Client's experiences on the provision of person-centered abortion care in public health facilities across four regions of Ethiopia: a cross-sectional study

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Abstract

Background

Ethiopia has made remarkable progress in expanding access to and provision of comprehensive abortion care. However, complications due to unsafe abortion still contributes to a significant proportion of maternal mortality in the country. As efforts to increase accessibility, availability, acceptability, and quality of comprehensive abortion care continue, evaluating service quality is critical. This study assesses the quality of comprehensive abortion care in public health facilities, from clients' perspectives, in four regions of Ethiopia to examine how person-centered care differs based on facility and service characteristics.

Methods

We conducted 1,870 client exit surveys in 2018 using structured questionnaires with women who received induced abortion or postabortion care services from 76 public health facilities across four regions: Tigray, Amhara, Oromia, and Southern Nations, Nationalities, and People's. We calculated descriptive, bivariate, and multivariable statistics to examine service characteristics associated with 30 person-centered care outcomes grouped into five domains.

Results

Comprehensive abortion care clients reported high levels of person-centered care, with participants reporting exceptionally positive experiences for outcomes in the dignity and respect domain and trust, privacy, and confidentiality domain. However, there was notable room for improving client experiences across three domains of person-centered abortion care: autonomy, communication and supportive care, and health facility environment. In the multivariate analysis, client-reported quality outcomes differed significantly by diagnosis, region, health facility type, and procedure type. Findings specifically reveal that clients in Amhara, at tertiary and primary hospitals, and who received postabortion care report lower person-centered care.

Conclusions

The positive experiences reported by comprehensive abortion care clients highlight the impact of the Ethiopian government's strategy to increase abortion access in the public health sector.

However, numerous disparities in person-centered care were identified, providing insight into opportunities to advance the quality of comprehensive abortion care. Recommendations include investment in initiatives to improve postabortion care client experiences, better integration of reproductive health services at higher-level facilities, and leveraging qualitative methods to research regional differences. These findings can direct regional-level and facility-based person-centered abortion care interventions to ensure the most effective impact on the health outcomes and human rights of people seeking comprehensive abortion care in Ethiopia.

Plain English Summary

Ethiopia has made great progress in increasing access to comprehensive abortion care through putting progressive policies and guidelines into place at the national level. This has led the public health sector to be an important setting for providing induced abortion and postabortion care throughout the country. There are still challenges in reducing delayed care-seeking and preventing deaths from unsafe abortion. To continue the positive gains that have been made and tackle ongoing challenges which contribute to poor health outcomes, understanding the quality of services from the perspective of the client is necessary.

This research study used surveys to explore induced abortion and postabortion care client experiences in public health facilities across four regions of Ethiopia (Tigray, Amhara, Oromia, and Southern Nations, Nationalities, and People's) to evaluate abortion service quality, with specific focus on person-centered care. The survey had questions on demographic and service characteristics, as well as related to five domains of person-centered abortion care. Comprehensive abortion care clients indicated good experiences with dignity and respect as well as trust, privacy, and confidentiality. There were opportunities to improve client experiences through improving autonomy, communication and supportive care, and the health facility environment. Certain groups of clients reported low levels of person-centered abortion care including those who received postabortion care, services in Amhara, and attended a tertiary or

primary hospital. These results can direct future programs, policies, and research at the national, regional, and facility level to improve person-centered abortion care for induced abortion and postabortion care clients.

Key Words

Abortion; comprehensive abortion care; safe induced abortion; postabortion care; Ethiopia; public health facilities; service quality; quality of care; client perspective; person-centered care

Background

Abortion in Ethiopia

Ethiopia is considered to have a “semi-liberal” abortion law (1). The current law allows for abortion in cases of rape, incest, incurable fetal deformity, if continuation of the pregnancy or birth of the child endangers the life of the pregnant person or the child, , if they are mentally or physically disabled, or if they are a minor who is physically or mentally unprepared for childbirth, and in case of grave and imminent danger which can be averted by an immediate intervention (2). Since the liberalization of the abortion law in 2005, Ethiopia has achieved remarkable progress in improving access to and provision of safe abortion services. Through an integrated national strategy, which included the development and implementation of national safe abortion technical and procedural guidelines, integration of comprehensive abortion care in public health facilities, training of several health worker types beyond physicians, such as, clinical officers, midwives, and nurses in abortion care, and the expansion of medication abortion (MA) technology in the country, there have been significant reductions of unsafe abortions and improvements in maternal health outcomes (3–6). The maternal mortality ratio for Ethiopia has substantially declined from 865 per 100,000 live births in 2005 to 401 per 100,000 live births in 2017 (7). While unsafe abortion used to be a leading cause of maternal mortality in the country, the proportion of maternal deaths from unsafe abortion has declined to below 10% (8).

Ethiopia's public health sector consists of three levels of care: primary, secondary, and tertiary. The primary level of care consists of health posts (the only type not authorized to provide abortion care), health centers, and primary hospitals. The secondary level of care includes general/secondary hospitals. Finally, specialized/tertiary hospitals provide health care at the tertiary level (9). The Ministry of Health issued "Technical and Procedural Guidelines for Safe Abortion Services in Ethiopia" in 2014 (10) which detailed the ability of public health facilities to provide legal induced abortion services[1] and postabortion care (PAC)[2] services based on gestational age. The guidance specifies that all levels of facilities (except health posts) can provide abortion care up to 12 weeks of gestation; public hospitals are additionally allowed to perform abortion up to 24 weeks, and tertiary facilities up to 28 weeks (10). As a result, the public sector has become increasingly important in the provision of comprehensive abortion care (CAC)[3]. A national research study found that in Ethiopia nearly three-quarters (72%) of PAC and 34% of induced abortion services are performed in public hospitals and health centers (4). The same study documented an increase in abortion care provided by the public sector nationally from 36% in 2008 to 56% in 2014 (6).

Despite these achievements, challenges in eliminating unsafe abortion remain. Even as facility-based abortions have increased, complications from abortion and the need for PAC services have not decreased as expected. In fact, the percentage of PAC clients with low or moderate abortion morbidity increased from 19.5% to 25.1% between 2008 and 2014. Additionally, the percentage of PAC clients with severe complications between 2008 and 2014 increased from 7% to 11% (6).[4]

[1] Safe induced abortion is defined as the intentional ending of a confirmed pregnancy using a method recognized as safe by the World Health Organization and by someone with the necessary skills.
[2] Postabortion care (PAC) includes the treatment of incomplete or unsafe abortions and any related complications.
[3] CAC is defined by the World Health Organization as the provision of information, abortion management (including induced abortion and care related to pregnancy loss), and PAC. We use the term CAC to describe a combined category of both facility-based induced abortion and PAC services/clients throughout this paper.
[4] "Morbidity was defined as low if the woman had no clinical signs of infection, organ failure or suspicious findings during uterine evacuation; moderate if she had early signs of peritonitis or sepsis, including an elevated temperature or offensive products of conception upon evacuation; and severe or "near-miss" if she had one or more signs of unsafe abortion morbidity, including generalized peritonitis, tetanus, a pulse rate >119 beats per minute, organ

Women-centered[5] abortion care is a central component of the "Technical and Procedural Guidelines for Safe Abortion Services in Ethiopia" (10); however, much of the existing literature to understand progress made and inform future CAC interventions has been focused on access to care, availability of services, and meeting clinical criteria, rather than examining quality of CAC services from abortion clients' perspectives (5,11). This is especially true for recent research conducted outside of the capital city, Addis Ababa, and for larger scale studies, causing integral aspects of CAC quality to be insufficiently studied (12,13). Further, it is widely understood that access to health services does not necessarily mean that services are of high-quality (14,15) – and this remains true for CAC services as well (16). As strategies in Ethiopia to reduce maternal morbidity and mortality continue, having a clear understanding of induced abortion and PAC service quality is critical to inform effective interventions. This approach may also allow for the development of innovative approaches related to quality improvement to address ongoing challenges in advancing CAC throughout Ethiopia.

Quality of Abortion Care

The importance of high-quality health care services, both as a mechanism to encourage care-seeking and improve human rights, is well-established (16,17). High-quality health services have been shown to positively impact health behaviors, adherence to treatments, and willingness to return to the health facility (18). Disparities in access to high-quality reproductive health care exist, with low-income, rural, adolescents, and other marginalized groups often facing an increased number of barriers (14,19–21). Providing high quality health services is critical from a human rights perspective; it is a central component in upholding the right to health (16). While efforts to evaluate quality of care in high-income countries have been researched

failure, temperature >37.9° C, evidence of a foreign body or injury to the cervix or uterine area, shock or death" pp. 15 (6).

[5] Women is the term used in the Ethiopian guidelines and study protocol. We acknowledge that women are not the only population who need and deserve comprehensive abortion care; therefore, the term person will be used throughout this manuscript when possible. However, the term women will be used at times due to the cultural context, terminology utilized in the existing literature, and to accurately represent those included in the study population.

147 extensively, particularly in relation to respectful maternity care and client-centered family
148 planning, evidence related to quality of CAC is lacking, especially in lower- and middle-income
149 contexts; therefore, gaps in our understanding remain (17,22–24).

150 Prior studies have elucidated the relationship between low quality of care with high levels of
151 abortion stigma and increased abortion-related morbidity and mortality, indicating that quality
152 improvement interventions are important for reducing community stigma and improving health
153 outcomes (25–27). Additionally, research has suggested further positive impacts to improving
154 the quality of induced abortion services, including increased uptake and knowledge of
155 contraceptive methods (28,29). Despite years of advocacy for the examination of quality of CAC
156 services beyond access and safety, only recently in 2022 was a standardized global
157 measurement tool developed (30,31). The most recent World Health Organization (WHO)
158 abortion care guidelines from 2022 emphasized the importance of ensuring high-quality CAC
159 and defined the six components of quality as follows: efficient, accessible, acceptable/person-
160 centered, equitable, and safe (32).

161 While all six components are important for ensuring high-quality care, we focus this paper on
162 person-centered care because it is often overlooked by evaluators and is the only dimension of
163 quality that relies heavily on the client perspective (16,33). A systematic review of indicators
164 used to measure abortion service quality found that measurement of quality in abortion care has
165 advanced to being more multi-faceted, as indicators spanned a wide range of topics beyond the
166 clinical. However, the review found the majority of indicators still focused on infrastructure and
167 technical competence of health providers, with far fewer asking about the experience of clients
168 related to provider-client interaction, decision-making, or provision of information (30). Person-
169 centered care in reproductive health was originally defined as “providing reproductive health
170 care that is respectful of and responsive to individual women and their families’ preferences,
171 needs and values, and ensuring that their values guide all clinical decisions” (24). The Person-
172 Centered Care Framework for Reproductive Health Equity developed by Sudhinaraset et al.

(24) has been adapted for CAC. This framework lays out six domains: dignity & respect; autonomy; communication & supportive care; trust, privacy, and confidentiality; social support; and health facility environment (34). Altshuler and Whaley (35) used this framework to review peer-reviewed literature focused on perceptions of CAC quality from the patient perspective, demonstrating its utility to adequately analyze the inclusion of person-centeredness in induced abortion and PAC services across a variety of settings.

Incorporating perspectives of individuals seeking CAC is vital to ensuring interventions are effective at meeting the needs of the population being served. Utilizing client perspectives as a method to evaluate person-centered care has gained traction and more recently has been applied to induced abortion and PAC (33,36,37). However, person-centered care is often evaluated through questions that employ broad statements about client satisfaction with services. Due to stigma, lack of confidentiality, or gratefulness for being provided the abortion procedure, findings of satisfaction are often universally high and do not tend to differ based on demographic or service characteristics (16). For example, a study from Ethiopia in 2005 evaluating quality of PAC in government hospitals in Addis Abba found that 92.3% of patients reported satisfaction with services (38). However, in-depth studies analyzing CAC from the client perspective have demonstrated that when induced abortion and PAC clients are asked about specific aspects of care, there is greater variability in response, painting a clearer picture of the true client experiences and providing essential insights into person-centered abortion care (34,35,37,39). Unfortunately, a comprehensive review of person-centered abortion care from diverse country settings found that health facilities and providers often fail in providing adequate person-centered care to CAC clients (35). This results in devastating impacts for those seeking induced abortion or PAC, including negative mental health and psycho-social outcomes, delayed care-seeking, and using unsafe methods to avoid going to health facilities (26,27,35).

While the term “person-centered care” is not always explicitly used in the existing literature, research from Ethiopia and neighboring countries evaluating CAC service quality have used

client perspectives to provide insight into similar dimensions. These studies have mainly focused on understanding the individual determinants and demographics of those who reported higher or lower quality of care, evaluating quality of PAC alone, or concentrating on care provided in hospitals or in the private sector (34,37–43). Findings from Kenya and Tanzania have shown differences in person-centered abortion care received by procedure type and facility level (39,44). Specifically, Baynes et al. (39) revealed that, in the public health sector in Tanzania, higher satisfaction for PAC was found at lower-level health facilities, including health centers and primary hospitals. Mossie Chekol et al. (37) also found differences in patient satisfaction among CAC clients in Addis Ababa with regards to the abortion procedure type and facility type, with higher satisfaction found for manual vacuum aspiration (MVA) and public health facilities compared to MA services and private facilities, respectively. These studies have demonstrated that targeted efforts for improving person-centered care require examination of CAC quality dimensions by facility and procedure attributes. However, they are also mainly located in urban cities and therefore are unable to provide a fuller depiction of person-centered CAC in rural areas or understand differences between regions. This study builds upon person-centered abortion care frameworks utilized in Kenya and expands on prior studies within Ethiopia that have evaluated the underlying factors associated with satisfaction of CAC services from the patient perspective in Addis Abba and for PAC clients (34,37,43).

Within the Ethiopian context, as investments in the public sector to increase CAC access have expanded, additional research is needed to understand the differing levels of person-centered care by level of public health facility to inform quality improvement and service delivery interventions. Furthermore, without analyzing quality of CAC services and centering patient experiences, a key opportunity to improve the health outcomes of women and girls is neglected (14,27). This study utilized client perspectives to examine the quality of induced abortion and PAC services, with a specific focus on person-centered care, in public health facilities in four regions of Ethiopia (Tigray, Amhara, Oromia, Southern Nations, Nationalities, and People's

[SNNP]). Through assessing the differences in person-centered care, based on facility and service characteristics, including facility region, diagnosis, facility level, and procedure type, the research aims to inform health system interventions, at the health facility and regional level, with the goal of improving the quality of CAC across Ethiopia.

Methods

Study Design, Setting, and Population

Our objective was to examine the variability of person-centered care for people seeking CAC services across facility and service characteristics in Ethiopian public health facilities. We employed a cross-sectional facility-based multi-stage cluster sampling survey design using structured client exit interview (CEI) questionnaires. We conducted this research between November 2018 and March 2019. The research protocol and data collection instruments were reviewed and approved for adherence to ethical standards by the Ethiopian Public Health Institute (EPHI) Scientific and Ethical Review committee.

The research setting included thirty-two zones located within four regions of Ethiopia: Tigray, Amhara, Oromia, and SNNP. These four regions were selected to be included in the study because of their mixture of urban and rural areas and socio-demographic diversity. Inclusion of these four large regions allows for increased generalizability because together they comprise the majority, over 80%, of the Ethiopian population (45).

The study population included people who met the following eligibility criteria: received an induced abortion or PAC service, in stable health condition, above the age of 13, and consented to participate in the research study. For minors under the age of 18 parental or guardians consent was obtained for thier participation in this study, though they are legally permitted to seek sexual and reproductive health (SRH) services without the consent of parents or guardians.

Sampling Procedure

A list of all public health facilities offering PAC and/or induced abortion services in the 32 zones within the four regions served as the sampling frame to select participating health facilities. The sampling frame was partitioned into strata using three levels of stratification: region, zone, and facility type (hospital/health center). Overall, the stratification generated 128 strata. From each stratum, a health facility was selected randomly. The number of clients recruited from each sampled health facility was then determined based on probability proportional to size of annual induced abortion and PAC caseload. In each facility, the enumerator used a systematic sampling technique to select and recruit every other eligible client in a one-month recruitment and interview period.

The sample size of clients was estimated using a single population proportion formula. The estimated number of women of reproductive age in the four regions at the time of data collection was 18,531,086 (49). We calculated the sample size based on this projected population size and the assumption that 50% clients would report acceptable person-centered care with a precision that would produce a 95% confidence interval. We set a design effect of three as a multiplier to increase the sample size to account for the cluster effect of the study design and a 10% increase was included to account for non-response. The STATCALC function of Epi Info version 7 was used for this calculation, finding a target sample size of 1,152 CAC clients. During data collection, a one-month interview and recruitment period was set across all facilities to achieve the minimum sample size, rather than specific participant targets by site. This approach contributed to an unintentional protocol deviation caused by higher than predicted caseloads at each facility and led to interviewing 2,009 CAC clients, exceeding the target sample size.

Survey Development

The client exit survey focused on the experience of CAC clients at the health facility before, during, and after their procedure. The survey covered CAC clients' experience receiving timely care, having autonomy, with confidentiality, being treated respectfully, of discrimination or

abuse, with the physical infrastructure of the health facility, and more. Questions included in the survey were adapted for CAC and to the Ethiopian context from a validated respectful maternity care questionnaire developed by Sheferaw et al. (46) and a health facility responsiveness questionnaire developed by the WHO (47). The original questionnaires were designed as scales to measure client experience of compassionate care and the responsiveness of health systems and facilities to patient needs. The data collection instrument for the client exit surveys was translated into the respective local languages of the study regions, including Amharic and Afan Oromo, and then back translated into English by independent translators. Local data collectors pre-tested the questionnaire, prior to data collection, through 20 pilot interviews at Adama Hospital, Bishoftu Hospital, and Bishoftu Health Center. Based on the pilot study findings, the research team made appropriate amendments to the survey language and order of questions to improve flow and increase clarity.

Data Collection and Ethical Considerations

Data collection procedures in this study were designed and conducted with attention to key ethical and quality considerations for participants, health facility staff, researchers, and all those involved in the data collection process. The data collectors consisted of health care workers outside of the sampled health facility who had at least a diploma in health sciences to ensure they had a base-level of knowledge regarding healthcare and working with patients and to increase participants willingness to respond honestly about their experience in the health facility. To establish high-quality and ethical data collection, there was a data collection orientation held in each study region. During this three-day orientation, all data collectors were trained on the research study, content in the questionnaire, navigating sensitive issues, informed consent, confidentiality, probing, in addition to other relevant study procedures and ethical considerations.

During data collection, supportive supervision was provided to data collectors to confirm accuracy and completeness of data. Data collectors followed all ethical guidelines including

garnering written informed consent from participants, informing clients of the voluntary nature of the study, explaining benefits and risks of participation in the study and that participation in the study will not impact future health services. Considerations for participants safety and confidentiality, due to the sensitive nature of induced abortion and PAC, were incorporated including conducting interviews in a private setting inside the health facility and not collecting any identifiable information. Interviews were conducted in the language participants felt most comfortable with and were administered via a paper-based in-person survey. No remuneration was provided to participants following completion of the survey. Recruitment, consent, and interviews were all completed on the same day that participants received the abortion procedure, and all steps were conducted after the client received health services and before they left the facility.

Data Analysis

All survey data were entered into CSpro 7 and then exported to Stata version 14, where all data cleaning, exploration, and statistical analyses were conducted. We removed 132 participants with high levels of missing data, for a final sample of 1,870 study participants from 76 health facilities. Independent variables of interest included demographic characteristics (i.e., age, residence location, marital status, educational attainment), facility region (Oromia vs. Amhara vs. SNNP vs. Tigray), health facility type (health center vs. primary hospital vs. secondary hospital vs. tertiary hospital), diagnosis (induced abortion vs. PAC), and procedure type (MA vs. MVA).

Two scales adapted for this study setting and population were utilized, therefore one of the initial steps in our data analysis process was conducting exploratory and confirmatory factor analysis (EFA and CFA) to test the structure of the respectful maternity care (46) and health facility responsiveness (47) scales for the Ethiopian context and abortion measurement. We used a random number generator in Stata to randomly assign observations to one of two datasets, one for training (EFA) and another for testing (CFA) the scale validity and reliability.

We assessed the factor structure of each scale using a polychoric correlation matrix, maximum likelihood estimation, and oblimin factor rotation, following best practices in scale development (48). Our results indicated poor fit of the original scale structures and no promising alternative factor structures based on fit indices.

The initial EFA and CFA findings led us to analyze individual items from the scales separately instead of as a composite metric. In addition to the service quality questions from these scales, we also looked at other relevant questions that were included in the client exit survey. This approach led to the inclusion of 30 individual outcomes in our data analysis. Questions adapted from the respectful maternity care questionnaire used a 5-point Likert scale with the following response categories: strongly agree, agree, don't know, disagree, strongly disagree. Due to the known limitations in interpreting "don't know" as the 3rd point of the Likert scale (49), we decided to exclude these responses (less than 7% of responses for all outcomes) from the analysis and collapse the remaining categories into binary variables: strongly agree and agree collapsed into one category and strongly disagree and disagree responses combined. Questions adapted from the health facility responsiveness questionnaire also used a 5-point Likert scale with very good, good, moderate, bad, very bad as the response options. We collapsed these outcomes into three-level ordinal variables with very good and good collapsing into a single category, moderate responses remaining in a moderate category, and combining very bad and bad into one category.

We calculated descriptive statistics for all independent variables and service quality outcomes. Outcome themes were chosen based on the quality-of-care literature including dignity & respect; autonomy; communication & supportive care; trust, privacy, and confidentiality; and health facility environment. Specifically, these categories were identified based upon the six person-centered care domains defined by the Person-Centered Care Framework for Reproductive Health Equity (27,37). One of the six person-centered care domains, social support, was not asked about in the questionnaire and therefore was left out of analysis. Table 1

presents the remaining five person-centered care domains used in the analysis, as well as domain definitions and service outcomes for each domain. In addition, service quality outcomes that did not map to any of the five person-centered abortion care domains and those with greater than 10% missing data were excluded from analysis.

[TABLE 1 WILL GO HERE]

Bivariate analyses were conducted for all service quality outcomes by independent variables of interest noted above. Appropriate bivariate tests, including Pearson's chi-square test, Fisher's exact test, and Kruskal Wallis tests, were conducted depending on how the outcome variable was operationalized. Based on existing literature, initial analyses, and variable type, we conducted multivariable logistic regressions and ordered logistic regressions on the person-centered care outcomes that were significantly associated with the explanatory variables in the bivariate analyses. All multivariable regression models accounted for clustering by health facility and included the following independent variables: health facility type, age, marital status, educational attainment, diagnosis, and procedure type. We omitted the health facility region from the adjusted multivariable models because of limited variability. For example, facility region perfectly predicted success on a subset of outcomes, nullifying its utility as a control variable. For all levels of analysis, p-values less than 0.05 were considered statistically significant.

Results

Demographics and Service Characteristics of Participants

Table 2 presents sample characteristics for the final sample of 1,870 CAC clients. Participants were aged 25.3 ± 6.2 years with 28.8% of clients being 20 years of age or younger. About half (49.4%) were married and 44.5% had at least some secondary education. Most respondents (69.6%) lived in urban areas. Over one-third of respondents received care at secondary

hospitals (35.5%), followed by tertiary hospitals (27.1%), primary hospitals (19.5%), and health centers (17.5%). One-third of clients received CAC services in Oromia (33.3%), followed by Tigray (30.2%), Amhara (24.1%), and SNNPR (24.1%). Just over half of respondents (51.1%) were seeking induced abortion services, while just below half of participants (48.9%) were seeking PAC services. PAC clients were more likely to receive MVA (80.5%) than MA (19.5%), but conversely more induced abortion clients received MA (81.5%) than MVA (18.5%). Below, we present our findings by the five person-centered care domains disaggregated by the independent variables [Table 3 and Table 4].

[TABLES 2, 3, & 4 WILL GO HERE]

Autonomy

Participants indicated low levels of autonomy, with over half (53.3%) reporting they were unable to choose their procedure type and nearly one-third (30.4%) rating their involvement in making decisions about their own health care as bad or moderate. However, three-quarters (75.2%) of CAC clients reported that they had a good experience with being asked permission before any procedure was started.

CAC clients at health centers (AOR=6.38, $p<0.001$), primary hospitals (AOR=2.86, $p<0.001$), and secondary hospitals (AOR=2.47, $p<0.05$) all had higher odds of having the chance to choose their procedure type compared to individuals who received abortion services in tertiary facilities. Only 30.8% of CAC clients at tertiary hospitals were able to choose their procedure compared to 72.9% of those at health centers ($p<0.05$). CAC clients who received services at secondary hospitals had higher odds of reporting a good experience with health care decision making (AOR=2.6, $p<0.05$) and being asked for permission prior to procedure (AOR=2.6, $p<0.05$) when compared to tertiary facilities.

Clients' ability to choose their procedure type varied significantly by region, with the highest performance on this outcome reported in Oromia (62%) followed by Tigray (47.9%), SNNPR (40.5%), and Amhara (26.9%) ($p<0.05$). Relatively low levels of autonomy were found in Amhara, with less than half of respondents (45.5%) indicating a good experience related to their involvement in health care decision-making and 44.1% reporting a bad or moderate experience being asked for permission prior to their procedure. Conversely, most CAC clients in Tigray reported good experiences with decision-making (88.7%) and giving their permission prior to procedure (91.3%).

Induced abortion clients had increased odds (AOR=3.5, $p<0.001$) of being able to choose their procedure type compared to PAC clients. Only 29.9% of PAC clients were able to choose their procedure type compared to 62.7% safe induced abortion clients ($p<0.05$). Induced abortion clients also had higher odds of being involved in personal health care decisions (AOR=2.2, $p<0.01$) and being asked permission prior to procedure (AOR=2.98, $p<0.001$) than PAC clients. Respondents who received MA (AOR=1.5, $p<0.05$) had increased odds of being able to choose their procedure type compared to MVA clients.

Communication & Supportive Care

We found high levels of clear communication and supportive care, with 97.5% of respondents agreeing that their health provider spoke in an understandable language and 87.9% indicating that their provider responded to their needs. However, outcomes related to timely care, pain management, and integration of services demonstrated ample room for improving key aspects of care. Approximately one-quarter of respondents indicated dissatisfaction with their wait time (24.1%) and a moderate or bad experience receiving prompt attention at the facility (24.4%). Additionally, over one-third (36.5%) of CAC clients included in the study were unsatisfied with the duration of their consultation time, and over one-quarter (26.6%) rated their amount of time to ask their provider questions as bad or moderate. Descriptive statistics suggest that over two-

thirds (67.8%) of CAC clients received pain medication, 72.5% rated their experience getting information about other services as good, and 80.4% received family planning (FP) counselling.

Clients at health centers (AOR=3.0, $p<0.05$) and secondary facilities (AOR=2.9, $p<0.05$) were three times more likely than those at tertiary facilities to have a positive experience with enough time to ask their provider questions. Health center clients also had 4.9 higher odds of receiving FP counselling ($p<0.05$) compared to those at tertiary facilities, with 91.9% receiving FP counselling. In descending order, 84% of CAC clients at secondary hospitals, 78% at primary facilities, and 69.7% at tertiary hospitals received FP counseling ($p<0.05$). All health center clients (100%) indicated that they understood the language used by their providers, higher than those at any other facility level ($p<0.05$). Notably, we found lacking supportive care and clear communication at primary hospitals compared to all other facility types, with only 55.4% being satisfied with the duration of their consultation ($p<0.05$), 72.8% reporting a good experience being clearly communicated ($p<0.05$), and 63% indicating a good experience getting information about other treatments ($p<0.05$).

Consistently, the lowest levels of communication and supportive care were seen in the Amhara region, particularly related to timely care. Over one-third (37.7%) of CAC clients in Amhara believed their wait time was too long, in comparison to 22.8% in Oromia, 18.7% in Tigray, and 15.3% in SNNPR ($p<0.05$). Slightly over half (58.6%) of Amhara respondents rated their experience of prompt attention as good, compared to Oromia (71.2%), SNNPR (86.5%), and Tigray (89.5%) ($p<0.05$). CAC clients in Tigray reported the highest levels of communication and supportive care, especially for outcomes related to the experience during a clients' consultation and other interactions with their health care provider. In fact, only 7.4% of CAC clients in Tigray rated the clarity of information explained to them by a healthcare provider as bad or moderate, compared to 36.5% of participants from Amhara ($p<0.05$). Similarly, CAC clients reported receiving information about other health services at the highest rate in Tigray (87.2%), followed by Oromia (74.9%), SNNPR (70.3%), and Amhara (52%) ($p<0.05$).

Induced abortion clients reported better communication and supportive care compared to PAC clients across all significant outcomes in the multivariable analysis. Induced abortion clients had 2.3 times higher odds of reporting that the provider responded to their needs ($p<0.01$), 2.2 times higher odds of being more likely to receive prompt attention ($p<0.01$), and 2.3 times higher odds of being more likely to receive clear explanation of the treatment or procedure from their health care provider ($p<0.01$). Additionally, they were more likely to indicate a good experience with having enough time to ask questions about health problems (AOR=1.9, $p<0.01$) and getting information about other services (AOR=2.9, $p<0.001$).

While six outcomes were significantly associated with procedure type in the bivariate findings, only two outcomes remained significant when controlled for confounding factors. Interestingly, numerous bivariate findings suggested that MA clients reported slightly higher levels of communication and supportive care, however in the adjusted model only receiving pain medication (AOR=0.49, $p<0.01$) and understanding language used by health care providers (AOR=0.29, $p<0.05$) remained significant, showing that MVA clients had a better experience than MA clients. This association may be present due to the omission of health centers from the model due to perfect predictability for this outcome, allowing closer examination of differences between MA and MVA clients at the remaining facility levels.

Trust, Privacy, and Confidentiality

Most CAC clients reported positive experiences with confidentiality. Particularly, 84.8% of respondents rated a good experience with their personal information being kept confidential. Only 14.6% of clients reported a bad experience with their privacy being respected during physical examinations and treatments, while 85.4% responded good for this outcome. Those receiving CAC at secondary hospitals and health centers rated all confidentiality and privacy outcomes at higher levels than those at tertiary or primary hospitals. In fact, nearly 4 in 5 secondary hospital (79.7%) and health center (79.7%) clients had good experiences with

privacy of their counseling rated, compared to 71.5% of those at tertiary facilities and 66.6% of clients at primary hospitals ($p<0.05$).

We found greater trust, privacy, and confidentiality in Tigray compared to all other regions, with 94.5% of CAC clients rating the respect for their privacy throughout their physical examinations as good and 94.7% rating information confidentiality as good. This compared to lower rates found in SNNPR (87.4% and 90%, respectively), Oromia (83% and 80.3%, respectively), and Amhara (76.2% and 75.6%, respectively) (both $p<0.05$). Additionally, the lowest levels of privacy and confidentiality were observed in Amhara. Only 54.3% of CAC clients in Amhara reported their experience being able to talk privately to a health provider as good however, significantly more positive responses were seen in all other regions ($p<0.05$).

Induced abortion clients reported better privacy and confidentiality compared to PAC clients, including physical privacy during procedure (AOR=2.5, $p<0.05$), talking privately with their provider (AOR=2.99, $p<0.01$), and confidentiality (AOR=3.3, $p<0.001$). While 83.4% of induced clients had good experiences with their time speaking privately with a provider, less than two-thirds (66.2%) of PAC clients reported the same ($p<0.01$). Comparing across procedure type, MA clients had a better experience talking privately to a provider and with information confidentiality, with 79% and 87.4% reporting a good experience, respectively in comparison to MVA clients (70.3% and 82.1%, respectively) ($p<0.05$; $p<0.05$). However, these significant associations were not seen once controlling for confounding variables in the multivariable analysis.

Dignity & Respect

Nearly all CAC clients reported that the health provider used a kind approach (93.0%) and treated them in a friendly manner (92.0%) with respect (93.2%). This high level of dignity and respect continued with 89.1% of respondents indicating that they were shown concern and empathy and 88.7% reporting that the provider addressed them by their name. However, a low

but notable percent of CAC clients, 18.6% and 16.0% respectively, reported a moderate or bad experience for being talked to respectfully and being treated with dignity. Additionally, while a considerable majority of CAC clients did not experience instances of discrimination or abuse, 15.5% reported being scolded by a provider and 15.9% stated that they were treated poorly due to personal attributes. Slightly less indicated that they were shouted at by a provider (12.3%) or that their provider insulted them based on personal characteristics (10.6%).

Marginal differences by health facility type were seen with respondents who received services at primary hospitals frequently reporting the lowest levels of dignity and respect; however, few dignity and respect outcomes remained significant by facility type in the multivariable models. CAC clients at secondary hospitals had 2.51 higher odds of being treated with respect ($p<0.05$) and shown empathy ($p<0.05$), compared to those at tertiary facilities.

Consistently, CAC clients who received services in Amhara reported the lowest levels of respect and dignity. Less than three quarters of clients in Amhara reported a good experience being greeted and spoken to respectfully (69.4%), as well as receiving respectful treatment from their provider (71.2%). This is compared to significantly higher rates in the other study regions: Tigray (91% and 92.9%), Oromia (76.1% and 79.9%), and SNNP (88.3% and 90%) ($p<0.05$). Further, nearly one-quarter of respondents (24%) in Amhara reported not being treated well based on personal attributes compared to 15.5% in Tigray, 13.2% in Oromia, and 7.9% in SNNPR ($p<0.05$). Conversely, for being insulted by a provider or shouted at by a provider, Tigray (14.7% and 16.1%, respectively) had the highest rate, compared to clients from Amhara (10.7% and 9.8%, respectively), Oromia (8.6% and 12.3%, respectively), and SNNPR (5.6% and 7.9%, respectively) ($p<0.05$, $p<0.05$).

A higher percent of induced abortion clients reported being treated with respect (94.1%) and being shown concern and empathy from health workers (90%) compared to 92.1% and 87.8% of PAC clients, respectively ($p<0.05$). Induced abortion clients were more likely to report a good

or moderate experience being talked to respectfully (AOR= 1.9, p<0.01) and treated with respect and dignity (AOR=1.95, p<0.05). Overall, high levels of respectful treatment were found across all clients with over four-fifths of induced (87%) and PAC clients (81%) reporting being treated with respect and dignity (p<0.05). Although MA clients were called by their name marginally more often than MVA clients (90.1% vs 86.7%, p<0.05), no significant associations were identified in the multivariable analysis.

Health Facility Environment

Overall, nearly three quarters (74.7%) of CAC clients in the study rated the spaces in the waiting room and examination rooms as good. Over one third (36.7%) of participants reported bad or moderate cleanliness of the procedure room. Although abortion in the public sector is free in Ethiopia, 17% of respondents paid for services received at the health facility. While bivariate results demonstrated significant differences across facility types, none were significantly associated in the adjusted model.

Related to rating the cleanliness of the procedure room 59.5% of Amhara clients selected good, compared to 61.1% in Oromia, 61.1% in SNNPR, and 69.6% in Tigray (p<0.05). In contrast, 80.6% of those who received services in Amhara rated the space at the health facility as good compared to below three-quarters of respondents in all other regions (p<0.05). Interestingly, a much higher percent of respondents in SNNPR (45.2%) reported paying for services than those in other regions with the lowest amount in Oromia (8.2%) (p<0.05). There were no significant associations between health facility environment outcomes and diagnosis, nor procedure type, in the multivariable analysis.

Discussion

Key Findings

Overall, high levels of person-centered care were reported among all surveyed clients. While variations and disparities in person-centered care were seen when disaggregated by sub-populations and settings, when analyzing all participant responses and applying threshold guidance from indicators included in the Abortion Care Quality (ACQ) Tool (50), for the majority of outcomes, over 80% of the sample reported a positive experience. This is consistent with research from Addis Ababa, which found that people who received CAC in public facilities reported high levels of satisfaction on person-centered care indicators similar to those in this study (37). Altshuler & Whaley (35) conducted a scoping review evaluating person-centered abortion care from the client perspective, finding that globally CAC services fail to provide person-centered care frequently due to institutional and legal restrictions on abortion. Likewise, there is universal consensus among health experts that liberal abortion policies and reduced institutional restrictions lead to improved CAC access, safety, and quality (32). Our findings support these conclusions; high levels of person-centered abortion care are offered within the Ethiopian context likely related to the improved abortion landscape and the concerted effort made at the national level to expand safe CAC services in public health facilities.

However, study results also indicate room for improving quality of induced abortion and PAC services for clients within public health facilities in Ethiopia with specific focus needed on three domains: autonomy, communication and supportive care, and health facility environment. Prior research further supports focusing attention and resources to these components of CAC. Specifically, induced abortion clients from Kenya and India emphasized interpersonal interactions with providers and health facility personnel as one of the most critical components of good quality abortion services – aligning well with the outcomes included in both the communication and supportive care and autonomy domains (36). Mossie Chekol et al. (37) identified interpersonal communication, receiving information related to the procedure, and the physical environment as three focus areas to improve CAC client satisfaction in Addis Ababa, corroborating our findings. Further, our results build upon these prior research findings through

584 expanding the analysis to other regions of Ethiopia. Additionally, although CAC clients reported
585 nearly universally good experiences of dignity and respect, any instance of abuse or
586 discrimination should not be tolerated as it constitutes a human rights violation (32). Therefore,
587 although less than one in six CAC clients experienced being scolded, shouted at, discriminated,
588 or insulted due to personal attributes, critical attention must be given to address this issue.

589 Abortion Care Guidelines from WHO indicate that regardless of whether a client receives PAC
590 or induced abortion services, all abortion clients deserve the same high-level of person-centered
591 care (32). Consistent with previous studies (6), we found a high rate, nearly half, of clients
592 seeking PAC services, despite induced abortion being available and accessible in the public
593 sector (3,5,10). While prior research in Ethiopia has not found differences in the quality of client
594 experiences between PAC and induced abortion services (37), our findings illuminate disparities
595 between diagnosis categories, with induced abortion clients reporting higher levels of autonomy,
596 communication and supportive care, as well as privacy and confidentiality than PAC clients. We
597 hypothesize this may be indicative of the more serious and sometimes urgent nature of PAC
598 services compared to induced care, but these differences warrant further investigation.

599 Consistently, our regional analysis indicated that CAC services received in the Amhara region
600 had the lowest levels of person-centered care across all domains. There were fewer noticeable
601 gaps between the other three regions studied. However, marginally higher levels of autonomy
602 and trust, privacy & confidentiality were observed in Tigray and dignity & respect was highest in
603 SNNPR. These results are consistent with a study which found that Amhara had the lowest
604 family planning quality score and that there were only slight differences in family planning quality
605 scores observed between the other regions studied (51). Conversely, relevant contraceptive use
606 and antenatal care indicators calculated in the Ethiopian 2016 Demographic and Health Survey
607 (DHS) consistently ranked Amhara as having better health outcomes than other regions,
608 frequently finding that Oromia fared the worst (52). It is important to note that while information
609 can be gleaned from these prior studies, they do not include induced abortion or PAC services

specifically and are focused on clinical quality and accessibility indicators, rather than person-centered care (51,52).

The findings from this study also establish that CAC clients had higher levels of autonomy and communication and supportive care at health centers and secondary facilities, than at tertiary hospitals. Research assessing the quality of PAC services in the public sector in Tanzania identified results consistent with these findings. Specifically, Baynes et al. (39) concluded that the strongest predictor of high client satisfaction was related to facility type, with PAC clients more satisfied with services at lower-level facilities including health centers, than tertiary facilities. Lower-level facilities are often assumed to be understaffed and under resourced leading to the conclusion that they are unable to provide high-quality care (14,53); our findings challenge this assumption and are consistent with primary care facilities in lower- and middle-income countries being effectively leveraged to provide HIV care and treatment (14). Similarly, the lowest rates of family planning counselling and having a good experience getting information about other health services were observed at primary and tertiary hospitals, with the highest rates seen at health centers. Wake et al. (54) demonstrated the importance of focusing on the integration of reproductive health services through analysis showing that postabortion contraception acceptance in Ethiopia is directly associated with increased family planning counselling. Therefore, we see a clear need for better integration of reproductive health services including family planning counselling, particularly in primary and tertiary hospitals.

Across all domains, few disparities in person-centered care were identified between CAC clients who received MVA or MA. This conflicts with prior studies in Addis Ababa and Kenya, all which found significantly different levels of satisfaction and person-centered care by abortion procedure type (37,44,55). However, for the individual outcome of receiving pain medication, our results show that MA clients are less likely to receive pain medication, similar to the existing literature which indicates that MVA clients receive more person-centered abortion care than MA clients (37,44). We must be aware of how the question was posed to respondents, as it did not

ask about receiving a prescription for pain medication or counselling and advice on pain management, only about receiving pain medication while at the facility. Regardless, pain is important to consider for MA as it is commonly noted as a reason for dissatisfaction among abortion clients (56). Low uptake of pain management among MA clients may conflict with WHO guidelines which explicitly recommends that MA clients at any gestational age are offered pain management (32). There may be misconceptions among women in Ethiopia related to pain and side effects of MA, potentially indicating a lack of pre-procedure counselling. In fact, a study in Northwest Ethiopia found that half of women selected MA over MVA as a way to avoid pain and therefore called for improved counselling on side effects and pain management (55).

Strengths and Limitations

This study had limitations that are important to note. First, the adapted scales used in the survey were not validated for CAC measurement. We addressed this limitation by analyzing each outcome individually rather than using a composite measure. Furthermore, the context in Northern Ethiopia has changed drastically since data collection for this study due to the COVID-19 pandemic (57) and the conflict in Tigray. Health facilities and services across Northern Ethiopia have been devastated (58,59). In fact, as of June 2021 reports indicate that only 13.5% of all health centers and hospitals were operating in the Tigray region, of course having a distressing impact on access and availability of SRH services, including induced abortion services and PAC (60,61). This change in context has likely impacted the accuracy of our findings compared to the current state of abortion services in the four study regions of Ethiopia. Lastly, known limitations of client exit surveys for those seeking CAC include social desirability bias, low expectations of quality, and universally high satisfaction rates must be considered in interpretation of findings.

Despite these limitations, this study also had a variety of strengths. First, this research fills a recognized gap in the literature by focusing on person-centered care in public health facilities

using client exit surveys. Second, the unique timing of this research provides a baseline of the quality of CAC services in Tigray and the surrounding regions that can be used to benchmark future research and service quality monitoring as the region recovers from the humanitarian crisis and works to reestablish high quality CAC services in the local health system. Third, this study also explores person-centered abortion care using independent variables that few studies in Ethiopia or East Africa have used in the past, including by region and level of public health facility. Even studies which have obtained data from multiple regions in the country or multiple facility levels, have not conducted analysis or disaggregation of data by these categories (12,41,62). Regional and facility considerations are important for localizing CAC quality improvement priorities, policies, and programs (12,51).

Program and Research Implications

Our analysis highlights the need for concentrating quality improvement efforts on specific domains of person-centered abortion care and on specific populations and settings to target areas where there is the most opportunity for impact. It is critical for programs aiming to improve CAC client experiences to have components dedicated to increasing the autonomy of people seeking induced abortion or PAC services, improving the level of communication and supportive care from health care providers, and for addressing instances of abuse and discrimination experienced by CAC clients. More specific program implications are clear from this study's key findings at facility and regional levels. Due to the continued high rates of PAC, programmatic efforts to reduce disparities between induced abortion care and PAC service quality is critical. Our results also may indicate the need for the development of guidelines and training on appropriate pain management for MA. Additionally, concentrated initiatives are needed to improve CAC service quality at primary and tertiary hospitals with a specific focus on reproductive service integration and family planning counselling. Based on our findings, contextual knowledge, and analysis of prior research, continuing to invest in task-sharing

688 initiatives, within higher-level facilities, may be an effective intervention for regional and national
689 health officials to consider, as an approach for both expanding access to CAC and improving
690 client experiences (3,63,64).

691 With our recommendations calling for increased focus on the quality of CAC services across the
692 country, we cannot ignore the current humanitarian crisis in the study regions. Existing research
693 on the emergency from international humanitarian organizations have primarily focused on
694 gender-based violence services, with little mention of the impact on CAC services (65). This
695 study provides an in-depth picture of CAC, from the client perspective, prior to the onset of the
696 conflict and consequently, may be useful context to understand how the conflict has affected the
697 health system and people in need of induced abortion or PAC. Additionally, it is important to
698 note that CAC is included in the Minimum Initial Service Package (MISP) for SRH in Crisis
699 Situations[6], both for responding to the needs for survivors of sexual violence (Objective 2) and
700 as an additional SRH priority (66). Resources from humanitarian organizations and national
701 actors to evaluate the impact of the ongoing conflict on CAC are critical to identify appropriate
702 response interventions following implementation of the MISP (61).

703 Lastly, this study has also identified numerous areas for additional inquiry to further understand
704 person-centered abortion care across Ethiopia. Due to the quantitative nature of this study,
705 qualitative inquiry and direct observation research, including the perspectives of both abortion
706 clients and providers, would provide useful insight into the disparities in person-centered care
707 between induced abortion and PAC clients, the continued higher-than-expected PAC rates in
708 the country, and the provision of pain management for all CAC clients, as well as, between MA
709 and MVA. National-level actors can also utilize these results as a basis for improving monitoring
710 and evaluation of CAC service quality. Specifically, our findings indicate that because additional
711 efforts are needed to study the quality of CAC across regions (12,51), this topic should be

[6] The MISP is the minimum, life-saving sexual and reproductive health needs that humanitarians must address at onset of an emergency (within 48 hours wherever possible).

integrated into the Ethiopian DHS to ensure consistent monitoring of induced abortion and PAC services nationally and inform efforts to improve maternal health outcomes. Finally, the results of this research also provide evidence for future research to include analysis of person-centered abortion care in Ethiopia and surrounding areas by health facility level, region, and diagnosis. Specifically, we recommend DHS integration and stakeholder adoption of indicators from the new the ACQ Tool, released in 2022 (50,67). A key strength of this tool is the intentional development of indicators that are client-centered, simple, and effective. As Ethiopian public, private, and NGO health facilities were included as study sites for the ACQ Tool development, the final tool has validity and particular relevance to the Ethiopian context (67). We therefore recommend application of this tool for future investigations of person-centered abortion care in Ethiopia and beyond.

Conclusions

Our analysis of 30 person-centered abortion care outcomes revealed generally high levels of person-centered care in public health facilities in Ethiopia. While Ethiopia has made major strides in advancing facility-based CAC services, examining client experiences with CAC services is important for advancing person-centered care and determining areas for quality improvement. In this study, we aimed to evaluate the extent of person-centeredness experienced by CAC clients when seeking care at a public health facility in four regions of Ethiopia. In doing so, we build upon the existing person-centered abortion care literature in East Africa and identify key focus areas for future research efforts as well as, facility- and regional-level programs to improve the quality of CAC services in this context.

The recommendations emanating from our findings are relevant for a diverse array of international, national, regional, and local actors, including the Ethiopian Ministry of Health, regional-level health officials, academic researchers, humanitarian organizations, well as health facility staff and providers. Our findings suggest that attention and resources to quality

improvement should be concentrated on improving CAC clients' autonomy and communication and supportive care. Further, multivariable results highlighted important person-centered care disparities in Amhara, in primary and tertiary hospitals, and among PAC clients, providing evidence for where to target future person-centered program and research initiatives. Relevant actors must dedicate resources to improve PAC quality, integration of reproductive health services with CAC, and pain management for MA clients as vital interventions for improving person-centered abortion care in public health facilities across Ethiopia.

List of abbreviations (in order of appearance)

MA	Medication abortion
PAC	Postabortion care
CAC	Comprehensive abortion care
WHO	World Health Organization
MVA	Manual vacuum aspiration
SNNPR	Southern Nations, Nationalities, and People's Region
CEI	Client exit interview
EPHI	Ethiopia Public Health Institute
SRH	Sexual and reproductive health
EFA	Exploratory factor analysis
CFA	Confirmatory factor analysis
FP	Family planning
ACQ	Abortion Care Quality Tool
DHS	Demographic and health survey
MISP	Minimum Initial Service Package

Declarations

Ethics approval and consent to participate

The research study was reviewed and approved for adherence to ethical standards by the Ethiopian Public Health Institute (EPHI) Scientific and Ethical Review committee (Approval #: 6.13/541). All study respondents at the age of 18 and above provided informed consent to participate in this study.Parents or guardians provided consent for minors under the age of 18.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

Funding

Funding for this research was provided by a donor which chooses to remain anonymous. The funder was not involved in the study design, data collection and analysis, decision to publish, or preparation of this manuscript.

Authors' contributions

SMc analyzed and interpreted the client exit interview data and led the writing of the manuscript. BC, VA, and SD provided analysis and interpretation support, as well as contributions to the writing and editing of the manuscript. DD, AB and SMu critically reviewed drafts of the manuscript. BC, DD, AB and SMu supported the conceptualization and protocol development of

the research protocol, as well as supervised and led data collection for this study. All authors read and approved the final manuscript.

Acknowledgements

We are grateful to our research assistants who collected the surveys and the women who generously gave their time to participate in this research. We would also like to thank the many healthcare providers and officials across Ethiopia for supporting the implementation of this study.

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Table 1. Person-Centered Care Framework for Reproductive Health Equity Domains, Definitions, and Corresponding Outcomes

Domain	Definition	Outcomes	Variable Type
Autonomy	Autonomy refers to healthcare providers who respect women's views, support women to make educated decisions about their own care and obtain informed consent prior to procedures.	Were you given the opportunity to choose the type of abortion procedure that you received today?	Binary**
		How would you rate your experience of being involved in making decisions about your health care or treatment as much as you wanted?	Ordinal
		How would you rate your experience of being asked permission before performing any procedure or starting treatment?	Ordinal
Communication & supportive care	Communication & supportive care refer to healthcare providers providing timely and compassionate care through clear explanations of procedures, purpose of treatments, expected side effects, as well as integration of care that is responsive to patient needs. They confirm that women understand their explanations by using appropriate language for women to understand and ensuring patient care and safety.	Did you receive any pain medication before and after the procedure?	Binary**
		The health workers spoke to me in a language that I could understand.	Binary
		The health worker responded to my needs whether or not I asked.	Binary
		Received family planning counselling in addition to abortion procedure?	Binary**
		In your opinion, how do you describe the duration of your consultation with provider?	Binary*
		In your opinion how do you describe your wait time in the facility between the time you first arrived and the time you saw a provider?	Binary*
		How would you rate your experience of getting prompt attention at the health service?	Ordinal
		How would you rate your experience of getting enough time to ask questions about your health problem or treatment?	Ordinal
		How would you rate the experience of how clearly health care providers explained things to you?	Ordinal
		How would you rate your experience of getting information about other types of treatments or tests?	Ordinal
Trust, privacy, and confidentiality	Trust, privacy, and confidentiality refers to women's perceptions of competence in their healthcare providers and facility. Privacy refers to both the environment in which women's care is provided and during procedures/physical examinations and to ensuring medical records are kept confidential.	How would you rate the way your privacy was respected during physical examinations and treatments?	Ordinal
		How would you rate the way the health services ensured you could talk privately to health care providers?	Ordinal
		How would you rate the way your personal information was kept confidential?	Ordinal
Dignity & respect	Dignity & respect refer to the ability of women to receive care from their healthcare providers and other health facility staff in a respectful and caring setting. It captures typologies of physical and verbal abuse.	I felt that health workers cared for me with a kind approach.	Binary
		The health workers treated me in a friendly manner.	Binary
		All health workers treated me with respect as an individual.	Binary
		The health worker showed his/her concern and empathy.	Binary
		The provider called me by my name.	Binary
		The health provider scolded me during the procedure for different reason.	Binary
		The health workers shouted at me because I haven't done what I was told to do.	Binary
		Some of the health workers did not treat me well because of some personal attributes.	Binary
		Some health workers insulted me and my companions due to personal attributes.	Binary
		How would you rate your experience of being greeted and talked to respectfully?	Ordinal
		How would you rate your experience of being treated with respect and dignity?	Ordinal

Health facility environment	This captures the quality of the facility and providing a fully enabled environment, including the commodities and equipment, but also referral system, communication and transportation, maternal and neonatal health team that can cover the full continuum of care, environment where staff are respected, valued, and that is clean, and the extent to which a health facility offers a welcoming and pleasant environment. Examples include clean surroundings and enough space in waiting rooms and wards.	Did you pay any fee for the services you obtained in this facility?	Binary**
		How would you rate the cleanliness of the rooms inside the facility, including toilets?	Ordinal
		How would you rate the amount of space in the waiting and examination rooms?	Ordinal

Dignity & respect domain definition has been adapted to encompass care received from both providers and other facility staff.
Communication & supportive care domain definitions has been adapted to include two relevant aspects: timeliness and integration of reproductive health services.
All ordinal variables were analyzed as three-level ratings with the answer categories good, moderate, and bad. All binary variables except those marked with * or ** were asked and analyzed as agree/disagree questions.
*Variables were originally asked in the survey as ordinal but were dichotomized with the answer categories satisfied/unsatisfied for analysis purposes.
**Variables were asked and analyzed with yes/no answer categories.

Table 2. Socio-demographic and background characteristics of respondents (n=1870)	
Background Characteristics	**n (%)***
Age *(mean, median, sd)*	(25.29, 24, 6.22)
18 and under	195 (10.5)
19 - 24	748 (40.3)
25 and over	913 (49.2)
Marital Status	
Never married	729 (39.3)
Ever married	1127 (60.7)
Educational Level Completed	
No formal education	810 (43.7)
Primary	547 (29.5)
Secondary or above	498 (26.8)
Residence	
Urban	1301 (69.6)
Rural	569 (30.4)
Facility Region	
Tigray	565 (30.2)
Amhara	451 (24.1)
Oromia	623 (33.3)
SNNPR	231 (12.4)
Health Facility Type	
Tertiary/Comprehensive Specialized Hospital	507 (27.1)
Secondary/General Hospital	671 (35.9)
Primary Hospital	364 (19.5)
Health Center	328 (17.5)
Reason for Visiting Facility	
Facility-based induced abortion care	941 (51.1)
For postabortion care	901 (48.9)
Type of Procedure	
Evacuation using instrument (MVA)	870 (48.3)
Evacuation using tablet/pills (MA)	933 (51.7)
*Percentages shown are among non-missing results; no variable had higher than 5% missing data	

Table 3. Bivariate analysis of person-centered care outcomes disaggregated by independent variables

Person-Centered Care Outcome	All Clients (n=1870)	Health Facility Type				Facility Region				Diagnosis		Procedure Type	
		Tertiary Hospital (n=211)	Secondary Hospital (n=944)	Primary Hospital (n=395)	Health Center (n=320)	Tigray (n=565)	Amhara (n=451)	Oromia (n=623)	SNNPR (n=231)	Safe Induced Abortion (n=941)	Post-Abortion Care (n=901)	Evacuation using instrument (n=870)	Evacuation using tablet/pill (n=933)
	n (%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Autonomy													
Had opportunity to choose the type of abortion procedure received[αβγΔ]	853 (46.7)	30.8	47.0	45.1	72.9	47.9	26.9	62.0	40.5	62.7	29.9	33.3	59.2
†Good experience being involved in making decisions about your health care or treatment[αβγΔ]	1258 (69.6)	63.4	77.1	57.7	78.1	88.7	45.5	70.9	66.2	78.5	60.6	63.8	76.2
†Good experience being asked permission before procedure performed or treatment started[αβγΔ]	1359 (75.2)	69.2	81.8	66.1	81.8	91.3	55.9	74.0	76.1	83.8	66.4	70.6	79.4
Communication & Supportive Care													
Received pain medication before and after procedure[αβγΔ]	1237 (67.8)	50.6	74.0	76.7	72.5	68.1	61.8	68.9	75.4	62.1	74.0	76.9	59.7
Satisfied with duration of consultation with provider[αβΔ]	1149 (63.5)	70.3	64.2	55.4	60.3	65.7	62.1	56.0	80.5	64.8	61.7	61.3	65.8
Satisfied with wait time in the facility between the time first arrived and the time seen by a provider[αβγΔ]	1386 (75.9)	78.8	70.8	76.5	81.0	81.3	62.3	77.2	84.7	78.4	73.5	73.6	77.6
†Good experience of getting prompt attention at the health facility[αβγ]	1398 (75.6)	73.3	77.7	70.1	81.2	89.5	58.6	71.2	86.5	80.1	71.1	74.2	76.5
†Good experience with having enough time to ask questions about health problems or treatment[αβγΔ]	1328 (73.4)	63.6	80.8	64.6	84.6	87.8	54.3	75.3	70.3	80.0	66.8	69.3	77.6
Health workers spoke in a language patient could understand[αβγ]	1806 (97.5)	95.6	97.4	97.8	100.0	97.0	95.3	98.7	99.6	97.9	97.2	98.0	97.1
Health worker responded to patient needs whether or not being asked[αβγΔ]	1624 (87.9)	84.1	90.7	82.9	93.5	94.1	77.1	90.5	87.0	93.5	81.8	84.0	91.5
†Good experience with the clarity that health care providers explained things[αβγΔ]	1457 (80.5)	76.3	86.8	72.8	83.6	92.6	63.5	81.4	82.4	86.0	75.1	77.8	83.1
†Good experience getting information about other types of treatments or tests[αβγΔ]	1311 (72.5)	64.6	79.9	63.0	81.5	87.2	52.0	74.9	70.3	81.1	63.7	68.2	76.9
Received family planning counselling[αβγ]	1456 (80.4)	69.7	84.1	78.0	91.9	81.0	66.5	89.7	80.4	82.8	78.1	79.5	81.3
Trust, Privacy, & Confidentiality													
†Good experience with privacy being respected during physical examinations and treatments[αβγ]	1547 (85.4)	83.7	89.1	81.0	85.6	94.5	76.2	83.0	87.4	89.1	81.8	84.2	86.4

†Good experience with being able to talk privately to health care providers$^{\alpha\beta\gamma\Delta}$	1358 (74.8)	71.5	79.7	66.6	79.7	90.6	54.3	72.3	82.5	83.4	66.2	70.3	79.0
†Good experience with personal information being kept confidential$^{\alpha\beta\gamma\Delta}$	1540 (84.8)	80.9	87.6	79.9	91.2	94.7	75.6	80.3	90.0	90.2	79.1	82.1	87.4
Dignity & Respect													
Health workers cared for me with a kind approach$^{\beta}$	1723 (93.0)	94.5	94.1	92.0	89.6	97.3	88.7	90.0	98.7	92.2	93.6	94.0	91.8
Health workers treated me in a friendly manner$^{\beta}$	1705 (92.0)	93.3	92.1	89.3	92.6	95.0	88.9	89.1	97.8	92.0	91.8	91.7	92.0
Health workers treated me with respect as an individual$^{\alpha\beta\gamma}$	1725 (93.2)	93.1	93.8	90.9	94.8	94.5	88.4	94.6	95.7	94.1	92.1	92.8	93.6
Health worker showed concern and empathy$^{\alpha\beta\gamma}$	1651 (89.1)	88.9	92.9	83.0	88.3	94.5	83.3	86.2	94.4	90.0	87.8	89.4	88.4
Provider called me by my name$^{\alpha\beta\gamma\Delta}$	1643 (88.7)	85.3	92.2	81.3	94.8	87.2	78.0	97.2	90.5	90.7	86.5	86.8	90.3
†Good experience being greeted and talked to respectfully$^{\alpha\beta\gamma}$	1505 (81.4)	79.4	83.2	75.0	87.7	91.5	69.7	78.0	88.3	84.9	77.8	79.8	82.4
†Good experience being treated with respect and dignity$^{\alpha\beta\gamma}$	1552 (84.0)	83.7	87.3	75.8	86.7	93.4	71.7	82.0	90.0	87.0	81.0	83.1	84.4
Health provider did not scold me during the procedure$^{\alpha}$	1498 (81.3)	81.3	78.8	86.3	80.6	82.9	83.7	75.5	88.1	81.7	81.0	80.9	81.3
Health worker did not shout at me$^{\alpha\beta}$	1548 (84.1)	87.8	80.6	85.4	84.2	81.5	86.9	83.8	86.0	83.8	84.3	84.5	83.6
Health workers did not treat me poorly due to personal attributes$^{\alpha\beta}$	1418 (77.4)	83.9	76.3	78.7	68.0	81.3	71.5	73.1	90.4	77.7	76.6	77.8	76.7
Health workers did not insult me and my companions due to personal attributes$^{\alpha\beta}$	1619 (87.5)	90.5	85.6	87.0	87.4	84.2	88.6	87.2	94.4	88.4	86.7	87.3	86.9
Health Facility Environment													
†Good cleanliness of rooms inside the facility$^{\alpha\beta\gamma\Delta}$	1151 (63.3)	55.8	60.4	69.9	74.7	69.6	59.5	61.1	61.1	67.0	59.8	61.2	64.6
†Good amount of space in the waiting and examination rooms$^{\beta}$	1358 (74.7)	74.5	75.0	77.7	70.9	73.1	80.6	72.5	72.9	74.0	75.6	76.4	72.8
Did not pay fee for services at health facility$^{\alpha\beta}$	1478 (83.0)	81.7	79.4	82.0	93.1	81.7	86.1	91.8	54.8	81.5	84.8	84.4	81.7

All percentages shown are among non-missing data. Outcomes noted with † are three-level ordinal variables with the categories good, moderate, and bad.
KEY: α by health facility type $p < 0.05$; β by region $p < 0.05$; γ by diagnosis $p < 0.05$; Δ by procedure type $p < 0.05$

Table 4. Multivariable results of statistically significant person-centered care outcomes

Person-Centered Care Domain	Person-Centered Care Outcome	Regression Model Co-Variates				
		Health Facility Type			Diagnosis	Procedure Type
		Secondary Hospital *AOR [95% CI]*	Primary Hospital *AOR [95% CI]*	Health Center *AOR [95% CI]*	Induced Abortion Care *AOR [95% CI]*	Evacuation using tablet/pills *AOR [95% CI]*
Autonomy	Opportunity to choose abortion procedure type	2.47 [1.06, 5.81]*	2.86 [1.31, 6.22]**	6.38 [2.29, 17.76]***	3.47 [2.30, 5.24]***	1.53 [1.06, 2.21]*
	†Experience being involved in making decisions about your health care	2.64 [1.10, 6.30]*	1.19 [0.44, 3.19]	2.12 [0.83, 5.44]	2.17 [1.39, 3.38]**	1.07 [0.70, 1.63]
	†Experience being asked permission prior to procedure or treatment	2.55 [1.09, 5.97]*	1.08 [0.41, 2.87]	1.68 [0.65, 4.35]	2.98 [1.89, 4.71]***	0.86 [0.59, 1.25]
Communication & Supportive Care	Received pain medication	2.74 [1.01, 7.43]*	3.26 [1.35, 7.87]**	3.00 [1.09, 8.22]*	0.80 [0.45, 1.41]	0.49 [0.32, 0.77]**
	Duration of consultation	0.81 [0.34, 1.91]	0.62 [0.28, 1.34]	0.70 [0.32, 1.58]	1.04 [0.65, 1.69]	1.16 [0.76, 1.78]
	Wait time between arriving and being seen by provider	0.66 [0.27, 1.61]	1.02 [0.49, 2.11]	1.17 [0.47, 2.92]	1.44 [0.96, 2.16]	1.03 [0.72, 1.48]
	†Experience receiving prompt attention	1.42 [0.57, 3.54]	1.06 [0.38, 2.94]	1.74 [0.71, 4.24]	2.24 [1.33, 3.76]**	0.76 [0.51, 1.15]
	†Experience of having time to ask questions	2.93 [1.27, 6.78]*	1.38 [0.59, 3.22]	3.00 [1.12, 8.03]*	1.92 [1.20, 3.10]**	1.06 [0.70, 1.62]
	Understood language used by health workers	3.37 [1.23, 9.22]*	3.27 [1.29, 8.26]*	n/a	3.49 [1.59, 7.68]**	0.29 [0.11, 0.77]*
	Health worker responsive to patient needs	2.51 [0.79, 7.95]	1.65 [0.59, 4.62]	3.04 [0.90, 10.21]	2.29 [1.23, 4.27]**	1.17 [0.59, 2.31]
	†Experience of clear communication from provider	2.23 [0.94, 5.52]	1.00 [0.38, 2.64]	1.46 [0.53, 3.94]	2.29 [1.35, 3.87]**	1.00 [0.63, 1.60]
	†Experience receiving information about other treatments/tests	2.88 [1.19, 6.96]*	1.26 [0.47, 3.39]	2.24 [0.87, 5.75]	2.91 [1.66, 5.09]***	0.84 [0.57, 1.23]
	Received family planning counselling	2.44 [0.92, 6.46]	1.87 [0.60, 5.83]	4.86 [1.36, 17.35]*	1.35 [0.74, 2.48]	0.84 [0.58, 1.23]
Trust, Privacy & Confidentiality	†Experience of having physical privacy respected	1.73 [0.65, 4.62]	0.92 [0.31, 2.77]	1.09 [0.38, 3.12]	2.46 [1.15, 5.25]*	0.85 [0.50, 1.44]
	†Experience of talking privately to health care providers	1.90 [0.76, 4.75]	1.03 [0.38, 2.79]	1.38 [0.47, 4.06]	2.99 [1.78, 5.03]**	0.82 [0.55, 1.24]
	†Experience of having personal information kept confidential	1.96 [0.68, 5.61]	1.12 [0.36, 3.51]	2.07 [0.52, 8.19]	3.31 [1.68, 6.53]**	0.88 [0.51, 1.50]
Dignity	Treated with kind approach	1.87 [0.61, 5.74]	0.86 [0.17, 4.32]	1.00 [0.21, 4.89]	1.65 [0.70, 3.92]	0.89 [0.54, 1.48]

	Treated in a friendly manner	1.83 [0.67, 4.99]	0.95 [0.30, 3.01]	1.23 [0.33, 4.63]	1.41 [0.67, 2.96]	0.92 [0.51, 1.66]
	Treated with respect	2.51 [1.01, 6.28]*	1.02 [0.28, 3.69]	1.70 [0.37, 7.73]	2.06 [0.89, 4.77]	0.83 [0.54, 1.27]
	Shown concern and empathy	2.51 [1.03, 6.12]*	0.90 [0.27, 2.99]	1.76 [0.40, 7.84]	1.96 [0.97, 3.95]	0.86 [0.49, 1.51]
	Provider called me by my name	2.80 [0.92, 8.58]	0.64 [0.14, 2.91]	2.67 [0.57, 12.60]	1.62 [0.87, 3.01]	1.10 [0.69, 1.77]
	†Experience being greeted and talked to respectfully	1.38 [0.62, 3.11]	0.87 [0.36, 2.12]	1.81 [0.72, 4.55]	1.90 [1.20, 3.03]**	0.91 [0.61, 1.35]
	†Experience being treated with dignity and respect	1.45 [0.61, 3.44]	0.67 [0.26, 1.71]	1.23 [0.46, 3.31]	1.95 [1.18, 3.24]*	0.79 [0.54, 1.15]
	Health provider scolded me	1.02 [0.31, 3.31]	0.45 [0.17, 1.18]	0.83 [0.33, 2.10]	0.78 [0.50, 1.23]	1.06 [0.66, 1.69]
	Health worker shouted at me	1.50 [0.46, 4.92]	0.68 [0.32, 1.47]	1.10 [0.49, 2.48]	0.89 [0.54, 1.47]	1.26 [0.80, 1.99]
	Not treated well because of personal attribute	1.78 [0.51, 6.20]	1.10 [0.35, 3.44]	2.04 [0.78, 5.36]	0.81 [0.42, 1.54]	1.08 [0.65, 1.81]
	Insulted me and my companions because of personal attributes	1.72 [0.37, 7.95]	1.12 [0.26, 4.90]	1.44 [0.53, 3.93]	0.62 [0.29, 1.33]	1.37 [0.88, 2.14]
Health Facility Environment	†Health facility cleanliness	1.13 [0.41, 3.09]	1.72 [0.52, 5.67]	2.14 [0.67, 6.80]	1.37 [0.82, 2.31]	0.98 [0.66, 1.44]
	†Health facility space	0.99 [0.33, 3.03]	1.07 [0.33, 3.46]	0.83 [0.21, 3.26]	1.18 [0.69, 2.00]	0.88 [0.62, 1.27]
	Paid fee for services	1.24 [0.35, 4.37]	0.97 [0.29, 3.22]	0.33 [0.08, 1.32]	1.44 [0.78, 2.67]	1.16 [0.68, 2.00]

Controlled for age, marital status, and education level

Reference categories: tertiary hospitals, post-abortion care, and evacuation with instrument
† three-level ordinal variable with good, moderate, bad categories

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

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