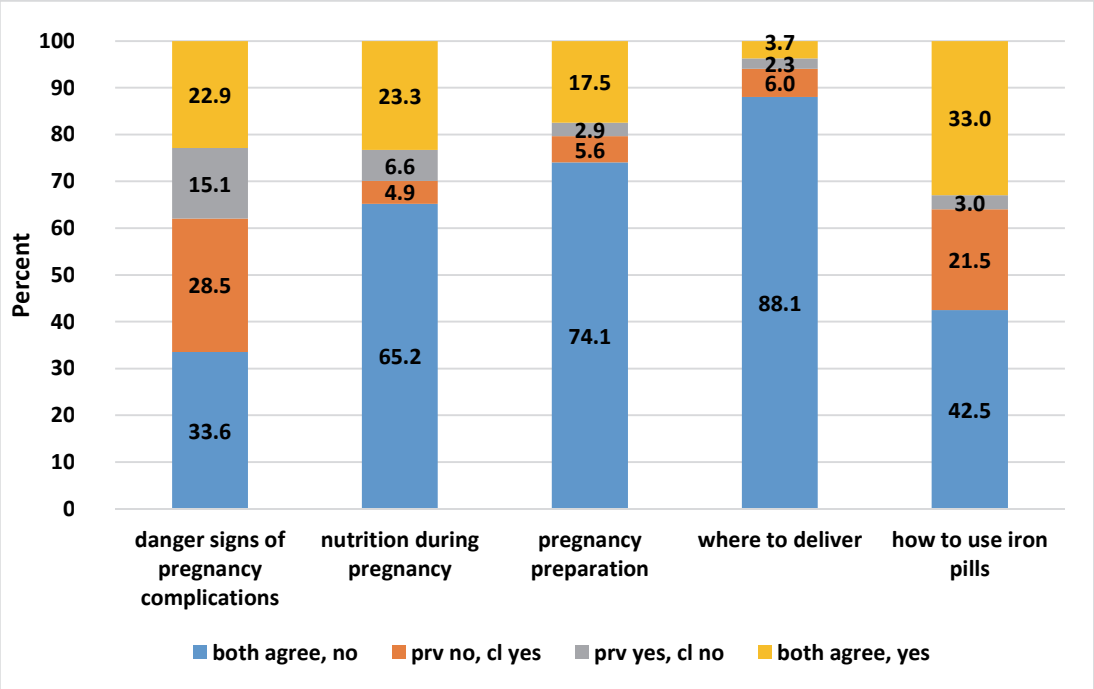


Figure 4. Agreement between observation and client's report on ANC counseling items, Senegal 2014



In Malawi the percentages of positive agreement between observation and client's report that the counseling occurred were approximately 30% or above, with the level of agreement in counseling on pregnancy preparation and how to use iron pills over 55%. The highest level of disagreement was for counseling on danger signs, at almost 40%.

For Senegal the level of agreement between observation and client's report on counseling was also relatively low, as for Haiti. The least agreement was found in counseling on where to deliver, with only 4% agreement that the counseling occurred but with 88% agreement that counseling did not occur. The highest level of disagreement was, again, found for counseling on danger signs, at over 40%.

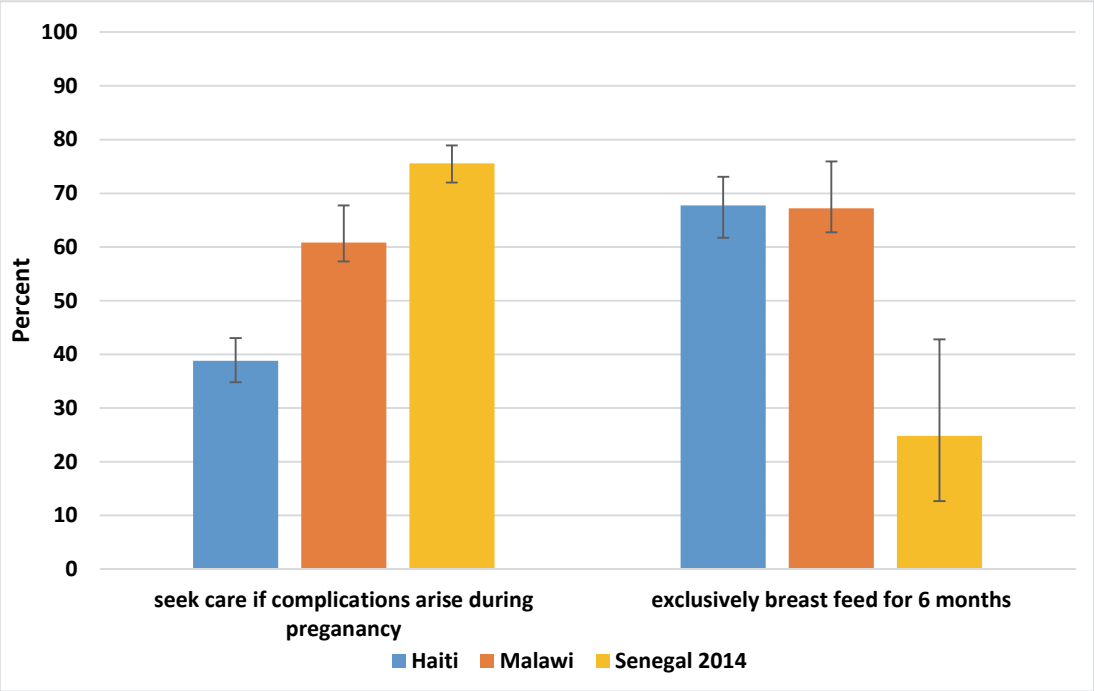
Cross-tabulations of the five counseling items that combine the observation and client's reports with client, provider, and facility variables are shown in Appendices 1-3. Very few variables were found to be significant across all counseling items and in all three countries. In Haiti and Malawi the duration of the consultation was significant for most of the counseling items, with the longest duration found when both client and observation agree that the counseling took place. In Senegal the duration of consultation was only significantly different for counseling on danger signs and nutrition.

For Haiti, Appendix 1 shows that none of the background variables were significantly associated with the combined variable for counseling on danger signs of pregnancy complications. However, the number of visits the client previously had made, the provider's category, the provider's years of education, and the total number of supervisory items were significantly associated with the combined counseling variables on nutrition during pregnancy, pregnancy preparation, and where to deliver. The client's number of visits to the facility was also significantly associated with counseling on how to use iron pills. In general, the highest percentages of agreement that the counseling was performed were for clients making a first visit to the facility and for clients seeing a provider other than a doctor, specialist, or technician.

In Malawi, as Appendix 2 shows, some client variables were significantly associated with most of the counseling items, including client's age, whether the pregnancy was the client's first, and the number of visits to the facility. As in Haiti, clients visiting the facility for the first time had the highest percentage of agreement on whether the counseling was offered, although the number of visits to the facility was not significant for counseling on danger signs. In Senegal, as Appendix 3 shows, substantially fewer significant associations were found compared with Haiti and Malawi. The number of visits to the facility was significantly associated with counseling on pregnancy preparation, where to deliver, and how to use iron pills. However, compared with Haiti and Malawi, an opposite pattern was observed for counseling on pregnancy preparation and where to deliver with clients, with clients making four or more visits having the highest percentage of agreement that the counseling occurred. The region variable was also significantly associated with all counseling items in Senegal.

Two more measures were examined to assess the quality of the advice that providers gave to clients during their consultation. In the exit interviews clients were asked what advice the provider gave them on what to do if complications arise during pregnancy and on how many months to exclusively breastfeed. Figure 5 shows that in Haiti only 39% of clients reported that the provider advised them to seek care in a facility if complications arise during pregnancy, followed by Malawi at 61%, and Senegal at 76%. In Haiti and Malawi about two-thirds of clients reported that the provider advised them to exclusively breastfeed for six months, compared with about one-quarter of clients in Senegal.

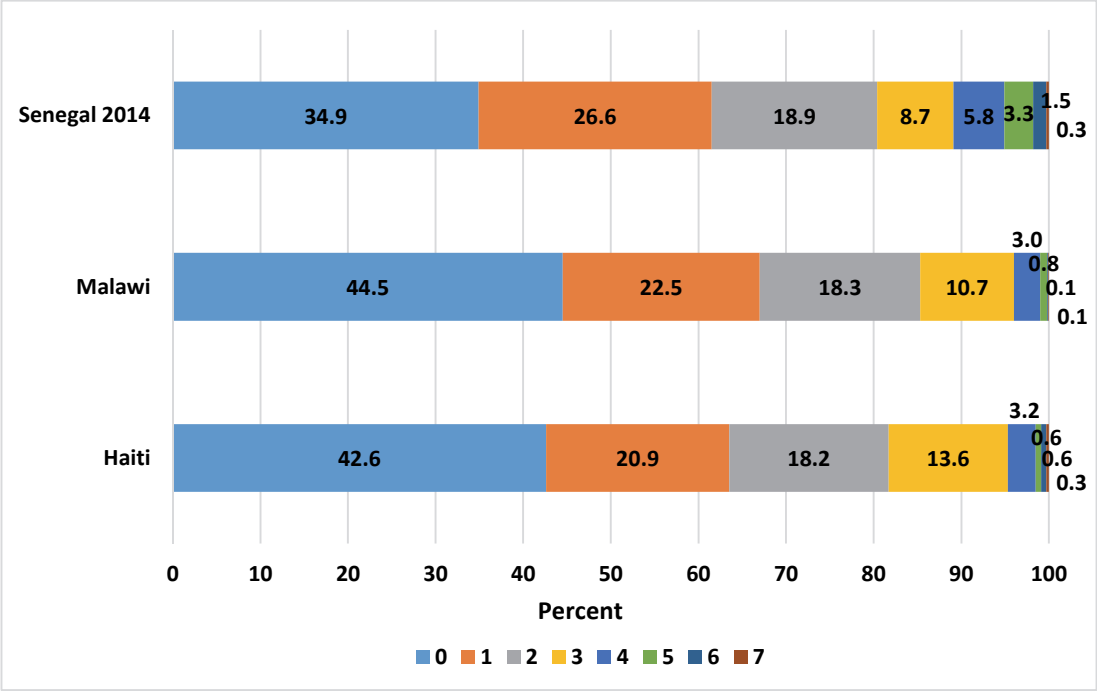
Figure 5. Client's report of advice given by provider



3.1.2. Client's knowledge

During ANC visits, clients' knowledge was tested during the exit interview by asking what danger signs they know of that could lead to complications during pregnancy, how to prepare for delivery, and the side effects of taking iron pills. As Figure 6 shows, in all three countries more than half of the clients knew at least one danger sign of pregnancy complications; however, less than 20% knew more than two danger signs and less than half a percent knew all seven possible danger signs.

Figure 6. Number of danger signs client knows



The level of knowledge on how to prepare for delivery was lowest in Haiti, with two-thirds (66%) of clients not knowing any of the four possible ways to prepare for their delivery (Figure 7). In Haiti only one-third (34%) of clients knew at least one way to prepare for delivery, while in Malawi two-thirds (65%) of clients and in Senegal nearly two-thirds (60%) of clients knew. Clients' knowledge of the side effects of iron pills was low in all three countries. Figure 8 shows that in Haiti 82% of clients did not know any of the side effects of iron pills, and in Malawi 91%. In Senegal about two-thirds (65%) of clients did not know any side effects of iron pills. Due to these low levels of knowledge as well as the low percentages of counseling on the side effects of iron pills provided to clients (Figure 1), this knowledge outcome was not analyzed further in the regressions.

Figure 7. Number of ways client knows to prepare for delivery

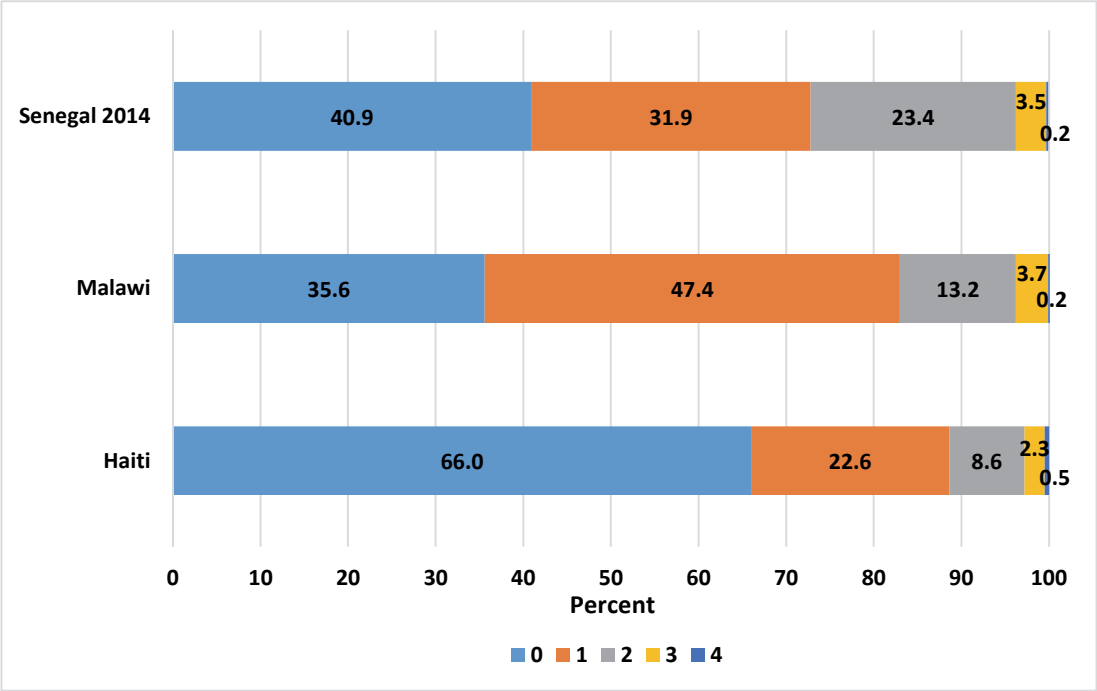


Figure 8. Number of side effects of iron pills client knows

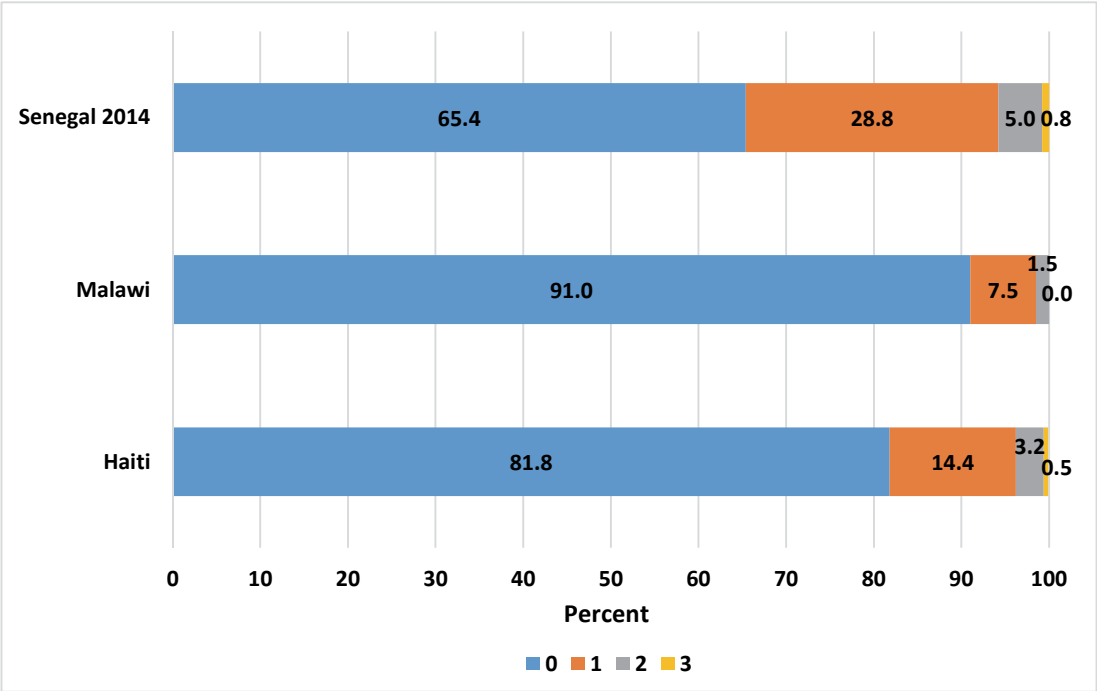


Figure 9 shows that in all three countries the most reported danger sign that clients reported knowing about was vaginal bleeding, followed by headache or blurred vision. In Malawi and Senegal over 45% of clients

reported vaginal bleeding as a danger sign compared with 29% of clients in Haiti. Figure 10 shows that clients primarily reported knowing about having money in preparation for delivery, at 25% in Haiti and 49% in Senegal, but for Malawi the most reported knowledge about how to prepare was having a sterile blade or scissors to cut the cord (58%). In general, there was a low level of knowledge of the three main side effects of iron pills, with nausea as the most reported by clients in all countries, at an estimated 15% in Haiti, 8% in Malawi, and 25% in Senegal (not shown).

Figure 9. Client's responses concerning knowledge of danger signs

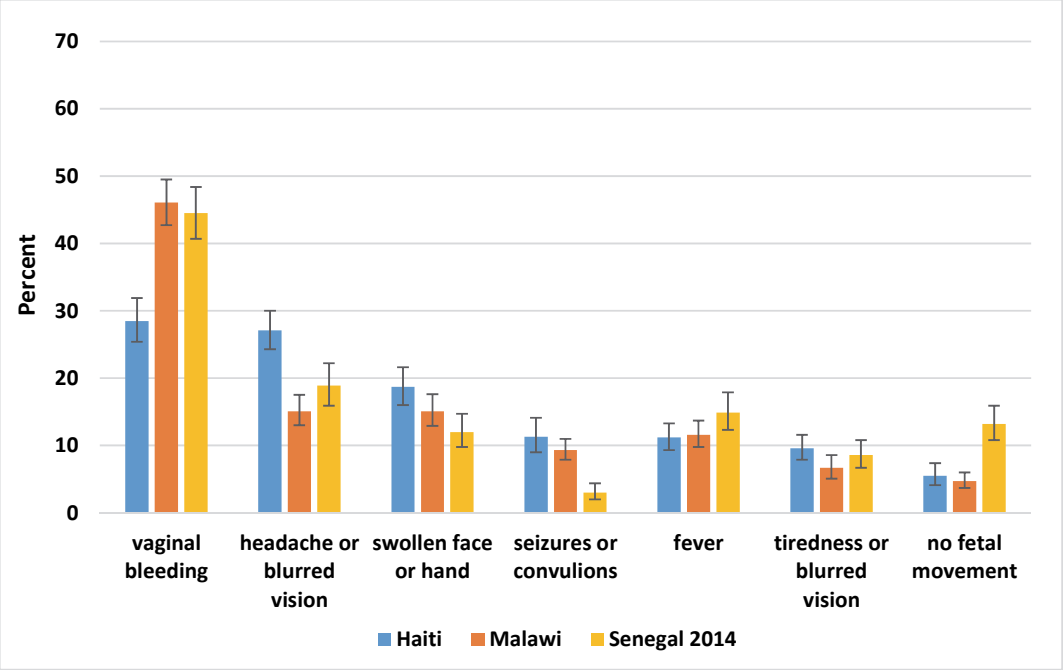


Figure 10. Client's responses on what to have in preparation for delivery

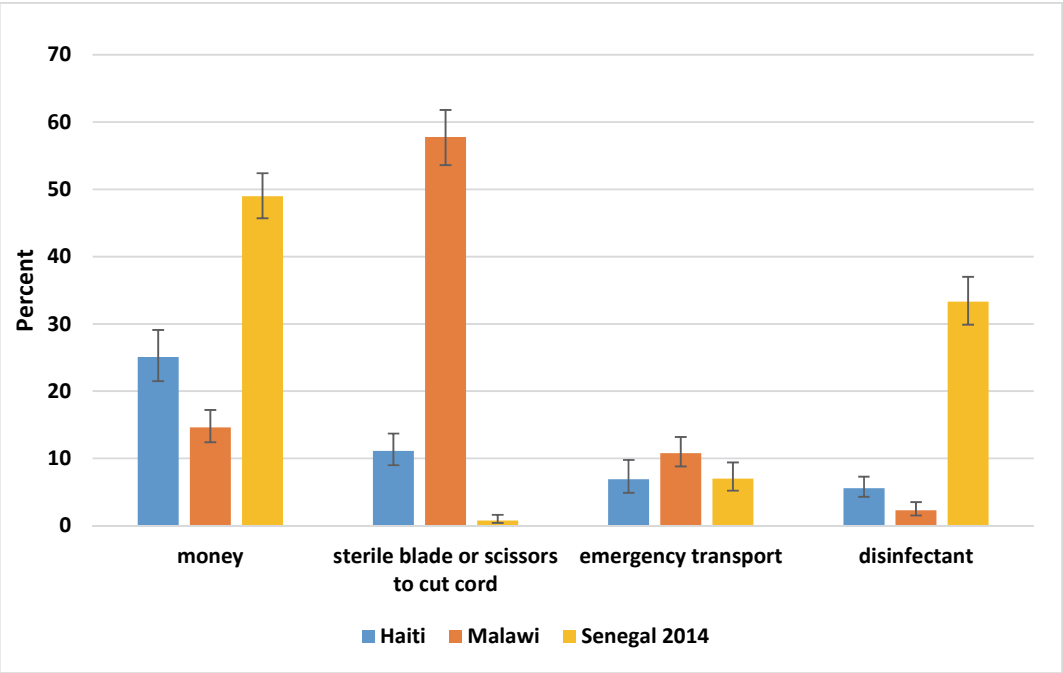


Figure 11 shows the mean number of danger signs the client knows by the two counseling variables of interest. There are a total of seven possible danger signs indicating a pregnancy complication that clients should know, but for all three countries the mean number of danger signs known did not exceed 1.5. This mean differed by the counseling variables. In general, all countries showed a higher mean number of danger signs known if the provider gave counseling, but this difference does not appear to be significant in Haiti. For the counseling variable that combines the client's report and the observation of counseling, the mean number of danger signs known increases significantly, to almost two or more, when the observation and client's report agree. There was no significant difference in all three countries in the means between clients who agreed with the observation that no counseling was provided and clients who reported that no counseling was provided but observation showed that counseling was given. For Senegal, there was no significant difference between the three categories of agreement that no counseling was given, provider not observed to give counseling but client reported counseling given, and provider observed but client did not report counseling was given.

Figure 11. Mean number of danger signs client knows by counseling variables

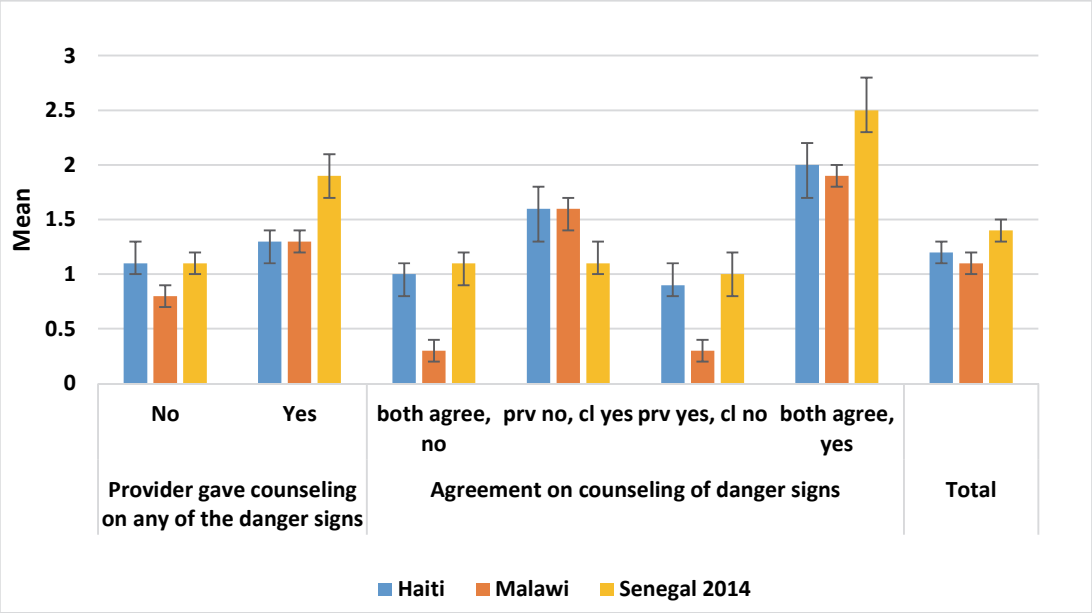
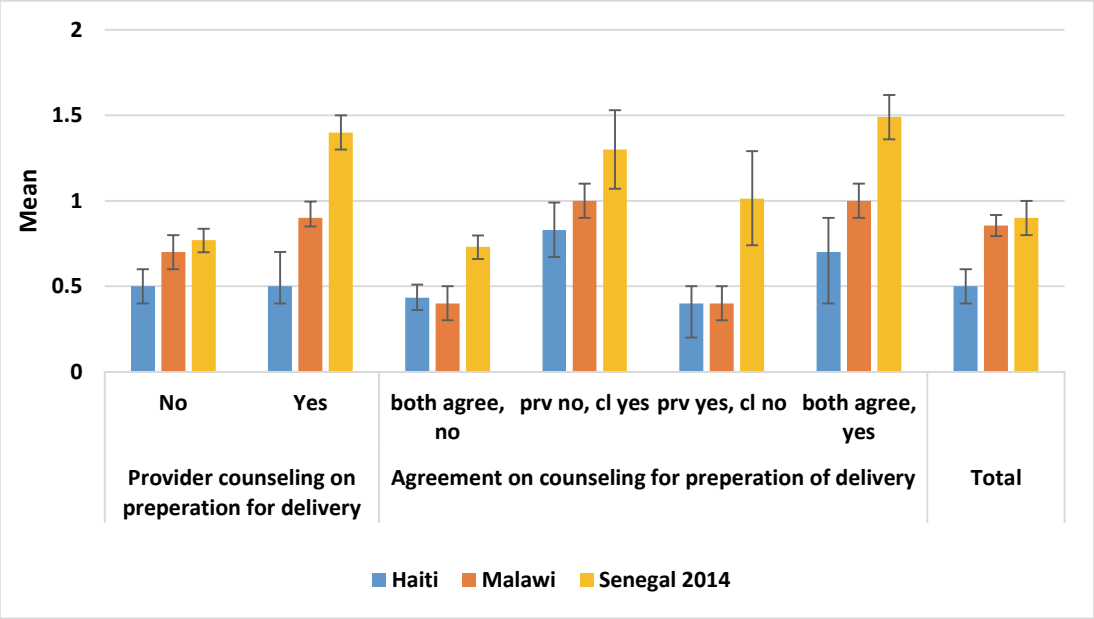


Figure 12 shows the mean number of ways the client knows to prepare for delivery by the counseling categories for delivery preparation. There are a total of four possible ways to prepare for a delivery but for all three countries the mean number of ways that clients knew was below one, with Haiti having a mean of just one-half. Similar to the findings for knowledge of danger signs, the mean number of ways the client knew to prepare for delivery was highest when there was agreement between observation and client's report that the counseling took place, at 1.5 in Senegal, 1.0 in Malawi, and 0.7 in Haiti. Also for this type of counseling, in all three countries there was no significant difference in the means between clients who agreed with observation that no counseling was provided and clients who reported that no counseling was provided but the counseling was observed to be given.

Figure 12. Mean number of ways client knows to prepare for delivery, by counseling variables



Poisson or negative binomial regressions were used depending on the goodness of fit test and the test of the overdispersion parameter, as described in the methods section. Four models were fit for each country and each outcome. Two models were fit for all clients, one of which includes the variable of whether the provider was observed to give counseling and the other to include the counseling variable that combines the observation and client's report. The same two models were also fit for clients having their first pregnancy. The results for the main independent variable of interest, counseling, are found in Tables 4 and 5, and the summary of the estimates for all the independent variables in the model are found in Appendices 4 and 5.

As Table 4 shows, all models indicated that receiving counseling on any of the seven danger signs increased the expected number of danger signs the client knew, and this was significant except in Haiti. In Malawi and Senegal the effect of counseling was much higher for clients with their first pregnancy compared with all clients. In both countries the number of danger signs known increased by 190% if clients received counseling for their first pregnancy compared with those that did not receive counseling. However, as shown with the combined variable of observation and client's report on counseling, if the provider gave counseling but the client did not report receiving it, this did not significantly increase the number of danger signs the client knew compared with clients who agreed with the observation that no counseling was given. In Haiti and Malawi, even if observation did not show that the client was given the counseling but the client reported receiving counseling, the number of danger signs clients knew increased compared with clients who agreed with the observation that no counseling was given. For all countries and all models, there was

no significant difference in the number of danger signs known between clients who were counseled but did not report being counseled and clients who agreed with the observation that the consultation was not given. The highest incidence risk ratios in the number of danger signs known for all countries were found for clients who agreed with the observation that the counseling occurred.

Table 4. Adjusted incidence risk ratios for counseling variables in the regressions of the number of danger signs the client knows

	Haiti				Malawi				Senegal 2014			
Distribution	**nbreg**				**nbreg**		**poisson**		**nbreg**			
Client type	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**
Counseled on any of the seven signs of pregnancy complications (ref.=no)												
Yes	1.1	1.1			**2.9*** **	**1.6*** **			**2.9*** **	**1.7*** **		
Agreement on counseling on signs of pregnancy complications (ref.= both agree no counseling)												
Provider did not counsel, but client reported receiving			**1.8*** **	**1.6*** **			**7.4*** **	**4.5*** **			1.1	1.0
Provider counseled, but client did not report			0.9	1.0			1.0	0.9			0.9	0.9
Both agree counseling was provided			**2.4*** **	**2.0*** **			**11.9*** **	**5.7*** **			**3.9*** **	**2.4*** **

Notes: Distributions are either negative binomial or poisson. Adjusted results control for client, provider and facility variables. For full adjusted models see Appendix 4. * p<0.05, ** p<0.001, *** p<0.001

Table 5 summarizes the adjusted incidence risk ratio for the counseling variables in the regression of the number of ways the client knows to prepare for delivery. In Malawi and Senegal receiving counseling on how to prepare for delivery significantly increased the number of ways the client knows to prepare for delivery compared with those who did not receive counseling, but this was not significant in Haiti. When the clients report is combined with the observation of the counseling, we find similar results as in Table 5. In all three countries it was the presence of the clients report that the counseling was given that significantly increased their knowledge. If the provider was observed to give counseling but the client did not report receiving it, this did not increase the client's knowledge in the number of ways to prepare for delivery compared with clients who agreed with the observation that the counseling was not given.

Table 5. Adjusted incidence risk ratios for counseling variables in the regressions of the number of ways the client knows to prepare for delivery

	Haiti				Malawi				Senegal 2014			
Distribution	**nbreg**				**poisson**				**poisson**			
Client type	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**
Counseled on how to prepare for delivery (ref.= no)												
Yes	1.1	1.2			**1.4** **	**1.3*** **			**3.2*** **	**1.5*** **		
Agreement on counseling on preparation for delivery (ref.= both agree no counseling)												
Provider did not counsel, but client reported receiving			**1.7*** **	**1.6*** **			**3.6*** **	**2.3*** **			**2.4*** **	**1.4*** **
Provider counseled, but client did not report			0.9	1.0			1.1	1.1			2.2	1.3
Both agree counseling was provided			**1.6* **	**1.6** **			**3.4*** **	**2.4*** **			**4.0*** **	**1.6*** **

Notes: Distributions are either negative binomial or poisson. Adjusted results control for client, provider and facility variables. For full adjusted models see Appendix 5. * p<0.05, ** p<0.001, *** p<0.001

3.2. Family Planning

3.2.1. Provider-client counseling in family planning

Family planning providers were observed as to whether they counseled clients on their questions or concerns on current contraceptive method, how to use a method provided or prescribed during the visit, side effects of the method, and when to return for follow-up services. Figure 13 presents the percentage of providers who were observed to provide each of the counseling items. In all three countries counseling on client's questions on current method and how to use the method was more commonly observed than counseling on side effects and follow-up services. Among the countries, Malawi had a higher percentage of family planning providers observed to counsel clients on each of the four counseling items compared with Haiti and Senegal. For example, 76% of providers in Malawi compared with 64% in Haiti and 56% in Senegal were observed to discuss with the client how to use the method. Counseling on side effects, the least-provided service, was observed for 38% of providers in Malawi, 26% in Senegal, and 21% in Haiti .

Figure 13. Percentage of providers observed to provide specific counseling items during family planning visits

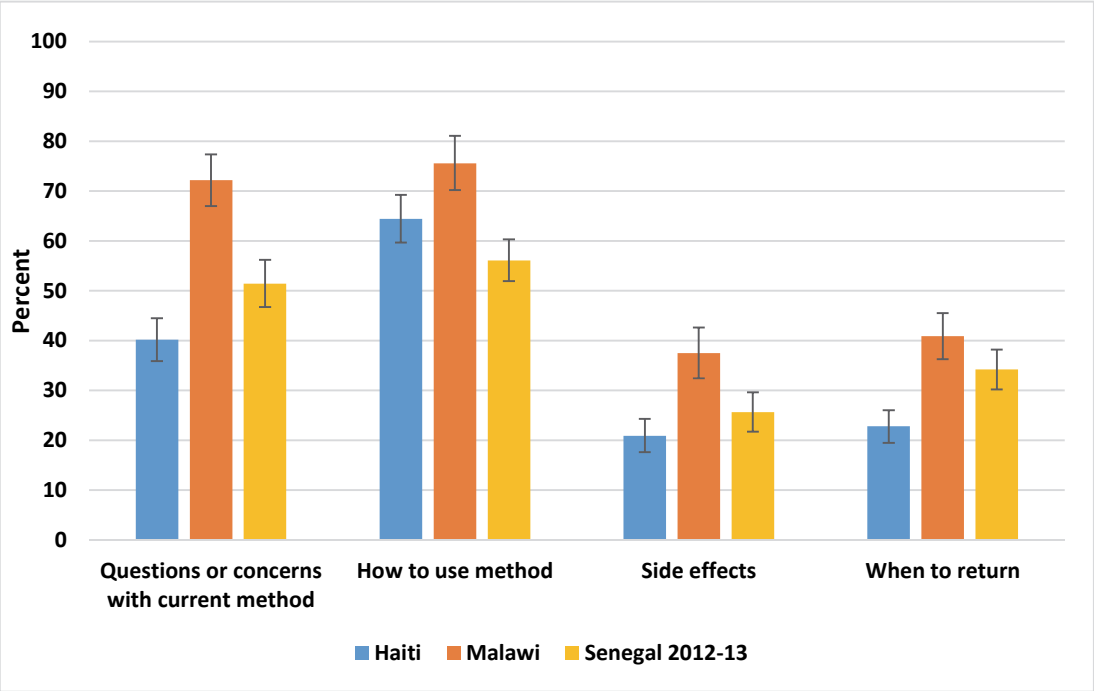


Table 6 shows that, overall, clients reported higher levels of receiving the four counseling items than was observed during the consultation, except counseling in Malawi on how to use the method, where a lower percentage of clients reported receiving this counseling than the percentage observed. While counseling on when to return for follow-up services was the second-least observed, it was the most reported by the clients (over 90% in all three countries). Kappa statistics verify that the agreement between the observation and client's report was fair (all were below the threshold of 0.40), especially for counseling on how to use a method, which had the lowest kappa among the counseling items in each country. All of the kappa statistics were significant, indicating that they are not due to chance, except for the kappa estimates in Haiti for how to use method, and in Malawi and Senegal for when to return for follow-up. A non-significant kappa indicates that the kappa estimate may be due to chance. The percent agreements between observation and client's report were all below 80%. Only counseling on questions or concerns with current method in Malawi and Senegal had a percent agreement above 70%.

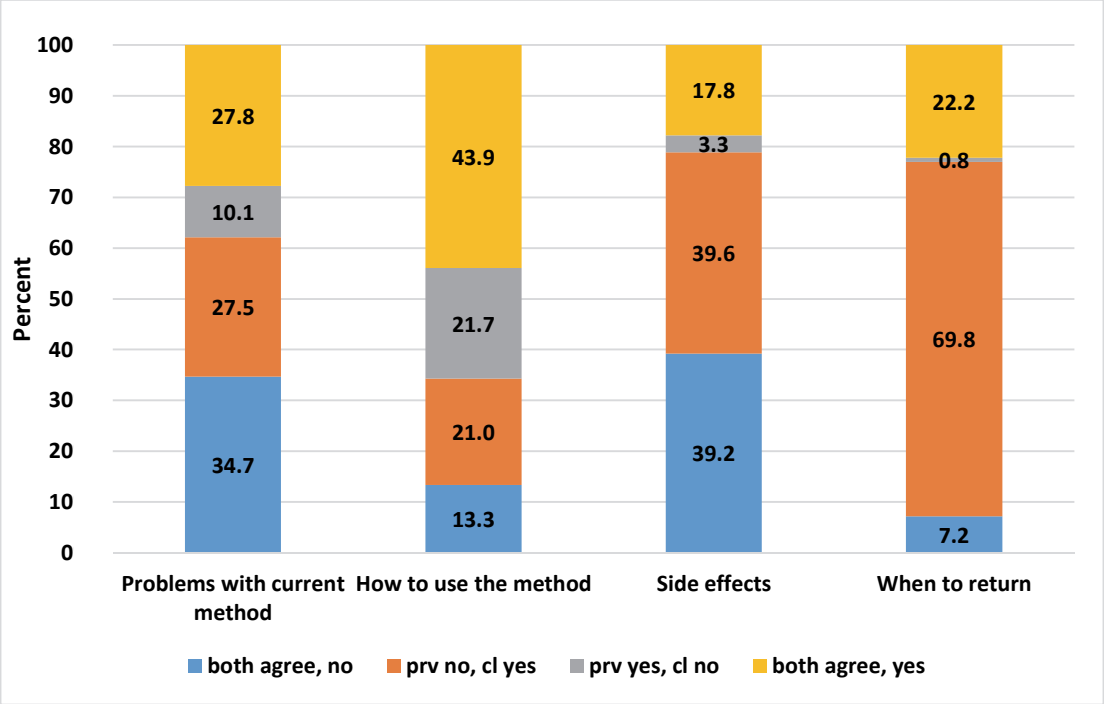
Table 6. Percentage of providers observed to offer counseling on the following family planning items and the percentage of clients reporting receiving the counseling, with reported percent agreement and kappa statistics

	Haiti						Malawi					
	Provider observed		Client reported		Percent agree-ment	Kappa	Provider observed		Client reported		Percent agree-ment	Kappa
	%	C.I.	%	C.I.	%		%	C.I.	%	C.I.	%	
Questions or concerns with current method	40.2	[35.9,44.5]	55.2	[51.0,59.4]	62.4	0.267	72.2	[67.0,77.4]	71.6	[66.3,76.9]	70.5	0.242
How to use method	64.4	[59.7,69.2]	65.0	[61.1,68.9]	57.3	0.057	75.6	[70.2,81.1]	67.6	[61.4,73.8]	61.7	0.062
Side effects	20.9	[17.6,24.3]	57.4	[53.5,61.3]	57.1	0.209	37.5	[32.4,42.6]	59.3	[54.3,64.3]	61.7	0.266
When to return	22.8	[19.5,26.0]	92.0	[89.4,94.6]	29.4	0.028	40.9	[36.3,45.5]	93.4	[91.4,95.5]	40.8	-0.022

	Senegal (2012-13)					
	Provider observed		Client reported		Percent agree-ment	Kappa
	%	C.I.	%	C.I.	%	
Questions or concerns with current method	51.4	[46.7,56.2]	79.9	[75.7,84.1]	74.1	0.346
How to use method	56.1	[51.9,60.3]	86.8	[83.7,90.0]	60.7	0.085
Side effects	25.6	[21.7,29.6]	75.1	[70.5,79.7]	45.9	0.119
When to return	34.2	[30.2,38.2]	98.4	[97.3,99.5]	37.9	0.011

Figures 14-16 present the percent distribution by four categories of agreement between observation data and client's report for each counseling element. Generally, it is desirable to see a high level of positive agreement: that is, the provider was observed to give the counseling and the client reported receiving the counseling. In Haiti the highest level of positive agreement was on counseling on how to use the method: in 44% of these consultations the provider was observed to give the counseling and the client reported receiving it. Disagreement between the observation and client's report includes two scenarios: the provider was observed to give the counseling but the client reported not receiving it, or the provider was not observed to give the counseling but the client reported receiving counseling. The highest disagreement occurred for counseling on when to return for follow-up services; in 70% of cases clients reported receiving counseling but providers were not observed to give the counseling. There was 39% agreement that the counseling on side effects did not take place, which was the highest among the four counseling times (Figure 14).

Figure 14. Agreement between observation and client's report on family planning counseling items in Haiti



In Malawi the highest level of positive agreement was for counseling on problems with the current method, at 59%, followed by counseling on how to use the method, at 53%. In Malawi as in Haiti, a considerable proportion of clients (56%) reported receiving counseling on when to return for follow-up services but the provider was not observed to provide the counseling. Counseling on side effects had the highest level of agreement that the counseling did not take place, at 32% (Figure 15).

Figure 15. Agreement between observation and client's report on family planning counseling items in Malawi

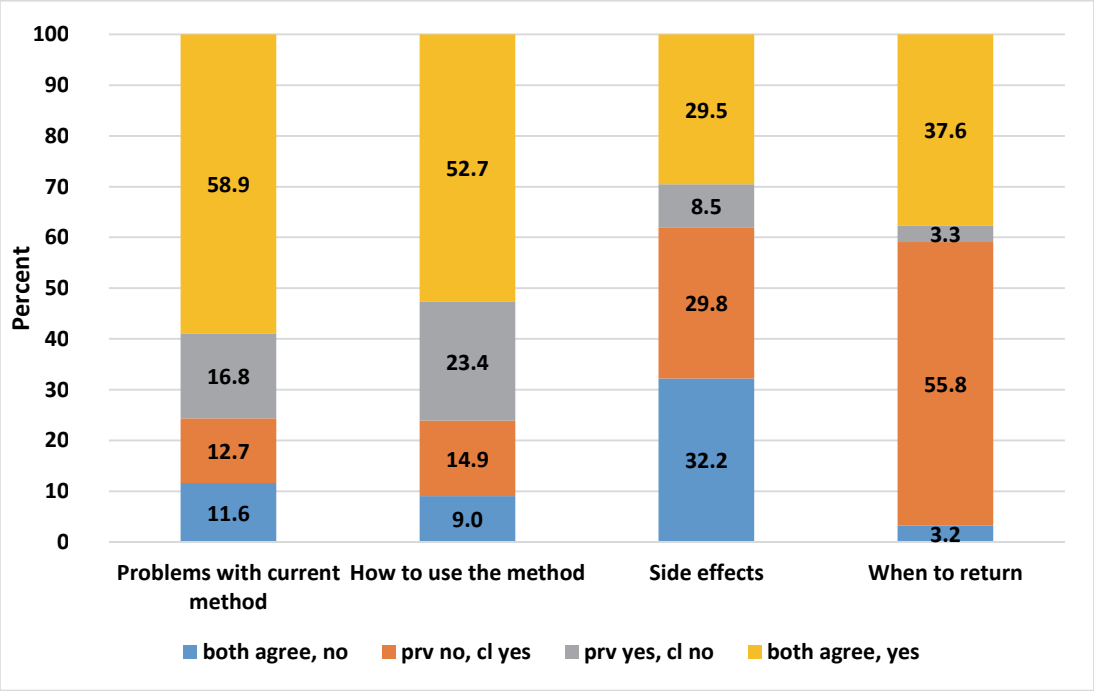
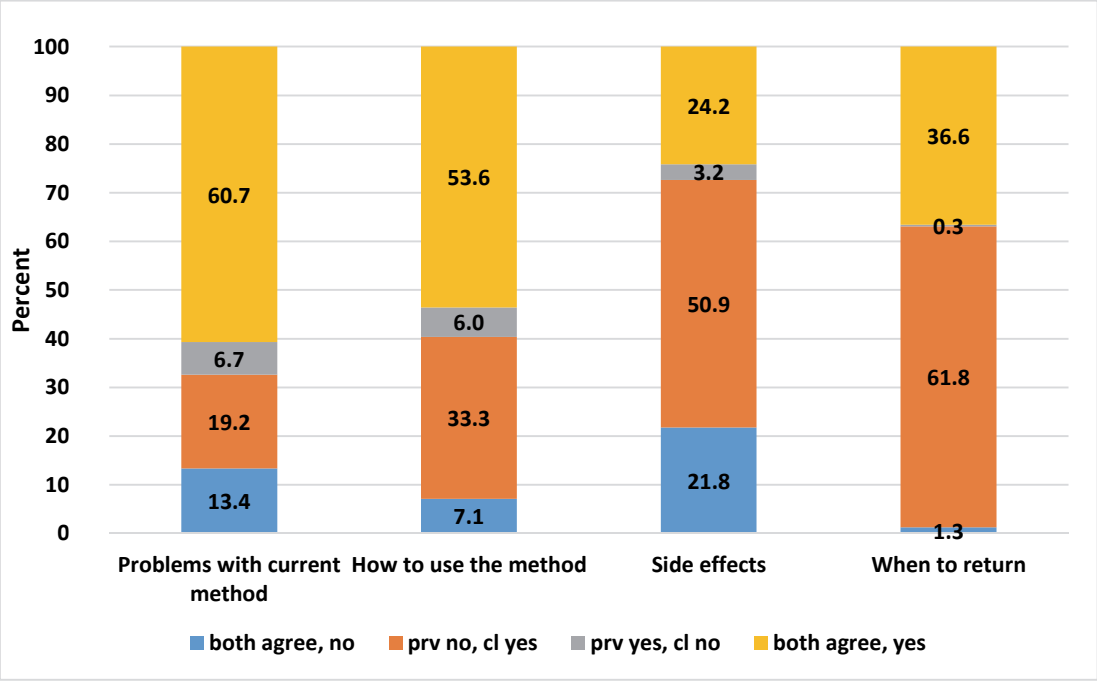


Figure 16 shows that in Senegal there was 61% agreement between the observation and the client's report that counseling on problems with current method occurred during the consultation. The highest level of disagreement was again found for counseling on when to return follow-up. In 62% of cases, clients reported that the counseling took place but the providers were not observed to give the counseling. Among the three countries, Senegal had the lowest percentages of agreement that the counseling did not occur.

Figure 16. Agreement between observation and client's report on family planning counseling items in Senegal 2012-13



Provider-client agreement on counseling items was also examined by client, provider, and facility characteristics (Appendices 6-8). Overall, few characteristics were associated with agreement on counseling. In Haiti the type of method that the client received was significantly associated with all four family planning counseling categories. Being a new client was also associated with a higher percentage of positive agreement, except for the counseling on problems with current method. Provider and facility characteristics were less relevant to provider-client counseling agreement.

For Malawi a few more variables were significantly associated with agreement on counseling on how to use the method. As Appendix 7 shows, in addition to client's status and client's method type, provider's recent training, facility type, and type of residence (urban-rural) were also significant. Provider category was associated with agreement on counseling on when to return for follow-up services.

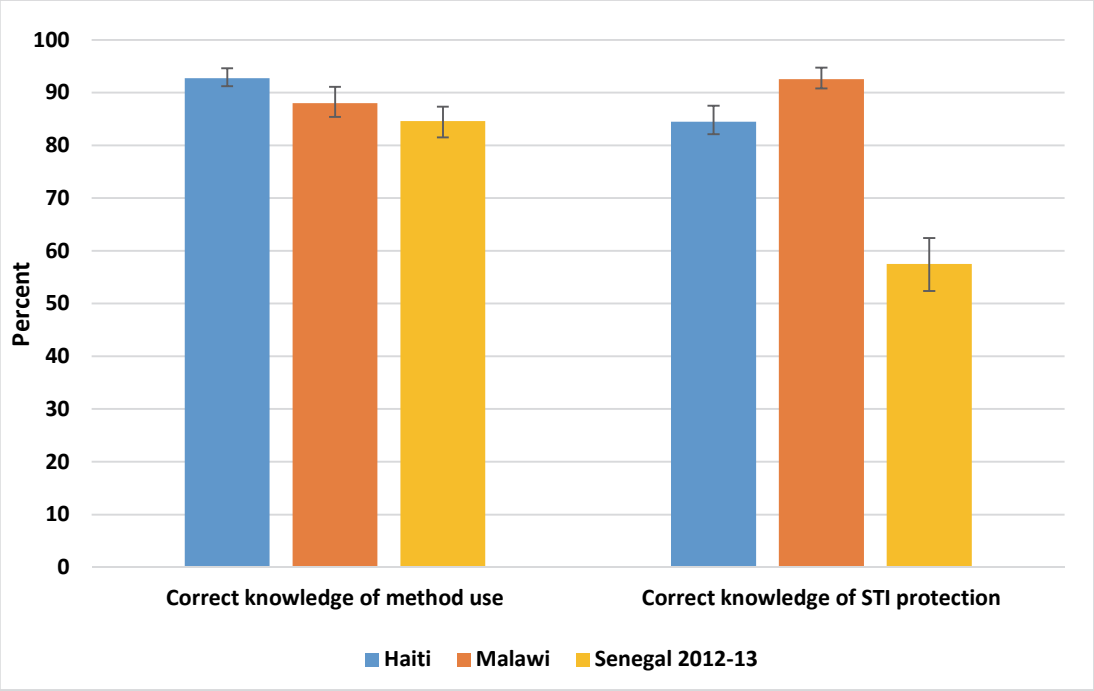
Results for Senegal (Appendix 8) shows that client status was significantly associated with agreement on all counseling elements. Except for counseling on problems with current method, returning clients had a higher percentage of positive agreement that the counseling occurred compared with new clients. Regional variation was also significant for all the counseling items except for counseling on when to return.

3.2.2. Client's knowledge

The study analyzed two variables related to client knowledge about family planning: general knowledge of method use and knowledge of STI protection of the method. Appendix 9 describes the correct knowledge a client should report for each contraceptive method. In Haiti 93% of clients knew general use of their

method and 85% correctly identified whether the method protects against STIs. The knowledge level among women in Malawi was also high, at 88% and 93% respectively for these two variables. In Senegal, while 85% of clients were aware of the general use of their method, only 58% had correct knowledge on STI protection. Due to the high level of client's knowledge except in Senegal for method's protection against STIs, no regression analysis could be performed. In addition, in Senegal clients were not asked if they had received the counseling on their method's protection from STIs, and therefore the counseling variable that combines the observation and client's report could not be created and analyzed for this knowledge outcome.

Figure 17. Percent of family planning clients with correct knowledge of method use and correct knowledge of method's protection against STIs



3.3. Sick Child Care

3.3.1. Provider-client counseling in sick child visits

Four different types of counseling were observed during sick child visits—whether the provider told the caregiver about the illness; gave counseling on signs or symptoms for which to immediately bring back the child; gave counseling on child's weight or growth; and gave counseling on feeding when the child is sick. Figure 18 shows the observed provision of counseling on each topic by country and survey. No country or survey stands out in terms of consistently providing more counseling than the others. The single item most counseled was informing the client of the child's illness, at over 40% in Malawi, the counseling observed on feeding when a child is sick was 25% in Haiti and 15-16%, in Malawi and Senegal (both survey years). Signs and symptoms to bring the child back immediately was the least frequently counseled topic related to sick child visits.

Figure 18. Percent of providers observed to provide counseling on child health items

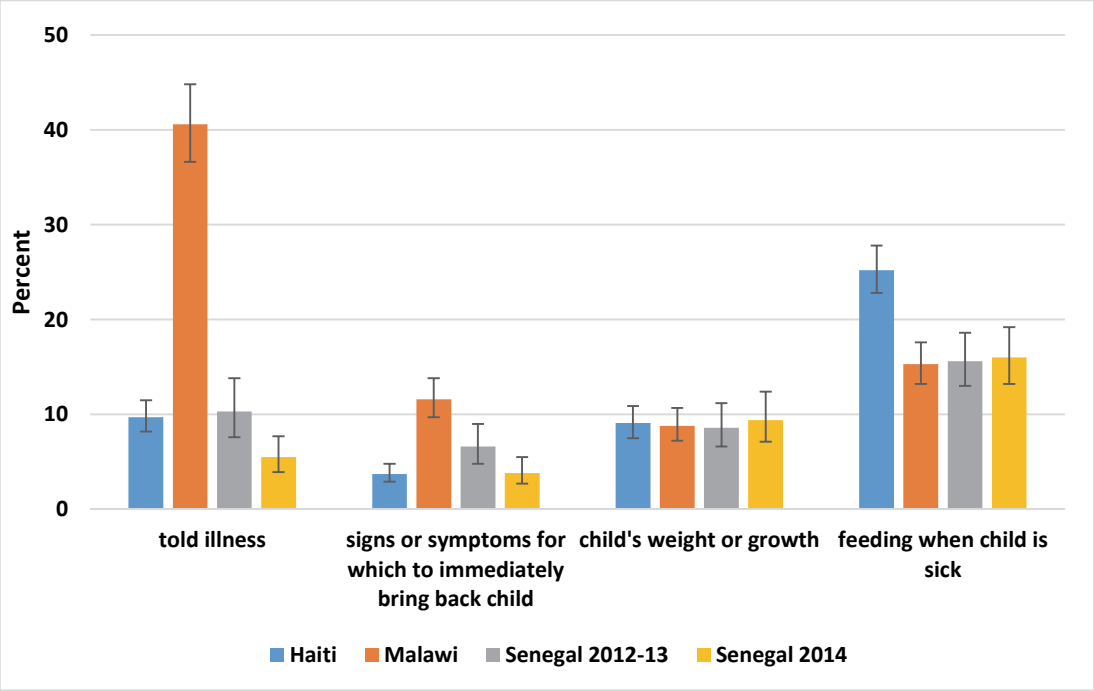


Table 7 presents the percentage of visits where providers gave counseling on each of the four sick child topics as well as whether or not the client reported receiving counseling on those topics, with Cohen's kappa statistics of agreement. In general, clients reported a higher level of counseling for almost all counseling items and all the countries compared with the observation that the counseling was provided. All kappa estimates indicated a no-to-fair level of agreement; all the estimates were below the 0.40 threshold for fair agreement, and many were between 0.01 and 0.2, indicating only slight agreement. The percent agreement statistics were all below 80% except for being told the illness and counseling on signs and symptoms for which to bring back the child in the Senegal 2014 survey. In some situations there was a relatively high percent agreement compared with the kappa estimate. For example, there was 76% agreement in Haiti that counseling was provided on signs or symptoms for which to bring back the child, but the kappa estimate was only 0.06. This is due to the very low levels of counseling provided on this topic in Haiti, with only 4% of providers observed to be giving this counseling.

Table 7. Percentage of providers observed to offer counseling on the following sick child items and the percentage of clients reporting receiving the counseling, with reported percent agreement and kappa statistics

	Haiti						Malawi					
	Provider gave counseling		Client reported receiving counseling		Percent agree-ment	Kappa	Provider gave counseling		Client reported receiving counseling		Percent agree-ment	Kappa
	%	C.I.	%	C.I.			%	C.I.	%	C.I.		
Told illness	9.7	[8.2,11.5]	22.5	[20.2,25.0]	76.9	0.17	40.6	[36.6,44.8]	62.5	[59.4,65.6]	58.8	0.21
Signs or symptoms for which to immediately bring back child	3.7	[2.9,4.8]	23.3	[20.4,26.5]	76.3	0.06	11.6	[9.7,13.8]	33.4	[30.6,36.3]	66.3	0.10
Child's weight or growth	9.1	[7.5,10.9]	39.4	[36.3,42.6]	63.4	0.11	8.8	[7.2,10.7]	23.5	[20.0,27.4]	73.1	0.05
Feeding when child is sick	25.2	[22.8,27.8]	35.4	[32.7,38.1]	62.5	0.12	15.3	[13.2,17.6]	15.1	[13.2,17.2]	76.7	0.09

	Senegal 2012-13						Senegal 2014					
	Provider gave counseling		Client reported receiving counseling		Percent agree-ment	Kappa	Provider gave counseling		Client reported receiving counseling		Percent agree-ment	Kappa
	%	C.I.	%	C.I.			%	C.I.	%	C.I.		
Told illness	10.3	[7.6,13.8]	27.9	[24.5,31.5]	75.2	0.23	5.5	[3.9,7.7]	14.9	[12.2,18.0]	87.5	0.34
Signs or symptoms for which to immediately bring back child	6.6	[4.8,9.0]	21.7	[18.9,24.8]	79.9	0.21	3.8	[2.7,5.5]	14.0	[11.3,17.3]	87.0	0.23
Child's weight or growth	8.6	[6.6,11.2]	27.3	[24.1,30.7]	76.2	0.24	9.4	[7.1,12.4]	31.2	[26.9,35.8]	75.1	0.28
Feeding when child is sick	15.6	[13.0,18.6]	26.4	[23.3,29.7]	74.8	0.25	16.0	[13.2,19.2]	26.6	[22.9,30.7]	75.3	0.28

Figures 19-22 show the distribution of the different levels of agreement when combining observation of provider counseling and client's report of counseling for the four items related to sick child visits, for each of the four surveys covered in this report. Overall, there was a low level of positive agreement between the observation and client's report that the counseling occurred for all countries and all counseling items with the exception of being told illness in Malawi. There was also a high level of agreement that the counseling did not occur, with the highest levels in Senegal.

Figure 19. Agreement between observation and client's report on sick child counseling items, Haiti

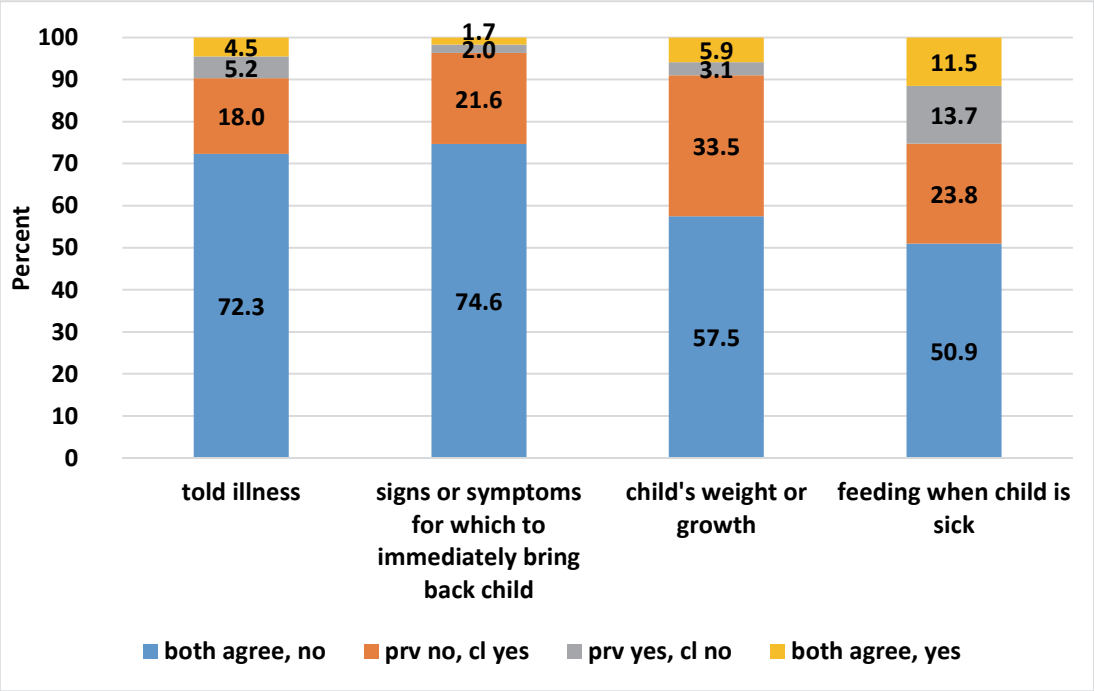


Figure 20. Agreement between observation and client's report on sick child counseling items, Malawi

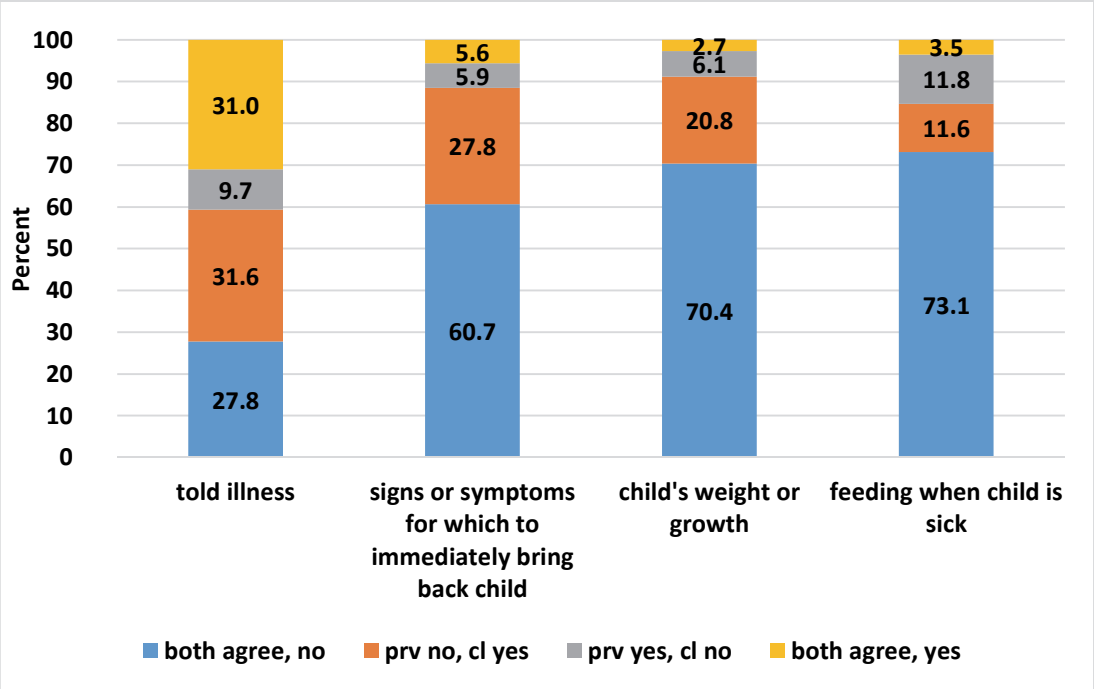


Figure 21. Agreement between observation and client's report on sick child counseling items, Senegal 2012-13

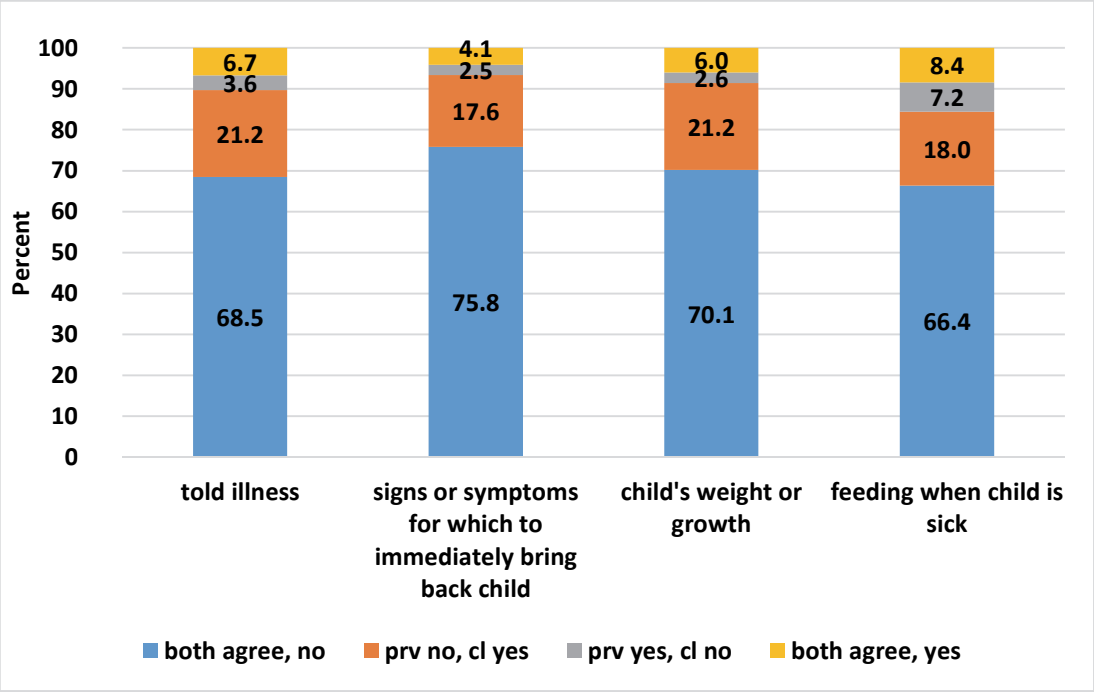
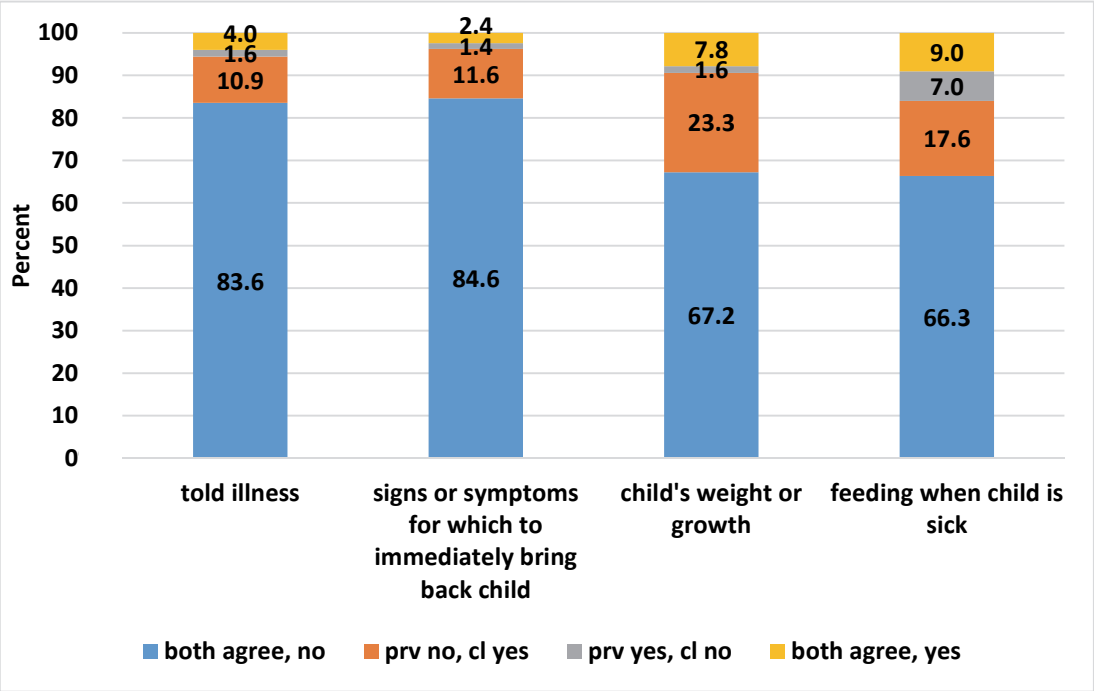


Figure 22. Agreement between observation and client's report on sick child counseling items, Senegal 2014



In Haiti (Figure 19) a very small percentage of clients and providers agreed that counseling occurred in all areas, with the highest positive agreement for counseling on feeding a sick child. The highest level of disagreement was for counseling on feeding the child when sick, followed by counseling on child's weight or growth, with most of the disagreement due to the client reporting that the counseling took place when it was not observed to be given. The highest level of agreement that the counseling did not take place was for counseling on signs or symptoms for which to bring the child back (75%), followed by being told the illness (72%).

In Malawi (Figure 20) observations and client reports agreed that the client was informed about the child's illness in less a third (31%) of the consultations. There was a high proportion of disagreement for this item, where 32% of clients reported that their provider told them the child's illness when the provider was not observed to do so, and 10% of clients said that they were not counseled when the provider was observed to give the counseling. In 28% of cases client reports agreed with observation that the provider did not provide counseling on this topic. Across the other three items, the client agreed that the provider did not provide counseling for over 60% of the consultations, while agreement between the observation and client's report that counseling did occur was less than 6%. As in Haiti, more clients reported that the provider gave counseling when observation showed that the provider did not: 28% for symptoms to bring a child back, 21% for child's weight and growth, and 12% for feeding children when sick.

For Senegal 2012-13 and Senegal 2014, Figures 21 and 22 show consistently high proportions of consultations in which the provider did not give counseling. Most often the client report agreed with the observation of whether counseling occurred. In both Senegal surveys, however, a higher proportion of clients reported that the provider gave counseling on each item when observation showed that the provider did not compared with the proportion of observations and client reports agreeing that counseling occurred. Overall, there appears to be slightly more disagreement among clients and providers in the 2012-13 survey compared to the 2014 survey and especially concerning being told illness and signs or symptoms for which to bring the child back to the facility.

Appendices 10-13 contain results of cross-tabulations between the counseling items in each country by client, provider, and facility background characteristics. Looking at all four appendices together, no strong patterns emerge for any counseling item or any background characteristics. In Haiti, as Appendix 10 shows, there are no significant differences by background characteristics for whether or not a provider gave counseling regarding the signs and symptoms for which to bring a child back immediately. Several characteristics have significant associations with a provider discussing weight and growth, including client education, caretaker relationship, child's age, provider category, provider's years of education, provider's salary type, and region. Appendix 11 shows more significant associations in Malawi compared with Haiti. Across the four counseling items, child's age, provider category, location of facility, and managing authority are significantly related to agreement of counseling.

As Appendices 12 and 13 show for the two Senegal surveys, there are several significant associations between background characteristics of client, provider, and facility, and agreement or disagreement of counseling on the selected items. In both Senegal surveys region is significantly associated with all four counseling items. Also in both surveys the client's education, provider's salary type, and the facility type are significantly associated with agreement that the provider told the child's illness. Most of the client and provider characteristics are not associated with agreement on counseling on signs and symptoms for which to bring the child back, in both surveys. For counseling on child's weight or growth, the Senegal 2012-13 survey shows significant associations with child's age, provider's training, provider's salary, facility type, and region, while the Senegal 2014 survey shows the client's age, client's education, provider's salary type, and region to be significantly associated with counseling. The caretaker type and the child's age are significantly associated with agreement on feeding of child when sick, in both surveys.

4. Discussion and Conclusion

One of the strengths of the SPA surveys is that they include both information obtained from observations performed during a consultation between a provider and a client and information obtained directly from the client following the consultation. Since the individual client data are linked to the specific provider observations during consultation, comparisons can be made between the consultation observation and the client's exit interview. The current analysis is concerned both with the content of the counseling provided during a consultation and with whether the client was aware of receiving this content, when asked in the exit interview. Three services, ANC, family planning, and sick child visits, were analyzed in three countries: Haiti, Malawi, and Senegal, with data available in Senegal from two surveys in consecutive years.

In general, with some exceptions, clients in all three countries reported in exit interviews that they received counseling more frequently than observation showed to be the case. Kappa estimates generally showed only slight to moderate agreement between the observation and client's report. While the percent agreement on some counseling topics was over 80%, especially for ANC counseling, this was usually because both observation and exit interviews agreed that the counseling did not occur—which reflects the low levels of counseling provided. In addition, there were high levels of disagreement between the observation and client's report, mainly when the client reported that a consultation occurred when it was not observed to occur. This gap in perception could be due to several reasons. The client might have misidentified the type of counseling the interviewer was asking about—for instance counseling on problems with the current contraceptive method could be considered as similar to counseling on side effects of the method. The client might also be recalling an experience during a previous visit without realizing that the question was about the current visit. Also, clients might want to report receiving counseling even if they had not in order to avoid alienating their providers or reporting dissatisfaction with services (Donabedian 1988), or appearing to lack information they were expected to have.

Of equal or perhaps greater concern is the disagreement between the observation and client's report when the provider was observed to offer counseling but the client did not report receiving it. This type of disagreement was substantial in Haiti and Malawi for counseling on danger signs of pregnancy complications and how to use a family planning method, and also in Haiti on counseling on nutrition during pregnancy. Such disagreement could indicate that the client did not understand or retain the information provided in these areas during the consultation.

Counseling that involves the use of job-aids, is client-centered, and has good provider-client interaction can improve effectiveness in transferring information from provider to client (Chewning and Sleath 1996; Clift 2001; Jennings et al. 2010; Roter 2000). A randomized control study in Benin found that use of job aids in a trial group for ANC counseling significantly increased the mean percent of recommended messages provided to clients and increased the proportion of women with correct knowledge compared with a control group (Jennings et al. 2010). A client-centered approach in family planning counseling has been found to increase the number of new users, satisfaction with services, and method continuation (Abdel-Tawab and Roter 2002; Kamhawi et al. 2013). Another study shows that children demonstrated more favorable weight gain when parents received counseling from providers who underwent training on nutrition counseling compared with children whose parents were counseled by providers who did not receive training, and that counseling provided by those with training was more likely to be client-centered (Santos et al. 2001). A challenge in achieving client-centered counseling is that it may require more time. A study in Tanzania found that implementing a new model for ANC consultation that included proper counseling would add another 15 minutes on average per visit—twice the average duration of the visit without using the new model (von Both et al. 2006). Providers may have only a limited amount of time to spend with their clients, especially if they need to see many clients in a day. Shortages in health personnel contribute to increased workload and decrease the amount of time providers can spend with each patient, which in turn can affect

the quality of the visit and thus the outcome for the patient (Adam et al. 2005; Duffield et al. 2011; Igumbor et al. 2016). The 2006 World Health Report highlighted the global crisis in the health workforce and named 57 countries facing a critical shortage of staff—Haiti, Malawi, and Senegal were all included in the list (World Health Organization 2006).

4.1. Antenatal Care

The importance of counseling during ANC visits can be vital for the health of the child and mother. Knowledge on danger signs of pregnancy complications can save lives, as it is vital for the mother to recognize these signs quickly in order to get help in time. Knowledge on nutrition during pregnancy and how to take iron pills is important for the growth of the child and maintaining the health and strength of the mother. For the health care provider, counseling can be an important method to transfer this knowledge to mothers. Our analysis of SPA data has shown a relatively low level of counseling observed, especially in exclusive breastfeeding, use of family planning methods after delivery, and side effects of iron pills, which in all three countries were all observed in approximately 10% or less of consultations. In Senegal only 25% of clients reported that the provider told them to exclusively breastfeed for six months. Many studies in several settings have reported low levels of ANC counseling (Ali et al. 2010; Anya, Hydara, and Jaiteh 2008; Dhandapany et al. 2008; Jennings et al. 2010; Magoma et al. 2011; Singh et al. 2012). In the three countries in our study, counseling on danger signs was given for approximately half or less than half of the clients. An average of one danger sign was observed to be given in the counseling of clients in Haiti and Senegal and in Malawi the average was 1.5 [results not shown]. The kappa estimate for the agreement between the observation and clients on counseling for danger signs was the lowest for Haiti and Senegal and was one of the lowest for Malawi. Furthermore, knowledge of danger signs of pregnancy complications and how to prepare for delivery was low, and most women were only able to report an average of approximately one or less danger signs or ways to prepare for delivery. Several other studies have found low levels of counseling on danger signs and low knowledge of danger signs (Ali et al. 2010; Anya, Hydara, and Jaiteh 2008; Duysburgh et al. 2013; Jennings et al. 2010; Kabakyenga et al. 2011; Magoma et al. 2011; Nikiéma, Beninguisse, and Haggerty 2009; Pembe et al. 2009). While our results showed that vaginal bleeding was the most reported danger sign known by clients, less than 50% of clients reported this danger sign, and in Haiti less than 30%. Hemorrhage and hypertensive disorders are the major causes of maternal deaths (Khan et al. 2006; Ronsmans, Graham, and group 2006). In Haiti and Senegal, however, less than 13% of the clients were observed to be counseled on vaginal bleeding as a danger sign, and in Malawi 29% [results not shown]. Very few client, provider, or facility characteristics were found to be significantly associated with agreement on counseling for danger signs. For the remaining ANC counseling items, the client's number of ANC visits had a significant association with counseling, and in Haiti and Malawi clients who had already made their first visit had the highest level of positive agreement that counseling occurred. In Senegal this was only found for counseling on how to use iron pills. This finding may be due to providers feeling that they only need to provide the information to the client only once (i.e. in the first visit), perhaps to save time. A study in Benin found that ANC counseling in revisiting clients was hardly conducted at all compared with clients in their first visit (von Both et al. 2006).

A low level of knowledge about the number of danger signs and how to prepare for delivery can be expected if counseling is rushed and ineffective. In fact the regression results showed that even when observation showed that counseling was given, unless the client reported that it was received it did not increase the client's knowledge, net of other factors—indicating that the knowledge transfer from the provider to the client did not occur and the counseling was not effective. An effective, client-centered type of counseling requires skills and training that many providers in the study countries may not have. Clients may also feel there is too much information to retain in the short time with the provider, and the provider may feel there is not enough time to give all the counseling necessary. WHO indicates that the first ANC consultation should take between 30-40 minutes (World Health Organization 2002). In the current analysis consultations times were on average 15 minutes long in Haiti, 18 minutes in Senegal, and only 12 minutes in Malawi,

which may not be enough time to conduct the necessary ANC checkup and give key information to the client. Only in Senegal, which has the highest average consultation duration among the three surveys, was the duration of the consultation significantly associated with the knowledge of danger signs and preparation for delivery, with slightly increased knowledge with increasing duration. The low level of knowledge shown in the ANC results can also be due to certain client, provider, and facility characteristics. The regression results showed that only a few other characteristics significantly increased the number of danger signs or ways to prepare for delivery that clients know. For all countries the number of danger signs known increased with increasing education level, except in Haiti for clients in their first pregnancy. In general, for all countries the more ANC visits the client had the higher the number of danger signs known, and in Malawi only the higher the number of ways known to prepare for delivery. Other studies have also found higher awareness of danger signs among women with more education and/or more ANC visits (Duysburgh et al. 2013; Hailu and Berhe 2014; Kabakyenga et al. 2011; Pembe et al. 2009). Kabakyenga et al. (2011) found a significant relationship between knowledge of danger signs and knowledge of birth preparedness, after controlling for probable confounding factors. Few other patterns were found in the regression results; however, in Senegal all clients residing in all regions had significantly higher knowledge in number of danger signs and ways to prepare for delivery compared with the Northern region.

4.2. Family Planning

In general, low levels of counseling were observed during family planning consultations on important aspects of contraceptive methods, even though providers were aware of the presence of the observer. In Haiti only one in five family planning consultations were observed in which the provider counseled clients on side effects of the client's method. In contrast, much higher proportions of providers spoke about how to use the method and asked clients if they had general questions and concerns about their methods. Low levels of provider emphasis on side effects compared with other information about contraceptive methods have also been observed in other countries. For example, a study in Kenya found that providers in 74% of family planning counseling sessions with new clients discussed how to use pills, while only 26% talked about side effects (Kim, Kols, and Mucheke 1998). In the Kenya study providers were concerned that too much negative information about the method could scare clients away from using contraception. Side effects are among the commonly reported reasons for contraceptive discontinuation, particularly for hormonal methods (Bailey 2010; Bradley, Schwandt, and Khan 2009). Therefore, it is important for providers to give clients sufficient consultation on side effects to help them choose appropriate methods and guide them on what to do when side effects occur.

Provider observation and client reports have been used frequently to assess the quality of family planning services, but usually not both together. Limited research has assessed the comparability of the two types of data obtained by these methods. In this study the availability of information from direct observation of family planning consultations and from client reports of the same counseling allowed us to assess the agreement between observation data and client exit interview data on various family planning counseling aspects. The agreement indicated by kappa statistics was low to fair (kappa statistics ranging from 0.03 to 0.35). In their comparisons of provider observations and client interviews, Bessinger and Bertrand (2001) found a fair to good agreement (kappa statistics 0.4-0.98) for a wide range of indicators. In their study, however, indicators on information given to client, which are similar to the ones included in this study, demonstrated poorer agreement than other indicators such as interpersonal relations.

From the perspective of quality of care, the provider should be observed to give counseling and the client should also report receiving the counseling. However, our study found that such agreement between providers and clients was low, from 18-44% in Haiti, 30-59% in Malawi, and 24-61% in Senegal. Many providers were observed to discuss with their clients how to use the current contraceptive method but their clients did not report such a discussion. In Haiti and Malawi in one in every five consultations the provider was observed to give counseling on how to use the method but the client reported that the provider did not

discuss how to use the method. Client recall bias could be a reason for the difference. Clients might not remember all the information they were given when they were interviewed immediately before leaving the facility and might not have had time to process the information (Bessinger and Bertrand 2001; Tumlinson et al. 2014). Poor quality of counseling could also contribute to such discrepancies. Providers could mention how to use the method but perform poorly in explaining in details that might ensure that clients could understand the message. As discussed previously, good-quality counseling takes time. With an average of just 10-15 minutes of consultation time, providers face extra difficulties to provide detailed information. In our study, with new clients and users of pills, however, providers seemed to provider better counseling, reflected in a high level of positive agreement between providers and clients. In general, clients reported high levels of knowledge on general use of the method and on its STI protection, especially in Haiti and Malawi. Besides obtaining knowledge from the current visit, many clients might have already known from other sources how to use the method and its protection from STI.

4.3. Sick Child Care

Overall, these SPA surveys reveal a deficit in observed counseling for caregivers during sick child visits. For most of the counseling items, providers gave counseling in 16% or less of the sick child visits observed. Among the four counseling items assessed, the item with the most counseling was for the diagnosis of the child, at 41% in Malawi, while the smallest proportions of visits involved counseling on signs and symptoms for bringing the child back, at 4% in Haiti. In all surveys, based on observation less than 10% of clients were counseled on the child's weight or growth. These findings are particularly concerning since counseling has been proven to improve caretaker knowledge and practices, which can improve child health outcomes, such as improving child weight gain with better feeding practices (Santos et al. 2001, Zaman, Ashraf, and Martines 2008). The analysis shows a fair level of agreement between providers and clients when counseling was not provided, particularly in both rounds of surveys in Senegal. Despite the lack of counseling provided overall, discordance was still pervasive between observed counseling and client reports of receiving counseling. Disagreement between the two accounts for different counseling topics was as high as 41% in Malawi, 38% in Haiti, and 25% in Senegal 2012-13 and 2014. Additionally, our study found that in all surveys the average time spent in sick child visits was only 10-20 minutes.

One strategy proven to improve the quality of sick child visits is the Integrated Management of Childhood Illness (IMCI), a health-system intervention developed by WHO and partners intended to strengthen health worker case management skills through a set of guidelines for diagnosis and treatment of sick child visits and corresponding training of providers (Armstrong et al. 2004; Campbell and Gove 1996; Nguyen et al. 2013; Tulloch 1999). Implementation of this strategy of care can improve child health outcomes, and training of health care providers in this strategy has been seen to improve both the quality of counseling (Armstrong et al. 2004; Gilroy et al. 2004) and time spent on counseling (Adam et al. 2005). Results from a study by Adam and colleagues (2005) also indicate that these two components of care, quality and time, are linked in that providers who received training in IMCI not only spent more time in consultations but also were more likely to make a correct diagnosis. Further, client-centered counseling is a core component of IMCI provider training. Client-centered counseling has been shown to improve caretaker's recall of the information exchanged during visits, which is critical if a caretaker is to implement the provider's recommendations (Santos et al. 2001; Zaman, Ashraf, and Martines 2008).

4.4. Limitations

One of the limitations in the analysis of the counseling effect on level of knowledge in ANC is that the client's information may have been gained elsewhere and not necessarily from the observed counseling session. This was evident in the regression results, in which clients who were not observed to be counseled but who reported being counseled significantly increased their apparent level of knowledge for number of danger signs and ways to prepare for delivery compared with clients who agreed that counseling was not

given. While the regression analysis did control for many variables in order to address this possible source of bias, a separate analysis for clients in their first pregnancy was also conducted to attempt to capture women who are receiving their knowledge from the consultation. Despite the possibility that the knowledge can be gained elsewhere, the level of knowledge found for the number of danger signs and the number of way to prepare for delivery was relatively low, with most clients unable to report any danger signs, or only one. However, the results still found that even when counseled the clients did not increase in their level of knowledge except if they reported receiving the counseling that the provider was observed to have given. The analysis of agreement between consultation observations and client reports could be improved if there are parallel questions in both questionnaires. Family planning counseling on STI protection was observed but clients were not asked whether such counseling was given. Also the questions in the exit interview were not specific enough, which could lead to misclassification of different counseling items.

In the sick child analysis, the main limitation was lack of information on child's condition or health. Unlike the counseling provided in ANC and family planning visits, many counseling topics given during sick child consultations depend on the child's health condition or diagnosis. For instance, there may be no need to counsel on what to feed the child when sick if the child's condition does not require special feeding instructions. Also, counseling on the child's weight or growth may not be required if the visit was for a specific illness and the child does not show signs of malnourishment. This may be the reason that we see very high levels of agreement between the observation and client's report that the counseling did not occur. However, there are still high levels of disagreement, which may be an indicator of the poor quality of counseling provided. In addition, there is the possibility that the interviewer did not recognize that the counseling was provided to the client. While The DHS Program goes through a thorough training before implementing an SPA survey, interviewer bias may still be possible and especially if the observation was made at the end of the day and after several observations, leading to interviewer fatigue. Another limitation is the inability to conduct any regression analysis on client's knowledge in the family planning and sick child analysis. This was due to the high level of knowledge shown in responses to the questions related to family planning and the lack of any questions about client knowledge in the sick child exit interviews. Therefore, the effect of counseling on the client's knowledge in these areas could not be examined.

4.5. Conclusion

Low levels of counseling have been observed during ANC, family planning, and sick child visits. Also, levels of agreement were low between client reports of whether counseling occurred and the observation that counseling in fact did occur. Ideally, we would like to see complete agreement between the client's report and the observation, especially a positive agreement that the counseling occurred. In the analysis of knowledge on danger signs and preparation for delivery, it was necessary for the client to report that the counseling occurred in order to significantly increase their knowledge. Inclusion of other questions in the exit interview that test the client's knowledge in topics related to family planning and sick child treatment would be useful to be able to study the effect of counseling on knowledge in these areas. In general, there appears to be evidence that more emphasis is required in training providers on the importance of providing counseling to all clients and also on how to provide counseling that is more focused on the client's needs and is more client-centered. Health facilities need to evaluate the amount of time spent with clients during their visits and how to efficiently use this time to provide the required services as well as effective counseling to increase client knowledge and in turn improve maternal and child health outcomes.

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Appendices

Appendix 1. Quality of Counseling for Haiti: Cross tabulation of provider and client reported counseling and client, provider, and facility background characteristics

	Danger signs of pregnancy complications					Nutrition during pregnancy					Pregnancy preparation					Where to deliver					How to use iron pills				
	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value
Duration of consultation																									
Average in minutes	14.2	13.7	15.8	18.0	**0.002**	13.6	16.3	16.2	17.6	**<0.001**	15.0	15.0	15.8	18.9	0.073	14.5	16.7	16.1	17.1	0.094	15.2	14.5	13.9	17.0	**0.035**
Client's age					0.281					0.556					0.939					0.634					0.212
<20	37.7	8.7	40.8	12.8		47.7	9.1	18.2	25.0		77.7	9.5	7.2	5.6		61.7	14.1	11.1	13.1		31.1	34.6	5.7	28.7	
20-29	35.5	14.0	33.2	17.2		45.1	9.8	21.2	23.9		74.6	10.6	6.9	7.9		62.0	14.1	8.6	15.3		32.8	31.6	7.6	28.0	
30-35	33.0	15.5	34.3	17.3		46.5	12.2	17.1	24.2		76.1	11.0	7.1	5.8		61.3	15.3	6.6	16.8		35.3	37.5	5.7	21.5	
36+ & DK	38.7	12.1	31.0	18.1		51.1	9.2	22.2	17.5		78.5	10.0	5.6	5.9		68.6	11.0	7.4	13.1		40.8	31.7	5.1	22.4	
Client's education					0.107					0.352					0.131					0.049					0.654
No school	32.2	13.8	40.5	13.5		47.3	8.9	16.2	27.6		74.8	10.9	4.9	9.4		59.1	15.9	5.9	19.2		33.7	36.2	4.8	25.3	
Primary & post-primary	39.0	11.2	33.8	16.0		44.6	10.6	19.6	25.2		74.7	10.4	6.4	8.4		58.5	15.0	9.1	17.4		33.7	33.4	5.6	27.3	
Secondary+	33.9	15.2	32.7	18.3		47.5	10.3	21.2	20.9		76.8	10.4	7.7	5.1		66.4	12.9	8.4	12.3		34.4	32.8	7.8	24.9	
Client's first pregnancy					0.369					0.467					0.950					0.067					0.535
No	34.3	13.9	33.9	17.9		46.6	9.7	20.9	22.8		75.6	10.3	6.9	7.1		59.9	14.7	8.8	16.6		33.8	32.9	6.4	27.0	
Yes	37.9	12.8	34.7	14.7		46.1	11.2	18.0	24.7		76.0	10.8	6.6	6.5		67.4	12.9	7.3	12.4		34.7	34.6	7.1	23.6	
Number of visits to facility					0.448					**0.026**					**0.003**					**0.007**					**<0.001**
1	35.7	11.2	35.3	17.9		46.5	8.2	20.1	25.2		76.7	8.7	5.5	9.1		59.1	13.0	8.7	19.2		38.1	27.3	6.8	27.7	
2	37.9	13.1	34.5	14.6		46.2	9.7	20.5	23.6		78.4	13.2	5.0	3.3		70.0	11.4	7.4	11.3		33.0	34.2	9.1	23.7	
3	35.0	16.2	32.9	15.9		41.8	10.6	22.4	25.1		75.2	9.2	10.0	5.6		67.8	14.2	8.5	9.4		27.2	42.3	7.1	23.4	
4+ visits	32.2	17.8	32.5	17.5		49.4	16.5	16.9	17.2		69.8	13.5	10.4	6.3		58.4	20.6	8.0	13.0		28.5	43.4	2.5	25.6	
Provider category					0.359					**<0.001**					**<0.001**					**<0.001**					0.060
Nurse/midwife/other	34.1	13.7	33.4	18.8		39.6	11.3	20.3	28.8		70.5	11.7	8.1	9.7		54.8	15.2	9.2	20.8		33.3	31.1	5.9	29.8	
Doctor/specialist/tech	37.3	13.2	35.1	14.4		54.8	8.9	19.4	16.9		82.3	9.0	5.3	3.5		71.9	12.8	7.1	8.2		35.0	36.4	7.5	21.1	
Provider's number of years of schooling					0.506					**0.018**					**0.012**					**0.001**					0.245
<16	37.1	14.1	32.1	16.7		42.4	11.1	20.4	26.1		75.2	10.3	6.3	8.1		64.1	15.6	6.5	13.8		32.0	27.6	5.1	35.3	
16-18	31.6	14.1	33.9	20.4		37.0	12.1	21.5	29.4		66.7	14.2	9.4	9.7		51.1	14.0	10.2	24.7		31.8	33.3	7.2	27.7	
19+	37.4	13.2	34.4	15.1		51.6	9.2	19.1	20.1		80.1	8.9	5.7	5.3		67.4	13.8	7.9	10.9		35.5	35.0	6.8	22.8	
Total number of supervisory items					0.651					**0.049**					**0.009**					**0.001**					0.733
None	35.4	14.5	35.5	14.6		50.8	6.7	19.5	23.0		83.9	8.7	4.0	3.4		73.8	12.7	4.4	9.2		36.6	34.4	6.7	22.2	
1-5	37.6	13.5	32.2	16.7		45.1	10.9	17.9	26.1		70.8	11.7	8.6	8.9		59.1	14.8	9.6	16.5		32.5	32.5	7.2	27.8	
6	31.8	12.3	36.2	19.7		43.6	13.3	24.3	18.8		75.2	10.4	7.0	7.3		55.0	14.5	10.6	19.9		33.9	34.2	5.3	26.6	

Continues

Appendix 1–*Continued*

	Danger signs of pregnancy complications					Nutrition during pregnancy					Pregnancy preparation					Where to deliver					How to use iron pills				
	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value
Provider received training in ANC counseling within 24 months					0.238					0.953					0.964					0.560					**0.031**
No	37.2	12.6	33.9	16.3		46.5	10.4	19.5	23.6		75.4	10.7	6.9	6.9		63.6	14.3	8.1	14.0		34.1	34.6	5.2	26.0	
Yes	29.7	16.6	35.2	18.4		46.3	9.7	21.1	22.8		77.0	9.7	6.6	6.8		58.6	13.3	8.7	19.3		34.1	29.3	11.5	25.2	
Facility type					0.284					**0.007**					0.205					0.788					0.204
Hospital	39.3	14.7	30.0	16.0		51.9	9.5	22.1	16.5		78.3	9.1	7.1	5.5		62.4	13.5	8.4	15.7		36.4	33.2	8.2	22.1	
Health center	31.5	12.4	37.6	18.5		44.6	9.8	18.5	27.1		74.3	11.0	7.9	6.9		61.5	15.2	9.2	14.1		33.4	33.6	6.3	26.7	
Other	37.8	13.9	34.7	13.5		38.2	13.5	18.3	30.0		73.9	12.6	3.1	10.4		65.9	12.4	5.1	16.6		30.2	33.5	3.6	32.7	
Location					0.247					0.510					0.600					0.136					0.208
Urban	37.4	14.5	33.0	15.1		48.6	10.0	18.7	22.8		76.7	10.5	6.9	5.9		64.8	15.1	7.1	13.0		34.9	34.2	7.6	23.3	
Rural	32.9	12.2	35.8	19.1		43.4	10.6	21.6	24.3		74.5	10.4	6.7	8.3		59.3	12.7	9.8	18.2		32.8	32.5	5.3	29.4	
Managing authority					0.188					0.407					0.903					0.972					0.830
Private/faith/NGO/other	32.2	13.6	36.4	17.9		43.9	10.9	20.1	25.1		74.9	11.1	7.0	6.9		62.1	14.3	8.6	14.9		35.4	33.0	6.7	24.9	
Government	39.6	13.4	31.5	15.5		49.5	9.4	19.7	21.4		76.9	9.7	6.6	6.9		63.0	13.7	7.8	15.4		32.5	34.1	6.5	27.0	
Region					0.352					0.086					0.001					<0.001					0.057
North	33.8	15.4	30.6	20.2		53.0	8.7	14.8	23.6		75.7	9.7	6.5	8.1		64.6	13.3	5.2	16.9		33.6	35.5	9.3	21.6	
Center	37.3	10.3	36.2	16.2		40.6	13.0	21.6	24.9		68.8	10.7	11.9	8.6		53.6	9.0	13.5	24.0		33.2	37.4	4.7	24.6	
South	32.2	18.0	33.8	16.0		37.7	11.6	21.7	29.0		67.3	15.2	8.1	9.3		53.7	25.2	7.4	13.8		31.5	25.6	5.0	37.8	
West	37.2	11.9	35.3	15.6		50.5	8.9	21.0	19.6		84.1	8.4	3.5	4.0		70.9	11.7	7.6	9.8		36.1	34.1	7.0	22.8	

Notes: 1. Both agree no counseling provided; 2. Provider not observed but client reported; 3. Provider observed but client did not report; 4. Both agree counseling provided.

Appendix 2. Quality of Counseling for Malawi: Cross tabulation of provider and client reported counseling and client, provider, and facility background characteristics

	Danger signs of pregnancy complications					Nutrition during pregnancy					Pregnancy preparation					Where to deliver					How to use iron pills				
	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value
Duration of consultation																									
Average in minutes	10.7	12.9	10.4	13.5	0.127	10.7	12.9	9.1	14.1	**0.041**	11.8	13.1	9.7	12.0	0.158	9.5	14.6	9.2	13.8	**<0.001**	9.1	13.6	6.6	12.3	**<0.001**
Client's age					**0.020**					0.646					**0.015**					**0.002**					0.713
<20	30.5	15.0	22.9	31.6		44.0	16.8	11.0	28.2		20.1	16.8	10.0	53.2		34.8	16.3	17.6	31.4		15.8	22.9	2.7	58.6	
20-29	27.3	16.9	21.3	34.4		40.5	21.5	8.7	29.3		16.0	19.0	7.3	57.6		29.0	20.6	15.3	35.1		13.4	26.2	3.3	57.1	
30-35	22.8	25.5	20.9	30.8		38.6	19.5	10.7	31.2		12.1	20.8	13.6	53.4		21.6	24.5	14.4	39.5		14.9	23.9	2.0	59.2	
36+ & DK	30.5	22.7	18.4	28.5		43.2	21.9	9.5	25.4		14.0	23.7	13.7	48.6		23.6	22.7	22.9	30.7		12.5	26.4	5.0	56.1	
Client's education					0.339					0.815					0.135					0.800					0.634
No school	33.3	20.5	18.8	27.3		44.5	19.2	9.1	27.2		11.5	27.7	9.0	51.8		31.0	17.3	17.8	33.9		15.6	22.7	4.9	56.8	
Primary & post-primary	26.3	18.5	21.9	33.4		40.4	20.6	9.8	29.2		16.6	18.0	9.5	55.9		27.7	21.2	16.1	34.9		14.0	25.3	2.9	57.9	
Secondary+	30.9	14.0	16.5	38.6		43.2	13.7	6.9	36.2		18.6	19.2	14.3	47.9		32.7	18.7	10.6	38.0		8.9	32.1	1.5	57.4	
Client's first pregnancy					**<0.001**					**0.063**					**0.008**					**0.007**					0.819
No	25.7	21.3	20.4	32.6		39.6	21.7	9.6	29.1		14.5	20.7	9.2	55.6		26.1	21.0	16.3	36.5		14.1	25.6	3.1	57.2	
Yes	32.6	10.3	24.2	32.9		45.5	15.7	9.7	29.1		20.3	15.0	10.9	53.8		35.2	19.4	15.9	29.5		13.9	23.5	3.2	59.5	
Number of visits to facility					0.057					**<0.001**					**0.004**					**<0.001**					**<0.001**
1	24.9	19.1	17.9	38.1		35.4	20.5	6.6	37.5		13.9	16.0	7.4	62.7		19.4	16.4	11.6	52.6		11.0	24.1	1.5	63.5	
2	28.3	20.1	22.9	28.7		44.6	19.6	10.7	25.1		18.7	24.4	9.8	47.1		37.1	24.8	19.9	18.1		11.8	23.5	3.6	61.1	
3	30.2	16.3	22.1	31.4		45.9	17.3	13.2	23.7		17.8	20.3	11.3	50.6		36.5	22.0	19.6	22.0		16.6	25.6	4.4	53.5	
4+ visits	29.0	18.1	27.1	25.9		44.7	24.4	11.5	19.3		14.6	18.9	13.2	53.4		28.1	23.8	18.5	29.6		23.2	30.2	5.2	41.5	
Provider category					0.374					0.528					**0.036**					0.868					0.155
Nurse/midwife/other	27.0	18.6	21.2	33.2		40.6	20.5	9.7	29.2		15.5	19.7	9.3	55.5		28.1	20.8	16.2	34.9		13.8	24.6	3.1	58.4	
Doctor/specialist/tech	37.4	18.9	22.6	21.1		51.4	13.8	8.2	26.6		26.1	9.8	16.6	47.5		33.9	17.1	15.6	33.4		20.2	37.0	2.0	40.8	
Provider's number of years of schooling					0.652					0.949					0.425					0.122					0.637
<16	29.1	20.0	21.2	29.8		41.3	20.0	10.3	28.4		15.1	17.2	11.3	56.4		25.1	19.5	19.5	35.9		15.2	23.8	3.6	57.3	
16-18	24.5	17.2	21.8	36.5		40.5	20.5	9.6	29.4		15.7	21.7	7.8	54.8		31.4	22.5	11.6	34.5		11.7	26.8	2.4	59.1	
19+	32.1	17.8	19.2	30.9		42.6	19.9	5.6	31.9		22.7	19.9	7.9	49.5		32.1	18.1	20.3	29.5		19.7	24.6	3.2	52.5	
Total number of supervisory items					0.697					0.301					0.139					0.743					**0.030**
None	24.8	20.8	20.3	34.1		40.4	22.4	6.8	30.5		16.1	23.5	7.2	53.2		26.7	22.0	13.9	37.3		8.7	22.7	2.8	65.8	
1-5	28.4	17.7	24.2	29.8		45.9	19.4	9.2	25.5		19.4	18.8	9.1	52.7		31.3	20.1	16.0	32.5		17.0	30.0	3.0	50.0	
6	27.9	18.3	19.2	34.6		37.0	19.8	11.5	31.6		12.6	17.5	11.4	58.5		26.5	20.4	17.6	35.6		14.3	22.0	3.3	60.4	

Continues

Appendix 2–*Continued*

	Danger signs of pregnancy complications					Nutrition during pregnancy					Pregnancy preparation					Where to deliver					How to use iron pills				
	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value
Provider received training in ANC counseling within 24 months					0.531					0.476					0.529					0.225					0.378
No	27.7	18.2	20.7	33.4		41.3	20.9	9.0	28.8		16.2	20.0	9.4	54.3		29.3	21.4	15.7	33.7		14.9	24.4	3.2	57.6	
Yes	25.6	21.6	25.0	27.8		39.7	16.0	13.5	30.9		14.0	15.0	10.6	60.4		22.3	15.8	19.7	42.2		9.1	29.9	2.7	58.3	
Facility type					0.401					0.137					0.913					0.484					0.121
Hospital	25.8	19.4	22.0	32.9		36.8	20.4	8.4	34.4		16.4	19.5	8.7	55.4		25.5	21.1	15.8	37.6		12.7	25.2	3.2	59.0	
Health center	28.4	17.3	21.2	33.2		43.7	19.4	10.4	26.5		15.9	18.9	10.2	55.0		30.8	20.0	16.6	32.6		15.1	23.6	3.1	58.1	
Other	28.9	36.5	14.2	20.4		45.0	33.8	10.7	10.5		10.6	25.4	8.6	55.3		16.1	27.8	13.7	42.4		11.3	54.4	1.9	32.4	
Location					0.735					0.220					0.643					0.206					0.133
Urban	25.9	17.2	20.6	36.3		38.2	16.8	8.2	36.8		18.1	20.5	7.9	53.5		23.8	23.5	12.8	39.9		9.8	27.9	1.1	61.1	
Rural	27.9	19.2	21.6	31.4		42.1	21.5	10.1	26.3		15.1	18.9	10.2	55.8		29.9	19.6	17.5	33.0		15.6	24.1	3.8	56.5	
Managing authority					0.905					0.093					0.879					0.698					0.617
Private/faith/NGO/other	26.8	20.1	20.3	32.9		36.8	26.4	7.9	28.9		15.0	19.1	8.8	57.0		30.7	21.7	14.5	33.0		16.6	26.0	2.8	54.6	
Government	27.6	18.1	21.7	32.6		42.7	17.9	10.3	29.2		16.3	19.4	9.9	54.5		27.4	20.2	16.8	35.5		13.1	24.8	3.2	58.9	
Region					0.273					0.250					0.936					0.051					0.087
North	21.1	15.8	19.0	44.2		35.2	20.9	8.0	35.9		17.3	18.6	10.9	53.1		19.9	25.8	14.2	40.1		10.2	30.5	3.4	55.9	
Central	27.6	21.4	19.7	31.4		43.4	15.9	9.0	31.7		16.9	19.7	9.9	53.5		25.6	18.1	17.0	39.2		10.1	27.0	3.2	59.6	
South	28.6	16.8	23.3	31.2		40.3	23.9	10.6	25.2		14.7	19.2	9.0	57.1		32.7	21.7	16.0	29.6		18.5	22.2	2.9	56.4	

Notes: 1. Both agree no counseling provided; 2. Provider not observed but client reported; 3. Provider observed but client did not report; 4. Both agree counseling provided.

Appendix 3. Quality of Counseling for Senegal: Cross tabulation of provider and client reported counseling and client, provider, and facility background characteristics

	Danger signs of pregnancy complications					Nutrition during pregnancy					Pregnancy preparation					Where to deliver					How to use iron pills				
	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value
Duration of consultation																									
Average in minutes	16.7	19.2	18.1	20.0	**0.003**	16.9	18.8	17.3	22.7	**<0.001**	17.9	18.0	19.4	20.0	0.278	18.0	20.0	18.3	22.7	0.278	18.5	17.5	15.3	19.0	0.300
Client's age					0.083					0.621					0.550					**0.013**					0.137
<20	32.3	29.1	14.3	24.3		69.1	6.6	4.7	19.6		77.8	3.7	3.5	15.0		92.2	3.5	2.1	2.2		47.6	20.0	0.6	31.7	
20-29	33.9	27.6	16.9	21.6		64.6	5.1	7.5	22.8		74.9	6.0	2.9	16.3		88.0	7.5	1.8	2.7		40.1	22.2	4.3	33.4	
30-35	27.6	33.7	11.7	27.0		63.7	4.5	5.7	26.1		70.4	4.8	2.8	22.0		87.3	5.0	1.0	6.7		44.8	17.8	2.0	35.4	
36+ & DK	44.5	22.4	13.9	19.2		65.8	2.4	6.5	25.3		71.8	7.7	2.3	18.2		84.0	4.4	7.1	4.5		43.0	26.8	1.8	28.3	
Client's education					0.320					0.580					0.726					0.420					0.564
No school	32.4	29.3	16.4	22.0		66.7	4.6	5.9	22.8		74.6	5.6	3.0	16.8		87.6	6.6	2.2	3.6		42.8	21.8	3.0	32.4	
Primary & post-primary	33.4	26.2	15.5	24.9		61.1	6.3	7.1	25.5		71.3	5.4	2.3	21.0		89.4	4.3	3.3	3.0		42.5	21.1	1.5	34.9	
Secondary+	39.1	29.0	8.8	23.2		66.2	4.0	8.7	21.2		76.8	5.7	3.5	13.9		87.5	6.7	0.7	5.1		41.6	21.0	5.3	32.1	
Client's first pregnancy					0.330					0.832					0.944					0.323					0.094
No	33.0	28.3	16.2	22.5		65.2	4.7	6.8	23.3		73.7	5.6	2.8	17.8		87.5	6.7	2.1	3.6		41.9	21.1	3.6	33.4	
Yes	35.6	29.2	11.2	24.0		65.4	5.9	5.7	22.9		75.4	5.5	3.0	16.2		90.1	3.4	2.7	3.9		44.7	23.0	0.7	31.6	
Number of visits to facility					0.283					0.174					**<0.001**					**<0.001**					**0.003**
1	35.3	30.9	13.0	20.8		62.6	4.4	6.3	26.7		86.0	4.1	1.2	8.7		91.2	6.2	0.9	1.7		38.6	18.5	3.4	39.6	
2	33.6	25.9	18.3	22.1		65.8	6.6	6.1	21.5		79.5	5.1	3.5	12.0		92.5	4.1	1.6	1.8		41.1	24.1	3.5	31.3	
3	32.2	24.5	15.6	27.8		64.6	2.6	7.7	25.1		64.8	5.4	3.1	26.7		85.2	3.9	5.0	5.9		39.8	24.9	1.9	33.5	
4+ visits	31.0	32.8	13.8	22.4		70.3	6.3	6.7	16.7		51.6	9.7	5.0	33.7		77.6	11.5	2.7	8.2		57.1	19.7	1.8	21.4	
Provider category					0.663					0.175					0.867					0.081					0.569
Nurse/midwife/other	33.9	28.2	14.4	23.5		65.2	5.6	6.9	22.4		73.9	5.9	2.8	17.4		87.4	6.9	2.5	3.3		42.8	20.7	2.7	33.8	
Doctor/specialist/tech	31.5	30.1	18.7	19.6		65.4	1.5	5.1	28.1		74.9	4.0	3.3	17.8		91.9	1.4	1.0	5.6		41.2	25.8	4.2	28.8	
Provider's number of years of schooling					0.833					0.392					0.715					0.619					0.611
<16	34.0	30.5	13.0	22.5		61.9	6.9	5.8	25.4		73.2	6.3	2.6	17.9		89.4	5.0	2.2	3.4		43.6	21.3	2.1	32.9	
16-18	32.9	28.6	16.2	22.3		67.3	4.5	6.4	21.8		73.1	5.3	3.0	18.6		86.6	7.0	2.6	3.9		44.0	20.7	3.1	32.1	
19+	36.2	20.9	15.2	27.7		63.0	1.2	10.4	25.4		83.1	5.1	3.1	8.7		93.1	3.3	0.4	3.1		29.1	27.4	4.8	38.7	
Total number of supervisory items					0.605					0.449					0.740					0.141					0.165
None	33.7	31.3	15.7	19.3		70.2	6.4	6.6	16.9		79.1	5.4	3.0	12.5		90.2	5.2	2.8	1.8		47.9	17.0	3.4	31.7	
1-5	34.1	21.0	20.5	24.5		61.1	4.7	8.3	25.9		72.9	6.1	2.0	19.0		86.3	4.0	5.7	4.0		26.2	26.9	4.3	42.5	
6	33.4	28.9	13.8	24.0		64.1	4.4	6.2	25.2		72.3	5.5	3.0	19.1		87.6	6.7	1.3	4.3		43.7	22.2	2.5	31.6	

Continues

Appendix 3–*Continued*

	Danger signs of pregnancy complications					Nutrition during pregnancy					Pregnancy preparation					Where to deliver					How to use iron pills				
	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value
Provider received training in ANC counseling within 24 months					0.068					0.538					0.269					0.513					0.520
No	34.4	29.8	16.4	19.4		66.8	4.8	6.7	21.7		76.7	5.1	2.7	15.4		88.5	5.2	2.2	4.1		43.5	22.7	3.0	30.9	
Yes	31.9	25.8	12.4	29.9		61.9	5.3	6.3	26.6		68.6	6.6	3.2	21.7		87.2	7.7	2.4	2.7		40.6	19.2	2.9	37.3	
Facility type					**0.009**					0.419					0.290					0.720					**0.048**
Hospital	31.8	25.2	22.4	20.6		76.1	6.1	5.7	12.0		85.7	4.4	0.0	9.9		93.1	2.3	1.9	2.6		38.9	27.7	9.4	24.1	
Health center	25.0	40.4	8.6	26.1		62.2	6.3	7.6	23.9		68.7	4.9	2.3	24.1		85.4	7.7	2.2	4.6		42.0	14.9	2.7	40.4	
Other	35.2	26.5	15.8	22.4		65.1	4.6	6.5	23.8		74.3	5.8	3.1	16.8		88.2	5.9	2.3	3.6		42.8	22.3	2.6	32.2	
Location					0.493					0.342					0.225					0.386					0.061
Urban	35.0	29.8	12.1	23.1		60.9	6.0	7.1	26.0		72.1	7.8	1.9	18.3		85.3	7.1	3.0	4.7		44.3	25.9	3.2	26.6	
Rural	32.7	27.7	17.0	22.7		68.0	4.3	6.3	21.5		75.4	4.2	3.5	16.9		89.9	5.3	1.8	3.0		41.4	18.8	2.8	37.1	
Managing authority					0.073					0.049					0.561					0.310					0.564
Private/faith/NGO/other	49.4	22.2	14.5	13.8		58.4	0.4	11.9	29.4		75.2	7.9	0.3	16.6		80.8	8.8	2.4	8.0		45.0	26.7	1.6	26.7	
Government	31.9	29.1	15.2	23.8		65.9	5.4	6.0	22.6		74.0	5.3	3.1	17.6		88.8	5.7	2.2	3.2		42.3	21.0	3.1	33.6	
Region					**0.024**					**0.020**					**0.001**					**0.048**					**<0.001**
Northern	36.9	28.6	16.1	18.4		71.4	6.0	3.3	19.3		81.8	2.2	3.1	12.9		94.4	3.0	1.6	1.0		44.6	13.0	2.1	40.2	
Dakar	42.8	26.0	14.6	16.7		57.8	8.2	8.2	25.8		72.6	12.3	1.3	13.8		80.1	8.5	4.6	6.8		41.4	33.2	4.8	20.6	
Thies	37.1	23.7	8.9	30.3		55.0	6.9	7.7	30.4		67.4	3.5	4.0	25.0		86.1	4.9	2.6	6.4		39.6	32.2	4.9	23.3	
Central	27.2	24.2	19.4	29.2		62.8	4.3	6.5	26.3		68.7	7.7	3.7	20.0		85.1	9.1	2.3	3.6		31.6	21.7	1.5	45.3	
East	37.6	33.6	17.6	11.2		84.1	0.0	9.9	6.0		89.7	1.9	2.5	5.9		95.5	3.7	0.3	0.6		70.6	9.4	1.1	18.9	
South	22.3	43.1	9.3	25.4		68.9	1.4	5.7	24.0		71.9	1.2	1.9	25.0		93.2	3.2	0.8	2.8		47.9	14.8	4.3	33.0	

Notes: 1. Both agree no counseling provided; 2. Provider not observed but client reported; 3. Provider observed but client did not report; 4. Both agree counseling provided.

Appendix 4. Regression of the number of danger signs that could occur during pregnancy that the client knows with reported incidence risk ratios

		Haiti				Malawi				Senegal 2014			
	Distribution	**nbreg**	**nbreg**	**nbreg**	**nbreg**	**nbreg**	**nbreg**	**poisson**	**poisson**	**nbreg**	**nbreg**	**nbreg**	**nbreg**
	Client type	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**
Duration of consultation													
Average in minutes		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	**1.0****	1.0	**1.0****
Client characteristics													
Client's age (ref.=<20)	20-29	**1.4***	**1.4****	**1.4***	**1.3***	0.9	0.9	0.9	1.0	0.8	1.0	0.8	1.0
	30-35	**1.6****	**1.6*****	**1.5***	**1.5*****	1.5	1.1	1.1	1.1	1.1	1.0	1.0	1.0
	36+ & dk	1.2	**1.6****	1.3	**1.5****	0.8	1.0	0.7	1.1	1.3	1.1	1.1	1.1
Client's education (ref.=none)	Primary & post primary	1.0	**1.3***	1.1	1.2	1.8	**1.2***	1.7	1.2	1.4	**1.1***	1.4	**1.1***
	Secondary +	1.2	**1.4****	1.2	**1.3****	**3.2****	**1.6***	**2.0***	**1.4***	**1.9****	**1.3****	**1.7****	**1.3***
Number of previous ANC visits (ref.= first visit)	2	1.1	**1.2****	1.3	**1.3****	1.1	1.2	1.1	**1.3*****	1.2	1.2	1.2	1.2
	3	1.1	**1.3***	1.2	**1.2***	1.1	**1.2***	1.2	**1.4*****	**1.7****	**1.2***	**1.5***	1.1
	4 or more	1.2	**1.3*****	1.1	**1.3****	1.4	**1.3***	1.3	**1.5*****	**2.6*****	**1.5*****	**2.5*****	**1.5*****
Client's first pregnancy (ref.=no)	yes		1.0		1.0		**0.7*****		**0.9***		**0.8****		**0.7****
Counseling													
Counseled on any of the seven signs of pregnancy complications (ref.=no)	yes	1.1	1.1			**2.9*****	**1.6*****			**2.8*****	**1.7*****		
Agreement on counseling on signs of pregnancy complications (ref.= both agree no counseling)	Provider did not counsel, but client reported receiving			**1.8*****	**1.6*****			**7.4*****	**4.5*****			1.1	1.0
	Provider counseled, but client did not report			0.9	1.0			1.0	0.9			0.9	0.9
	Both agree counseling was provided			**2.4*****	**2.0*****			**11.9*****	**5.7*****			**3.8*****	**2.3*****

Continues

Appendix 4–*Continued*

		Haiti				Malawi				Senegal 2014			
	Distribution	**nbreg**	**nbreg**	**nbreg**	**nbreg**	**nbreg**	**nbreg**	**poisson**	**poisson**	**nbreg**	**nbreg**	**nbreg**	**nbreg**
	Client type	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**
Provider characteristics													
Provider category (ref.=nurse/midwife/other)	doctor/specialist/ technician	1.0	1.0	1.0	1.1	1.0	0.7	1.1	0.9	1.2	1.0	1.2	1.1
Provider's years of education (ref.=<16)	16-18	0.9	0.9	1.0	0.9	**0.7***	1.0	**0.8***	0.9	0.8	0.9	**0.7***	1.0
	19+	0.8	0.8	0.9	0.9	**0.5***	0.8	**0.6****	**0.8***	0.7	1.0	**0.6***	1.0
Provider's training in ANC counseling (ref.=no)	yes	0.9	0.9	0.8	0.9	0.9	1.0	1.2	1.1	**1.4***	**1.3*****	1.4	**1.2****
Total number of supervisory items (ref.=none)	1-5	1.3	**1.3***	1.3	**1.3***	1.0	0.9	1.1	1.0	0.8	1.0	0.9	1.0
	6	0.9	1.1	0.9	1.1	1.3	1.1	1.2	1.1	1.3	1.1	1.1	1.1
Facility characteristics													
Managing authority (ref.=private/faith/NGO/ other)	Government	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.1	0.9	1.0	0.8	0.9
Health facility type (ref.=hospital)	Health center	0.9	1.0	0.9	1.0	1.1	1.1	1.1	1.0	1.5	1.2	1.6	1.1
	Other	0.8	0.9	0.9	0.9	1.0	1.2	0.9	1.0	0.8	1.0	0.9	1.0
Locality (ref.=urban)	Rural	0.9	0.9	0.9	0.9	1.0	1.0	0.9	1.1	1.3	0.9	1.3	1.0
Region (ref.=North)	Center	0.8	1.0	0.9	1.1	0.7	0.8	0.8	0.9				
	South	1.1	1.1	1.2	1.1	**0.6****	**0.7****	0.7*	**0.8***				
	West	0.9	0.9	0.9	0.9								
Region (ref.=Northern)	Dakar									1.8	**1.7****	1.7	**1.8*****
	Thies									1.4	**1.8*****	1.1	**1.7*****
	Central									1.1	**1.6*****	1.1	**1.6*****
	East									1.6	**2.4*****	1.5	**2.5*****
	South									1.2	**1.9*****	1.1	**1.8*****
Observations		531	1,603	531	1,603	489	2,025	489	2,025	256	1,206	256	1,206

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

Appendix 5. Regressions of the number of way the client knows to prepare for delivery with reported incidence risk ratios

		Haiti				Malawi				Senegal 2014			
	Distribution	**nbreg**	**nbreg**	**nbreg**	**nbreg**	**poisson**	**poisson**	**poisson**	**poisson**	**poisson**	**poisson**	**poisson**	**poisson**
	Client type	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**
Duration of consultation													
Average in minutes		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	**1.0***	1.0	**1.0****	1.0
Client characteristics													
Client's age (ref.=<20)	20-29	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.4	1.1	1.5	1.1
	30-35	1.3	1.2	1.1	1.2	1.5*	1.0	1.1	1.1	1.1	1.1	1.0	1.1
	36+ & DK	1.4	1.2	1.4	1.2	0.6	0.9	0.5	1.0	1.1	1.1	0.8	1.1
Client's education (ref.=none)	Primary & post primary	0.8	1.3	0.8	1.3	0.9	1.0	1.0	1.1	1.0	1.1	0.9	1.1
	Secondary +	0.9	1.2	1.0	1.2	0.8	0.8	0.8	0.9	0.8	1.0	0.7	1.0
Number of previous ANC visits (ref. = first visit)	2	1.1	1.0	1.1	1.0	**1.4****	**1.1***	**1.4****	**1.2****	1.3	1.0	1.2	1.0
	3	0.8	0.9	0.8	1.0	**1.5*****	**1.2****	**1.6*****	**1.2*****	1.3	1.1	1.3	1.1
	4 or more	1.2	1.1	1.2	1.1	**1.6*****	**1.3*****	**1.7*****	**1.4*****	1.6	**1.2****	1.4	**1.2***
Client's first pregnancy (ref.=no)	yes		1.0		1.0		**0.9***		0.9		**0.6*****		**0.6*****
Counseling													
Counseled in how to prepare for delivery (ref.= no)	Yes	1.1	1.2			**1.4****	**1.3*****			**3.2*****	**1.5*****		
Agreement on counseling on preparation for delivery (ref.= both agree no counseling)	Provider did not counsel, but client reported receiving			**1.7*****	**1.6*****			**3.6*****	**2.3*****			**2.4*****	**1.4*****
	Provider counseled, but client did not report			0.9	1.0			1.1	1.1			2.2	1.3
	Both agree counseling was provided			**1.6***	**1.6****			**3.4*****	**2.4*****			**4.0*****	**1.6*****
Provider characteristics													
Provider category (ref.=nurse/midwife/other)	Doctor/specialist/ technician	1.7	**1.6***	1.7	**1.6***	0.9	0.8	0.9	0.9	0.9	0.8	0.9	0.8
Provider's years of education (ref.=<16)	16-18	1.3	1.2	1.3	1.2	0.9	1.0	0.9	1.0	1.1	1.1	1.1	1.1
	19+	0.7	0.8	0.7	0.8	0.9	0.7	1.0	0.7	1.0	1.1	1.1	1.2
Provider's training in ANC counseling (ref.=no)	Yes	0.9	1.0	0.9	1.0	0.9	0.9	1.0	0.9	0.8	1.1	0.8	1.0
Total number of supervisory items (ref.=none)	1-5	1.0	1.1	1.0	1.1	1.1	1.0	1.1	1.0	1.2	0.9	1.1	0.9
	6	1.1	0.9	1.1	0.9	1.0	1.0	1.0	1.1	**1.5***	1.0	1.5	1.0

Continues

Appendix 5–*Continued*

		Haiti				Malawi				Senegal 2014			
	Distribution	**nbreg**	**nbreg**	**nbreg**	**nbreg**	**poisson**	**poisson**	**poisson**	**poisson**	**poisson**	**poisson**	**poisson**	**poisson**
	Client type	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**	**1st preg**	**all clients**
Facility characteristics													
Managing authority (ref.=private/faith/NGO/other)	Government	1.1	1.1	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.1	1.0
Health facility type (ref.=hospital)	Health center	1.2	1.0	1.1	1.0	**1.3**	**1.3****	**1.4***	**1.3*****	**0.4****	0.9	**0.4***	0.9
	Other	**1.9***	**1.5***	**1.9***	**1.4***	1.4	**1.5*****	1.4	**1.4*****	**0.3*****	0.8	**0.3****	0.8
Locality (ref.=urban)	Rural	**0.6****	**0.7****	**0.6****	**0.7****	1.0	1.0	1.0	1.0	1.2	1.0	1.3	1.1
Region (ref.=North)	Center	1.1	1.2	1.1	1.3	0.9	1.0	0.8	1.0				
	South	1.2	1.1	1.1	1.1	1.0	1.1	0.9	1.0				
	West	**1.8***	**1.4***	**1.8***	**1.5****								
Region (ref.=Northern)	Dakar									**2.3***	**2.0*****	2.1	**2.0*****
	Thies									1.6	**1.8*****	1.5	**1.8*****
	Central									1.5	**1.8*****	1.3	**1.8*****
	East									**2.6***	**2.1*****	2.4	**2.1*****
	South									1.9	**2.2*****	1.7	**2.1*****
Observations		531	1,603	531	1,603	489	2,025	489	2,025	256	1,206	256	1,206

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

Appendix 6. Quality of Counseling for Haiti: Cross tabulation of provider and client reported counseling and client, provider, and facility background characteristics

	Problems with current method					How to use					Side effects					When to return				
	Both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	Both yes[4]	p-value	Both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	Both yes[4]	p-value	Both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	Both yes[4]	p-value	Both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	Both yes[4]	p-value
Duration of consultation																				
Average in minutes	10.2	13.4	15.9	12.1	0.062	10.8	13.5	12.2	13.4	0.487	10.8	12.4	16.7	17.4	**0.001**	14.6	11.7	13.0	15.6	**0.023**
Client's age					**0.006**					0.129					0.520					0.005
<20	58.6	20.7	6.3	14.4		20.3	23.2	17.9	38.5		39.7	31.9	2.6	25.8		13.7	54.3	1.2	30.7	
20-29	31.3	29.9	8.6	30.2		14.0	19.0	20.3	46.7		37.1	40.6	3.5	18.8		7.0	67.5	1.2	24.3	
30-35	38.3	25.5	11.8	24.4		9.2	24.2	26.7	39.8		43.9	38.1	3.3	14.7		7.0	71.8	0.3	20.8	
36+ & DK	31.8	25.7	12.9	29.5		13.8	21.8	20.8	43.6		39.2	41.7	3.2	16.0		5.3	79.3	0.4	14.9	
Client's education					0.243					0.764					0.443					0.108
No school	39.3	26.2	9.1	25.5		12.1	19.3	23.9	44.6		38.2	39.5	3.0	19.2		4.8	74.2	0.4	20.6	
Primary & post-primary	34.2	28.0	12.4	25.4		13.2	19.9	22.5	44.4		42.5	35.9	3.3	18.3		5.9	68.2	1.1	24.8	
Secondary+	33.1	27.4	8.1	31.4		14.0	23.2	19.7	43.1		36.1	43.8	3.5	16.7		9.7	69.4	0.8	20.0	
Client status					0.466					**0.037**					**<0.001**					**0.001**
New client	34.4	28.2	12.8	24.6		9.6	24.9	17.3	48.2		24.7	37.9	2.5	34.9		7.6	52.1	2.0	38.2	
Returning client	34.7	27.3	9.4	28.7		14.1	19.6	23.5	42.8		44.5	40.6	3.4	11.5		7.0	76.5	0.4	16.0	
Client's method					**0.010**					**<0.001**					**<0.001**					**<0.001**
Other	46.7	19.7	15.6	18.0		21.0	26.1	13.3	39.6		59.3	28.8	0.8	11.1		36.4	50.9	2.3	10.4	
Pill	29.1	23.9	10.6	36.4		1.4	17.8	7.2	73.5		32.0	52.4	3.7	11.9		3.7	74.6	0.8	20.9	
Progestin injectable	33.7	29.0	9.3	28.0		13.8	20.8	24.6	40.8		37.5	39.4	3.6	19.5		3.7	71.7	0.6	23.9	
Provider category					0.166					**0.009**					0.248					0.170
Nurse/midwife/doctor	30.9	27.3	12.8	28.9		15.6	26.5	18.6	39.3		37.4	38.1	3.5	21.0		8.2	65.2	1.1	25.5	
Auxiliary nurse	37.7	27.6	7.9	26.8		11.5	16.8	24.1	47.6		40.7	40.8	3.2	15.3		6.3	73.4	0.7	19.6	
Provider's number of years of schooling					0.077					0.710					0.533					**0.006**
<16	41.5	25.6	10.6	22.2		12.4	18.6	22.7	46.3		38.7	41.1	3.8	16.4		6.6	74.7	0.4	18.3	
16-18	28.9	29.0	9.8	32.4		13.9	23.8	20.3	42.0		40.2	39.5	2.5	17.8		7.8	69.5	1.2	21.5	
19+	37.1	26.5	10.2	26.1		14.2	15.9	24.6	45.3		37.2	33.7	5.7	23.5		6.5	53.4	0.8	39.3	
Total number of supervisory items					0.266					0.092					0.760					0.766
None	37.4	31.2	11.0	20.4		22.7	22.5	20.8	34.1		45.8	35.0	4.0	15.2		6.8	73.7	0.5	19.0	
1-5	38.1	24.8	10.0	27.1		11.1	22.8	22.8	43.3		38.7	40.0	2.9	18.3		6.5	69.3	0.5	23.7	
6	29.5	28.7	9.8	32.0		12.1	18.3	20.7	48.9		37.1	41.0	3.5	18.4		8.1	68.8	1.4	21.8	
Provider received training in family planning counseling within 24 months					0.356					0.762					0.307					0.312
No	36.7	28.0	9.4	25.9		12.7	20.6	23.0	43.7		41.4	39.1	3.3	16.2		7.5	71.5	0.5	20.5	
Yes	30.5	26.4	11.6	31.4		14.5	21.9	19.2	44.4		35.2	40.5	3.4	20.9		6.5	66.6	1.5	25.4	

Continues

Appendix 6–*Continued*

	Problems with current method					How to use					Side effects					When to return				
	Both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	Both yes[4]	p-value	Both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	Both yes[4]	p-value	Both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	Both yes[4]	p-value	Both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	Both yes[4]	p-value
Facility type					0.397					0.376					0.563					0.421
Hospital	34.9	33.1	7.6	24.3		15.5	23.8	16.2	44.5		36.1	40.2	3.2	20.4		6.0	69.3	1.1	23.6	
Health center	34.4	23.5	11.8	30.3		13.9	21.2	23.0	41.9		38.5	39.3	3.7	18.5		6.5	68.6	1.1	23.9	
Other	34.9	29.0	9.6	26.5		9.6	17.4	25.4	47.6		44.3	39.4	2.8	13.5		10.0	73.0	0.0	17.1	
Location					0.447					0.824					**0.001**					0.358
Urban	36.1	28.6	8.4	26.9		12.9	19.8	22.6	44.7		34.1	39.4	4.4	22.2		7.3	67.2	1.1	24.4	
Rural	33.0	26.2	12.0	28.8		13.9	22.5	20.6	43.0		45.2	39.8	2.1	12.8		7.0	72.8	0.5	19.7	
Managing authority					**0.042**					0.167					0.572					0.288
Private/faith/NGO/other	35.2	22.4	10.6	31.7		12.0	25.2	20.7	42.0		41.0	38.7	2.6	17.7		7.2	66.5	1.1	25.2	
Government	34.1	32.4	9.6	23.9		14.5	17.2	22.6	45.7		37.6	40.4	4.1	17.9		7.1	72.9	0.6	19.4	
Region					0.653					0.127					0.042					0.017
North	38.8	24.5	8.9	27.7		7.5	16.2	28.9	47.3		46.7	37.7	2.2	13.4		11.3	68.9	0.3	19.5	
Center	34.2	27.6	11.9	26.3		14.9	20.4	20.3	44.4		31.8	42.0	3.6	22.6		3.4	68.1	0.6	27.9	
South	27.0	32.8	10.1	30.0		14.2	24.4	15.7	45.8		34.6	43.7	2.9	18.8		4.0	70.1	1.7	24.2	
West	38.8	24.9	8.9	27.4		17.1	24.0	21.6	37.3		45.9	33.9	4.8	15.4		11.0	72.9	0.9	15.1	

Notes: 1. Both agree no counseling provided; 2. Provider not observed but client reported; 3. Provider observed but client did not report; 4. Both agree counseling provided.

Appendix 7. Quality of Counseling for Malawi: Cross tabulation of provider and client reported counseling and client, provider, and facility background characteristics

	Problems with current method					How to use					Side effects					When to return				
	Both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	Both yes[4]	p-value	Both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	Both yes[4]	p-value	Both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	Both yes[4]	p-value	Both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	Both yes[4]	p-value
Duration of consultation																				
Average in minutes	6.8	6.9	10.0	8.2	0.320	5.2	7.0	6.5	12.5	**<0.001**	7.4	8.8	7.4	13.4	**0.001**	13.5	7.1	13.2	12.7	**0.001**
Client's age					0.618					0.669					0.813					**0.014**
<20	15.1	15.0	10.5	59.4		12.8	12.4	19.7	55.1		27.7	29.2	9.3	33.8		2.8	43.3	3.8	50.2	
20-29	10.9	11.0	19.4	58.7		9.5	14.7	22.8	53.0		32.9	31.0	7.4	28.7		3.0	54.3	4.3	38.4	
30-35	11.3	16.8	13.8	58.1		7.9	14.3	26.4	51.5		30.7	27.0	11.0	31.2		2.9	64.6	1.4	31.2	
36+ & DK	13.8	10.7	13.2	62.3		4.0	20.3	24.3	51.4		35.8	29.1	9.3	25.7		6.0	56.9	0.9	36.2	
Client's education					0.415					0.406					0.499					0.215
No school	15.1	9.1	21.8	54.0		8.0	16.6	23.2	52.1		37.9	31.0	6.0	25.1		3.9	57.5	6.1	32.5	
Primary & post-primary	11.1	13.2	16.1	59.5		9.2	14.4	23.6	52.8		31.3	29.7	8.9	30.0		3.0	55.6	2.9	38.4	
Secondary+	0.0	6.2	0.0	93.8		4.5	42.5	0.0	53.0		29.7	17.6	0.0	52.7		16.8	51.1	0.0	32.1	
Client status					0.331					**0.003**					**0.001**					0.111
New client	14.1	17.6	16.5	51.8		4.3	11.2	16.2	68.4		25.9	28.8	4.5	40.9		3.3	51.0	1.9	43.9	
Returning client	11.0	11.5	16.9	60.6		10.8	16.3	26.2	46.8		34.6	30.2	10.0	25.1		3.2	57.6	3.9	35.3	
Client's method					0.058					**<0.001**					0.135					**<0.001**
Other	15.4	8.8	29.1	46.7		1.9	11.4	9.2	77.5		28.0	33.6	4.5	34.0		9.8	34.2	5.4	50.6	
Pill	14.7	7.0	21.5	56.8		4.0	6.5	8.7	80.8		30.1	19.8	7.2	42.9		9.6	37.5	14.8	38.0	
Progestin injectable	10.9	13.6	15.1	60.4		10.4	16.0	26.6	47.0		32.9	30.2	9.2	27.7		1.8	60.3	2.1	35.9	
Provider category					0.618					0.938					0.484					**0.024**
Clinician/technician/other	14.3	13.1	19.6	53.0		10.5	15.5	22.1	52.0		35.7	25.1	6.4	32.9		6.7	62.4	1.6	29.3	
Nurse/midwife	11.2	12.6	16.4	59.8		8.8	14.8	23.6	52.9		31.7	30.5	8.8	29.0		2.7	54.9	3.6	38.8	
Provider's number of years of schooling					0.133					0.108					0.502					0.878
<16	11.3	12.5	18.1	58.1		11.7	16.9	21.3	50.1		34.9	27.8	9.6	27.7		3.4	56.7	2.9	37.0	
16-18	9.4	12.2	15.9	62.6		6.2	12.4	23.6	57.9		27.4	33.0	7.5	32.1		3.2	54.1	4.1	38.5	
19+	34.9	19.3	11.0	34.9		5.7	15.9	47.5	30.9		49.5	20.6	6.1	23.7		1.0	63.1	0.0	35.9	
Total number of supervisory items					**0.001**					0.181					0.766					0.883
none	9.3	9.4	13.3	68.0		11.5	15.0	30.2	43.3		36.0	27.8	6.5	29.7		3.5	60.0	3.1	33.5	
1-5	19.1	18.2	20.5	42.1		11.6	13.8	23.7	50.9		34.0	30.1	9.3	26.7		2.9	55.8	2.7	38.7	
6	6.4	10.1	16.1	67.4		4.8	15.7	18.4	61.1		27.9	31.0	9.2	31.9		3.4	53.0	4.1	39.6	
Provider received training in family planning counseling within 24 months					0.851					**0.007**					0.153					0.180
No	11.5	13.6	17.6	57.3		11.2	16.1	17.0	55.7		29.1	31.7	10.2	29.0		3.2	56.7	2.0	38.0	
Yes	11.7	11.1	15.5	61.7		5.3	12.7	34.2	47.8		37.4	26.7	5.7	30.3		3.2	54.3	5.5	37.0	

Continues

Appendix 7–*Continued*

	Problems with current method					How to use					Side effects					When to return				
	Both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	Both yes[4]	p-value	Both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	Both yes[4]	p-value	Both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	Both yes[4]	p-value	Both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	Both yes[4]	p-value
Facility type					0.897					**0.010**					0.885					0.259
Hospital	10.6	13.3	15.1	61.0		8.2	10.7	33.7	47.4		33.7	27.4	9.1	29.8		1.7	56.6	4.3	37.4	
Health center	11.7	12.1	18.3	57.9		9.7	18.0	14.7	57.6		30.3	32.3	7.9	29.4		3.7	56.2	2.4	37.7	
Other	15.1	12.7	17.2	55.1		8.7	17.0	22.0	52.3		34.8	28.1	8.8	28.3		7.4	50.8	3.6	38.3	
Location					0.404					**0.013**					0.487					0.466
Urban	9.9	10.2	13.6	66.3		6.4	11.5	36.0	46.1		34.5	26.3	11.1	28.1		3.1	59.7	4.0	33.1	
Rural	12.7	14.2	18.9	54.3		10.5	16.8	16.1	56.6		30.8	31.9	7.0	30.3		3.3	53.6	2.9	40.2	
Managing authority					0.824					0.191					0.178					0.364
Private/faith/NGO/other	14.1	13.3	15.7	56.9		11.8	19.7	24.0	44.4		37.2	32.6	5.9	24.3		4.6	54.6	1.6	39.2	
Government	10.9	12.5	17.1	59.5		8.3	13.6	23.3	54.8		30.9	29.1	9.2	30.8		2.9	56.1	3.8	37.2	
Region					0.468					0.478					**0.049**					0.488
North	4.9	15.7	8.8	70.6		8.5	26.7	16.3	48.5		24.7	30.0	9.7	35.6		2.4	67.1	0.7	29.8	
Central	13.0	13.6	17.9	55.5		8.8	12.2	25.6	53.4		31.2	25.2	11.0	32.7		3.6	54.0	3.2	39.3	
South	11.5	11.0	17.3	60.2		9.3	15.7	22.1	52.8		34.9	35.4	5.3	24.4		2.9	55.8	4.1	37.2	

Notes: 1. Both agree no counseling provided; 2. Provider not observed but client reported; 3. Provider observed but client did not report; 4. Both agree counseling provided.

Appendix 8. Quality of Counseling for Senegal: Cross tabulation of provider and client reported counseling and client, provider, and facility background characteristics

	Problems with current method					How to use					Side effects					When to return				
	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value
Duration of consultation																				
Average in minutes	15.5	15.0	11.7	12.4	0.364	11.9	12.1	10.5	19.6	**<0.001**	12.0	13.4	29.5	23.4	**<0.001**	9.4	12.4	14.0	22.4	**<0.001**
Client's age					0.089					0.108					0.378					0.148
<20	13.0	13.6	2.9	70.5		4.5	20.3	5.2	70.0		12.1	45.2	2.3	40.4		0.0	55.0	0.0	45.0	
20-29	18.7	22.1	6.7	52.6		7.8	28.7	5.4	58.0		23.3	49.9	3.9	22.9		0.3	60.2	0.6	38.9	
30-35	12.1	16.0	6.6	65.3		6.4	39.0	6.5	48.1		23.9	52.4	2.5	21.2		3.3	62.6	0.0	34.1	
36+ & DK	7.5	19.4	7.6	65.5		7.4	39.0	6.8	46.8		19.1	52.6	2.8	25.5		1.4	65.8	0.0	32.7	
Client's education					0.221					0.591					0.681					0.254
No school	11.1	18.0	8.1	62.8		7.4	36.1	6.1	50.4		22.7	52.7	2.7	21.8		2.0	64.9	0.3	32.8	
Primary & post-primary	18.7	17.4	6.0	57.9		6.0	32.4	5.1	56.5		23.4	47.7	3.2	25.7		1.3	59.2	0.0	39.5	
Secondary+	11.0	25.0	4.3	59.7		8.0	28.1	7.1	56.8		17.2	51.3	4.1	27.4		0.0	58.4	0.6	41.0	
Client status					**<0.001**					**<0.001**					**<0.001**					**<0.001**
New client	18.0	43.4	6.1	32.6		0.4	12.9	2.0	84.7		11.8	37.7	5.3	45.2		1.4	40.1	0.0	58.4	
Returning client	13.0	16.6	6.8	63.7		10.0	42.0	7.7	40.3		26.0	56.5	2.3	15.2		1.3	71.1	0.4	27.2	
Client's method					0.751					**<0.001**					0.525					**0.013**
Other	11.4	20.9	6.2	61.4		10.7	32.1	4.1	53.1		19.3	47.7	4.8	28.2		1.3	52.6	0.0	46.1	
Pill	14.0	23.8	6.2	56.0		1.2	22.8	1.9	74.1		21.7	56.2	3.1	19.1		3.1	69.8	0.6	26.6	
Progestin injectable	14.0	16.7	7.1	62.2		8.5	37.8	8.2	45.5		22.5	49.7	2.7	25.0		0.7	61.4	0.2	37.7	
Provider category					0.613					0.508					0.478					0.447
Nurse/doctor/technician	13.0	17.5	5.0	64.5		8.1	36.3	4.3	51.3		19.4	53.6	1.9	25.1		1.5	60.6	0.7	37.2	
Midwife	13.7	20.1	7.6	58.6		6.6	31.5	7.0	54.9		23.1	49.3	3.9	23.7		1.2	62.5	0.0	36.2	
Provider's number of years of schooling					0.723					0.350					0.509					0.169
<16	14.5	16.3	6.6	62.6		7.6	37.2	3.8	51.4		21.0	53.5	1.4	24.1		1.5	64.2	0.0	34.4	
16-18	13.4	22.3	6.4	58.0		6.5	29.5	6.8	57.2		21.0	50.1	4.7	24.3		0.8	59.1	0.2	39.9	
19+	10.6	13.8	8.6	67.0		8.8	39.5	8.9	42.7		27.8	46.9	1.2	24.1		3.6	68.0	1.2	27.2	
Total number of supervisory items					0.466					0.165					0.408					0.492
None	10.1	15.0	7.7	67.2		10.2	26.8	6.5	56.5		23.3	44.4	1.9	30.5		1.7	60.4	0.6	37.3	
1-5	14.6	15.7	6.1	63.5		6.2	42.4	3.6	47.8		22.4	55.8	2.3	19.4		1.4	56.3	0.5	41.8	
6	14.1	23.0	6.6	56.3		6.4	30.8	7.2	55.6		20.7	50.8	4.2	24.3		1.1	65.5	0.0	33.3	
Provider received training in family planning counseling within 24 months					0.308					0.250					0.378					0.644
No	14.9	21.1	5.5	58.4		8.6	31.3	6.8	53.3		24.5	48.8	3.2	23.5		1.5	62.6	0.4	35.4	
Yes	11.2	16.3	8.5	64.1		4.8	36.4	4.7	54.1		17.3	54.3	3.2	25.3		1.0	60.5	0.0	38.5	

Continues

Appendix 8–*Continued*

	Problems with current method					How to use					Side effects					When to return				
	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value
Facility type					0.396					0.098					0.523					0.230
Hospital	20.1	21.0	9.4	49.6		2.4	18.6	11.0	68.1		20.0	55.8	1.6	22.6		0.8	49.7	0.0	49.5	
Health center	9.7	25.2	7.8	57.3		3.7	38.3	8.7	49.3		21.4	57.4	3.5	17.7		0.9	71.3	0.0	27.8	
Other	14.0	17.9	6.4	61.8		8.0	32.8	5.3	53.9		21.9	49.4	3.2	25.6		1.5	60.3	0.3	37.9	
Location					0.161					**0.011**					0.261					0.521
Urban	14.6	22.8	7.5	55.1		5.5	27.4	7.5	59.6		22.8	47.2	4.3	25.7		1.0	62.5	0.0	36.5	
Rural	12.2	15.4	5.9	66.6		8.9	39.7	4.4	47.0		20.6	54.9	1.9	22.6		1.7	61.1	0.6	36.6	
Managing authority					0.459					0.490					0.527					0.962
Private/faith/NGO/other	19.8	0.0	15.1	65.1		16.1	15.1	3.6	65.2		34.6	47.0	3.6	14.9		0.0	68.3	0.0	31.7	
Government	13.3	19.5	6.5	60.6		7.0	33.6	6.1	53.4		21.5	51.0	3.2	24.3		1.4	61.7	0.3	36.7	
Region					**0.043**					**<0.001**					**0.001**					0.128
Northern	10.6	13.5	10.7	65.2		4.2	48.2	1.0	46.6		11.0	69.4	2.3	17.2		3.2	67.8	0.8	28.3	
Dakar	17.4	29.1	6.5	47.0		3.9	23.3	10.1	62.7		21.3	50.3	5.8	22.6		1.0	69.6	0.0	29.4	
Thies	8.5	18.8	6.3	66.3		3.8	33.3	2.7	60.3		13.0	47.9	4.5	34.7		0.7	58.6	0.0	40.7	
Central	11.3	19.4	4.0	65.2		9.9	48.3	0.3	41.6		30.3	43.8	2.4	23.6		1.9	50.0	0.7	47.4	
East	11.2	19.6	11.6	57.6		9.2	55.0	1.2	34.7		4.8	59.8	1.1	34.4		0.0	72.4	0.0	27.6	
South	16.7	7.8	4.5	71.0		14.6	12.9	14.5	58.0		35.3	41.5	0.0	23.3		0.4	56.2	0.0	43.3	

Notes: 1. Both agree no counseling provided; 2. Provider not observed but client reported; 3. Provider observed but client did not report; 4. Both agree counseling provided.

Appendix 9. Family planning client exit questions used to assess client's general knowledge of method use

Method	Question	Correct knowledge
Pill	How often do you take the pill?	Once a day
Condom (male)	How many times can you use one condom	Once
Condom (female)	What type of lubricant can you use with the female condom?	Any oil or lubricant
IUCD	What should you do to make sure that your IUCD is in place?	Check string
Progestin injectable	How long does the injection provider protection from pregnancy?	2-3 months
Monthly injectable	How long does the injection provide projection from pregnancy	1 month
Implant	How long does your implant provide protection against pregnancy	3-5 years
Natural method	How do you recognize the days on which you should not have sexual intercourse	One of the following: 1) Body temperature; 2) mucus in vagina; 3) days 12-16 of the menstrual cycle; 4) white bead days/days 8-19 of menstrual cycle
Vasectomy	After you have been sterilized (and after the first 3 months), can you make a woman pregnant again?	Only slight risk
Tubal ligation	After you have been sterilized, could you ever become pregnant again?	Only slight risk
LAM	Can you use this method if your menstrual period has returned?	No

Appendix 10. Quality of Counseling for Haiti: Cross tabulation of provider and client reported counseling and client, provider, and facility background characteristics

	Told illness					Signs or symptoms for which to immediately bring back child					Child's weight or growth					Feeding when child is sick				
	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value
Duration of consultation																				
Average in minutes	14.1	16.2	16.2	18.9	0.082	14.1	16.8	17.3	16.8	**0.032**	13.9	15.2	15.3	20.2	0.054	13.4	16.2	14.6	18.1	**0.001**
Client's age					0.634					0.148					0.526					0.784
<20	74.7	15.3	4.5	5.5		79.5	17.9	1.6	1.0		57.0	33.7	3.9	5.4		55.0	20.4	13.8	10.8	
20-29	72.0	18.1	5.9	4.0		75.0	20.6	2.7	1.8		57.8	33.1	3.4	5.7		51.2	24.6	12.8	11.3	
30-35	72.0	18.4	5.3	4.3		76.0	21.0	1.4	1.6		55.4	35.7	3.7	5.2		50.5	22.4	16.0	11.1	
36+ & DK	72.5	18.1	3.5	5.9		70.5	26.3	1.3	1.8		59.1	31.9	1.6	7.4		49.2	24.7	13.2	12.9	
Client's education					0.242					0.191					**0.001**					0.161
No school	72.6	16.5	4.4	6.5		76.8	19.9	1.5	1.7		66.1	23.9	2.5	7.4		52.1	19.1	15.5	13.4	
Primary & post-primary	74.6	16.3	4.9	4.1		74.2	21.4	1.7	2.7		57.8	32.2	4.1	5.9		49.8	23.6	15.1	11.6	
Secondary+	70.7	19.5	5.6	4.3		74.2	22.3	2.4	1.0		54.6	37.2	2.7	5.5		51.4	25.4	12.2	10.9	
Caretaker Relationship					0.670					0.440					**0.046**					0.172
Mother	72.3	18.1	5.3	4.3		75.0	21.4	2.2	1.5		56.6	33.7	3.6	6.1		49.8	24.3	14.0	11.9	
Other	72.4	17.2	4.8	5.6		73.2	22.8	1.5	2.4		61.1	32.5	1.3	5.0		55.8	21.8	12.2	10.2	
Child's sex					0.463					0.135					0.147					0.302
Female	72.0	18.0	5.9	4.2		74.5	21.3	1.9	2.3		57.4	32.3	3.7	6.6		49.1	24.4	14.7	11.8	
Male	72.6	17.9	4.4	5.0		74.8	22.0	2.2	1.0		57.6	34.8	2.6	5.1		53.0	23.2	12.6	11.3	
Child's age					0.212					0.200					**<0.001**					**<0.001**
0-11 months	71.7	18.8	4.8	4.7		75.6	20.1	2.6	1.7		52.0	37.5	4.1	6.5		40.6	28.8	14.5	16.1	
12-35 months	72.1	16.8	6.7	4.5		73.1	23.3	1.5	2.1		57.8	32.9	2.8	6.4		54.3	22.2	13.5	10.0	
36-71 months	73.8	18.6	3.1	4.5		75.8	21.3	2.0	0.8		67.5	26.7	1.9	3.8		64.6	17.4	12.5	5.5	
Provider category					**0.024**					0.472					**0.001**					0.608
Nurse/midwife/other	76.0	17.1	3.1	3.9		74.5	21.8	1.4	2.3		53.7	33.2	3.6	9.5		50.4	23.1	13.4	13.1	
Doctor/specialist/tech	70.6	18.4	6.2	4.9		74.7	21.5	2.3	1.4		59.2	33.6	2.9	4.3		51.2	24.2	13.8	10.8	
Provider's number of years of schooling					0.091					0.531					**0.001**					0.927
<16	75.0	19.1	1.7	4.2		74.5	21.7	1.4	2.4		50.3	36.1	2.9	10.7		53.7	20.9	13.1	12.3	
16-18	75.9	14.6	4.8	4.7		73.8	21.6	2.0	2.7		58.4	29.3	3.6	8.7		50.3	23.8	14.0	11.9	
19+	70.9	18.5	5.8	4.7		74.6	21.9	2.3	1.2		58.6	34.2	3.0	4.2		50.5	24.0	14.2	11.2	
Total number of supervisory items					0.377					0.448					0.368					0.685
None	74.0	16.4	5.6	4.0		76.9	20.0	1.3	1.8		60.4	31.3	2.7	5.5		50.5	23.1	15.4	11.0	
1-5	73.4	17.3	4.7	4.5		72.5	23.6	2.6	1.3		55.9	35.5	3.6	5.0		51.4	25.3	11.5	11.8	
6	68.0	21.4	5.1	5.5		74.0	21.5	2.5	2.0		54.8	34.1	3.2	7.8		51.0	23.0	14.0	12.0	

Continues

Appendix 10–*Continued*

	Told illness					Signs or symptoms for which to immediately bring back child					Child's weight or growth					Feeding when child is sick				
	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value
Provider received training in child health/illness in the past three years					0.938					0.114					0.105					0.075
No	72.9	17.3	5.0	4.8		73.4	24.1	1.4	1.1		60.8	31.8	3.0	4.4		52.8	24.0	14.3	8.9	
Yes	71.9	18.5	5.1	4.6		75.3	20.2	2.6	2.0		54.9	35.0	3.2	6.9		49.6	23.2	13.9	13.3	
Provider salary type					0.165					0.072					**0.002**					**0.012**
None	69.8	20.4	5.7	4.0		77.9	18.6	2.0	1.5		63.1	30.1	2.5	4.3		54.5	20.1	15.1	10.3	
Regular salary	74.8	16.0	4.6	4.7		70.3	26.0	2.3	1.4		50.6	38.7	3.6	7.1		46.3	27.7	13.0	13.0	
No regular salary but other pay	74.0	14.9	5.0	6.0		75.0	20.3	1.7	2.9		56.8	31.1	4.1	8.0		51.3	26.1	10.9	11.8	
Facility type					**0.001**					0.112					0.086					0.571
Hospital	64.9	22.9	7.3	5.0		73.5	24.5	0.9	1.0		59.4	33.6	2.8	4.2		52.5	25.4	12.2	9.9	
Health center	75.8	15.6	4.6	4.0		75.1	19.9	3.1	1.8		57.9	33.6	3.3	5.2		50.2	22.4	15.0	12.3	
Other	76.5	15.3	3.1	5.1		75.4	20.9	1.4	2.4		53.2	33.1	3.5	10.2		50.2	24.5	13.0	12.3	
Location					0.827					0.940					0.333					0.255
Urban	71.6	18.7	5.4	4.3		74.5	21.7	2.2	1.5		56.1	35.6	3.1	5.2		48.9	25.9	13.6	11.6	
Rural	73.1	17.2	5.0	4.8		74.8	21.5	1.9	1.8		58.9	31.2	3.2	6.7		53.2	21.5	13.8	11.4	
Managing authority					**0.041**					0.627					0.278					0.347
Private/faith/NGO/other	71.2	17.1	6.2	5.5		74.3	22.0	2.3	1.4		55.9	34.1	3.8	6.2		49.9	23.2	14.8	12.0	
Government	73.9	19.2	3.7	3.2		75.1	21.1	1.7	2.1		59.8	32.6	2.2	5.4		52.4	24.8	12.0	10.8	
Region					**0.019**					0.120					**0.040**					0.072
North	75.8	18.3	2.9	3.0		75.4	22.9	0.8	0.9		63.1	31.9	1.4	3.5		56.4	21.1	14.7	7.8	
Center	71.3	21.8	3.7	3.3		78.6	17.5	1.9	1.9		63.2	28.6	2.2	6.0		51.4	24.2	12.4	12.1	
South	71.0	15.6	5.3	8.1		74.5	22.6	0.6	2.2		50.5	36.2	4.7	8.6		54.6	24.9	10.0	10.5	
West	71.7	17.3	6.8	4.2		72.7	22.3	3.3	1.7		55.7	35.0	3.6	5.7		46.8	24.4	15.4	13.5	

Notes: 1. Both agree no counseling provided; 2. Provider not observed but client reported; 3. Provider observed but client did not report; 4. Both agree counseling provided.

Appendix 11. Quality of Counseling for Malawi: Cross tabulation of provider and client reported counseling and client, provider, and facility background characteristics

	Told illness					Signs or symptoms for which to immediately bring back child					Child's weight or growth					Feeding when child is sick				
	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value
Duration of consultation																				
Average in minutes	17.0	22.7	17.2	22.0	**<0.001**	20.5	20.9	19.7	16.8	0.216	19.9	21.7	19.1	20.4	0.758	20.1	17.5	23.2	24.9	**0.035**
Client's age					0.245					0.289					0.164					0.735
<20	26.4	35.1	7.3	31.2		61.7	29.9	3.7	4.7		69.5	22.5	4.6	3.4		72.1	11.9	11.0	5.0	
20-29	29.0	31.7	9.9	29.3		60.1	28.3	6.2	5.5		69.8	20.9	6.4	2.9		72.5	11.3	12.7	3.4	
30-35	27.3	31.8	9.9	31.0		59.2	28.7	5.5	6.7		70.5	23.2	4.5	1.9		73.7	12.4	11.0	3.0	
36+ & DK	24.1	27.1	10.1	38.8		65.4	21.5	7.6	5.5		74.1	14.6	8.5	2.8		76.1	11.2	9.2	3.6	
Client's education					**0.012**					0.086					0.141					**0.011**
No school	29.5	26.4	13.0	31.1		66.9	24.9	4.4	3.9		73.6	17.6	6.3	2.4		76.8	9.4	10.7	3.2	
Primary & post-primary	27.8	32.4	9.4	30.4		59.7	28.4	6.1	5.8		70.4	21.0	6.0	2.7		73.0	11.9	11.5	3.6	
Secondary+	20.2	26.1	2.2	51.5		61.9	18.7	8.8	10.6		53.7	31.1	8.7	6.5		58.4	10.7	28.7	2.2	
Caretaker Relationship					0.365					**0.009**					0.611					0.066
Mother	26.7	32.0	10.0	31.3		59.0	28.4	6.6	6.0		70.3	21.3	5.7	2.7		73.8	11.5	10.8	3.9	
Other	31.4	30.1	8.7	29.8		65.8	25.8	4.0	4.4		70.7	19.2	7.4	2.7		71.0	12.0	14.6	2.3	
Child's sex					0.223					0.704					0.373					0.882
Female	29.3	30.5	8.7	31.4		61.7	26.6	5.9	5.8		71.2	19.4	6.2	3.2		72.7	12.0	11.5	3.7	
Male	26.3	32.5	10.6	30.6		59.6	28.9	6.0	5.5		69.6	22.2	6.0	2.3		73.5	11.2	12.0	3.4	
Child's age					**0.039**					**0.033**					**0.024**					**<0.001**
0-11 months	31.0	29.5	9.8	29.6		58.3	28.4	5.7	7.6		66.9	22.5	7.9	2.7		65.4	17.1	11.8	5.7	
12-35 months	27.5	33.0	9.2	30.3		61.3	28.5	5.8	4.4		73.1	18.8	5.2	2.9		75.4	9.0	13.0	2.5	
36-71 months	22.0	32.1	10.5	35.3		64.2	24.5	6.7	4.7		71.0	22.1	4.6	2.3		83.5	6.5	8.6	1.3	
Provider category					**0.002**					0.868					**0.028**					**0.041**
Nurse/midwife/other	19.3	29.1	13.0	38.6		58.9	28.5	6.8	5.8		72.8	14.4	9.4	3.3		66.6	16.2	12.4	4.8	
Doctor/specialist/tech	29.2	31.9	9.1	29.8		60.9	27.7	5.8	5.6		70.0	21.8	5.6	2.6		74.2	10.9	11.7	3.3	
Provider's number of years of schooling					0.168					**0.045**					0.232					0.843
<16	28.8	31.0	9.5	30.7		60.8	28.5	5.6	5.1		71.1	21.3	5.4	2.2		73.3	12.0	11.3	3.4	
16-18	26.3	34.8	9.7	29.2		62.9	24.9	5.8	6.5		68.5	19.4	7.9	4.2		72.6	10.7	12.8	4.0	
19+	18.4	24.6	12.1	44.8		47.2	29.6	13.3	9.9		68.8	18.7	8.3	4.2		72.8	9.3	15.1	2.8	
Total number of supervisory items					**0.002**					0.374					**0.003**					0.448
None	29.6	33.2	9.4	27.8		60.1	30.1	5.4	4.4		63.0	30.8	3.7	2.5		75.2	10.4	11.8	2.6	
1-5	33.3	33.9	7.8	24.9		63.1	26.5	5.9	4.5		73.6	17.6	5.7	3.1		75.0	10.5	10.7	3.8	
6	22.4	28.7	11.3	37.7		59.1	27.3	6.3	7.3		72.5	17.1	7.9	2.5		70.4	13.2	12.6	3.9	

Continues

Appendix 11–*Continued*

	Told illness					Signs or symptoms for which to immediately bring back child					Child's weight or growth					Feeding when child is sick				
	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value
Provider received training in child health/illness in the past three years					**<0.001**					**0.008**					0.152					**0.002**
No	37.8	33.9	8.5	19.8		66.8	25.5	4.3	3.5		70.0	23.5	4.0	2.5		78.9	10.9	7.9	2.3	
Yes	23.0	30.4	10.2	36.3		57.7	28.9	6.7	6.7		70.6	19.5	7.1	2.8		70.4	11.9	13.6	4.1	
Provider salary type					0.073					0.071					0.188					0.296
None	20.3	30.6	9.1	40.0		61.6	24.8	7.3	6.3		59.2	30.0	5.7	5.0		68.6	14.2	15.2	2.0	
Regular salary	25.3	32.4	10.8	31.5		56.3	29.3	7.0	7.4		72.2	19.7	6.0	2.1		74.5	10.0	11.6	3.9	
No regular salary but other pay	31.4	31.1	8.9	28.6		63.8	27.2	4.8	4.2		71.5	19.6	6.2	2.6		73.1	12.3	11.1	3.5	
Facility type					**<0.001**					0.387					**<0.001**					0.252
Hospital	35.7	33.5	7.6	23.2		63.9	26.8	5.4	3.9		61.0	33.7	3.0	2.3		75.4	11.5	11.2	1.9	
Health center	24.9	30.8	11.0	33.3		59.4	28.0	6.1	6.5		75.5	13.9	7.7	3.0		71.3	11.9	12.3	4.5	
Other	16.6	28.9	9.7	44.8		56.9	29.5	6.8	6.8		75.0	14.3	7.8	2.8		75.5	10.1	10.7	3.6	
Location					**0.004**					0.059					**<0.001**					**0.011**
Urban	36.8	32.7	7.7	22.8		64.8	28.0	3.7	3.4		62.5	31.2	3.2	3.1		79.4	10.7	8.6	1.2	
Rural	23.9	31.1	10.5	34.5		58.9	27.7	6.9	6.6		73.8	16.3	7.3	2.6		70.4	12.0	13.1	4.5	
Managing authority					**<0.001**					**0.001**					**0.048**					**<0.001**
Private/faith/NGO/other	19.0	30.4	10.4	40.1		55.8	27.5	9.6	7.0		68.6	19.1	9.0	3.2		63.6	13.7	16.7	6.0	
Government	30.7	31.9	9.4	28.0		62.3	27.8	4.7	5.2		71.0	21.3	5.1	2.5		76.3	10.9	10.1	2.7	
Region					0.520					**0.004**					**0.079**					0.194
North	29.6	36.2	9.6	24.6		64.4	26.9	3.4	5.2		80.9	13.3	4.8	1.1		79.0	10.4	8.0	2.6	
Central	27.7	30.0	9.3	33.0		57.1	28.0	7.7	7.2		68.5	22.4	6.3	2.8		71.1	11.6	12.9	4.3	
South	27.2	31.9	10.3	30.7		64.4	27.8	4.4	3.4		68.7	21.6	6.4	3.3		73.6	12.0	11.7	2.7	

Notes: 1. Both agree no counseling provided; 2. Provider not observed but client reported; 3. Provider observed but client did not report; 4. Both agree counseling provided.

Appendix 12. Quality of Counseling for Senegal 2012-13: Cross tabulation of provider and client reported counseling and client, provider, and facility background characteristics

	Told illness					Signs or symptoms for which to immediately bring back child					Child's weight or growth					Feeding when child is sick				
	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value
Duration of consultation																				
Average in minutes	10.4	11.4	13.0	13.4	0.112	10.7	10.8	16.2	11.9	**0.007**	9.8	12.8	15.8	14.1	**<0.001**	10.0	11.9	12.5	14.1	**<0.001**
Client's age					0.796					0.424					0.594					0.299
<20	68.6	23.9	3.2	4.3		76.8	13.7	5.3	4.2		79.2	16.7	0.9	3.2		65.4	20.7	5.4	8.5	
20-29	68.8	21.1	4.6	5.5		78.5	15.5	2.2	3.8		68.7	23.0	2.4	5.9		64.5	20.2	6.8	8.5	
30-35	68.2	21.7	2.4	7.7		70.6	22.4	2.5	4.5		67.7	22.3	2.9	7.1		63.7	20.0	8.5	7.8	
36+ & DK	68.3	19.9	3.5	8.3		76.3	17.6	2.1	4.0		71.5	19.0	3.3	6.2		72.3	12.0	7.2	8.6	
Client's education					**0.002**					0.240					0.200					0.211
No school	71.6	19.5	3.0	5.9		73.6	18.6	3.0	4.8		73.1	18.0	3.0	5.9		64.9	17.5	7.4	10.2	
Primary & post-primary	72.2	16.3	4.4	7.1		76.0	19.1	1.2	3.7		65.2	26.1	1.8	6.9		67.6	18.7	6.1	7.7	
Secondary+	55.7	31.8	4.3	8.2		81.5	13.1	2.6	2.7		68.2	24.2	2.4	5.2		69.2	18.5	8.0	4.2	
Caretaker relationship					0.480					0.160					0.059					**<0.001**
Mother	68.5	21.9	3.4	6.2		75.0	18.0	3.0	4.0		68.4	22.2	2.7	6.6		63.4	20.1	7.2	9.3	
Other	68.5	18.5	4.4	8.6		78.9	15.9	0.7	4.5		77.1	17.2	2.2	3.5		78.7	9.5	7.2	4.6	
Child's sex					**0.025**					0.693					0.684					0.331
Female	68.5	23.3	1.8	6.4		76.6	17.7	2.3	3.4		71.7	20.1	2.7	5.4		66.9	19.1	7.3	6.7	
Male	68.5	19.5	5.1	6.9		75.1	17.6	2.7	4.7		68.8	22.1	2.5	6.5		66.1	17.1	7.1	9.8	
Child's age					0.852					0.403					**0.006**					**<0.001**
0-11 months	71.1	19.9	3.7	5.3		74.9	18.2	3.3	3.5		64.1	25.4	3.4	7.1		54.4	28.1	6.9	10.6	
12-35 months	67.4	21.4	3.7	7.5		75.9	16.1	3.0	5.0		68.5	20.7	2.8	8.0		66.0	15.4	7.8	10.9	
36-71 months	66.7	22.5	3.5	7.3		76.8	18.6	0.9	3.7		79.3	16.8	1.4	2.5		81.4	8.9	6.9	2.8	
Provider category					**0.010**					0.060					0.169					0.738
Nurse/midwife/other	71.4	19.7	3.2	5.7		74.8	18.1	2.7	4.5		71.7	20.1	2.3	5.9		66.7	18.2	6.8	8.3	
Doctor/specialist/tech	48.3	31.9	6.4	13.3		82.9	14.5	1.2	1.4		59.3	29.1	4.6	7.0		64.7	16.8	9.9	8.6	
Provider's number of years of schooling					**0.002**					0.815					0.349					0.475
<16	72.3	20.3	2.4	5.1		74.1	18.3	2.3	5.3		72.1	20.2	3.0	4.7		68.9	17.7	5.2	8.2	
16-18	73.7	17.2	3.5	5.5		78.2	16.5	2.4	2.9		70.3	19.8	1.6	8.3		64.9	17.2	8.1	9.8	
19+	52.9	29.4	6.2	11.5		75.1	18.1	3.1	3.6		66.2	25.6	3.4	4.8		64.3	19.8	9.5	6.4	

Continues

Appendix 12–*Continued*

	Told illness					Signs or symptoms for which to immediately bring back child					Child's weight or growth					Feeding when child is sick				
	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value
Total number of supervisory items					0.393					0.146					0.710					0.876
none	62.5	24.7	4.0	8.8		80.8	14.3	3.6	1.3		67.1	24.0	2.6	6.3		65.7	17.7	7.0	9.6	
1-5	70.5	17.6	4.2	7.6		74.3	16.9	2.7	6.1		68.7	20.8	2.4	8.1		64.6	20.9	6.8	7.7	
6	70.4	21.7	3.0	4.9		74.1	19.9	1.8	4.2		72.7	20.0	2.7	4.5		68.0	16.3	7.5	8.1	
Provider received training in child health/illness in the past three years					0.851					**0.044**					**0.007**					**0.040**
No	70.2	19.6	3.1	7.1		82.0	15.1	1.9	1.0		73.4	19.8	3.5	3.3		73.2	15.3	7.2	4.3	
Yes	67.8	21.8	3.8	6.5		73.3	18.6	2.8	5.3		68.8	21.8	2.3	7.1		63.8	19.1	7.2	10.0	
Provider salary type					**<0.001**					**0.008**					**0.007**					**0.032**
None	68.1	25.0	3.0	3.9		85.3	11.8	1.4	1.6		75.4	18.4	0.0	6.2		70.8	22.0	3.1	4.1	
Regular salary	74.0	19.8	2.1	4.0		70.3	22.5	2.2	5.0		75.1	18.1	2.4	4.4		68.4	17.0	6.5	8.1	
No regular salary but other pay	58.5	22.0	6.7	12.8		81.6	11.2	3.6	3.5		58.6	28.3	4.1	9.0		60.8	17.9	10.4	10.9	
Facility type					**0.002**					0.115					**0.026**					0.727
Hospital	51.6	40.5	0.9	7.1		78.0	17.2	2.5	2.3		62.8	34.2	0.9	2.1		69.5	19.8	7.3	3.4	
Health center	68.3	25.1	2.8	3.9		83.5	13.6	2.1	0.8		71.5	23.9	1.6	2.9		67.0	16.3	7.7	9.0	
Other	69.8	19.3	3.9	7.0		74.7	18.2	2.6	4.6		70.5	19.9	2.9	6.7		66.1	18.1	7.1	8.7	
Location					0.254					**0.001**					0.406					0.061
Urban	65.2	22.5	4.3	8.0		82.1	14.0	1.7	2.2		69.1	23.4	2.6	4.9		69.6	17.4	7.3	5.7	
Rural	71.9	19.9	3.0	5.3		69.3	21.4	3.3	6.0		71.2	19.0	2.6	7.2		63.2	18.6	7.1	11.1	
Managing authority					0.466					0.341					0.626					0.371
Private/faith/NGO/ other	61.9	26.1	3.9	8.0		81.8	14.4	1.2	2.7		68.4	20.2	4.2	7.2		65.9	22.2	4.3	7.6	
Government	70.2	20.0	3.5	6.3		74.3	18.4	2.8	4.4		70.6	21.5	2.2	5.7		66.6	16.9	7.9	8.6	
Region					**<0.001**					**<0.001**					**0.011**					**0.001**
Northern	57.0	27.4	6.5	9.1		81.4	7.1	6.4	5.1		53.8	31.0	4.0	11.2		51.0	21.3	13.3	14.5	
Dakar	56.9	25.8	7.6	9.6		87.5	10.7	1.4	0.4		67.9	23.2	5.2	3.7		68.0	17.0	8.4	6.6	
Thies	61.8	28.6	2.2	7.4		62.6	28.1	3.8	5.5		73.4	17.3	1.1	8.2		69.9	21.7	2.7	5.7	
Central	72.3	18.9	2.9	6.0		62.2	29.0	2.1	6.6		76.1	18.2	1.6	4.1		66.4	22.2	5.3	6.1	
East	85.5	14.5	0.0	0.0		74.1	22.5	1.7	1.7		79.7	17.1	3.3	0.0		77.2	6.9	10.6	5.4	
South	88.3	8.1	0.0	3.5		90.9	5.6	0.0	3.5		71.5	20.5	1.0	7.1		70.2	10.4	6.8	12.6	

Notes: 1. Both agree no counseling provided; 2. Provider not observed but client reported; 3. Provider observed but client did not report; 4. Both agree counseling provided.

Appendix 13. Quality of Counseling for Senegal 2014: Cross tabulation of provider and client reported counseling and client, provider, and facility background characteristics

	Told illness					Signs or symptoms for which to immediately bring back child					Child's weight or growth					Feeding when child is sick				
	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value
Duration of consultation																				
Average in minutes	11.1	14.9	13.4	14.5	**0.002**	11.1	14.3	15.4	19.6	**<0.001**	11.0	13.1	13.6	12.9	**0.035**	10.9	13.3	12.5	14.2	**0.002**
Client's age					0.865					0.564					**0.033**					0.113
<20	82.0	11.1	1.0	5.8		87.9	8.1	0.3	3.7		55.2	68.4	65.4	72.1		59.8	25.6	6.4	8.3	
20-29	83.2	10.5	1.6	4.8		84.4	11.8	1.3	2.5		28.0	22.8	25.1	20.5		64.8	16.3	7.2	11.8	
30-35	83.5	11.8	1.5	3.2		82.1	13.6	2.6	1.7		0.9	1.5	1.0	2.7		68.1	19.8	6.0	6.0	
36+ & DK	84.9	10.6	1.9	2.6		86.2	10.6	0.7	2.6		15.9	7.4	8.5	4.7		69.9	14.6	8.0	7.5	
Client's education					**0.005**					0.862					**0.031**					0.730
No school	84.9	11.0	1.0	3.0		83.7	12.7	1.4	2.1		70.5	21.2	2.2	6.1		65.0	18.8	7.6	8.6	
Primary & post-primary	84.4	8.4	3.9	3.4		86.5	9.5	1.0	2.9		67.7	22.6	0.9	8.8		70.7	15.2	5.5	8.6	
Secondary+	78.8	13.5	0.4	7.3		84.7	10.9	1.7	2.7		57.5	30.2	0.7	11.7		65.0	17.2	7.2	10.6	
Caretaker relationship					0.180					0.275					0.542					**0.008**
Mother	83.5	11.4	1.7	3.3		84.7	12.0	1.2	2.2		66.4	24.0	1.6	8.1		64.4	19.2	7.0	9.4	
Other	83.7	8.1	1.0	7.2		84.1	9.6	2.5	3.8		71.9	19.9	1.6	6.7		76.7	9.6	7.0	6.7	
Child's sex					0.178					0.652					0.314					0.521
Female	82.1	12.9	1.3	3.7		85.5	10.5	1.3	2.7		65.3	24.0	2.0	8.8		64.9	17.5	7.3	10.2	
Male	85.0	9.0	1.8	4.2		83.7	12.7	1.5	2.2		69.1	22.7	1.2	6.9		67.7	17.8	6.7	7.8	
Child's age					0.164					0.763					0.062					**<0.001**
0-11 months	81.5	12.5	2.2	3.9		83.3	12.6	1.3	2.9		65.6	26.6	0.9	6.9		55.3	26.6	6.2	11.8	
12-35 months	84.1	10.5	0.7	4.7		86.5	9.9	1.6	2.0		66.7	21.1	2.5	9.7		69.9	13.5	7.5	9.1	
36-71 months	86.3	8.7	2.5	2.5		82.9	13.5	1.1	2.5		71.6	22.0	0.9	5.5		79.1	9.9	7.4	3.6	
Provider category					0.068					0.443					0.426					0.156
Nurse/midwife/other	87.9	8.2	1.2	2.6		86.0	9.8	1.1	3.0		65.7	26.2	1.6	6.4		69.5	18.0	6.0	6.4	
Doctor/specialist/tech	80.3	12.9	1.8	5.0		83.5	13.0	1.6	2.0		68.4	21.1	1.6	8.9		63.9	17.3	7.8	11.0	
Provider's number of years of schooling					0.726					0.486					0.313					0.365
<16	82.6	11.6	1.9	4.0		81.9	14.0	1.6	2.5		65.7	24.1	1.6	8.6		63.1	21.4	5.9	9.5	
16-18	85.9	9.7	1.3	3.1		87.7	9.7	0.9	1.7		67.3	21.6	2.0	9.1		68.1	14.9	8.4	8.7	
19+	80.3	11.9	1.5	6.3		84.8	9.2	2.1	3.9		71.8	25.7	0.6	1.9		71.7	13.2	6.9	8.2	

Continues

Appendix 13–*Continued*

	Told illness					Signs or symptoms for which to immediately bring back child					Child's weight or growth					Feeding when child is sick				
	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value	both no[1]	prv no, cl yes[2]	prv yes, cl no[3]	both yes[4]	p-value
Total number of supervisory items					0.852					0.707					0.317					0.152
None	84.4	10.6	0.7	4.3		88.5	8.8	0.4	2.3		68.8	24.2	1.2	5.8		72.7	12.0	7.8	7.5	
1-5	80.7	11.7	2.9	4.7		85.5	10.0	1.8	2.7		57.2	32.4	2.5	7.9		64.2	24.7	2.7	8.5	
6	84.0	10.8	1.6	3.6		82.7	13.2	1.7	2.4		69.3	20.6	1.5	8.6		64.4	18.1	7.9	9.7	
Provider received training in child health/illness in the past three years					0.687					**0.012**					0.623					0.118
No	83.4	9.6	2.9	4.0		95.7	4.3	0.0	0.0		66.3	27.9	1.2	4.6		76.8	10.8	7.2	5.2	
Yes	83.6	11.1	1.4	4.0		82.9	12.7	1.6	2.8		67.4	22.7	1.7	8.3		64.8	18.7	7.0	9.5	
Provider salary type					**0.014**					0.183					**0.024**					0.069
None	71.9	23.1	3.8	1.2		79.3	14.2	1.2	5.4		55.9	29.5	3.5	11.2		64.6	31.8	0.0	3.6	
Regular salary	82.6	11.1	1.8	4.4		83.4	13.3	1.1	2.2		71.7	21.1	1.2	5.9		68.4	15.0	7.6	9.1	
No regular salary but other pay	89.8	7.0	0.1	3.1		89.9	5.3	2.5	2.3		55.1	29.2	2.4	13.3		60.0	23.0	7.1	10.0	
Facility type					**0.002**					0.549					0.332					0.061
Hospital	63.8	21.5	3.6	11.1		89.6	8.2	0.0	2.2		65.2	23.2	1.4	10.2		66.6	9.1	10.2	14.1	
Health center	83.4	12.6	0.6	3.4		88.2	8.3	1.0	2.5		62.5	31.7	1.5	4.2		75.6	9.9	9.5	5.0	
Other	85.1	9.8	1.6	3.5		83.6	12.4	1.6	2.4		68.2	22.0	1.6	8.2		64.8	19.6	6.4	9.2	
Location					**<0.001**					0.323					0.334					0.305
Urban	75.0	16.4	2.5	6.2		84.8	12.2	1.8	1.2		68.3	24.2	2.1	5.4		63.2	17.4	8.1	11.3	
Rural	89.1	7.3	1.0	2.5		84.4	11.2	1.1	3.2		66.6	22.8	1.3	9.4		68.4	17.8	6.4	7.5	
Managing authority					0.274					0.100					0.831					0.243
Private/faith/NGO/other	76.7	16.4	2.5	4.4		78.8	20.0	1.2	0.0		70.4	20.7	2.2	6.6		61.1	25.4	5.4	8.1	
Government	84.7	10.0	1.4	3.9		85.5	10.3	1.4	2.8		66.7	23.7	1.5	8.0		67.2	16.4	7.3	9.1	
Region					**<0.001**					**0.001**					**0.001**					**<0.001**
Northern	90.3	8.1	1.1	0.6		86.0	7.1	1.2	5.7		56.4	29.0	3.4	11.3		49.0	25.0	9.4	16.7	
Dakar	68.3	18.7	3.7	9.3		82.4	14.0	3.2	0.3		75.0	20.5	1.3	3.2		63.6	18.0	7.2	11.2	
Thies	81.5	13.7	2.6	2.2		74.8	17.5	2.0	5.7		56.3	25.6	0.9	17.3		60.1	24.7	5.1	10.1	
Central	85.5	10.7	0.4	3.4		82.0	14.9	0.9	2.2		71.2	18.0	1.5	9.3		67.2	21.2	6.1	5.5	
East	94.5	2.7	0.0	2.8		94.2	5.5	0.3	0.0		79.4	16.2	1.7	2.7		91.3	2.0	5.2	1.5	
South	88.4	6.4	1.3	3.8		94.2	5.2	0.0	0.6		63.4	33.8	1.0	1.8		75.4	6.9	9.3	8.5	

Notes: 1. Both agree no counseling provided; 2. Provider not observed but client reported; 3. Provider observed but client did not report; 4. Both agree counseling provided.