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GENDER NORMS DATA ENGINE

Amplifying Impact: Leveraging Peer and Community Norms to Transform Adolescent SRH in Kenya and Nigeria

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List of Acronyms

Acronym	Definition
ABYM	Adolescent Boys and Young Men
AGYW	Adolescent Girls and Young Women
CATI	Computer-Assisted Telephonic Interview
CEFM	Child, Early, and Forced Marriage
CFA	Confirmatory Factor Analysis
DHS	Demographic and Health Survey
EFA	Exploratory Factor Analysis
GNDE	Gender Norms Data Engine
IPF	Iterative Proportional Fitting
OR	Odds Ratio
RDD	Random Digit Dialing
RMSE	Root Mean Square Error
SD	Standard Deviation
SE	Standard Error
SES	Socioeconomic Status
SRH	Sexual and Reproductive Health
TNSB	Theory of Normative Social Behavior

I. EXECUTIVE SUMMARY

Gender inequality continues to limit the agency and decision-making power of adolescent girls and young women (AGYW, aged 15–24), restricting their participation and voice in their homes and communities. These inequalities profoundly impact their sexual and reproductive health (SRH), curbing their autonomy around contraception and childbearing, limiting access to safe practices, and exposing them to coercive relationships (Starrs et al., 2018). Although global frameworks such as the Sustainable Development Goals (SDGs) emphasize the urgency of addressing gender inequality, progress has stalled (Global Gender Gap, 2024). Restrictive gender norms remain a key barrier to AGYW's health, well-being, and empowerment. Adolescent boys and young men (ABYM, aged 15–24) also play a crucial role in shaping AGYW's SRH outcomes. Traditional gender norms—portraying men as dominant and women as submissive—contribute to harmful behaviors such as unprotected sex and relationship coercion, reinforcing AGYW's disempowerment (Kato-Wallace et al., 2016). Addressing these norms among both groups is essential for meaningful and lasting improvements in SRH and gender equality.

While norms were once considered difficult to measure or change, recent advancements have shown that they can be both quantified and shifted (Heise et al., 2019). Yet, the lack of large-scale, population-level data has constrained generalizability and limited the design of targeted, scalable interventions. The Gender Norms Data Engine (GNDE) addresses this gap by providing nationally representative, scientifically sampled data on gender norms, SRH behaviors, and outcomes across Kenya and Nigeria. Importantly, in addition to individual-level data, GNDE offers community-level data down to the ward level, disaggregated by collective norms—or "level of support for gender-equitable norms"—among key reference groups such as AGYW peers, ABYM peers, older adults, and the broader community. This innovation enables detailed interrogation of recent advances in social norms theory, particularly the expanded Theory of Normative Social Behavior (TNSB). TNSB distinguishes between individual-level perceived norms (what individuals believe others do and approve of) and collective norms (the actual, aggregated beliefs and behaviors of a community or group) (Cialdini et al., 1991; Rimal & Yilma, 2022). It allows researchers to examine how behavior is shaped not only by perceived norms at the individual level, but also by the actual normative environment in their community (collective norms), and the interaction between descriptive and injunctive norms at both levels. These advancements can not only advance our understanding of the role social norms play in shaping behavior but also offer actionable insights on which levels of influence to target when designing behavior change strategies.

This analysis uses GNDE data to examine how gender-equitable norms influence SRH behaviors, outcomes, and relationship dynamics among AGYW and ABYM in Kenya and Nigeria. We specifically ask: **To what extent do self-perceived and collective gender norms—across key reference groups—shape adolescents' ability to access and use SRH services and exercise agency in their relationships? And what improvements might we expect if these norms were more equitable?** We assess key SRH outcomes including modern contraceptive use and intention to use, along with enabling factors such as agency over mobility, access to SRH information, use of a preferred method, and relationship dynamics. Gender norms are measured using the G-NORM scale—a validated tool for assessing gender-equitable norms (Sedlander & Rimal, 2019). To complement the regression analysis, we conducted simulation modeling based on our multivariate estimates—a method commonly used in population health to explore "what if" scenarios (Kaplan et al., 2015). This approach allows us to estimate predicted improvements in SRH outcomes for AGYW

and ABYM under hypothetical scenarios in which the normative environment becomes more gender-equitable.

Our findings underscore the critical role that norms programming can play in empowering AGYW, improving SRH outcomes and relationship dynamics for both AGYW and ABYM, and promoting gender equality. When combined with access to youth-friendly SRH services, norms-based interventions may offer a promising, holistic approach to improving the health and well-being of adolescents and young adults. Although our study design does not allow for causal inference, the strength and consistency of these relationships across diverse measures suggest that gender norms likely play an influential role in shaping SRH outcomes, including enabling factors. However, more targeted experimental research is needed to confirm these associations and establish causal links between normative shifts and improvements in SRH outcomes. Also, given the cross-sectional nature of our study, we only investigated direct relationships between gender norms and various outcomes and did not examine indirect pathways as mediated by the enabling factors—which likely underestimates the full impact of gender norms.

Our findings reveal consistent associations, with particularly strong evidence from Nigeria, between more equitable gender norms and a range of behaviors and enabling factors that facilitate SRH service use. Among Nigerian AGYW, more gender-equitable norms are positively associated with both modern contraceptive use and the intention to use contraceptives. For ABYM in both countries, more equitable norms are associated with increased intention to use contraceptives, though not with current use. Importantly, we also find that equitable gender norms are positively associated with enabling factors in both countries across sub-groups that may facilitate their exercise choice and agency in their SRH goals—such as ability to access SRH information, ability to use a preferred method, and relationship dynamics including increased agency over mobility and reductions in controlling behaviors. In alignment with the expanded Theory of Normative Social Behavior, we find that both perceived (individual-level) and collective (community-level) norms matter for behavior, but they may exert influence in distinct ways. While self-perceived norms are more consistently and directly associated with SRH outcomes, the magnitude of associations is often greater for collective norms—highlighting their added value in shaping the broader social environment. These findings underscore the importance of considering multiple levels of influence when designing gender norms interventions. Programs that aim to shift norms should not only target individuals but also engage with peer networks, adults, and broader community members to transform the normative environment.

The simulation modeling analysis further demonstrates that if a hypothetical normative intervention were able to shift norms toward greater gender equity—particularly collective norms among peers and the broader community—we would likely observe substantial improvements in AGYW's and ABYM's SRH outcomes. The predicted improvements illustrate how gender-equitable environments can enhance SRH outcomes, agency, and relationship dynamics. In Nigeria, collective support for gender-equitable norms among AGYW peers could drive a 22% increase in AGYW using modern contraceptives and an 18% rise in those intending to use them. There would be gains in enabling factors as well, with 22% more AGYW accessing SRH information, 20% more obtaining their preferred method, and 17% more able to use it. Relationship dynamics would likely improve too, with 15% more AGYW reporting greater agency over mobility and 15% fewer living in controlling relationships. For Nigerian ABYM, collective support for gender-equitable norms among peers may lead to an 8% increase in access to SRH information and methods, an 11% rise in attitudes rejecting

wife-beating, and improvements in non-controlling relationship behaviors. In Kenya, among AGYW, collective gender-equitable norms could lead to 23% more AGYW reporting non-controlling partnerships, an 11% increase in access to preferred methods if peer norms are more equitable, and a 5% boost in mobility agency. Kenyan ABYM show substantial potential gains, with collective gender-equitable norms leading to 19% more intending to use contraceptives, 15% more accessing a method of choice, and 28% more rejecting wife-beating. These modeled outcomes illustrate the potential impact of shifting gender norms but should be interpreted with caution, as they represent estimated effects rather than guaranteed outcomes.

In this light, our results point to the need for scalable, community-wide approaches to shifting norms. Mass media campaigns, school-based curricula, faith-based outreach, and community mobilization can all play complementary roles in reinforcing equitable norms at the local level. Integrating these efforts with youth-friendly SRH services can further support adolescents and young adults in making autonomous health decisions. Given the role of peers and adults as key reference groups, tailored strategies for each group may be essential to generate sustained change. While the findings offer strong evidence, they must be interpreted in light of study limitations. The analysis is cross-sectional and does not allow us to confirm causal pathways or isolate the mediating role of enabling factors that facilitate uptake and demand for SRH services. Future studies incorporating panel data or experimental designs could help test these pathways more rigorously. Nevertheless, this analysis represents an important step forward. It demonstrates that fostering supportive community environments and gender-equitable norms holds significant promise for improving SRH and broader empowerment outcomes for AGYW and ABYM. Moreover, by leveraging large-scale, sub-national data, the GNDE helps overcome long-standing gaps in the social norms literature—allowing for both national-level insights and hyper-local diagnostics. This granularity supports context-specific programming while preserving the potential to scale solutions across diverse geographies.

Policy and Programmatic Implications

KEY TAKEAWAY 1: Integrating gender-transformative norms programming with SRH interventions can create a supportive environment for improving SRH outcomes.

Shifting harmful gender norms and promoting gender-equitable norms can significantly enhance AGYW's and ABYM's sexual and reproductive health (SRH) outcomes. By addressing gender inequality and fostering positive norms, programs can improve access to SRH services, increase AGYW's agency over mobility, and positively influence relationship dynamics, ultimately improving overall health and well-being.

KEY TAKEAWAY 2: Targeting both AGYW and ABYM and reference groups in their communities can amplify the impact of gender norms programming on SRH outcomes.

Programs that engage AGYW, ABYM, and key reference groups—such as peers, older adults, and the broader community—can have a cascading effect on SRH behaviors and outcomes. Strengthening collective support for gender-equitable norms within these reference groups can enhance AGYW's SRH decision-making, access to information, and ability to seek and use services while encouraging ABYM to adopt more egalitarian attitudes and behaviors. This creates a more enabling environment for positive health outcomes.

KEY TAKEAWAY 3: Scalable, community-wide approaches may be a cost-effective way to shift gender norms and improve SRH outcomes for AGYW and ABYM.

Leverage scalable, gender-transformative strategies, such as mass media campaigns and community engagement, including by involving faith and cultural champions, to shift harmful gender norms across entire communities. Combined with targeted interventions that improve access to high-quality, youth-friendly SRH services, these approaches can create an enabling environment that supports AGYW's autonomy and well-being while encouraging ABYM to be supportive partners and adopt healthy practices, overcoming barriers to SRH access and improving overall health outcomes.

II. INTRODUCTION

Overview and Research Questions

Extensive research highlights how gender inequality profoundly limits the agency and decision-making power of adolescent girls and young women (AGYW, aged 15-24), curbing their participation and voice within their homes and communities. A critical dimension of this inequality lies in its impact on AGYW's sexual and reproductive health (SRH) (Starrs et al., 2018). The ability to make autonomous decisions about when and how many children to have is fundamental to their well-being and empowerment, enabling them to pursue education, careers, and better life outcomes. This autonomy includes access to safe sex practices and the ability to form healthy, equitable, and violence-free relationships—crucial for AGYW's overall health and long-term success. However, pervasive gender norms that prioritize women's roles as mothers restrict their mobility and stigmatize open discussions about sex, particularly outside marriage, significantly restrict their reproductive freedoms. These harmful norms often place AGYW in coercive relationships, undermining their autonomy and reinforcing barriers to equality (Nelson et al., 2024). Although the global community has committed to addressing gender inequality through frameworks such as the Sustainable Development Goals (SDGs), progress has been alarmingly slow. The 2024 Global Gender Gap Index projects it will take 131 years to close the gender gap—a substantial regression from the 99.5 years estimated in 2020 (Global Gender Gap, 2024).

Incorporating adolescent boys and young men (ABYM, aged 15-24) into discussions about AGYW's SRH is also crucial, as their attitudes and behaviors significantly influence AGYW's health outcomes. Research indicates that traditional gender norms, which often portray men as dominant and women as submissive, contribute to harmful behaviors and attitudes among ABYM. These norms can lead to increased risk-taking behaviors, including unprotected sex, and perpetuate coercive relationships that undermine AGYW's autonomy (Kato-Wallace et al., 2016). The World Health Organization emphasizes the importance of including both boys and girls in SRH education to challenge and change harmful gender norms. Such inclusive approaches not only address the specific health needs of ABYM but also promote respectful relationships and shared decision-making, which are crucial for the well-being of AGYW (World Health Organization, 2018). Furthermore, studies have shown that interventions targeting ABYM can lead to a reduction in gender-based violence and an increase in the use of contraceptives, thereby decreasing unintended pregnancies among AGYW (Boyce et al., 2024; Keith et al., 2023). Engaging ABYM in discussions about consent, healthy relationships, and shared responsibility in SRH is vital for creating an environment where AGYW can exercise their reproductive rights freely and safely.

Tackling restrictive gender norms can improve AGYW's and ABYM's health behaviors and outcomes and achieve gender equality. Still, these norms were long seen as immutable and challenging to quantify (Heise et al., 2019). Recent research demonstrates that gender norms can be measured and are amenable to change through targeted interventions (Marcus & Harper, 2014). Yet, data on norms has historically been limited to small-scale studies on specific sub-groups, leaving critical gaps

in our understanding of how gender norms operate within and across geographies and demographic groups, and how they can be leveraged for behavior change at scale. Moreover, these small studies often lack generalizability, limiting their utility for program design and national-level policy formulation.

The Gender Norms Data Engine (GNDE) addresses this gap by providing large-scale, population-level data on gender norms and a range of behaviors and outcomes, including SRH outcomes for AGYW and ABYM as explored in this paper. Additionally, while GNDE offers individual-level data, its primary innovation lies in generating community-level data on population characteristics, attitudes, and behaviors at granular geographic levels, including down to the ward level. This allows researchers to operationalize key concepts from social norms theory at a scale that bridges the longstanding gap between theoretical rigor and real-world applicability. This is particularly useful for social norms research, as norms are often enforced through social pressures exerted by reference groups within a community (Cialdini et al., 1991), and enables interrogation of critical questions in social norms theory, particularly recent theoretical developments such as those laid out in the expanded Theory of Normative Social Behavior (TNSB) (Rimal & Yilma, 2022).

This updated TNSB framework distinguishes between individual-level perceived norms and community-level or "collective norms," treating them as distinct constructs necessary to understand behavior, while retaining the foundational components of descriptive norms (beliefs about what others do) and injunctive norms (beliefs about what others approve of). Collective norms, as defined within the expanded TNSB, refer to the actual, aggregated beliefs and behaviors of a community or reference group. These prevailing codes of conduct indicate what behaviors are approved or disapproved by group members. They often influence individual choices in ways that may diverge from individuals' own perceptions of what is normative. By enabling empirical testing of these theoretical distinctions, the GNDE contributes to a more nuanced understanding of how norms operate at different levels. It allows researchers to examine how behavior is shaped not only by perceived norms at the individual level, but also by the actual normative environment in their community (collective norms), and the interaction between descriptive and injunctive norms at both levels. These advancements can not only advance our understanding of the role social norms play in shaping behavior but also provide actional insights on which level to target for achieving behavior change.

The GNDE refers to collective norms as "community or reference-group support"—an aggregated measure of agreement on gender-equitable behaviors (descriptive norms) and expectations (injunctive norms) within a defined spatial unit (in this case a ward), or among key reference groups within that unit. Because gender norms are shaped and reinforced by the social influence of specific groups within a community, disaggregating community support by reference group provides more actionable insight into whose attitudes and behaviors matter most. This is possible because GNDE samples respondents ages 15–69, allowing for an intergenerational analysis of gender norms and their prevalence and enforcement across multiple reference groups—peers, parents, older adults, and broader community members. This level of reference-group disaggregation within precise geographic units is rarely available in population-level datasets, making the GNDE a first-of-its-kind resource for applied social norms analysis.

We selected these reference groups based on their influence on adolescents and young adults' lives, as recognized by the Lancet Commission on Adolescent Health and Wellbeing (Patton et al., 2016). The broader community (comprising individuals aged 15-69 years) provides insights into the overarching gender norms that shape their sexual and reproductive health (SRH) opportunities and expectations. Older adults (aged 25 and above) hold significant decision-making power within

households, shaping the level of agency, choices available, and access to information and health services for AGYW and ABYM—though often differently for each group. The AGYW and ABYM reference groups are critical as peers (aged 15-24) that reflect the attitudes and behaviors within the same gender and age group, directly impacting SRH decisions and practices. They also play a crucial role as partners in shaping relationship dynamics and influencing SRH outcomes for AGYW and ABYM, respectively. Together, these groups allow for an intersectional, age-sensitive, and locally grounded understanding of how social norms shape behavior. This provides a comprehensive foundation for designing and scaling interventions that shift harmful norms and advance AGYW empowerment and global gender equality goals.

In this analysis, we leverage the GNDE to answer three critical questions:

1. Does an AGYW's and ABYM's (ages 15–24) self-perceived gender-equitable norms (overall, descriptive, injunctive) influence their SRH-related behaviors and outcomes, including through living in or fostering more egalitarian partnerships?
2. What role does collective support for gender-equitable norms (overall, descriptive, injunctive) among key reference groups in their community play in shaping AGYW's and ABYM's SRH outcomes and likelihood of engaging in egalitarian partnerships?
    - Which group has the most influence —whether it's the entire community (ages 15-69), adolescent girls and young women (AGYW: ages 15-24), adolescent boys and young men (ABYM: ages 15-24), or older adults (ages 25+)?
3. How much improvement in AGYW's and ABYM's SRH outcomes can we expect under a hypothetical scenario where gender norms become more equitable?

By answering these questions, the GNDE provides concrete insights into how both perceived and collective normative environments shape SRH-related behaviors and outcomes among adolescents and young adults. This includes an in-depth analysis of individual-level beliefs and perceptions about gender-equitable norms, capturing how young people internalize or push back against community expectations. GNDE also enables exploration of how individual perceptions interact with collective (community-level) norms to influence behavior. It identifies which actors and subgroups—such as peers, older adults, or broader community members—carry the most normative influence in different contexts. Together, these insights provide implementers with actionable intelligence to design and scale targeted interventions by clarifying where and how to intervene—whether through shifting individual beliefs, influencing peer dynamics, or addressing broader community expectations.

A unique strength of the GNDE lies in its ability to generate data at large scale and at highly granular, sub-national levels—including down to the ward level. This contrasts sharply with most social norms research, which has traditionally relied on smaller-scale, qualitative or experimental studies. While such studies offer deep insights, they often lack the representativeness and geographic precision needed to inform scalable programming. In contrast, GNDE's scope enables both national comparisons and hyper-local diagnosis, which are vital for designing programs that are both context-specific and scalable.

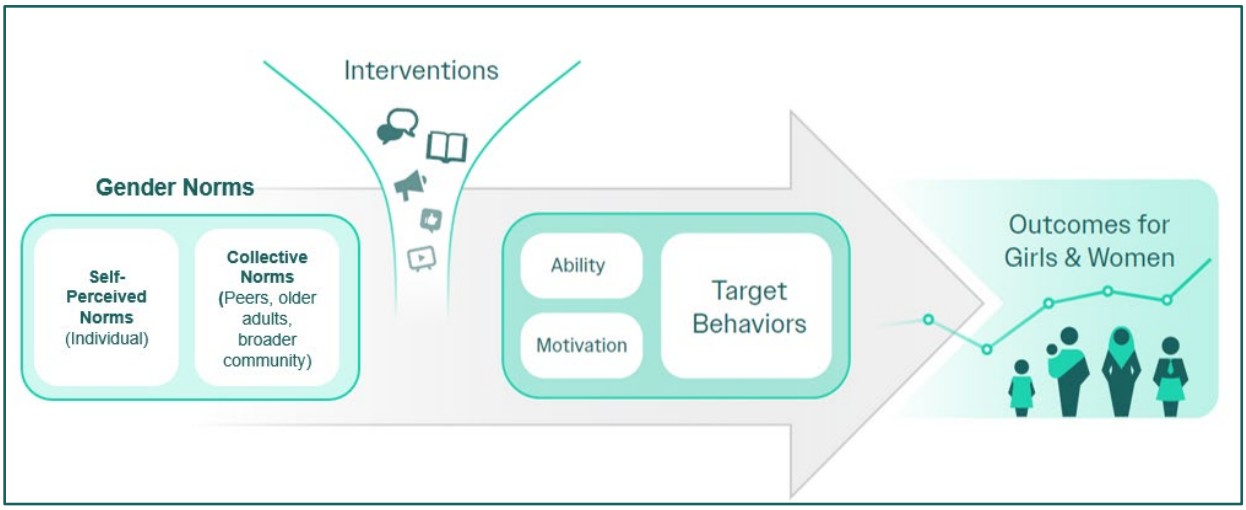
This integration of scale and specificity enhances the actionability of social norms data—transforming theoretical frameworks into practical strategies for local actors, donors, and governments seeking to

foster gender equity. As such, this work contributes to advancing social norms theory and practice by empirically distinguishing perceived and collective norms, integrating multiple reference groups across age cohorts, and operationalizing norms at geographic levels that enable evidence-based action.

Conceptual Framework

GNDE employs a comprehensive conceptual framework (Figure 1), grounded in social norms theory and the Fogg behavior model (Fogg, 2009), and developed in consultation with key stakeholders to better understand the relationship between community norms and behaviors, as well as leverage points for interventions (Agha et al., 2021; Cislaghi & Heise, 2020). This framework guides the measures we collect and the analysis we conduct. While the visual representation simplifies what is inherently a multi-directional and dynamic process, it offers a theory-informed and actionable roadmap for behavior change.

Figure 1: GNDE Conceptual Framework for Norms and Behavior Change



According to the framework, the outcomes of adolescent girls and young women (AGYW)—the primary subgroup of interest—are influenced by gender norms at both the individual and collective levels. These include self-perceived norms and collective norms in the broader community and among key reference groups, such as AGYW peers, adolescent boys and young men (ABYM), and older adults in their communities. For this analysis, the community is defined at the ward level. These norms shape behaviors and outcomes through both direct and indirect pathways. The indirect pathway reflects how norms influence intermediate factors—specifically *ability* and *motivation*, as conceptualized in the Fogg Behavior Model, as well as relationship dynamics. "Ability" refers to structural barriers such as time, cost, or social disapproval that may hinder behavioral adoption, while "motivation" pertains to psychological drivers, including how personally important a behavior is perceived to be. Prior studies have established associations between these mediators and normative environments (Agha et al., 2021).

In this analysis, we examine the direct associations between gender norms, behaviors, and outcomes, as well as between norms and the intermediate constructs of ability and motivation, among both AGYW and ABYM. Due to the cross-sectional nature of the data, we do not conduct mediation

analysis, and thus cannot formally test the hypothesized pathways linking norms to behavior via ability and motivation. As a result, while this limits our ability to isolate the most influential drivers within the behavioral system, the analysis still yields valuable insights into potential barriers and facilitators to behavior change. Importantly, this approach likely underestimates the true relationship between norms and behavioral outcomes, given that some effects may operate through unmeasured or indirect channels. Nevertheless, by aligning with established theoretical models and integrating multi-level normative constructs, this analysis provides an empirically grounded foundation to inform more targeted and effective interventions.

III. METHODOLOGY

This section discusses our data sources, key measures, and analytical strategies to examine the relationship between gender norms and SRH and related AGYW and ABYM outcomes.

Data Sources

For the analysis, we used two types of data sources: nationally representative surveys with randomized computer-assisted telephone interviews (CATI) and spatial data aggregated at the third administrative division level in Kenya and Nigeria.

Survey Data

Fraym oversaw the implementation of nationally representative surveys in Kenya and Nigeria, with data collected through computer-assisted telephone interviews (CATI). The surveys utilized random digit dialing (RDD) and quota sampling to optimize representativeness and address inherent limitations of CATI surveys. RDD ensures that all mobile phone subscribers in the country have an equal probability of being called and surveyed. Additionally, the timing of phone calls was adjusted to ensure adequate representativeness from all demographic groups, including poorer, rural female respondents. Quota sampling helped minimize biases inherent in telephone-based surveys by setting interlocking quotas across age, gender, education levels, wealth status, and geographic areas (geopolitical zones in Nigeria, province in Kenya) (Moniruzzaman Sarker & AL-Muaalemi, 2022). When quota groups become challenging to fill, Fraym uses handoffs (Glazerman et al., 2023). During handoffs, enumerators ask whether another household member falls in the quota group and, if so, whether that member is willing to participate. Age handoffs were conducted near the end of the survey fielding period to increase the sample of respondents aged 15 to 17 and young women. Fraym designed quotas on the following dimensions: (1) the general population (nested by age, gender, and geopolitical zone/province); (2) socioeconomics (nested by zone/province); (3) educational attainment (nested by zone/province); and (4) urbanicity. Weighting was applied using geopolitical zone or province proportions rather than national proportions to correct for geographic variability.

An iterative proportional fitting (IPF) process was used to generate survey weights, ensuring sample proportions closely matched the ideal population subgroups. Based on Demographic and Health Survey data from Kenya (2022) and Nigeria (2018), modest divergences were found between the sample and the general population, which were addressed through the raking process. Detailed demographic characteristics, including weighted and unweighted proportions, can be found in Tables A and B in the appendix.

This analysis utilized two rounds of data collection from Quarter 1 (Q1) and Quarter 3 (Q3) of 2024. The AGYW analysis was conducted using Q1 data, which included 10,501 individuals aged 15–69 in Nigeria, comprising 4,793 AGYW and 907 ABYM. In Kenya, 5,775 individuals were surveyed, including 2,571 AGYW and 456 ABYM. The ABYM analysis was conducted using Q3 data, as the ABYM sample size was increased in this round to enhance statistical power. In Q3, the total Nigerian sample increased to 14,089 individuals aged 15–69, including 4,792 AGYW and 4,696 ABYM. The sample grew to 8,064 individuals in Kenya, with 2,684 AGYW and 2,620 ABYM.

Spatial Data

To produce spatial data estimates, Fraym utilizes machine learning techniques to generate indicators of interest at one km² resolution. This process relies on two primary types of data inputs:

Firstly, *primary data* consists of scientifically sampled, geo-referenced survey data. This includes the nationally representative CATI survey conducted among individuals aged 15-69, as described above.

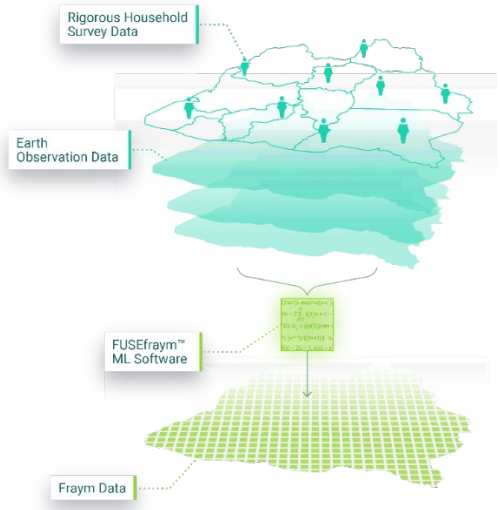
Secondly, *satellite imagery and related derived data products* encompass earth observation data, gridded population information, and proximity to physical locations such as health clinics, schools, ports, and roads.

The methodology for creating spatial layers from household survey data employs a model-stacking machine learning approach to predict continuous surfaces of population indicators at one km² resolution. This method builds on established techniques for spatial data interpolation (Davies & Van Der Laan, 2016). The process involves creating a model that identifies correlations between the sampled survey data from enumeration clusters and the satellite imagery and remotely sensed data from the same locations. This model is then used to predict survey data for areas not directly surveyed. A similar approach was pioneered by USAID's Demographic and Health Surveys program in 2015 and has since been enhanced by Fraym and others (Gething et al., 2015).

In the machine learning process, predictions are generated from base-learner models, which are then used to train a super-learner model (Davies & Van Der Laan, 2016). By employing multiple base models, the accuracy of predictions across different geographies is improved. Models are fine-tuned and assessed using industry-standard cross-validation techniques. Techniques such as boosting, bagging, and k-fold cross-validation are applied to enhance the predictive power of smaller datasets (Ghojogh & Crowley, 2023). A model using parameters from the training and tuning process for grid cells without survey data is applied to make predictions.

Fraym data scientists assess the quality of the data layers by examining standard model metrics like R-squared and Root Mean Square Error (RMSE). For instance, an RMSE value of 0.025 for a proportional question from the survey (e.g., proportion of adults with secondary education) indicates an average error of approximately 2.5 percentage points between the prediction and the actual data from enumeration areas. Additionally, at the lowest representative administrative level (e.g., regions), the spatial surface data is compared against the survey data. The survey mean is compared with the implied mean of the surface when aggregated through population-weighted zonal statistics.

Figure 2: Fraym Data Production Process



Key Variables

The following paragraphs provide detailed information on the key dependent and independent variables and the socio-demographic covariates used in the analysis.

Dependent Variables

We examined a range of measures to assess the sexual and reproductive health behaviors and outcomes of adolescents and young adults (ages 15-24). These included direct measures, such as modern contraceptive use and intent to use, and indirect measures, like agency, relationship dynamics, and male attitudes toward wife-beating—all factors that may influence an individual's ability to use contraception, even when desired.

Modern contraceptive use: A binary indicator was constructed to measure modern contraceptive use among sexually active AGYW and ABYM. Respondents were classified as modern contraceptive users if they reported using at least one of the following methods: female sterilization, male sterilization, intrauterine device (IUD), injectables, pills, male condoms, female condoms, emergency contraception, or other modern methods. Individuals who reported being pregnant/partner is pregnant were excluded from the sample.

Intent to use contraception: A binary measure was constructed to assess AGYW's and ABYM's intent to use contraception the next time they have sex for pregnancy prevention or birth spacing. The sample excludes AGYW and ABYM who reported being pregnant, having a pregnant partner, or trying to conceive, as well as those using medium-acting, long-acting, or permanent contraceptive methods, including injectables, implants, IUDs, or sterilization.

Ability to access information on SRH services and products: A binary measure was constructed to assess AGYW's and ABYM's ability to access information on pregnancy and STI prevention methods. Individuals rated their ability to obtain this information on a five-point scale: very easy, somewhat easy, neither easy nor difficult, somewhat difficult, or very difficult. The indicator was coded

as 1 if they reported "very easy" or "somewhat easy", and 0 if they reported "neither easy nor difficult," "somewhat difficult," or "very difficult."

Ability to obtain a method of choice: A binary measure was constructed to assess AGYW's and ABYM's ability to obtain a contraceptive method of their choice. Individuals reported their ability to obtain contraception on a five-point scale: very easy, somewhat easy, neither easy nor difficult, somewhat difficult, or very difficult. The indicator was scored as 1 if they reported 'very easy' or 'somewhat easy' to obtain contraception, and 0 if they reported 'neither easy nor difficult,' 'somewhat difficult,' or 'very difficult.

Ability to use a method of choice: A binary measure was constructed to assess AGYW's and ABYM's ability to use a contraceptive method of their choice with their partner to prevent unintended pregnancy and/or plan or space births. Individuals rated their ability to use a method of choice on a five-point scale: very easy, somewhat easy, neither easy nor difficult, somewhat difficult, or very difficult. The indicator was coded as 1 if they reported "very easy" or "somewhat easy," and 0 if they reported "neither easy nor difficult," "somewhat difficult," or "very difficult."

AGYW's ever living in controlling partnership (Self and ABYM reported): This composite binary measure assesses whether AGYW who have ever been in a relationship have experienced controlling behaviors from a current or previous male partner. To complement this, ABYM who have ever been in a relationship report whether they have exhibited controlling behaviors toward a current or previous female partner. The measure captures four key controlling behaviors: (1) whether the male partner was unsupportive or opposed to the female partner interacting with other men, (2) discouraged her from maintaining contact with friends and family, (3) insisted on always knowing her whereabouts, and (4) did not trust her with money. The indicator is coded as 1 (controlling partnership) if AGYW report experiencing at least one of these controlling behaviors from a partner or if ABYM report engaging in at least one of these behaviors toward a female partner. It is coded as 0 (non-controlling partnership) if no controlling behaviors are reported in all four areas.

AGYW's agency over mobility: A composite binary indicator was developed to measure whether AGYW had the agency to travel independently to social events (markets, family, and friends) or to work (school, university, or workplace). The indicator is coded as 1 if AGYW responded with "No" to needing permission to visit either of these places, and 0 if they responded with "Yes" to needing permission for either.

ABYM's attitudes against wife-beating: This indicator measures ABYM attitudes against wife-beating, focusing on whether they believe it is justified in specific scenarios. The measure is based on four common situations: if a wife goes out without telling her husband, neglects the children, argues with him, or burns the food. The indicator is coded as 1 if the respondent considers wife-beating unjustified in all four scenarios (i.e., answers "No" to all), and 0 if they consider it justified in any one of the scenarios (i.e., answers "Yes" to at least one). The sample excludes those who refused or reported not knowing.

Independent Variables

Our key independent variables assess the level of support for gender-equitable norms (G-NORM scale) (Sedlander et al., 2024) in the community based on the perceptions of AGYW or ABYM

themselves or the support received from specific reference groups. These reference groups include the full community (population aged 15-69 years), older adults (25+ years old), AGYW (15–24-year-old females), and ABYM (15–24-year-old males). The measures were constructed as follows:

Self-perceived gender-equitable norms (G-NORM scale) in their community: A continuous measure, ranging from 0 to 100, was constructed using predicted factor scores derived from the G-NORM scale validation process, specifically from the confirmatory factor analysis (CFA), and then normalized to a 0-100 scale. Higher scores indicate greater perceived community support for gender equitable norms, as captured by the G-NORM scale.

Collective gender-equitable norms among key reference groups (G-NORM scale) in their community: A continuous measure, ranging from 0 to 100, was developed to capture collective gender-equitable norms among key reference groups using the G-NORM scale. Higher values indicate greater support for gender-equitable norms within the community. These measures were generated for each reference group by producing predicted factor scores for the 15–69-year-old population through confirmatory factor analysis (CFA) on the G-NORM scale. Spatial interpolation was then applied to estimate hyperlocal values across geographic areas, and these were subsequently aggregated to the ward level in Kenya and Nigeria. The resulting ward-level estimates reflect the collective, community-level endorsement of gender-equitable norms among each reference group.

Details of these scales and the validation process are provided in the following paragraphs:

The G-NORM scale, originally developed to measure gender norms in India, is designed to differentiate between descriptive and injunctive norms and to capture social sanctions. The scale was subsequently adapted for use in Nepal and Uganda, with the version used in our study being the Uganda version. This Uganda version of the G-NORM consists of 20 items—10 descriptive norms and 10 injunctive norms. To assess whether the original properties of the Uganda version hold in other contexts, we used Confirmatory Factor Analysis (CFA) in Kenya and Nigeria. Since the Uganda version of the scale was developed specifically for the Sub-Saharan African context, we hypothesized that its original structure would remain intact in Kenya and Nigeria, justifying the use of CFA over Exploratory Factor Analysis (EFA). We conducted several sensitivity analyses to ensure the rigor and robustness of the validation process. Using the ‘splitsample’ function in STATA 17, we split the sample into two halves, balancing by administrative division, gender, and age. CFA was conducted in both halves, with cross-checks before applying the model to the full sample. Additionally, we evaluated the scale's performance among women of reproductive age, as the Uganda G-NORM was validated in this subgroup. Further sensitivity analyses were conducted using EFA. The CFA confirmed that the original properties of the Uganda version transferred well to Kenya and Nigeria, showing a good model fit with only one item needing to be removed for robustness in both countries.

The final scales for Kenya and Nigeria include an overall scale and descriptive and injunctive norm sub-scales. Descriptive norms refer to perceptions of what behaviors are commonly practiced, while injunctive norms relate to perceptions of what behaviors are socially approved (Cialdini et al., 1991). The final scales result in a 19-item overall scale, a 9-item descriptive norm sub-scale, and a 10-item injunctive norm sub-scale in Kenya and Nigeria (Table 1 in appendix). These scales exhibit high

Cronbach's alpha values, all above 0.70, indicating good internal consistency and reliable measurement of the underlying constructs.[i]

Covariates

Several socio-demographic covariates related to both gender norms and key behaviors or outcomes were included in our analysis. The details of these measures are provided below:

Age: Age was measured as a continuous measure capturing self-reported age in years among the respondents.

Urban Residence: A binary variable for place of residence was created based on the respondents' self-reported geographic location. Fraym geocoded each respondent's location using the Global Human Settlement Layer, assigning a score of 1 for urban locations and 0 for rural locations.

Religion: A binary variable was constructed to measure religion among the respondents, distinguishing between Christians (including Roman Catholic, Protestant, and other Christian denominations) and others. This variable scores 1 if the respondent identified as Roman Catholic, Protestant, or another Christian denomination, and 0 if they identified as Muslim, followed another religious belief, had no religious beliefs, reported 'don't know,' or refused to respond.

Schooling: A categorical variable reflecting the respondents' different levels of education was constructed. This variable categorized their education as "None" for those without formal education, "Primary" for those with complete or incomplete primary education, "Secondary" for those with complete or incomplete secondary education, and "Higher" for those with complete or incomplete higher education.

Wealth: Based on self-reported ownership of select assets, a categorical variable was constructed to classify individuals into low, medium, and high levels of wealth. The asset set was chosen by analyzing the relationship between household assets and wealth quintiles in each country's Demographic and Health Survey (DHS). "Low wealth" indicates ownership of none of the key assets, "medium wealth" includes ownership of one or a few target assets, and "high wealth" signifies ownership of all target assets.

Region: A categorical variable reflecting the respondents' region of residence was constructed to adjust for geographic variation in outcomes. The geopolitical zone was used for Nigeria, while the province was used to categorize regions for Kenya.

Partnership Status: A binary variable was constructed to measure the individual's current relationship status. This variable scores 1 if the respondent reported being currently married, living with a partner, or having a boyfriend/girlfriend, and 0 if they reported being single, widowed, divorced, or if they answered "don't know" or refused to respond.

Parental Status: A binary variable was constructed to measure the respondent's parental status. Respondents who reported never having given birth or fathered a child or having zero children were coded as 1. Those who reported having given birth, fathered a child, had at least one child, or

[i] Fraym's white paper with details of the scale validation process is available upon request.

provided a response of "don't know" or "refused" were coded as 0. This covariate was only used in outcomes directly linked to sexual and reproductive health.

Statistical Analyses

Analyses were conducted in several steps and run separately for AGYW and ABYM. First, we examined the distribution and summary statistics of key variables. Next, bivariate analyses were performed to explore associations between community gender norms and SRH outcomes. Statistically significant relationships (p-value < 0.05) were then advanced to the multivariate analysis stage. Finally, multivariate regression models were used to examine the relationship between gender norms and outcomes, adjusting for key socio-demographic covariates: age, place of residence (urban/rural, region), religion, educational attainment, wealth status, and current partnership status. Parental status was also included as an adjustment in the models for more direct SRH outcomes. We implemented multivariate logistic regression models and computed odds ratios and standard errors since all our outcomes were binary. Three types of models were run for each behavior/outcome variable and gender norm measure (G-NORM scale):

1. AGYW's and ABYM's self-perceived gender-equitable norms.
2. Collective gender-equitable norms examined separately for each reference group.
3. A combined model that included both the reference group's collective G-NORM score and the AGYW's and ABYM's self-perceived G-NORM score.

All models were population-weighted and accounted for complex survey design, including clustering of data. Analyses were conducted using STATA 17 and R (4.1.0) statistical software packages.

Additionally, to evaluate the potential return on investing in normative interventions, we conducted simulation modeling to assess how change in the G-NORM score could influence the prevalence of key behaviors and outcomes. Simulation modeling, a relatively novel methodology in population health, has gained recognition for its utility in exploring complex "what-if" scenarios. It enables researchers to examine the implications of an intervention or policy and its potential influence on outcome Y, thereby offering valuable insights for theoretical exploration, policy evaluation, and intervention design. (Kaplan et al., 2015). While the methodology explores a range of complex and dynamic forms of simulations, we used a static microsimulation model–simpler models used in policy analysis to study likely impact of programs (Martini & Trivellato, 1997).

Our multivariate logistic regression models estimate the association between the G-NORM score and key outcomes, with coefficients interpreted as the effect of a one-point change in the G-NORM score on the odds of each outcome. However, we recognize that a one-point shift in the G-NORM score represents only a marginal change, unlikely to result from real-world interventions. Therefore, we defined a 10-point increase as a proxy for a meaningful shift toward gender-equitable norms within a community. This decision aligns with conventions in discrete simulation modeling, where researchers simulate meaningful, non-marginal changes to assess potential impact (Martini & Trivellato, 1997). To estimate the potential impact of this shift, we applied the "predict" and "margins" commands in STATA to our logistic regression models. These commands allowed us to translate model outputs into predicted probabilities—rather than odds ratios—thereby enhancing interpretability. We calculated predicted probabilities at both the baseline G-NORM score and a simulated G-NORM

score (baseline +10 points) to assess how outcomes might shift under a more gender-equitable environment.

This approach estimates the expected probability of key outcomes (e.g., AGYW's ability to obtain contraception or ABYM's likelihood of controlling a partner) under different G-NORM scores, while holding other covariates constant. The difference between predicted probabilities at the baseline and simulated G-NORM scores represents the absolute change in the likelihood of these outcomes due to a 10-point improvement in the normative environment. We expressed this change as a percentage increase from the baseline predicted probability. Since prevalence reflects the population-level probability of an outcome, these percentage changes can be interpreted as changes in prevalence, aligning with the descriptive statistics of key outcomes. All results are reported as survey-weighted mean percentage increases in the prevalence of the outcome relative to baseline prevalence (Muller & MacLehose, 2014; Perraillon et al., 2024; Werth, 2024).

Limitations

Our analysis has several strengths, particularly the use of novel population-level measures of norms and the integration of individual-level data with spatial data to understand the relationship between the community normative environment and AGYW and ABYM outcomes. However, we acknowledge several limitations.

First, as our analysis is based on cross-sectional data, the results should be interpreted as reflecting consistent associations rather than causal relationships. Further research using longitudinal or experimental designs would be valuable to explore the directionality and underlying mechanisms of these associations more thoroughly. Additionally, our individual-level data was collected via telephone surveys. While we used techniques like random digital dialing and quota sampling to improve representativeness, non-phone users, particularly the poorest and hardest-to-reach AGYW and their families, may have been underrepresented. As a result, our models may underestimate the effects of gender norms, which could have a more substantial impact on this population subgroup. Another limitation is the potential underestimation of effect sizes due to holding certain variables constant in our simulations. While this approach is useful for isolating specific effects, it may lead to conservative impact estimates that do not fully capture the variability and interactions present in real-world scenarios. Future research could address this by incorporating additional contextual factors, allowing variables to vary dynamically, and conducting sensitivity analyses to better estimate the true magnitude of these effects. Moreover, our analysis focuses on the direct relationship between gender norms and AGYW and ABYM outcomes. However, indirect effects—such as those through ability, motivation, and other factors—may also be significant but were not explored in this study, potentially leading to an underestimation of the true impact of gender norms on AGYW and ABYM outcomes.

Another potential limitation is the issue of social desirability bias in reporting SRH behaviors. Given the sensitive nature of these outcomes, respondents may have been inclined to provide socially acceptable or normative responses, particularly in communities where certain SRH behaviors are stigmatized. This bias could lead to underreporting or misreporting of certain behaviors, thereby affecting the accuracy of the associations observed between gender norms and SRH outcomes. However, research has demonstrated that telephone enumeration reduces social desirability biases compared to face-to-face enumeration (Greenleaf et al., 2020; Kelly et al., 2013; Stuart & Grimes, 2009). Future studies could address this general limitation by triangulating survey data with other

data sources or incorporating more objective measures of SRH behaviors. Finally, while our norm measure is based on existing validated tools, including the G-NORM scale, and we followed a rigorous scale validation process in the new contexts, we could not supplement this with qualitative research that could have further contextualized the measures.

And lastly, simulation models, while powerful tools for exploring “what-if” scenarios, rely on simplified representations that do not fully capture the complexity or dynamic feedback loops of real-world systems. To isolate specific effects, these models often hold many variables constant, which can oversimplify the interdependencies inherent in real-life contexts. In this study, improvements to the normative environment may influence multiple aspects of AGYW’s surroundings, meaning the model could underestimate the broader impact of interventions. Additionally, simulation outcomes are better interpreted as directional insights rather than precise or causal predictions. The models also rely on a set of assumptions—some of which may lack empirical validation—particularly when modeling complex phenomena like social norm change. Further, limitations in data quality and granularity can constrain accuracy; for example, cross-sectional surveys typically lack the longitudinal depth needed to model behavioral transitions over time. Ultimately, while microsimulation provides valuable guidance for policy and intervention design, its findings should be viewed within the context of these methodological constraints (Kaplan et al., 2015; Martini & Trivellato, 1997).

Despite these limitations, our findings provide valuable insights and contribute to a deeper understanding of the complex interplay between community gender norms, AGYW, and ABYM outcomes, laying the groundwork for future research and intervention strategies.

IV. DESCRIPTIVE STATISTICS RESULTS

The following paragraphs provide descriptive statistics of key variables used for the multivariate analysis in Kenya and Nigeria (Table 2-4). As noted earlier, this analysis utilized two rounds of data collection from Quarter 1 (Q1) and Quarter 3 (Q3) of 2024. Analysis for AGYW was run on data from Q1 with Tables 2.1, 3.1, and 4.1, which provided a snapshot of outcome prevalence, norms environment, and socio-demographic characteristics. The analysis for ABYM was run on data from Q3, as the ABYM sample size was increased in this round to enhance statistical power. Tables 2.2, 3.2, and 4.3 provide descriptive statistics for ABYM's outcomes, norms, and socio-demographics. Given this difference in data used between the two groups, we observe minor differences between AGYW and ABYM's social and normative environments.

Behaviors/Outcomes

A greater proportion of sexually active adolescents and young adults (15-24 years old) in Kenya report using a modern contraceptive method compared to their Nigerian counterparts. In Kenya, 68% of sexually active AGYW currently use a modern method, and 66% intend to use one. In contrast, in Nigeria, 52% report current use of a modern method, with only 38% intending to use one (Table 2.1). A similar pattern is observed among ABYM. In Kenya, 62% of sexually active ABYM currently use a modern method, and 67% intend to do so. However, in Nigeria, only 53% of sexually active ABYM report current modern contraceptive use, and 49% intend to use one the next time they have sex (Table 2.2).

Kenyan AGYW and ABYM report a greater ability to access SRH resources and services than their Nigerian counterparts. Among Kenyan AGYW, 72% report the ability to access SRH information, 62% report the ability to obtain their preferred contraceptive method, and 58% report the ability to use a contraceptive method of their choice with their partner. A similar pattern is observed among Kenyan ABYM, where 70% report the ability to access SRH information, and 65% report the ability to obtain and use a contraceptive method of their choice. In Nigeria, these proportions are similar for ABYM but notably lower for AGYW. Specifically, 67% of Nigerian ABYM report the ability to access SRH information, 66% report the ability to obtain a contraceptive method of their choice, and 64% report the ability to use their preferred method. Among Nigerian AGYW, however, only 52% report the ability to access SRH information, 55% report the ability to obtain a method, and 53% report the ability to use a contraceptive method of their choice with their partner.

Regarding relationship dynamics, many adolescents and young adults in both countries describe their relationships as controlling. Specifically, 69% of Nigerian AGYW and 87% of Kenyan AGYW report experiencing some degree of control in their relationships. Similarly, 72% of Nigerian ABYM and 85% of Kenyan ABYM acknowledge exerting control over a current or previous partner. Despite these high levels of control, gender-equitable attitudes against wife/partner beating are more prevalent, particularly among Nigerian ABYM. In Nigeria, 72% of ABYM oppose wife-beating for reasons such as a woman going out without permission or burning food, compared to 56% of Kenyan ABYM. However, AGYW in both countries report limited agency over their mobility. Fewer than half say they have decision-making power over their movements, with only 31% in Nigeria and 38% in Kenya reporting such agency.

Gender Norms

Overall, Kenya exhibits more gender-equitable norms compared to Nigeria, although the average scores for gender-equitable norms remain low in both countries (Tables 3.1 and 3.2).

In Nigeria, AGYW report similar levels of self-perceived gender-equitable norms (G-NORM) (Mean: 43.99; SD: 17.49) as ABYM (Mean: 44.07; SD: 17.59). By contrast, in Kenya, self-perceived G-NORM scores are lower for ABYM (Mean: 50.42; SD: 22.77) than AGYW (Mean: 48.07; SD: 21.39).

Among reference groups in Nigeria, collective support for gender-equitable norms is lowest among AGYW (Mean: 43.80; SD: 6.20), followed by older adults (Mean: 44.20; SD: 6.41) and the broader community (Mean: 44.20; SD: 5.91). ABYM report the highest levels of collective support (Mean: 46.20; SD: 7.27).In Kenya, the broader community reports the lowest collective support (Mean: 49.48; SD: 4.18), followed by older adults (Mean: 49.67; SD: 5.36) and AGYW (Mean: 51.24; SD: 4.96), with ABYM again reporting the highest support (Mean: 52.62; SD: 7.42).

Socio-Demographic Covariates

In both countries, the average age of AGYW and ABYM is approximately 19 years (Tables 4.1 and 4.2). A larger proportion of Nigerian AGYW (51%) and ABYM (54%) reside in urban areas than their Kenyan counterparts (AGYW: 31%, ABYM: 27%). Additionally, more Kenyan respondents identify as Christian (AGYW: 92%, ABYM: 85%) than their Nigerian counterparts (AGYW: 49%, ABYM: 58%).

Regarding educational attainment, a greater proportion of Kenyan AGYW and ABYM have completed secondary or higher education, whereas a larger share of Nigerian AGYW report having no formal schooling. However, in both countries, ABYM are more likely than AGYW to have completed secondary or higher education.

Most respondents in both countries do not have children—88% of AGYW and 91% of ABYM in Nigeria, and 69% of AGYW and 87% of ABYM in Kenya. Additionally, the majority are not currently partnered. In Kenya, 28% of AGYW and ABYM report being partnered, compared to 18% of Nigerian AGYW and 11% of Nigerian ABYM.

V. MULTIVARIATE ANALYSIS RESULTS

This section presents the results from the multivariate regression models. Each sub-section focuses on an outcome related to AGYW and ABYM's sexual and reproductive health, or on indirect measures of relationship dynamics and agency that may impact AGYW's sexual and reproductive health outcomes.

Modern Contraceptive Use

The following paragraphs summarize key results from multivariate logistic regression models examining the relationship between community gender norms and the use of modern contraceptives among AGYW and ABYM in Nigeria and Kenya.

Self-Perceived Gender-equitable Norms

Table 5 presents the results of separate multivariate logistic regression models predicting modern contraceptive use among adolescent girls and young women (AGYW) based on their self-perceived gender-equitable norms (G-NORM scale and sub-scales). No significant associations were found among adolescent boys and young men (ABYM) in either country.

In Nigeria, we find a statistically significant, positive relationship between AGYW's self-perceived gender-equitable norms and their use of modern contraceptive methods, but not in Kenya. AGYW in Nigeria who perceive higher levels of gender-equitable norms are significantly more likely to use a modern method, even after accounting for socio-demographic factors such as wealth, education, religion, partnership status, parental status, and place of residence (urban versus rural settings and regional differences). Specifically, a one-point increase in AGYW's self-perceived gender-equitable norms (G-NORM score) increases their odds of using a modern method by 1% (OR: 1.01; SE: 0.00). Additionally, both descriptive norms—perceptions of what is commonly practiced—and injunctive norms—perceptions of what is commonly approved in their community—show a similar and significantly positive association with the odds of AGYW using a modern contraceptive method.

To further illustrate the potential return on investing in normative interventions, we applied the regression models described above to estimate the effect of a 10-point increase in AGYW's G-NORM score. This simulation modeling allows us to project the resulting change in the probability—and thus the prevalence—of modern contraceptive use. The percentage change from baseline prevalence is summarized in the text box below, with baseline values available in Table 2.1.

KEY TAKEAWAY (Individual Level): *A 10-point increase in self-perceived gender-equitable norms (G-NORM score) may lead to a* ***4.7%*** *increase in modern contraceptive use among Nigerian AGYW.*

Impact of Key Reference Group Collective Support for Gender-equitable Norms

Table 5 presents results from separate multivariate logistic regression models predicting AGYW's modern contraceptive use based on collective support for gender-equitable norms (G-NORM score) among key reference groups in their community. These groups include the overall community (ages 15–69), older adults (25+), AGYW peers, and ABYM peers.

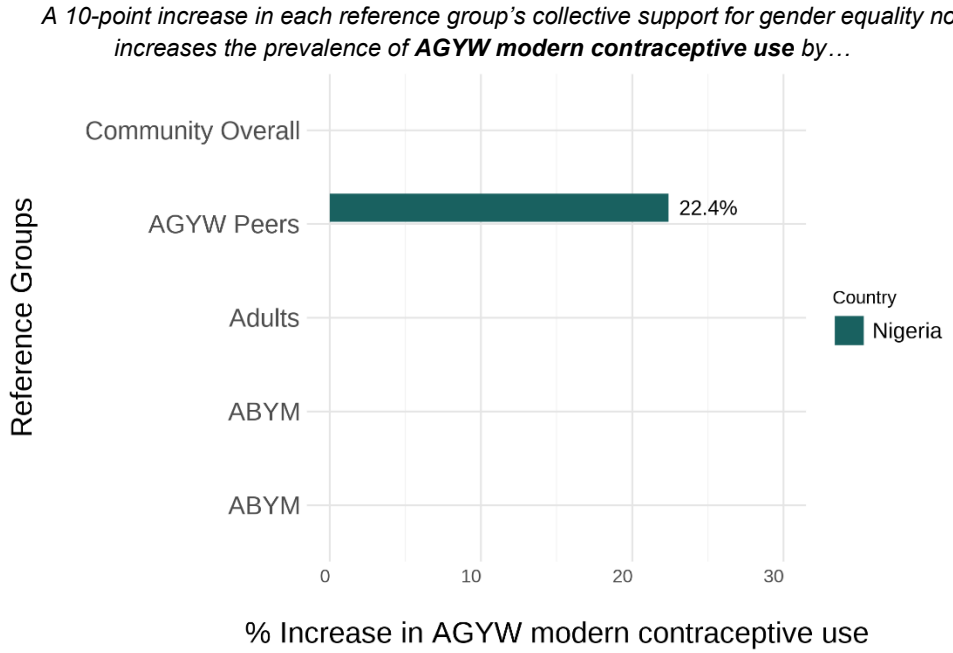
We find a statistically significant positive association between Nigerian AGYWs' use of modern contraceptives and their AGYW peers' collective support for gender-equitable norms in their community. However, no significant associations are observed with collective support from any reference group in Kenya. Specifically, greater collective support for gender-equitable norms (G-NORM score) among AGYW peers (OR: 1.04; SE: 0.02) increases the odds of modern contraceptive use among AGYW by 4%.

Both collective peer descriptive norms (aggregated common practices) and collective peer injunctive norms (aggregated social approval) show similar positive associations with modern contraceptive use, with nearly identical odds ratios (Table 5). However, in the combined model, only AGYW's self-perceived gender-equitable norms remains statistically significant. This suggests that self-perceived norms may be the strongest direct predictor, but collective peer support for gender-equitable norms in the community should still be considered important due to its greater magnitude of association with contraceptive use.

To further illustrate the potential return on investing in normative interventions, we calculated predicted probabilities of modern contraceptive use among AGYW under a simulated scenario where the overall collective G-NORM score among key reference groups increases by 10 points. This approach estimates the resulting change in prevalence. The percentage change from baseline is illustrated in Figure 3 and summarized below, while baseline prevalence is available in Table 2.1.

KEY TAKEAWAY (Reference Group): *A 10-point increase in collective support for gender-equitable norms (G-NORM score) among AGYW peers may increase modern contraceptive use among Nigerian AGYW by* ***22%.***

Figure 3: Reference Group's Collective G-NORM Score and AGYW's Modern Contraceptive Use [2]



Intent to Use Contraception

The following paragraphs summarize key results from multivariate logistic regression models examining the relationship between community gender norms and AGYW's and ABYM's intent to use contraception in Nigeria and Kenya.

Self-Perceived Gender-equitable Norms

Tables 6.1 and 6.2 present results from separate multivariate logistic regression models predicting intent to use a contraceptive method among adolescent girls and young women (AGYW) and adolescent boys and young men (ABYM) based on their self-perceived gender-equitable norms (G-NORM scale and sub-scales).

We find statistically significant positive associations between self-perceived gender-equitable norms and intent to use a contraceptive method for both Nigerian AGYW and ABYM. In Nigeria, AGYW and ABYM who perceive higher levels of gender-equitable norms are significantly more likely to intend to use a contraceptive method, even after adjusting for socio-demographic factors such as wealth, education, religion, partnership status, parental status, and place of residence (urban versus rural settings and regional differences). In Kenya, while no significant associations were found among AGYW, ABYM's self-perceived gender-equitable norms has a statistically significant negative association with their intention to use contraceptives.

[2] In Kenya, no statistically significant associations were found between AGYWs outcome of interest and the reference group gender norms.

In Nigeria, a one-point increase in self-perceived gender-equitable norms (G-NORM score) is associated with a 1% increase in the odds of intending to use a contraceptive method for both AGYW (OR: 1.01; SE: 0.00) and ABYM (OR: 1.01; SE: 0.00). Additionally, both descriptive norms—what is perceived to be practiced—and injunctive norms—what is perceived to be approved—show a similarly positive relationship and are significantly associated with the odds of intending to use a contraceptive method for both sub-groups. In contrast, a one-unit increase in Kenyan ABYM's self-perceived gender-equitable norms (G-NORM score) is associated with a 1% decrease in the odds of their intention to use contraceptives.

To further illustrate the potential return on investing in normative interventions, we applied the regression models described above to estimate the effect of a 10-point increase in Nigerian AGYWs' and ABYMs' G-NORM scores on their intention to use contraceptives[3]. This simulation modeling allows us to project the resulting change in the probability—and thus the prevalence—of intent to use contraception. The percentage change from baseline prevalence is summarized in the text box below, with baseline values available in Table 2.1.

KEY TAKEAWAY (Individual Level): *A 10-point increase in self-perceived gender-equitable norms (G-NORM score) may increase the prevalence of intent to use contraceptives among AGYW by an additional* ***3.0%*** *and among ABYM by an additional* ***4.6%*** *in Nigeria.*

Impact of Key Reference Group Collective Support for Gender-equitable Norms Tables 6.1 and 6.2 present results from separate multivariate logistic regression models predicting AGYW's and ABYM's intent to use contraception based on collective support for gender-equitable norms (G-NORM score) among key reference groups in their community. These groups include the overall community (ages 15–69), older adults (25+), AGYW peers, and ABYM peers.

We find a statistically significant positive association between AGYW's intent to use contraceptives and collective support for gender-equitable norms among key reference groups in Nigeria but not in Kenya. Among ABYM, the pattern is reversed: Kenyan ABYM show a positive association between contraceptive intent and collective support from key reference groups, but Nigerian ABYM do not.

In Nigeria, collective support for gender-equitable norms from all key reference groups—except ABYM—increases the odds of AGYW intending to use contraception. Collective support from the overall community shows the strongest association, followed by older adults and AGYW peers. Specifically, collective support for more gender-equitable norms (G-NORM score) from the overall community (OR: 1.03; SE: 0.01) increases the odds of AGYW intending to use contraception by 3%. However, after we include AGYW's self-perceived gender-equitable norms in the models (Table 6.1), these associations lose statistical significance, suggesting that collective community support may have a stronger direct influence.

In Kenya, we observe a different trend. Collective support from the overall community for gender-equitable norms raises the odds of ABYM intending to use contraception by 6% (OR: 1.06; SE: 0.03). Additionally, when older adults collectively uphold more gender-equitable injunctive norms, the odds of ABYM intending to use contraception increase by 4% (OR: 1.04; SE: 0.02). These associations

[3] In Kenya, negative statistically significant associations were found between ABYMs outcome of interest and the self-perceived group gender norms. Hence, real-world implications were not estimated for this effect.

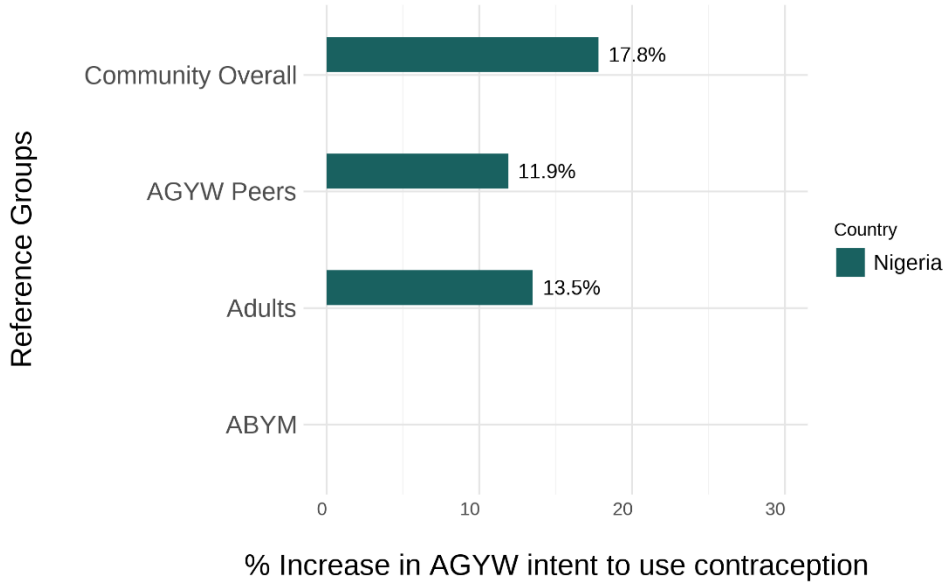
remain strong for the overall community but not older adults after we account for ABYM's self-perceived gender-equitable norms, indicating that the overall community serves as a key and influential reference group for Kenyan ABYM's intent to use contraception.

To further illustrate the potential return on investing in normative interventions, we estimated predicted probabilities of contraceptive intent under a simulated scenario in which the overall G-NORM score among key reference groups increases by 10 points. Figures 4.1 to 4.2 illustrate the percentage change from baseline contraceptive intent, which is summarized below. Tables 2.1 and 2.2 provide baseline prevalence.

***KEY TAKEAWAY (Reference Group)**: Boosting collective support for gender-equitable norms (G-NORM score) may increase contraceptive intent among an additional **18%** of Nigerian AGYW and **19%** of Kenyan ABYM.*

Figure 4.1: Reference Group's Collective G-NORM Score and AGYW's Intent to Use Contraception [4]

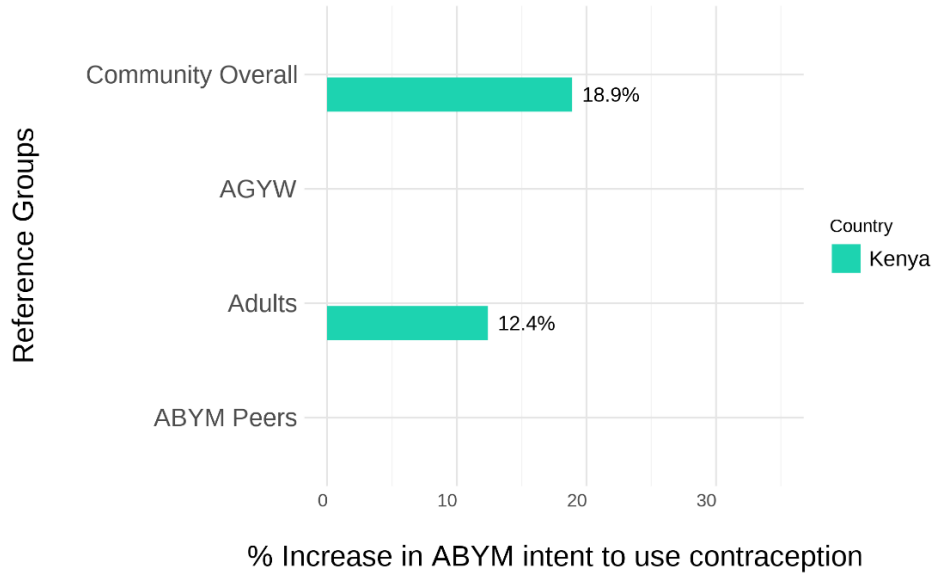
*A 10-point increase in each reference group's collective support for gender equality norms increases the prevalence of **AGYW intent to use contraception** by…*



[4] In Kenya, no statistically significant associations were found between AGYWs outcome of interest and the reference group gender norms.

Figure 4.2: Reference Group's Collective G-NORM Score and ABYM's Intent to Use Contraception [5]

*A 10-point increase in each reference group's collective support for gender equality norms increases the prevalence of **ABYM intent to use contraception** by…*



Ability to Access Information about SRH

The following paragraphs summarize key results from multivariate logistic regression models examining the relationship between community gender norms and AGYW's and ABYM's ability to access information on SRH services and products in Nigeria and Kenya.

Self-Perceived Gender-equitable Norms Tables 7.1 and 7.2 present the results of separate multivariate logistic regression models predicting AGYW and ABYM's ability to access information on SRH services and products based on their self-perceived gender-equitable norms (G-NORM scale and sub-scales).

In both countries, we find a statistically significant positive association between self-perceived gender-equitable norms and AGYW's and ABYM's reporting the ability to access sexual and reproductive health (SRH) information. AGYW who perceive higher levels of gender-equitable norms are significantly more likely to report having the ability to access SRH information, even after adjusting for socio-demographic factors such as wealth, education, religion, partnership status, parental status, and place of residence (urban versus rural settings and regional differences). A one-point increase in AGYW's self-perceived gender-equitable norms (G-NORM score) increases the odds of their ability to access SRH information by 2% (OR: 1.02; SE: 0.00) in Nigeria and 1% (OR: 1.01; SE: 0.00) in Kenya. Additionally, both descriptive norms—what is perceived to be practiced—and injunctive norms—what is commonly approved in the community—show a similar positive relationship and are significantly associated with the odds of AGYW reporting the ability to access SRH information.

[5] In Nigeria, no statistically significant associations were found between ABYMs outcome of interest and the reference group gender norms.

Among ABYM—particularly Kenyan ABYM—this relationship is more modest. In Nigeria, a one-point increase in ABYM's self-perceived gender-equitable norms corresponds to a 1% increase in the odds of their ability to access SRH information (OR: 1.01; SE: 0.00), while among Kenyan ABYM, the corresponding increase is 0.5% (OR: 1.005; SE: 0.00). Consistent with findings for AGYW, both descriptive and injunctive norms are positively associated with ABYM's ability to access to SRH information.

To further illustrate the potential return on investing in normative interventions, we applied the regression models described above to estimate the impact of a 10-point increase in AGYW's and ABYM's G-NORM score on their ability to access SRH information. This simulation modeling projects the resulting change in the probability—and thus the prevalence—of the ability to access SRH information. The percentage change from baseline prevalence is summarized in the text box below, with baseline values in Tables 2.1 and 2.2.

***KEY TAKEAWAY (Individual Level)**: A 10-point increase in self-perceived gender-equitable norms (G-NORM score) may enhance AGYW's ability to access SRH information by an additional **9.1%** in Nigeria and **2.1%** in Kenya. Among ABYM, the ability to access may improve by an additional **3.2%** in Nigeria and **1%** in Kenya.*

Impact of Key Reference Group Collective Support for Gender-equitable Norms

Tables 7.1 and 7.2 present results from separate multivariate logistic regression models predicting AGYW's and ABYM's ability to access SRH information on services and products based on collective support for gender-equitable norms (G-NORM score) from key reference groups in their community. These groups include the community overall (ages 15–69), older adults (25+), AGYW, and ABYM.

We find a statistically significant positive association between collective support for gender-equitable norms among key reference groups and the ability to access SRH information among Nigerian AGYW and ABYM, but not in Kenya. Among Nigerian AGYW, collective support from all key reference groups—except ABYM—for gender-equitable norms increases the odds of AGYW's ability to access SRH information. The largest impact is observed for collective support from the community overall, followed by support from AGYW peers and older adults. Specifically, collective support for more gender-equitable norms among the community overall (OR: 1.05; SE: 0.01) increases the odds of AGYW's ability to access SRH information by 5%. However, these relationships remained significant only for the community overall model after including AGYW's self-perceived norms, indicating that collective support from the broader community is more critical (Table 7.1).

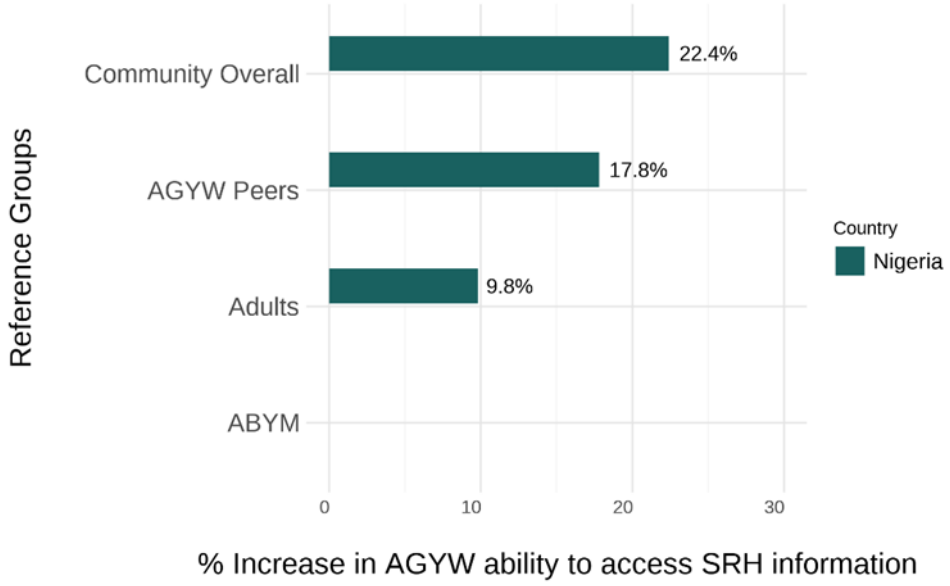
Among Nigerian ABYM, collective support from all reference groups is positively associated with the odds of ABYM reporting the ability to access SRH information, but the magnitude of association is strongest for ABYM peers (OR: 1.03; SE: 0.01) and the broader community (OR: 1.03; SE: 0.01). However, accounting for self-perceived gender-equitable norms, these relationships no longer remain significant, highlighting that self-perceived gender-equitable norms is more directly related to an ABYM's access to SRH information.

To further illustrate the potential return on investing in normative interventions, we estimated predicted probabilities of ability to access SRH information under a simulated scenario where the overall G-NORM score among key reference groups increases by 10 points. The percentage change from baseline contraceptive intent is illustrated in Figures 5.1 to 5.2 and summarized below, while baseline prevalence can be found in Tables 2.1 and 2.2.

KEY TAKEAWAY (Reference Group): *Increasing community-wide collective support for gender-equitable norms (G-NORM score) may result in an additional **22%** of Nigerian AGYW reporting the ability to access SRH information, while greater collective support from ABYM peers may boost Nigerian ABYM's access by an additional **8.3%.***

Figure 5.1: Reference Group's Collective G-NORM Score and AGYW's Ability to Access SRH Information [6]

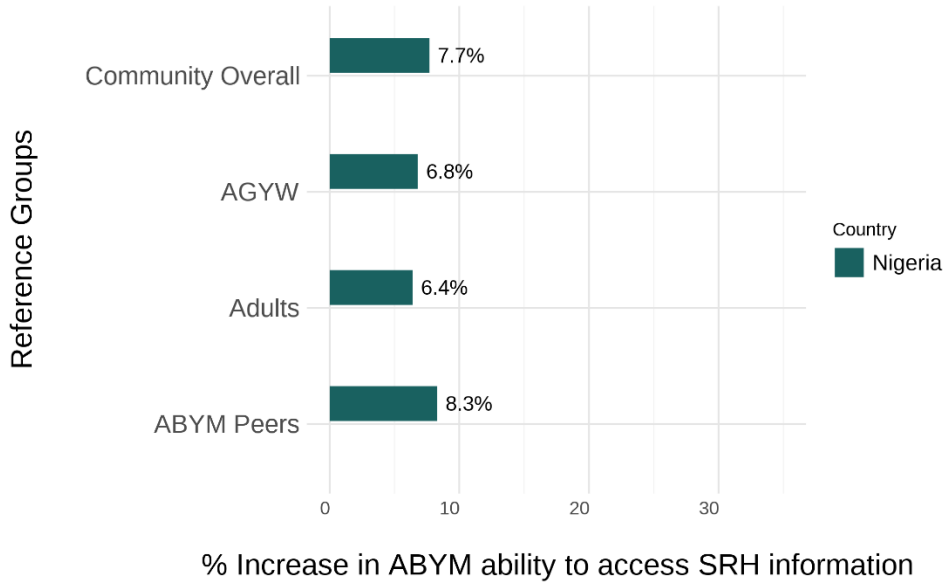
*A 10-point increase in each reference group's collective support for gender equality norms increases the prevalence of **AGYW's ability to access SRH information** by…*



[6] In Kenya, no statistically significant associations were found between AGYWs outcome of interest and the reference group gender norms.

Figure 5.2: Reference Group's Collective G-NORM Score and ABYM's Ability to Access SRH Information[7]

*A 10-point increase in each reference group's collective support for gender equality norms increases the prevalence of **ABYM's ability to access SRH information** by…*



Ability to Obtain Contraceptive Methods

The following paragraphs summarize key findings from multivariate logistic regression models analyzing the relationship between community gender norms and AGYW's and ABYM's ability to obtain a contraceptive of their choice in Nigeria and Kenya.

Self-Perceived Gender-equitable Norms

Tables 8.1 and 8.2 present the results of separate multivariate logistic regression models predicting the ability of AGYW and ABYM to obtain a contraceptive method of choice based on their self-perceived gender-equitable norms (G-NORM scale and sub-scales).

We find a statistically significant positive relationship between Nigerian AGYW's and ABYM's self-perceived gender-equitable norms and their ability to obtain a method of their choice, but this relationship is not observed in Kenya. Among Nigerian AGYW and ABYM, those who perceive higher levels of gender-equitable norms are significantly more likely to report having the ability to obtain a method of their choice, even after adjusting for socio-demographic factors such as wealth, education, religion, partnership status, parental status, and place of residence (urban versus rural settings and regional differences). A one-point increase in Nigerian AGYW's self-perceived gender-equitable norms (G-NORM score) in their community increases their odds of reporting the ability to obtain a contraceptive method by 1% (OR: 1.01; SE: 0.00). A similar pattern is observed among Nigerian ABYM, where a one-point increase in their self-perceived score leads to a 1% increase in their odds of reporting the ability to obtain their preferred contraceptive method (OR: 1.01; SE: 0.00).

[7] In Kenya, no statistically significant associations were found between ABYMs outcome of interest and the reference group gender norms.

Additionally, both descriptive norms—what is perceived to be practiced—and injunctive norms—what is commonly approved in their community—show a similar relationship and are significantly positively associated with the odds of AGYW and ABYM reporting the ability to obtain a contraceptive method of their choice.

To further illustrate the potential return on investing in normative interventions, we applied the regression models described above to estimate the impact of a 10-point increase in AGYW's and ABYM's G-NORM score on their ability to access SRH information. This simulation modeling projects the resulting change in the probability—and thus the prevalence—of the ability to obtain a contraceptive method of choice. The percentage change from baseline prevalence is summarized in the text box below, with baseline values in Tables 2.1 and 2.2.

KEY TAKEAWAY (Individual Level): *A 10-point increase in self-perceived gender-equitable norms (G-NORM score) may raise the prevalence of AGYW's ability to obtain contraceptives by an additional* ***4.0%,*** *and ABYM's by an additional* ***3.6%*** *in Nigeria.*

Impact of Key Reference Group Collective Support for Gender-equitable Norms

Tables 8.1 and 8.2 present results from separate multivariate logistic regression models predicting AGYW's and ABYM's ability to obtain a method of their choice based on collective support for gender-equitable norms (G-NORM score) from key reference groups in their community. These groups include the community overall (ages 15–69), older adults (25+), AGYW, and ABYM.

In Nigeria, we find a statistically significant positive association between collective support for gender-equitable norms from key reference groups and AGYW's and ABYM's ability to obtain a contraceptive method of their choice. In Kenya, however, these relationships only hold for ABYM.

In Nigeria, collective support for gender-equitable norms (G-NORM score) from all key reference groups—except ABYM—increases the odds of AGYW reporting the ability to obtain a method of their choice. The largest association comes from collective support from the overall community, followed by older adults and AGYW peers. Specifically, when the overall community reports greater collective support for gender-equitable norms (OR: 1.05; SE: 0.01), the odds of AGYW reporting the ability to obtain a contraceptive method of their choice increase by 5%. For Nigerian ABYM, only collective support from ABYM peers significantly influences their reported ability to obtain a preferred contraceptive method. A one-point increase in ABYM peers' G-NORM score corresponds to a 2% increase in the odds of ABYM reporting the ability to obtain their preferred contraceptive method (OR: 1.02; SE: 0.01). These relationships remain largely consistent for both AGYW (Table 8.1) but not for ABYM (Table 8.2) in the combined models, which include both self-perceived norms and reference group norms.

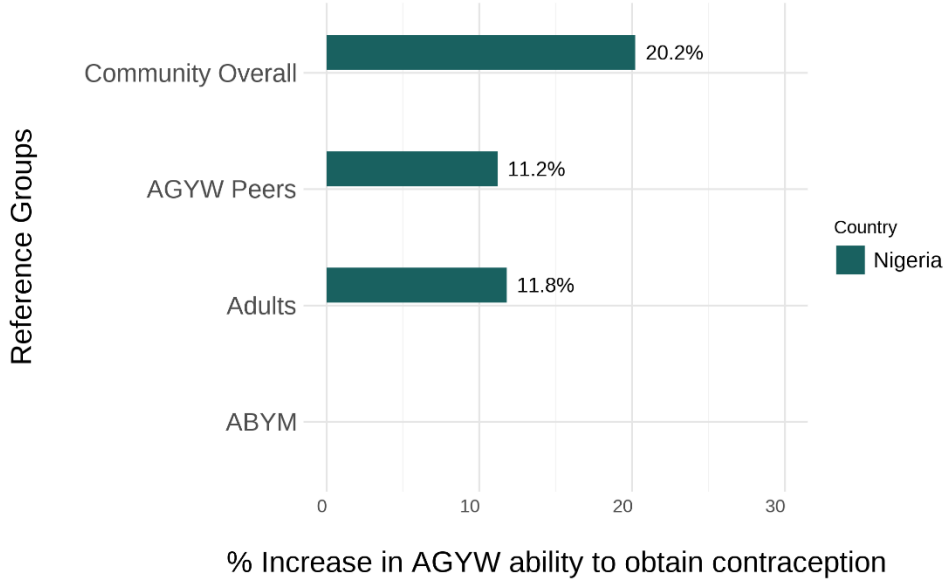
Among Kenyan ABYM, collective support from the overall community has the strongest association, followed by older adults. A one-point increase in the G-NORM score among the broader community is associated with a 5% increase in the odds of ABYM reporting the ability to obtain their preferred contraceptive method (OR: 1.05; SE: 0.02). These relationships largely hold in the combined models (Table 8.2).

To further illustrate the potential return on investing in normative interventions, we estimated predicted probabilities of obtaining a method of choice under a simulated scenario in which the overall G-NORM score among key reference groups increases by 10 points. Figures 6.1 to 6.2 illustrate the percentage change from baseline ability, which is summarized below. Tables 2.1 and 2.2 provide baseline prevalence.

KEY TAKEAWAY (Reference Group): *Increasing community-wide collective support for gender-equitable norms (G-NORM score) may boost Nigerian AGYW's ability to obtain a contraceptive method of choice by an additional **20%** and Kenyan ABYM's by an additional **15.4%,** while collective peer support among Nigerian ABYM may drive an additional **7.8%** increase.*

Figure 6.1: Reference Group's Collective G-NORM Score and AGYW's Ability to Obtain Contraception[8]

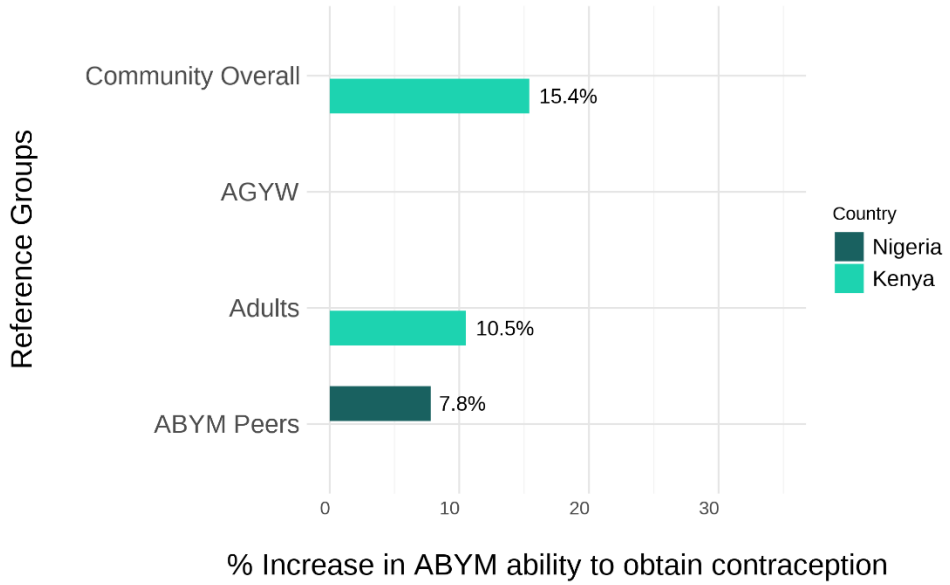
*A 10-point increase in each reference group's collective support for gender equality norms increases the prevalence of **AGYW's ability to obtain contraception** by…*



[8] In Kenya, no statistically significant associations were found between AGYWs outcome of interest and the reference group gender norms.

Figure 6.2: Reference Group's Collective G-NORM Score and ABYM's Ability to Obtain Contraception

*A 10-point increase in each reference group's collective support for gender equality norms increases the prevalence of **ABYM's ability to obtain contraception** by…*



Ability to Use Contraception of Choice

The following paragraphs summarize key results from multivariate logistic regression models examining the relationship between community gender norms and AGYW's and ABYM's ability to use their contraceptive method of choice in Nigeria and Kenya.

Self-Perceived Gender-equitable Norms

Tables 9.1 and 9.2 present the results of separate multivariate logistic regression models predicting AGYW's ability to use a contraceptive method of choice based on their self-perceived gender-equitable norms (G-NORM scale and sub-scales).

Across both groups, there is a statistically significant positive relationship between self-perceived gender-equitable norms and the ability to use a contraceptive method of choice in Nigeria but not in Kenya. Nigerian AGYW and ABYM who perceive higher levels of gender-equitable norms are significantly more likely to report having the ability to use a method of their choice, even after adjusting for socio-demographic factors such as wealth, education, religion, partnership status, parental status, and place of residence (urban versus rural settings and regional differences). A one-point increase in self-perceived gender-equitable norms is associated with a 1% increase in the odds of reporting the ability to use a method of choice for both AGYW (OR: 1.01; SE: 0.00) and ABYM (OR: 1.01; SE: 0.00). Additionally, both descriptive and injunctive norms show similar positive associations with the ability to use a contraceptive method of choice in both groups.

To further illustrate the potential return on investing in normative interventions, we applied the regression models described above to estimate the impact of a 10-point increase in AGYW's and ABYM's G-NORM score on their ability to use the contraceptive method of choice. This simulation modeling projects the resulting change in the probability—and thus the prevalence—of the ability to use a method of choice. The percentage change from baseline prevalence is summarized in the text box below, with baseline values in Tables 2.1 and 2.2.

KEY TAKEAWAY (Individual Level): *A 10-point increase in self-perceived gender-equitable norms (G-NORM score) may increase AGYW's ability to use contraceptives by an additional* ***3.0%*** *and among ABYM by an additional* ***2.6%*** *in Nigeria.*

Impact of Key Reference Group Collective Support for Gender-equitable Norms

Tables 9.1 and 9.2 present results from separate multivariate logistic regression models predicting AGYW's and ABYM's ability to use a method of their choice based on collective support for gender-equitable norms (G-NORM score) among key reference groups in their community. These groups include the community overall (ages 15–69), older adults (25+), AGYW, and ABYM.

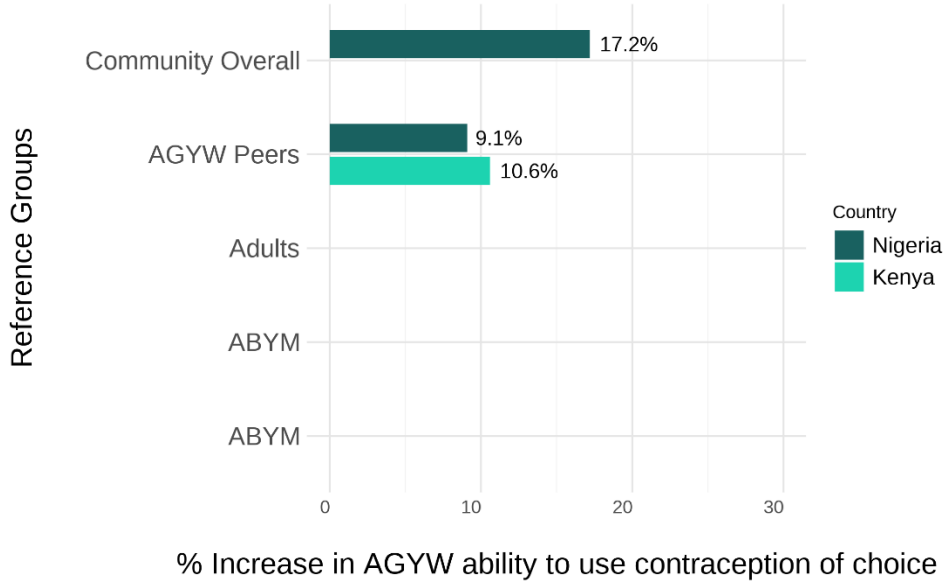
In both countries, we find a statistically significant positive association between AGYW's ability to use a contraceptive method of their choice and collective support for gender-equitable norms from key reference groups only. In Nigeria, collective support from the overall community and AGYW peers increases the odds of AGYW using a method of choice, with community-wide collective support having a larger impact. Among Kenyan AGYW, only collective peer support is positively associated with contraceptive use. Specifically, a higher G-NORM score in the overall community (OR: 1.04; SE: 0.01) raises the odds of Nigerian AGYW accessing contraception by 4%, while peer support in Kenya (OR: 1.02; SE: 0.01) increases the odds by 2%. These relationships largely remain significant even after controlling for AGYW's self-perceived gender-equitable norms in the combined models (Table 9.1).

To further illustrate the potential return on investing in normative interventions, we estimated predicted probabilities of using a method of choice under a simulated scenario in which the overall G-NORM score among key reference groups increases by 10 points. The percentage change from baseline ability is illustrated in Figure 7 and summarized below, while baseline prevalence can be found in Tables 2.1 and 2.2.

KEY TAKEAWAY (Reference Group): *Increasing community-wide collective support for gender-equitable norms (G-NORM score) may lead to* ***17%*** *more Nigerian AGYW reporting the ability to use a contraceptive method of their choice, while collective peer support in Kenya may increase prevalence by an additional* ***11%****.*

Figure 7: Reference Group's Collective G-NORM Score and AGYW's Ability to Use Contraception

*A 10-point increase in each reference group's collective support for gender equality norms increases the prevalence of **AGYW's ability to use contraception of choice** by…*



Ever Living in Controlling Partnership

The following paragraphs summarize key results from multivariate logistic regression models examining the relationship between community gender norms and AGYW's self-reported experience of controlling relationships and ABYM's reports of controlling their current or past female partner in Nigeria and Kenya.

Self-Perceived Gender-equitable Norms Tables 10.1 and 10.2 present results from separate multivariate logistic regression models examining the association between AGYW's self-reported experience of controlling relationships and ABYM's report of controlling their current or past female partner, based on their self-perceived gender-equitable norms (G-NORM scale and sub-scales).

Among AGYW, only Kenyan AGYW's self-perceived gender-equitable norms is negatively associated with living in a controlling partnership, even after adjusting for socio-demographic factors such as wealth, education, religion, and place of residence, including urban versus rural and region/zone. Specifically, a one-point increase in Kenyan AGYW's G-NORM score reduces their odds of living in a controlling partnership by 2% (OR: 0.98; SE: 0.01). Among ABYM, self-perceived gender-equitable norms is negatively associated with controlling their partner in both Kenya and Nigeria. A one-point increase in Kenyan ABYM's G-NORM score reduces the odds of controlling their partner by 1% (OR: 0.99; SE: 0.01), while in Nigeria, the odds decrease by 3% (OR: 0.97; SE: 0.01). Additionally, descriptive and injunctive norms show a similar negative relationship with the outcomes.

To further illustrate the potential return on investing in normative interventions, we applied the regression models described above to estimate the impact of a 10-point increase in AGYW's and ABYM's G-NORM score on their experience of living in a controlling partnership, or in the case of ABYM, controlling their partner. This simulation modeling projects the resulting change in the probability—and thus the prevalence—of experiencing or controlling a partner. The percentage change from baseline prevalence is summarized in the text box below, with baseline values available in Tables 2.1 and 2.2

KEY TAKEAWAY (Individual Level): *A 10-point increase in self-perceived gender-equitable norms (G-NORM score) may reduce the prevalence of AGYW living in a controlling partnership by an additional* ***2.8%*** *in Kenya and decrease ABYM controlling their partner by an additional* ***7.8%*** *in Nigeria and* ***2.4%*** *in Kenya.*

Impact of Key Reference Group Collective Support for Gender-equitable Norms

Tables 10.1 and 10.2 present results from separate multivariate logistic regression models predicting the relationship between AGYW's self-reported experience of living in a controlling relationship and ABYM's reports of controlling their current or past female partner, with collective support for gender-equitable norms (G-NORM scale and sub-scales) among key reference groups in their community. These groups include the overall community (ages 15–69), older adults (25+), AGYW, and ABYM.

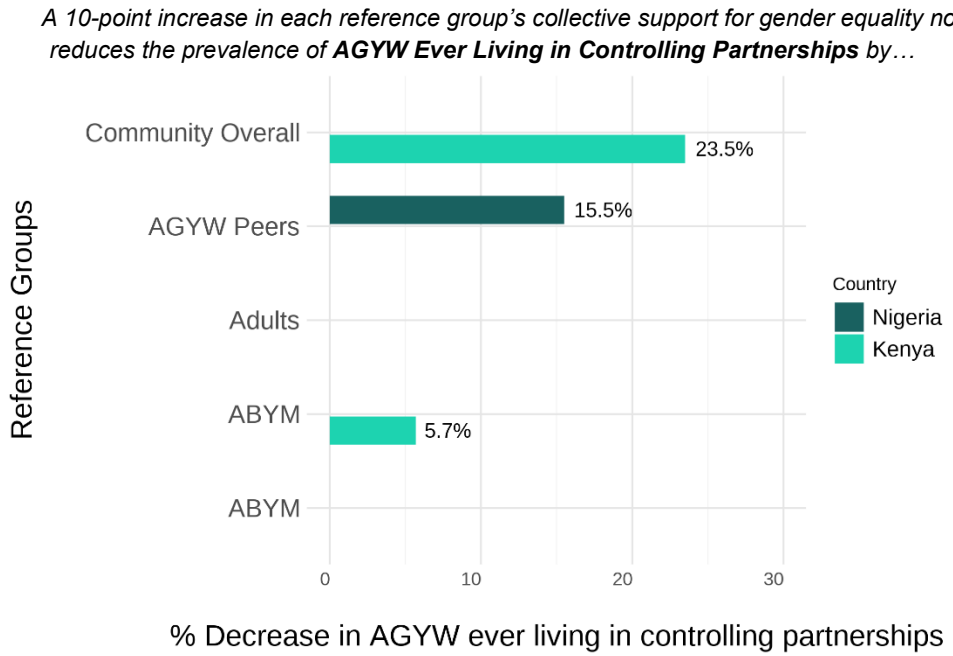
In both countries, we find a statistically significant negative association between AGYW's experience of living in a controlling relationship and collective support for gender-equitable norms among key reference groups. Among Kenyan AGYW, collective support from the overall community and ABYM reduces their odds of ever living in a controlling relationship. In Nigeria, collective support from AGYW peers is protective against living in a controlling relationship. Specifically, a one-point increase in G-NORM score among the overall community decreases the odds of ever living in a controlling partnership among Kenyan AGYW by 12% (OR: 0.88; SE: 0.05). In Nigeria, a one-point increase in the injunctive G-NORM score among AGYW peers decreases the odds of living in a controlling partnership among AGYW by 5% (OR: 0.95; SE: 0.02). These relationships for the overall community reference group remain significant in Kenya even after including AGYW's self-perceived norms in the models but not in Nigeria (see Table 10.1). Contrary to our expectations, while we observe no relationship between Nigerian ABYM and collective support for gender-equitable norms among key reference groups, Kenyan ABYM show an 11% increase (OR: 1.11; SE: 0.05) in the odds of controlling their partner when AGYW in their communities are more collectively supportive of gender-equitable norms. In the combined models, in both countries, ABYM's self-perceived gender-equitable norms remain highly significantly protective against controlling their partner (see Table 10.2).

To further illustrate the potential return on investing in normative interventions, we estimated the predicted probabilities of AGYW living in a controlling partnership under a simulated scenario in which the overall G-NORM score among key reference groups increases by 10 points.[9] The percentage change from baseline ability is shown in Figure 7 and summarized below, while baseline prevalence can be found in Tables 2.1 and 2.2.

[9] In Kenya, negative statistically significant associations were found between ABYMs controlling behaviors and the reference group gender norms. Hence, real-world implications were not estimated for this effect.

KEY TAKEAWAY (Reference Group): *Increasing community-wide collective support for gender-equitable norms (G-NORM score) may reduce prevalence of living in controlling relationships by 23% amongst Kenyan AGYW, and greater collective peer support may lower the prevalence of Nigerian AGYW living in controlling relationships by an additional 15%.*

Figure 8: Reference Group's Collective G-NORM Score and AGYW Ever Living in Controlling Partnerships[10]



Agency Over Mobility

The following paragraphs summarize key results from multivariate logistic regression models examining the relationship between community gender norms and AGYW's agency over mobility in Nigeria and Kenya.

Self-Perceived Gender-equitable Norms

Table 11 presents the results of separate multivariate logistic regression models predicting agency over mobility among AGYW, based on their self-perceived gender-equitable norms (G-NORM scale and sub-scales).

We find a statistically significant positive relationship between AGYW's self-perceived gender-equitable norms and their agency over mobility in Nigeria and Kenya. AGYW in both countries who perceive higher levels of gender-equitable norms are significantly more likely to report having agency over their mobility, even after adjusting for socio-demographic factors such as wealth, education, religion, and place of residence, including urban versus rural areas. A one-point increase in AGYW's self-perceived gender-equitable norms (G-NORM score) in their community increases their odds of

[10] In Nigeria, results were significant for the injunctive norms sub-scale for the AGYW Peers reference group.

reporting agency over mobility by 1% (OR: 1.01; SE: 0.00) in Nigeria and Kenya. Additionally, both descriptive norms—what is perceived to be practiced—and injunctive norms—what is commonly approved in their community—exhibit similar relationships and are significantly positively associated with the odds of AGYW reporting agency over their mobility.

To further illustrate the potential return on investing in normative interventions, we applied regression models to estimate the impact of a 10-point increase in AGYW's G-NORM score on their agency over mobility. This simulation modeling projects changes in the probability—and thus the prevalence—of agency over mobility. The percentage change from baseline prevalence is summarized in the text box below, with baseline values in Table 2.1.

KEY TAKEAWAY (Individual Level): *A 10-point increase in self-perceived gender-equitable norms (G-NORM score) may increase the prevalence of AGYW having agency over their mobility by* ***2.8%*** *in Nigeria and* ***5.4%*** *in Kenya.*

Impact of Key Reference Group Collective Support for Gender-equitable Norms

Table 11 presents results from separate multivariate logistic regression models predicting AGYW's agency over mobility based on collective support for gender-equitable norms (G-NORM scale and sub-scale) among key reference groups in their community. These groups include the community overall (ages 15–69), older adults (25+), AGYW peers, and ABYM.

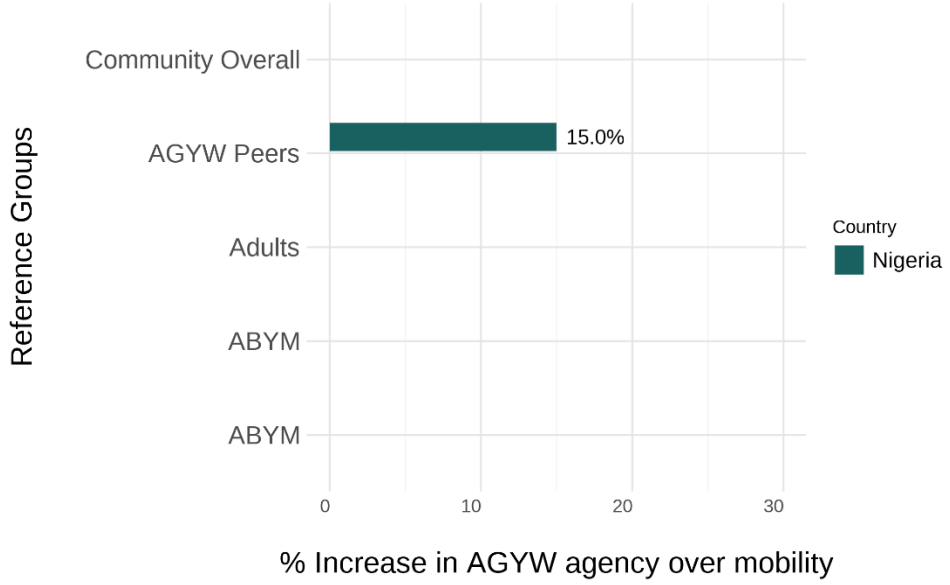
We find a statistically significant positive association between AGYW's agency over mobility and collective support for gender-equitable norms among AGYW peers in Nigeria. However, no significant associations were found for any reference group in Kenya. Specifically, a one-point improvement in the G-NORM score among AGYW peers increases the odds of Nigerian AGYW reporting agency over mobility by 2% (OR: 1.02; SE: 0.01). Among sub-scales, support for injunctive G-NORM (aggregated social approval) is positively associated with agency over mobility, whereas descriptive G-NORM (aggregated common practices) is not. In the combined models, only self-perceived norms remain significant, suggesting they have a more direct influence on AGYW's sense of agency (see Table 11).

To further illustrate the potential return on investing in normative interventions, we estimated predicted probabilities of AGYW's agency over mobility under a simulated scenario where the overall G-NORM score among key reference groups increases by 10 points. The percentage change from baseline is illustrated in Figure 8 and summarized below, while baseline prevalence can be found in Table 2.1.

KEY TAKEAWAY (Reference Group): *Increasing collective support for gender-equitable norms (G-NORM score) among AGYW peers may lead to* ***15%*** *more Nigerian AGYW reporting agency over mobility.*

Figure 8: Reference Group's Collective G-NORM Score and AGYW's Agency over Mobility [11]

*A 10-point increase in each reference group's collective support for gender equality norms increases the prevalence of **AGYWs agency over mobility** by…*



Male Attitude Against Wife-Beating

The following paragraphs summarize key results from multivariate logistic regression models that examine the relationship between community gender norms and ABYM's attitudes against wife-beating in Nigeria and Kenya.

Self-Perceived Gender-equitable Norms Table 12 presents the results of separate multivariate logistic regression models predicting ABYM attitudes towards wife-beating based on their self-perceived gender-equitable norms (G-NORM scale and sub-scales).

We find a statistically significant positive relationship between ABYM's self-perceived gender-equitable norms and their attitudes against wife-beating in both Nigeria and Kenya. ABYM in both countries who perceive higher levels of gender-equitable norms are significantly more likely to report attitudes against wife-beating, even after adjusting for socio-demographic factors such as wealth, education, religion, and place of residence, including urban versus rural areas and region/zone. A one-point increase in ABYM's G-NORM score increases their odds of reporting attitudes against wife-beating by 2% (OR: 1.02; SE: 0.00) in both countries. Additionally, when examining sub-scales, both descriptive norms—what is perceived to be practiced—and injunctive norms are significantly positively associated, with injunctive norms showing a slightly stronger association with attitudes against wife-beating in both countries.

[11] In Kenya, no statistically significant associations were found between AGYW's outcome of interest and the reference group gender norms.

To further illustrate the potential return on investing in normative interventions, we applied regression models to estimate the impact of a 10-point increase in ABYM's G-NORM score on their attitudes against wife beating. This simulation modeling projects changes in the probability—and thus the prevalence—of attitudes against wife beating. The percentage change from baseline prevalence is summarized in the text box below, with baseline values in Table 2.2.

KEY TAKEAWAY (Individual Level): *A 10-point increase in self-perceived gender-equitable norms (G-NORM score) may increase the prevalence of ABYM with attitudes against wife beating by an additional* ***10.2%*** *in Kenya and* ***4.5%*** *in Nigeria.*

Impact of Key Reference Group Collective Support for Gender-equitable Norms

Table 12 presents results from separate multivariate logistic regression models predicting ABYM's attitudes against wife-beating based on collective support for gender-equitable norms (G-NORM score) from key reference groups in their community. These groups include the overall community (ages 15–69), older adults (25+), AGYW, and ABYM peers.

In both countries, we find a statistically significant positive association between ABYM's attitudes against wife-beating and collective support for gender-equitable norms among all reference groups, except older adults. Greater collective support from the overall community and ABYM peers has the largest impact on ABYM's attitudes. Specifically, greater collective support from their ABYM peers increases the odds in both countries; we find a statistically significant positive association between ABYM's attitudes against wife-beating and collective support for gender-equitable norms from all reference groups, except older adults. In Nigeria, the largest odds ratios are observed for collective support from ABYM peers and the overall community. Specifically, greater collective peer support among ABYM increases the odds of Nigerian ABYM rejecting wife-beating by 4% (OR: 1.04; SE: 0.01), while collective support from the overall community (OR: 1.03; SE: 0.01) and AGYW (OR: 1.03; SE: 0.01) increases these odds by 3%.

In Kenya, the largest odds ratio is observed for community-wide collective support, which increases the odds of ABYM rejecting wife-beating by 7% (OR: 1.07; SE: 0.02), followed by collective support from ABYM peers, which increases the odds by 6% (OR: 1.06; SE: 0.02). When examining the sub-scales, Kenyan ABYM's attitudes against wife-beating are positively associated only with injunctive norms (aggregated social approvals), while in Nigeria, both descriptive norms (aggregated common practices) and injunctive norms are positively associated with rejecting wife-beating. However, in the combined models, these relationships are no longer significant, underscoring the ongoing importance of self-perceived gender-equitable norms—except in Nigeria, where AGYW's support continues to influence ABYM's outcomes. (see Table 12).

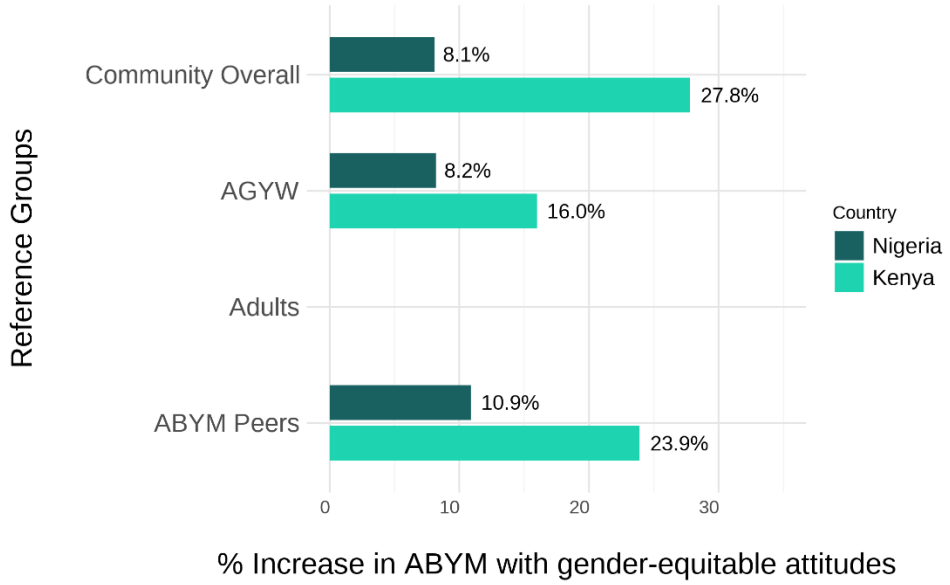
To further illustrate the potential return on investing in normative interventions, we estimated the predicted probabilities of ABYM's attitudes against wife beating under a simulated scenario in which

KEY TAKEAWAY (Reference Group): *Increasing collective support for gender-equitable norms (G-NORM score) in the overall community may lead to* ***28%*** *more Kenyan men expressing attitudes against wife-beating, while collective support among ABYM peers in Nigeria may increase these attitudes by an additional* ***11%.***

the overall G-NORM score among key reference groups increases by 10 points. The percentage change from baseline ability is shown in Figure 9 and summarized below, while baseline prevalence can be found in Table 2.2.

Figure 9: Reference Group's Collective G-NORM Score and ABYM's with Gender-Equitable Attitudes

*A 10-point increase in each reference group's support for gender equality norms increases the prevalence of **ABYM's with gender equitable attitudes** by…*



VI. DISCUSSION AND CONCLUSION

This study offers valuable insights into the potential role gender-equitable norms play in shaping the sexual and reproductive health (SRH) outcomes of adolescent girls and young women (AGYW) and adolescent boys and young men (ABYM) in Nigeria and Kenya. Drawing on data from the Gender Norms Data Engine (GNDE), we find consistent associations—particularly in Nigeria—between more equitable gender norms and a range of behaviors and enabling factors that facilitate SRH service use. Among Nigerian AGYW, more gender-equitable norms are positively associated with both modern contraceptive use and the intention to use contraceptives. For ABYM in both countries, more equitable norms are associated with increased intention to use contraceptives, though not with current use. Importantly, we also find that equitable gender norms are positively associated with enabling factors in both countries across sub-groups—such as ability to access SRH information, ability to use a preferred method, and relationship dynamics including increased agency over mobility and reductions in controlling behaviors. While our cross-sectional design precludes causal inference, the strength and consistency of these associations suggest that gender-equitable norms can meaningfully support adolescents' ability to achieve their SRH goals.

In alignment with the expanded Theory of Normative Social Behavior, we find that both perceived (individual-level) and collective (community-level) norms matter for behavior, but they may exert influence in distinct ways. While self-perceived norms are more consistently and potential directly associated with SRH behaviors and outcomes, the magnitude of associations is often greater for collective norms—highlighting their added value in shaping the broader social environment. Notably, both descriptive (what others do) and injunctive (what others approve of) norms remain salient across groups and behaviors. Yet, in several cases, a specific type of norm appears to dominate at the collective level. For instance, among Nigerian AGYW, the intention to use contraceptives is positively associated with collective gender-equitable descriptive norms across all reference groups, whereas reduced experiences of controlling relationships are more closely tied to injunctive norms among AGYW peers. These findings underscore the importance of considering multiple levels of influence when designing gender norms interventions. Programs that aim to shift norms should not only target individuals but also engage with peer networks, adults, and broader community members to transform the normative environment. Indeed, our simulation multivariate models—designed to illustrate the potential return on investment of normative interventions—suggest that increasing collective support for gender-equitable norms may yield meaningful improvements in SRH outcomes. This includes enabling factors that lay the groundwork for improved behaviors, even if those outcomes are not immediate.

In this light, our results point to the need for scalable, community-wide approaches to shifting norms. Mass media campaigns, school-based curricula, faith-based outreach, and community mobilization can all play complementary roles in reinforcing equitable norms at the local level. Integrating these efforts with youth-friendly SRH services can further support adolescents and young adults in making autonomous health decisions. Given the role of peers and adults as key reference groups, tailored strategies for each group may be essential to generate sustained change. While the findings offer strong evidence, finding must be interpreted with limitations in mind. The analysis is cross-sectional and does not allow us to confirm causal pathways or isolate the mediating role of constructs like ability and motivation, as framed by the Fogg Behavior Model. Future studies incorporating panel data or experimental designs could help test these pathways more rigorously. Nevertheless, this analysis offers a crucial step forward. It demonstrates that fostering supportive community environments and

gender-equitable norms holds significant promise for improving the SRH and broader empowerment of AGYW and ABYM. Moreover, by leveraging large-scale, sub-national data, the GNDE helps overcome long-standing gaps in the social norms literature—allowing for both national-level trend identification and hyper-local diagnostics. This granularity supports context-specific programming while preserving the ability to scale insights across diverse geographies.

In sum, this research contributes to advancing both theory and practice. It affirms the value of distinguishing between perceived and collective norms, incorporating multiple reference groups, and grounding analysis in well-established social norms theory. At the same time, it provides practical, actionable insights for program designers, donors, and local implementers seeking to transform the gendered social environments that shape adolescents' health and life trajectories.

APPENDIX

Table A: Survey Sample Characteristics: Comparison of Fraym Weighted Survey Data and DHS 2022 (Kenya) [1]

	Weighted Survey	DHS
Gender		
Male	49.7%	49.1%
Female	50.3%	50.9%
Age		
15-24	35.2%	30.7%
25-34	23.4%	23.9%
35-44	20.8%	18.1%
45-54	11.6%	12.1%
55-69	9.0%	11.2%
Socioeconomic Status (SES) [2]		
Low SES	35.5%	37.4%
Medium SES	31.2%	30.2%
High SES	33.3%	32.4%
Education		
No formal education	5.7%	10.4%
Incomplete/Complete primary	37.9%	37.1%
Incomplete/Complete Secondary primary	37.8%	37.4%
Incomplete/Complete Higher secondary	18.5%	15.1%
Urban		
Urban	29%	30.3%
Rural	71.0%	69.7%
Province		
Central	13.2%	10.8%
Coast	9.4%	8.3%
Eastern	14.6%	13.6%
Nairobi	12.1%	10.7%

Northeastern	2.0%	8.3%
Nyanza	12.8%	9.6%
Rift Valley	25.7%	25.9%
Western	10.1%	10.2%

[1] Table entails survey sample statistics from Q1 2024. Similar comparisons were run for Q3 2024 to ensure the sample aligned with DHS estimates. In both rounds, AGYW were intentionally oversampled respective to their proportional share of the total population for data production and research analysis purposes. In Q3 2024, ABYM were also oversampled.
[2] Fraym defines socioeconomic status through an asset ownership approach based on the 2022 DHS, selecting the two assets that best tracked DHS national wealth index trends. In Kenya, respondents without a bank account or television are considered Low SES. Respondents with only one of the two assets are considered Medium SES, and respondents with both assets are considered High SES.

Table B: Survey Sample Characteristics: Comparison of Fraym Weighted Survey Data and DHS 2018 (Nigeria) [1]

	Weighted Survey	DHS
Gender		
Male	48.9%	52.1%
Female	51.1%	47.9%
Age		
15-24	35.8%	25.1%
25-34	25.1%	25.9%
35-44	18.2%	20.2%
45-54	11.6%	13.3%
55-69	9.2%	11.3%
Socioeconomic Status (SES) [2]		
Low SES	34.2%	32.4%
Medium SES	23.4%	23.0%
High SES	42.4%	44.7%
Education		
No formal education	26.0%	24.7%
Incomplete/Complete primary	17.1%	16.8%
Incomplete/Complete Secondary primary	39.7%	42.9%
Incomplete/Complete Higher secondary	17.2%	15.6%
Urban		
Urban	55.9%	52.7%
Rural	44.1%	47.3%
Zone		
South East	12.1%	11.7%
South West	22.2%	21.8%
South South	15.9%	16.1%

North Central	15.0%	15.4%
North West	22.4%	22.5%
North East	12.3%	12.4%

[1] Table entails survey sample statistics from Q1 2024. Similar comparisons were run for Q3 2024 to ensure the sample aligned with DHS estimates. In both rounds, AGYW were intentionally oversampled respective to their proportional share of the total population for data production and research analysis purposes. In Q3 2024, ABYM were also oversampled.
[2] Fraym defines socioeconomic status through an asset ownership approach based on the 2018 DHS, selecting the two assets that best tracked DHS national wealth index trends. In Nigeria, respondents without a bank account or television are considered Low SES. Respondents with only one of the two assets are considered Medium SES, and respondents who own both assets are considered High SES.

Table 1: Final G-NORM Scale Items Kenya and Nigeria [1]

Norms Item	Nigeria	Kenya
Descriptive		
If a woman earns money, it will cause problems in her marriage.		
Only men make decisions about household income and expenses.	✓	✓
Husbands make the final decision about how many children to have.	✓	✓
Men make the final decision about their wife (or partner) using family planning methods.	✓	✓
If a woman disobeys her husband, she is sent back to her parents (or sent away).	✓	✓
Only women do the cooking, cleaning, and caring of children.	✓	✓
Women stop working when they get married.	✓	✓
Girls stop going to school if they get pregnant.	✓	✓
Husbands make the final decisions about buying major household items (e.g., television, bicycle, phone).	✓	✓
If there is only enough money for one cell phone for the household, the husband owns it.	✓	✓
Injunctive		
A woman should not work outside the home to keep peace in her marriage.	✓	✓
Only men should make decisions about income and expenses.	✓	✓
Husbands should make the final decision about how many children to have.	✓	✓
Men should make the final decision about their wife using family planning.	✓	✓
If a woman disobeys her husband, she should be sent back to her parents (or sent away).	✓	✓
Only women should do the cooking, cleaning, and caring of children.	✓	✓
Women should stop working when they get married.	✓	✓
Girls should stop going to school if they get pregnant	✓	✓
Husbands should make final decisions about buying major household items (e.g., television, bicycle, phone).	✓	✓
If there is only enough money for one cell phone for the household, the husband should own it.	✓	✓
Cronbach's Alpha		
Overall Scale	87.95	89.16
Descriptive Norms Sub-Scale	76.78	75.87
Injunctive Norms Sub-Scale	79.39	83.89

[1] Table reports Final G-NORM Scale items and Cronbach's Alphas constructed with Q1 2024 data.

Table 2.1: Descriptive Statistics of Key Outcomes for AGYW [1]

	Nigeria (n = 4,692)	Kenya (n = 2,520)
	Percentage	**Percentage**
Modern Contraceptive Use [2]	52%	68%
Intent to Use Contraception [3]	38%	66%
Ability to Access SRH Information	52%	72%
Ability to Obtain Contraception	55%	62%
Ability to Use Contraception	53%	58%
Ever Living in Controlling Partnerships [4]	69%	87%
Agency Over Mobility	31%	38%

[1] Estimates are in terms of percentages and are adjusted for survey weights.
[2] Sample includes only sexually active AGYW. In Nigeria, the sample is 1,508; in Kenya, the sample is 965.
[3] Sample excludes AGYW who reported being pregnant, trying to conceive, as well as those using medium-acting, long-acting, or permanent contraceptive methods. In Nigeria, the sample is 4,290; in Kenya, the sample is 2,207.
[4] Sample includes AGYW who are currently or were ever previously in a relationship. In Nigeria, the sample is 875, and in Kenya, the sample is 697.

Table 2.2: Descriptive Statistics of Key Outcomes for ABYM [1]

	Nigeria (n = 4,696)	Kenya (n = 2,620)
	Percentage	**Percentage**
Modern Contraceptive Use [2]	53%	62%
Intent to Use Contraception [3]	49%	67%
Ability to Access SRH Information	67%	70%
Ability to Obtain Contraception	66%	65%
Ability to Use Contraception	64%	65%
Ever Living in Controlling Partnerships [4]	72%	85%
Attitude Against Wife Beating	72%	56%

[1] Estimates are in terms of percentages and are adjusted for survey weights.
[2] Sample includes only sexually active ABYM. In Nigeria, the sample is 1,552, and in Kenya, the sample is 1,394.
[3] Sample excludes ABYM who reported being their partner being pregnant, trying to conceive, as well as those using medium-acting, long-acting, or permanent contraceptive methods. In Nigeria, the sample is 4,269; in Kenya, the sample is 2,429.
[4] Sample includes ABYM who are currently or were ever previously in a relationship. In Nigeria, the sample is 529, and in Kenya, the sample is 742.

Table 3.1: Descriptive Statistics of G-NORM Scores for AGYW

	Nigeria (n = 4,692)	Kenya (n = 2,520)
AGYW Self-Perceived Score	**Mean (SD)**	**Mean (SD)**
Overall score	43.99 (17.49)	50.42 (22.77)
Descriptive norms score	43.85 (17.60)	49.55 (22.35)
Injunctive norms score	44.17 (17.66)	51.42 (24.39)
Reference Groups' Collective Scores		
Full population (15 – 69)		
Overall score	44.2 (5.91)	49.48 (4.18)
Descriptive norms score	44 (5.79)	48.49 (4.04)
Injunctive norms score	44.4 (5.86)	50.68 (4.40)
Adults (25 – 69)		
Overall score	44.2 (6.41)	49.67 (5.36)
Descriptive norms score	43.9 (6.39)	48.6 (5.11)
Injunctive norms score	44.6 (6.56)	50.91 (5.67)
AGYW Peers (15 – 24 females)		
Overall score	43.8 (6.20)	51.24 (4.95)
Descriptive norms score	43.5 (6.16)	50.21 (5.03)
Injunctive norms score	43.9 (6.40)	52.15 (5.39)
ABYM (15 – 24 males)		
Overall score	46.2 (7.27)	52.62 (7.24)
Descriptive norms score	46.1 (7.06)	50.81 (6.71)
Injunctive norms score	46.5 (7.61)	53.11 (8.60)

Table 3.2: Descriptive Statistics of G-NORM Scores for ABYM

	Nigeria (n = 4,696)	Kenya (n = 2,620)
ABYM Self-Perceived Score	**Mean (SD)**	**Mean (SD)**
Overall score	44.07 (17.59)	48.07 (21.39)
Descriptive norms score	43.05 (18.57)	46.29 (22.62)
Injunctive norms score	45.09 (19.19)	49.86 (23.97)
Reference Group's Collective Scores		
Full population (15 – 69)		
Overall score	47.05 (7.16)	50.55 (4.04)
Descriptive norms score	45.27 (7.04)	48.85 (3.95)
Injunctive norms score	47.99 (7.28)	52.04 (4.28)
Adults (25 – 69)		
Overall score	48.01 (9.08)	50.77 (4.94)
Descriptive norms score	46.21 (8.46)	48.69 (4.96)
Injunctive norms score	48.9 (9.13)	52.68 (5.67)
AGYW (15 – 24 females)		
Overall score	49.69 (7.07)	54.54 (4.52)
Descriptive norms score	47.39 (6.87)	52.34 (4.73)
Injunctive norms score	50.66 (7.67)	55.12 (5.12)
ABYM Peers (15 – 24 males)		
Overall score	44.15 (6.11)	47.13 (4.84)
Descriptive norms score	42.62 (6.19)	45 (5.01)
Injunctive norms score	44.89 (6.71)	48.94 (4.78)

Table 4.1: Descriptive Statistics of Socio-Economic Characteristics among AGYW

	Nigeria (n = 4,692)	Kenya (n = 2,520)
	Percentage / Mean (SD)	**Percentage / Mean (SD)**
Mean Age	19.35 (2.87)	19.95 (3.12)
Urban	51%	31%
Religion		
Christianity	49%	92%
Others	51%	8%
Schooling		
None	54%	2%
Primary	20%	27%
Secondary	25%	52%
Higher	1%	19%
Wealth		
High	13%	34%
Middle	25%	31%
Low	62%	35%
Parental Status		
No child	88%	69%
One or more children	12%	31%
Partnership Status		
Currently Partnered	18%	28%
Currently Single	82%	72%

Table 4.2: Descriptive Statistics of Socio-Economic Characteristics among ABYM

	Nigeria (n = 4,696)	Kenya (n = 2,620)
	Percentage / Mean (SD)	**Percentage / Mean (SD)**
Mean Age	19.86 (3.07)	19.87 (3.02)
Urban	54%	27%
Religion		
Christianity	58%	85%
Others	42%	15%
Schooling		
None	32%	1%
Primary	23%	30%
Secondary	35%	46%
Higher	10%	22%
Wealth		
High	33%	38%
Middle	25%	29%
Low	41%	33%
Parental Status		
No child	91%	87%
One or more children	9%	13%
Partnership Status		
Currently Partnered	11%	28%
Currently Single	88%	72%

Table 5: Multivariate Regression Results on the Impact of Gender Norms (G-NORM scale) on Sexually Active AGYW's Modern Contraceptive Use [1]

	Nigeria (n = 1,508) [2]
	Odds Ratio (SE) [3]
Self-Perceived Gender-Equitable Norms	
Model 1: AGYW Overall Norms Score	1.01* (0.00)
Model 1.1: AGYW Descriptive Norms Score	1.01* (0.00)
Model 1.2: AGYW Injunctive Norms Score	1.01* (0.00)
Reference Groups' Collective Gender-Equitable Norms	
Model 2: Community Overall Norms Score	
Model 2.1: Community Descriptive Norms Score	
Model 2.2: Community Injunctive Norms Score	
Model 3: Adults Overall Norms Score	
Model 3.1: Adults Descriptive Norms Score	
Model 3.2: Adults Injunctive Norms Score	
Model 4: AGYW Peers Overall Norms Score	1.04* (0.02)
Model 4.1: AGYW Peers Descriptive Norms Score	1.04* (0.02)
Model 4.2: AGYW Peers Injunctive Norms Score	1.04* (0.02)
Model 5: ABYM Overall Norms Score	
Model 5.1: ABYM Descriptive Norms Score	
Model 5.2: ABYM Injunctive Norms Score	
Combined Models: Reference Group & AGYW's Self-Perceived Norms	
Model 6: Community Overall & AGYW Self	
Community Overall Norms Score	
AGYW Self-Perceived Norms Score	1.01* (0.00)
Model 7: Adults & AGYW Self	
Adults Overall Norms Score	
AGYW Self-Perceived Norms Score	1.01* (0.00)
Model 8: AGYW Peers & AGYW Self	
AGYW Peers Overall Norms Score	
AGYW Self-Perceived Norms Score	
Model 9: ABYM & AGYW Self	
ABYM Overall Norms Score	
AGYW Self-Perceived Norms Score	1.01* (0.00)

[1] All models were adjusted for key socio-demographic covariates such as age, urbanicity, religion, education, wealth, parental status, partnership status, and geopolitical zone and were weighted using survey weights. For Kenya, no models were significant.
[2] Sample includes only sexually active AGYW who responded to this question. Due to variations in ADM3 reported by respondents and official shapefiles, reference group models were run on a sample of 1,458 AGYW.
[3] Standard errors are in parentheses. Only significant results are reported, with the level of significance indicated by *** for $p < 0.001$, ** for $p < 0.01$, and * for $p < 0.05$

Table 6.1: Multivariate Regression Results on the Impact of Gender Norms (G-NORM scale) on AGYW's Intent to Use Contraception [1]

	Nigeria (n = 4,290) [2]
	Odds Ratio (SE) [3]
Self-Perceived Gender-Equitable Norms	
Model 1: AGYW Overall Norms Score	1.01*** (0.00)
Model 1.1: AGYW Descriptive Norms Score	1.01*** (0.00)
Model 1.2: AGYW Injunctive Norms Score	1.01*** (0.00)
Reference Groups' Collective Gender-Equitable Norms	
Model 2: Community Overall Norms Score	1.03* (0.01)
Model 2.1: Community Descriptive Norms Score	1.03* (0.01)
Model 2.2: Community Injunctive Norms Score	
Model 3: Adults Overall Norms Score	
Model 3.1: Adults Descriptive Norms Score	1.02* (0.01)
Model 3.2: Adults Injunctive Norms Score	
Model 4: AGYW Peers Overall Norms Score	
Model 4.1: AGYW Peers Descriptive Norms Score	1.02* (0.01)
Model 4.2: AGYW Peers Injunctive Norms Score	
Model 5: ABYM Overall Norms Score	
Model 5.1: ABYM Descriptive Norms Score	
Model 5.2: ABYM Injunctive Norms Score	
Combined Models: Reference Groups & AGYW's Self-Perceived Norms	
Model 6: Community Overall & AGYW Self	
Community Overall Norms Score	
AGYW Self-Perceived Norms Score	1.01*** (0.00)
Model 7: Adults & AGYW Self	
Adults Overall Norms Score	
AGYW Self-Perceived Norms Score	1.01*** (0.00)
Model 8: AGYW Peers & AGYW Self	
AGYW Peers Overall Norms Score	
AGYW Self-Perceived Norms Score	1.01*** (0.00)
Model 9: ABYM & AGYW Self	
ABYM Overall Norms Score	
AGYW Self-Perceived Norms Score	1.01*** (0.00)

[1] All models were adjusted for key socio-demographic covariates such as age, urbanicity, religion, education, wealth, parental status, partnership status and geopolitical zone and were weighted using survey weights. For Kenya, no models were significant.
[2] Sample excludes AGYW who reported being pregnant, trying to conceive, as well as those using medium-acting, long-acting, or permanent contraceptive methods. Due to variations in ADM3 reported by respondents and official shapefiles, reference group models were run on a sample of 4221 AGYW.
[3] Standard errors are in parentheses. Only significant results are reported, with the level of significance indicated by *** for $p < 0.001$, ** for $p < 0.01$, and * for $p < 0.05$

Table 6.2: Multivariate Regression Results on the Impact of Gender Norms (G-NORM scale) on ABYM's Intent to Use Contraception [1]

	Nigeria (n = 4,269) [2]	Kenya (n = 2,429) [2]
	Odds Ratio (SE) [3]	**Odds Ratio (SE) [3]**
Self-Perceived Gender-Equitable Norms		
Model 1: ABYM Overall Norms Score	1.01 (0.00) ***	0.99 (0.00) **
Model 1.1: ABYM Descriptive Norms Score	1.01 (0.00) **	0.99 (0.00) *
Model 1.2: ABYM Injunctive Norms Score	1.01 (0.00) ***	0.99 (0.00) **
Reference Groups' Collective Gender-Equitable Norms		
Model 2: Community Overall Norms Score		1.06 (0.03) *
Model 2.1: Community Descriptive Norms Score		1.05 (0.03) *
Model 2.2: Community Injunctive Norms Score		1.06 (0.02) **
Model 3: Adults Overall Norms Score		
Model 3.1: Adults Descriptive Norms Score		
Model 3.2: Adults Injunctive Norms Score		1.04 (0.02) *
Model 4: AGYW Overall Norms Score		
Model 4.1: AGYW Descriptive Norms Score		
Model 4.2: AGYW Injunctive Norms Score		
Model 5: ABYM Peers Overall Norms Score		
Model 5.1: ABYM Peers Descriptive Norms Score		
Model 5.2: ABYM Peers Injunctive Norms Score		
Combined Models: Reference Groups & ABYM's Self-Perceived Norms		
Model 6: Community Overall & ABYM Self		
Community Overall Norms Score		1.07 (0.03) **
ABYM Self-Perceived Norms Score	1.01 (0.00) ***	0.99 (0.00) ***
Model 7: Adults & ABYM Self		
Adults Overall Norms Score		
ABYM Self-Perceived Norms Score	1.01 (0.00) ***	0.99 (0.00) **
Model 8: AGYW Peers & ABYM Self		
AGYW Overall Norms Score		
ABYM Self-Perceived Norms Score	1.01 (0.00) ***	0.99 (0.00) **
Model 9: ABYM & ABYM Self		
ABYM Peers Overall Norms Score		
ABYM Self-Perceived Norms Score	1.01 (0.00) ***	0.99 (0.00) **

[1] All models were adjusted for key socio-demographic covariates such as age, urbanicity, religion, education, wealth, parental status, partnership status, and geopolitical zone (in Nigeria)/province (in Kenya) and were weighted using survey weights.
[2] Due to variations in ADM3 reported by respondents and official shapefiles, reference group models were run on a sample of 1,864 ABYM in Kenya. In Nigeria, reference group models were run on the full ABYM sample of 4,269, as ADM3 reported by respondents had no variations compared to the official shapefiles.
[3] Standard errors are in parentheses. Only significant results are reported, with the level of significance indicated by *** for $p < 0.001$, ** for $p < 0.01$, and * for $p < 0.05$

Table 7.1: Multivariate Regression Results on the Impact of Gender Norms (G-NORM scale) on AGYW's Ability to Access Information on SRH Services and Products [1]

	Nigeria (n = 4,659) [2]	Kenya (n = 2,520) [2]
	Odds Ratio (SE) [3]	**Odds Ratio (SE) [3]**
Self-Perceived Gender-Equitable Norms		
Model 1: AGYW Overall Norms Score	1.02*** (0.00)	1.01** (0.00)
Model 1.1: AGYW Descriptive Norms Score	1.02*** (0.00)	1.01*(0.00)
Model 1.2: AGYW Injunctive Norms Score	1.02*** (0.00)	1.01** (0.00)
Reference Groups' Collective Gender-Equitable Norms		
Model 2: Community Overall Norms Score	1.05*** (0.01)	
Model 2.1: Community Descriptive Norms Score	1.04** (0.01)	
Model 2.2: Community Injunctive Norms Score	1.04** (0.01)	
Model 3: Adults Overall Norms Score	1.02*(0.01)	
Model 3.1: Adults Descriptive Norms Score		
Model 3.2: Adults Injunctive Norms Score	1.02*(0.01)	
Model 4: AGYW Peers Overall Norms Score	1.04*** (0.01)	
Model 4.1: AGYW Peers Descriptive Norms Score	1.03** (0.01)	
Model 4.2: AGYW Peers Injunctive Norms Score	1.04*** (0.01)	
Model 5: ABYM Overall Norms Score		
Model 5.1: ABYM Descriptive Norms Score		
Model 5.2: ABYM Injunctive Norms Score		
Combined Models: Reference Groups & AGYW's Self-Perceived Norms		
Model 6: Community Overall & AGYW Self		
Community Overall Norms Score	1.02*(0.01)	
AGYW Self-Perceived Norms Score	1.02*** (0.00)	1.01** (0.00)
Model 7: Adults & AGYW Self		
Adults Overall Norms Score		
AGYW Self-Perceived Norms Score	1.02*** (0.00)	1.01** (0.00)
Model 8: AGYW Peers & AGYW Self		
AGYW Peers Overall Norms Score		
AGYW Self-Perceived Norms Score	1.02*** (0.00)	1.01** (0.00)
Model 9: ABYM & AGYW Self		
ABYM Overall Norms Score		
AGYW Self-Perceived Norms Score	1.02*** (0.00)	1.01** (0.00)

[1] All models were adjusted for key socio-demographic covariates such as age, urbanicity, religion, education, wealth, parental status, partnership status, and geopolitical zone (in Nigeria)/province (in Kenya) and were weighted using survey weights.
[2] Due to variations in ADM3 reported by respondents and official shapefiles, reference group models were run on a sample of 4,577 AGYW in Nigeria and 2,469 AGYW in Kenya.
[3] Standard errors are in parentheses. Only significant results are reported, with the level of significance indicated by *** for $p < 0.001$, ** for $p < 0.01$, and * for $p < 0.05$

Table 7.2: Multivariate Regression Results on the Impact of Gender Norms (G-NORM scale) on ABYM's Ability to Access Information on SRH Services and Products [1]

	Nigeria (n = 4,269) [2]	Kenya (n = 2,620) [2]
	Odds Ratio (SE) [3]	**Odds Ratio (SE) [3]**
Self-Perceived Gender-Equitable Norms		
Model 1: ABYM Overall Norms Score	1.01 (0.00) ***	
Model 1.1: ABYM Descriptive Norms Score	1.01 (0.00) ***	
Model 1.2: ABYM Injunctive Norms Score	1.01 (0.00) ***	1.005 (0.00) *
Reference Groups' Collective Gender-Equitable Norms		
Model 2: Community Overall Norms Score	1.02 (0.01) *	
Model 2.1: Community Descriptive Norms Score	1.03 (0.01) *	
Model 2.2: Community Injunctive Norms Score	1.02 (0.01) *	
Model 3: Adults Overall Norms Score		
Model 3.1: Adults Descriptive Norms Score	1.02 (0.01) *	
Model 3.2: Adults Injunctive Norms Score		
Model 4: AGYW Overall Norms Score		
Model 4.1: AGYW Descriptive Norms Score	1.02 (0.01) **	
Model 4.2: AGYW Injunctive Norms Score		
Model 5: ABYM Peers Overall Norms Score	1.03 (0.01) *	
Model 5.1: ABYM Peers Descriptive Norms Score	1.03 (0.01) **	
Model 5.2: ABYM Peers Injunctive Norms Score		
Combined Models: Reference Groups & ABYM's Self-Perceived Norms		
Model 6: Community Overall & ABYM Self		
Community Overall Norms Score		
ABYM Self-Perceived Norms Score	1.01 (0.00) ***	1.01 (0.00) *
Model 7: Adults & ABYM Self		
Adults Overall Norms Score		
ABYM Self-Perceived Norms Score	1.01 (0.00) ***	1.01 (0.00) *
Model 8: AGYW Peers & ABYM Self		
AGYW Overall Norms Score		
ABYM Self-Perceived Norms Score	1.01 (0.00) ***	1.01 (0.00) *
Model 9: ABYM & ABYM Self		
ABYM Peers Overall Norms Score		
ABYM Self-Perceived Norms Score	1.01 (0.00) ***	

[1] All models were adjusted for key socio-demographic covariates such as age, urbanicity, religion, education, wealth, parental status, partnership status, and geopolitical zone (in Nigeria)/province (in Kenya) and were weighted using survey weights.
[2] Due to variations in ADM3 reported by respondents and official shapefiles, reference group models were run on a sample of 2,003 ABYM in Kenya. In Nigeria, reference group models were run on the full ABYM sample of 4,269, as ADM3 reported by respondents had no variations compared to the official shapefiles.
[3] Standard errors are in parentheses. Only significant results are reported, with the level of significance indicated by *** for $p < 0.001$, ** for $p < 0.01$, and * for $p < 0.05$

Table 8.1: Multivariate Regression Results on the Impact of Gender Norms (G-NORM scale) on AGYW's Ability to Obtain Contraception [1]

	Nigeria (n = 4659) [2]
	Odds Ratio (SE) [3]
Self-Perceived Gender-Equitable Norms	
Model 1: AGYW Overall Norms Score	1.01*** (0.00)
Model 1.1: AGYW Descriptive Norms Score	1.01*** (0.00)
Model 1.2: AGYW Injunctive Norms Score	1.01*** (0.00)
Reference Groups' Collective Gender-Equitable Norms	
Model 2: Community Overall Norms Score	1.05*** (0.01)
Model 2.1: Community Descriptive Norms Score	1.04** (0.01)
Model 2.2: Community Injunctive Norms Score	1.04** (0.01)
Model 3: Adults Overall Norms Score	1.03** (0.01)
Model 3.1: Adults Descriptive Norms Score	1.03** (0.01)
Model 3.2: Adults Injunctive Norms Score	1.03** (0.01)
Model 4: AGYW Peers Overall Norms Score	1.03** (0.01)
Model 4.1: AGYW Peers Descriptive Norms Score	1.02* (0.01)
Model 4.2: AGYW Peers Injunctive Norms Score	1.02* (0.01)
Model 5: ABYM Overall Norms Score	
Model 5.1: ABYM Descriptive Norms Score	
Model 5.2: ABYM Injunctive Norms Score	
Combined Models: Reference Groups & AGYW's Self-Perceived Norms	
Model 6: Community Overall & AGYW Self	
Community Overall Norms Score	1.04** (0.01)
AGYW Self-Perceived Norms Score	1.01** (0.00)
Model 7: Adults & AGYW Self	
Adults Overall Norms Score	1.02* (0.01)
AGYW Self-Perceived Norms Score	1.01*** (0.00)
Model 8: AGYW Peers & AGYW Self	
AGYW Peers Overall Norms Score	
AGYW Self-Perceived Norms Score	1.01** (0.00)
Model 9: ABYM & AGYW Self	
ABYM Overall Norms Score	
AGYW Self-Perceived Norms Score	1.01*** (0.00)

[1] All models were adjusted for key socio-demographic covariates such as age, urbanicity, religion, education, wealth, parental status, partnership status, and geopolitical zone and were weighted using survey weights. For Kenya, no models were significant.
[2] Due to variations in ADM3 reported by respondents and official shapefiles, reference group models were run on a sample of 4,577 AGYW in Nigeria.
[3] Standard errors are in parentheses. Only significant results are reported, with the level of significance indicated by *** for $p < 0.001$, ** for $p < 0.01$, and * for $p < 0.05$

Table 8.2: Multivariate Regression Results on the Impact of Gender Norms (G-NORM scale) on ABYM's Ability to Obtain Contraception [1]

	Nigeria (n = 4,269) [2]	Kenya (n = 2,620) [2]
	Odds Ratio (SE) [3]	**Odds Ratio (SE) [3]**
Self-Perceived Gender-Equitable Norms		
Model 1: ABYM Overall Norms Score	1.01 (0.00) ***	
Model 1.1: ABYM Descriptive Norms Score	1.01 (0.00) ***	
Model 1.2: ABYM Injunctive Norms Score	1.01 (0.00) ***	
Reference Groups' Collective Gender-Equitable Norms		
Model 2: Community Overall Norms Score		1.05 (0.02) *
Model 2.1: Community Descriptive Norms Score		1.05 (0.03) *
Model 2.2: Community Injunctive Norms Score		1.05 (0.02) *
Model 3: Adults Overall Norms Score		1.03 (0.02) *
Model 3.1: Adults Descriptive Norms Score		
Model 3.2: Adults Injunctive Norms Score		
Model 4: AGYW Overall Norms Score		
Model 4.1: AGYW Descriptive Norms Score		
Model 4.2: AGYW Injunctive Norms Score		
Model 5: ABYM Peers Overall Norms Score	1.02 (0.01) *	
Model 5.1: ABYM Peers Descriptive Norms Score		
Model 5.2: ABYM Peers Injunctive Norms Score	1.02 (0.01) **	
Combined Models: Reference Groups & ABYM's Self-Perceived Norms		
Model 6: Community Overall & ABYM Self		
Community Overall Norms Score		1.05 (0.02) *
ABYM Self-Perceived Norms Score	1.01 (0.00) ***	
Model 7: Adults & ABYM Self		
Adults Overall Norms Score		1.03 (0.02) *
ABYM Self-Perceived Norms Score	1.01 (0.00) ***	
Model 8: AGYW Peers & ABYM Self		
AGYW Overall Norms Score		
ABYM Self-Perceived Norms Score	1.01 (0.00) ***	
Model 9: ABYM & ABYM Self		
ABYM Peers Overall Norms Score		
ABYM Self-Perceived Norms Score	1.01 (0.00) ***	

[1] All models were adjusted for key socio-demographic covariates such as age, urbanicity, religion, education, wealth, parental status, partnership status, and geopolitical zone (in Nigeria)/province (in Kenya) and were weighted using survey weights.
[2] Due to variations in ADM3 reported by respondents and official shapefiles, reference group models were run on a sample of 2,003 ABYM in Kenya. In Nigeria, reference group models were run on the full ABYM sample of 4,269, as ADM3 reported by respondents had no variations compared to the official shapefiles.
[3] Standard errors are in parentheses. Only significant results are reported, with the level of significance indicated by *** for $p < 0.001$, ** for $p < 0.01$, and * for $p < 0.05$

Table 9.1: Multivariate Regression Results on the Impact of Gender Norms (G-NORM scale) on AGYW's Ability to Use Contraception [1]

	Nigeria (n = 4,659) [2]	Kenya (n = 2,520) [2]
	Odds Ratio (SE) [3]	**Odds Ratio (SE) [3]**
Self-Perceived Gender-Equitable Norms		
Model 1: AGYW Overall Norms Score	1.01** (0.00)	
Model 1.1: AGYW Descriptive Norms Score	1.01** (0.00)	
Model 1.2: AGYW Injunctive Norms Score	1.01** (0.00)	
Reference Groups' Collective Gender-Equitable Norms		
Model 2: Community Overall Norms Score	1.04** (0.01)	
Model 2.1: Community Descriptive Norms Score	1.03** (0.01)	
Model 2.2: Community Injunctive Norms Score	1.03* (0.01)	
Model 3: Adults Overall Norms Score		
Model 3.1: Adults Descriptive Norms Score		
Model 3.2: Adults Injunctive Norms Score		
Model 4: AGYW Peers Overall Norms Score	1.02* (0.01)	1.03* (0.01)
Model 4.1: AGYW Peers Descriptive Norms Score	1.02* (0.01)	1.02* (0.01)
Model 4.2: AGYW Peers Injunctive Norms Score		
Model 5: ABYM Overall Norms Score		
Model 5.1: ABYM Descriptive Norms Score		
Model 5.2: ABYM Injunctive Norms Score		
Combined Models: Reference Groups & AGYW's Self-Perceived Norms		
Model 6: Community Overall & AGYW Self		
Community Overall Norms Score	1.03* (0.01)	
AGYW Self-Perceived Norms Score	1.01* (0.00)	
Model 7: Adults & AGYW Self		
Adults Overall Norms Score		
AGYW Self-Perceived Norms Score	1.01** (0.00)	
Model 8: AGYW Peers & AGYW Self		
AGYW Peers Overall Norms Score		1.03* (0.01)
AGYW Self-Perceived Norms Score	1.01* (0.00)	
Model 9: ABYM & AGYW Self		
ABYM Overall Norms Score		
AGYW Self-Perceived Norms Score	1.01** (0.00)	

[1] All models were adjusted for key socio-demographic covariates such as age, urbanicity, religion, education, wealth, parental status, partnership status, and geopolitical zone (in Nigeria)/province (in Kenya) and were weighted using survey weights.
[2] Due to variations in ADM3 reported by respondents and official shapefiles, reference group models were run on a sample of 4,577 AGYW in Nigeria and 2469 AGYW in Kenya.
[3] Standard errors are in parentheses. Only significant results are reported, with the level of significance indicated by *** for $p < 0.001$, ** for $p < 0.01$, and * for $p < 0.05$

Table 9.2: Multivariate Regression Results on the Impact of Gender Norms (G-NORM scale) on ABYM's Ability to Use Contraception [1]

	Nigeria (n = 4269) [2]
	Odds Ratio (SE) [3]
Self-Perceived Gender-Equitable Norms	
Model 1: ABYM Overall Norms Score	1.01 (0.00) **
Model 1.1: ABYM Descriptive Norms Score	1.01 (0.00) **
Model 1.2: ABYM Injunctive Norms Score	1.01 (0.00) **
Reference Groups' Collective Gender-Equitable Norms	
Model 2: Community Overall Norms Score	
Model 2.1: Community Descriptive Norms Score	
Model 2.2: Community Injunctive Norms Score	
Model 3: Adults Overall Norms Score	
Model 3.1: Adults Descriptive Norms Score	
Model 3.2: Adults Injunctive Norms Score	
Model 4: AGYW Overall Norms Score	
Model 4.1: AGYW Descriptive Norms Score	
Model 4.2: AGYW Injunctive Norms Score	
Model 5: ABYM Peers Overall Norms Score	
Model 5.1: ABYM Peers Descriptive Norms Score	
Model 5.2: ABYM Peers Injunctive Norms Score	
Combined Models: Reference Groups & ABYM's Self-Perceived Norms	
Model 6: Community Overall & ABYM Self	
Community Overall Norms Score	
ABYM Self-Perceived Norms Score	1.01 (0.00) **
Model 7: Adults & ABYM Self	
Adults Overall Norms Score	
ABYM Self-Perceived Norms Score	1.01 (0.00) **
Model 8: AGYW Peers & ABYM Self	
AGYW Overall Norms Score	
ABYM Self-Perceived Norms Score	1.01 (0.00) **
Model 9: ABYM & ABYM Self	
ABYM Peers Overall Norms Score	
ABYM Self-Perceived Norms Score	1.01 (0.00) **

[1] All models were adjusted for key socio-demographic covariates such as age, urbanicity, religion, education, wealth, parental status, partnership status, and geopolitical zone (in Nigeria)/province (in Kenya) and were weighted using survey weights. For Kenya, no models were significant.
[2] Due to variations in ADM3 reported by respondents and official shapefiles, reference group models were run on a sample of 2,003 ABYM in Kenya. In Nigeria, reference group models were run on the full ABYM sample of 4,269, as ADM3 reported by respondents had no variations compared to the official shapefiles.
[3] Standard errors are in parentheses. Only significant results are reported, with the level of significance indicated by *** for $p < 0.001$, ** for $p < 0.01$, and * for $p < 0.05$

Table 10.1: Multivariate Regression Results on the Impact of Gender Norms (G-NORM scale) on AGYW Ever Living in Controlling Partnerships [1]

	Nigeria (n = 875) [2]	Kenya (n = 697) [2]
	Odds Ratio (SE) [3]	**Odds Ratio (SE) [3]**
Self-Perceived Gender-Equitable Norms		
Model 1: AGYW Overall Norms Score		0.98 (0.01) **
Model 1.1: AGYW Descriptive Norms Score		0.98 (0.01) **
Model 1.2: AGYW Injunctive Norms Score		0.98 (0.01) **
Reference Groups' Collective Gender-Equitable Norms		
Model 2: Community Overall Norms Score		0.88 (0.05) *
Model 2.1: Community Descriptive Norms Score		0.88 (0.05) *
Model 2.2: Community Injunctive Norms Score		0.89 (0.05) *
Model 3: Adults Overall Norms Score		
Model 3.1: Adults Descriptive Norms Score		
Model 3.2: Adults Injunctive Norms Score		
Model 4: AGYW Peers Overall Norms Score		
Model 4.1: AGYW Peers Descriptive Norms Score		
Model 4.2: AGYW Peers Injunctive Norms Score	0.95 (0.02) *	
Model 5: ABYM Overall Norms Score		
Model 5.1: ABYM Descriptive Norms Score		
Model 5.2: ABYM Injunctive Norms Score		0.96 (0.02) *
Combined Models: Reference Groups & AGYW's Self-Perceived Norms		
Model 6: Community Overall & AGYW Self		
Community Overall Norms Score		0.90 (0.05) *
AGYW Self-Perceived Norms Score		0.98 (0.01) **
Model 7: Adults & AGYW Self		
Adults Overall Norms Score		
AGYW Self-Perceived Norms Score		0.98 (0.01) **
Model 8: AGYW Peers & AGYW Self		
AGYW Peers Overall Norms Score		
AGYW Self-Perceived Norms Score		0.98 (0.01) **
Model 9: ABYM & AGYW Self		
ABYM Overall Norms Score		
AGYW Self-Perceived Norms Score		0.98 (0.01) **

[1] All models were adjusted for key socio-demographics such as age, urbanicity, religion, education, wealth, parental status, partnership status, and geopolitical zone (in Nigeria)/province (in Kenya) and were weighted using survey weights.
[2] The sample includes only those AGYW who report being ever partnered. Due to variations in ADM3 reported by respondents and official shapefiles, reference group models were run on a sample of 860 AGYW in Nigeria and 679 AGYW in Kenya.
[3] Standard errors are in parentheses. Only significant results are reported, with the level of significance indicated by *** for $p < 0.001$, ** for $p < 0.01$, and * for $p < 0.05$

Table 10.2: Multivariate Regression Results on the Impact of Gender Norms (G-NORM scale) on ABYM Ever Living in Controlling Partnerships [1]

	Nigeria (n = 529) [2]	Kenya (n = 742) [2]
	Odds Ratio (SE) [3]	**Odds Ratio (SE) [3]**
Self-Perceived Gender-Equitable Norms		
Model 1: ABYM Overall Norms Score	0.97 (0.01) ***	0.99 (0.01) **
Model 1.1: ABYM Descriptive Norms Score	0.98 (0.01) ***	0.99 (0.00) *
Model 1.2: ABYM Injunctive Norms Score	0.98 (0.01) ***	0.99 (0.01) **
Reference Groups' Collective Gender-Equitable Norms		
Model 2: Community Overall Norms Score		
Model 2.1: Community Descriptive Norms Score		
Model 2.2: Community Injunctive Norms Score		
Model 3: Adults Overall Norms Score		
Model 3.1: Adults Descriptive Norms Score		
Model 3.2: Adults Injunctive Norms Score		
Model 4: AGYW Overall Norms Score		
Model 4.1: AGYW Descriptive Norms Score		1.11 (0.05) *
Model 4.2: AGYW Injunctive Norms Score		
Model 5: ABYM Peers Overall Norms Score		
Model 5.1: ABYM Peers Descriptive Norms Score		
Model 5.2: ABYM Peers Injunctive Norms Score		
Combined Models: Reference Groups & ABYM's Self-Perceived Norms		
Model 6: Community Overall & ABYM Self		
Community Overall Norms Score		
ABYM Self-Perceived Norms Score	0.97 (0.01) ***	0.98 (0.01) **
Model 7: Adults & ABYM Self		
Adults Overall Norms Score		
ABYM Self-Perceived Norms Score	0.97 (0.01) ***	0.98 (0.01) **
Model 8: AGYW Peers & ABYM Self		
AGYW Overall Norms Score		
ABYM Self-Perceived Norms Score	0.97 (0.01) ***	0.98 (0.01) **
Model 9: ABYM & ABYM Self		
ABYM Peers Overall Norms Score		
ABYM Self-Perceived Norms Score	0.97 (0.01) ***	0.98 (0.01) **

[1] All models were adjusted for key socio-demographic covariates such as age, urbanicity, religion, education, wealth, parental status, partnership status, and geopolitical zone (in Nigeria)/province (in Kenya) and were weighted using survey weights.
[2] Due to variations in ADM3 reported by respondents and official shapefiles, reference group models were run on a sample of 573 ABYM in Kenya. In Nigeria, reference group models were run on the full ABYM sample of 529 as ADM3 reported by respondents had no variations compared to the official shapefiles.
[3] Standard errors are in parentheses. Only significant results are reported, with the level of significance indicated by *** for $p < 0.001$, ** for $p < 0.01$, and * for $p < 0.05$

Table 11: Multivariate Regression Results on the Impact of Gender Norms (G-NORM scale) on AGYW's Agency Over Mobility[1]

	Nigeria (n = 4557) [2]	Kenya (n = 2520) [2]
	Odds Ratio (SE) [3]	**Odds Ratio (SE) [3]**
Self-Perceived Gender-Equitable Norms		
Model 1: AGYW Overall Norms Score	1.01** (0.00)	1.01*** (0.00)
Model 1.1: AGYW Descriptive Norms Score	1.01** (0.00)	1.01*** (0.00)
Model 1.2: AGYW Injunctive Norms Score	1.01** (0.00)	1.01*** (0.00)
Reference Groups' Collective Gender-Equitable Norms		
Model 2: Community Overall Norms Score		
Model 2.1: Community Descriptive Norms Score		
Model 2.2: Community Injunctive Norms Score		
Model 3: Adults Overall Norms Score		
Model 3.1: Adults Descriptive Norms Score		
Model 3.2: Adults Injunctive Norms Score		
Model 4: AGYW Peers Overall Norms Score	1.02* (0.01)	
Model 4.1: AGYW Peers Descriptive Norms Score		
Model 4.2: AGYW Peers Injunctive Norms Score	1.02* (0.01)	
Model 5: ABYM Overall Norms Score		
Model 5.1: ABYM Descriptive Norms Score		
Model 5.2: ABYM Injunctive Norms Score		
Combined Models: Reference Groups & AGYW Self-Perceived Norms		
Model 6: Community Overall & AGYW Self		
Community Overall Norms Score		
AGYW Self-Perceived Norms Score	1.01** (0.00)	1.01*** (0.00)
Model 7: Adults & AGYW Self		
Adults Overall Norms Score		
AGYW Self-Perceived Norms Score	1.01** (0.00)	1.01*** (0.00)
Model 8: AGYW Peers & AGYW Self		
AGYW Peers Overall Norms Score		
AGYW Self-Perceived Norms Score	1.01** (0.00)	1.01*** (0.00)
Model 9: ABYM & AGYW Self		
ABYM Overall Norms Score		
AGYW Self-Perceived Norms Score	1.01** (0.00)	1.01*** (0.00)

[1] All models were adjusted for key socio-demographic covariates such as age, urbanicity, religion, education, wealth, parental status, partnership status, and geopolitical zone (in Nigeria)/province (in Kenya) and were weighted using survey weights.
[2] Due to variations in ADM3 reported by respondents and official shapefiles, reference group models were run on a sample of 4,478 AGYW in Nigeria and 2,469 AGYW in Kenya.
[3] Standard errors are in parentheses. Only significant results are reported, with the level of significance indicated by *** for $p < 0.001$, ** for $p < 0.01$, and * for $p < 0.05$

Table 12: Multivariate Regression Results on the Impact of Gender Norms (G-NORM scale) on ABYM's Attitudes Against Wife Beating [1]

	Nigeria (n = 4,653) [2]	Kenya (n = 2,605) [2]
	Odds Ratio (SE) [3]	**Odds Ratio (SE) [3]**
Self-Perceived Gender-Equitable Norms		
Model 1: ABYM Overall Norms Score	1.02 (0.00) ***	1.02 (0.00) ***
Model 1.1: ABYM Descriptive Norms Score	1.01 (0.00) ***	1.02 (0.00) ***
Model 1.2: ABYM Injunctive Norms Score	1.02 (0.00) ***	1.02 (0.00) ***
Reference Groups' Collective Gender-Equitable Norms		
Model 2: Community Overall Norms Score	1.03 (0.01) *	1.07 (0.02) **
Model 2.1: Community Descriptive Norms Score		1.07 (0.02) **
Model 2.2: Community Injunctive Norms Score	1.03 (0.01) *	1.06 (0.02) **
Model 3: Adults Overall Norms Score		
Model 3.1: Adults Descriptive Norms Score		
Model 3.2: Adults Injunctive Norms Score		
Model 4: AGYW Overall Norms Score	1.03 (0.01) **	1.04 (0.02) *
Model 4.1: AGYW Descriptive Norms Score		1.04 (0.02) *
Model 4.2: AGYW Injunctive Norms Score	1.03 (0.01) **	
Model 5: ABYM Peers Overall Norms Score	1.04 (0.01) ***	1.06 (0.02) **
Model 5.1: ABYM Peers Descriptive Norms Score		1.05 (0.02) **
Model 5.2: ABYM Peers Injunctive Norms Score	1.03 (0.01) **	1.05 (0.02) **
Combined Models: Reference Groups & ABYM's Self-Perceived Norms		
Model 6: Community Overall & ABYM Self		
Community Overall Norms Score		
ABYM Self-Perceived Norms Score	1.02 (0.00) ***	1.02 (0.00) ***
Model 7: Adults & ABYM Self		
Adults Overall Norms Score		
ABYM Self-Perceived Norms Score	1.02 (0.00) ***	1.03 (0.00) ***
Model 8: AGYW Peers & ABYM Self		
AGYW Overall Norms Score	1.03 (0.01) **	
ABYM Self-Perceived Norms Score	1.02 (0.00) ***	1.03 (0.00) ***
Model 9: ABYM & ABYM Self		
ABYM Peers Overall Norms Score		
ABYM Self-Perceived Norms Score	1.02 (0.00) ***	1.02 (0.00) ***

[1] All models were adjusted for key socio-demographic covariates such as age, urbanicity, religion, education, wealth, parental status, partnership status, and geopolitical zone (in Nigeria)/province (in Kenya) and were weighted using survey weights.
[2] Due to variations in ADM3 reported by respondents and official shapefiles, reference group models were run on a sample of 1,993 ABYM in Kenya. In Nigeria, reference group models were run on the full ABYM sample of 4,653, as ADM3 reported by respondents had no variations compared to the official shapefiles.
[3] Standard errors are in parentheses. Only significant results are reported, with the level of significance indicated by *** for $p < 0.001$, ** for $p < 0.01$, and * for $p < 0.05$

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