

# Reconceptualizing Women's and Girls' Empowerment: A Cross-Cultural Index for Measuring Progress Toward Improved Sexual and Reproductive Health

***CONTEXT:*** *Improving women's empowerment is pivotal to public health and development programs; however, inconsistent definitions and lack of cross-cultural measures compromise monitoring efforts.*

***METHODS:*** *Data collected in 2017–2018 in Ethiopia, Uganda and two sites in Nigeria were used to develop a cross-cultural index of women's and girls' empowerment in sexual and reproductive health (WGE-SRH). Item development was grounded in qualitative interviews, and informed by a conceptual framework that included domains of existence of choice and exercise of choice related to sex, contraceptive use and pregnancy. Items were pilot tested among 1,229 women aged 15–49 across sites. Psychometric properties were explored to identify cross-site constructs, and logistic regression was used to assess the construct validity of each dimension.*

***RESULTS:*** *Analyses identified subscales for sexual existence of choice (Cronbach's alphas, 0.71–0.79) and contraceptive existence of choice (0.56–0.78). A pregnancy existence of choice subscale emerged for only two sites (0.61–0.80). Internal reliability of the exercise of choice subscales varied. Construct validity analyses found that for some sites, high scores on the sexual and contraceptive existence of choice subscales were associated with elevated odds of volitional sex and contraceptive use, respectively. Combining the existence of choice and exercise of choice summary scores for sex strengthened associations with volitional sex.*

***CONCLUSIONS:*** *The cross-cultural WGE-SRH index can be used to assess existence of choice related to contraception and volitional sex. Further work is needed to improve measures of SRH exercise of choice, and investigate the index's multidimensionality and associations with SRH outcomes.*

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In 2015, the United Nations designated women's empowerment–specifically, to "achieve gender equality and empower all women and girls"–as its fifth Sustainable Development Goal (SDG 5).[1] Grounded in a rights-based approach, women's empowerment can be seen both as an end in itself and as a means of accelerating development.[2] Although research has elucidated factors that influence women's economic empowerment,[3] a growing body of literature has further investigated the linkages between women's empowerment and a range of health behaviors and outcomes,[2] including initiation of sexual activity,[4] contraceptive use[5] and unintended pregnancy.[5,6] However, inconsistencies in current definitions and indicators underscore the lack of consensus on conceptualization and measurement of empowerment,[2] particularly in Sub-Saharan Africa.[7,8] A recent review of measurement approaches for women's empowerment identified three priorities for framing future research on this topic: grounding research in theory, minimizing implicit biases in analyses and collecting comprehensive information about the empowerment process (e.g., through the use of mixed-methods research).[9]

In the past decade, women's sexual and reproductive health (SRH) empowerment has become a central focus of reproductive health research and programs. Recent frameworks–including models developed by the Bill & Melinda Gates Foundation (BMGF),[10] the International Center Research on Women (ICRW)[11] and CARE[12]–have defined SRH empowerment using broad conceptualizations of empowerment. While the specific conceptualizations of SRH empowerment differ among models, consensus exists in understanding empowerment as a multilevel process involving resources and agency. Resources comprise both financial and intangible assets, including knowledge, social support and the policy environment,[11] while agency refers to the ability to set goals reflecting one's values.[13] Choice, voice and power are central foci of the BMGF and ICRW frameworks, which expand their attention from individual to collective empowerment, through leadership and collective action, to weigh on policies and programs.[10,11] The BMGF and ICRW frameworks, along with the CARE framework, focus on SRH as a key determinant of women's life prospects, while explicitly directing attention to power structures at the family and societal levels that prevent women from choosing, voicing and acting on their preferences; they also examine the institutional forces that constrain SRH choices and necessitate collective action to overturn.

The operationalization of these frameworks to reflect the ability of women from different cultures to define their sexual and reproductive preferences (e.g., to decide if and when to have sex, use contraceptives and bear children) according to their beliefs and values, and to act on these preferences, has not yet been explored. To close the gap, researchers have generated a number of measures—including the Reproductive Autonomy Scale,[14] Contraceptive Self-Efficacy Scale,[15] Reproductive Coercion Scale,[16] Women's Agency Scale[17] and Survey-Based Women's Empowerment index[18]—that shed light on specific components of empowerment. These measures, when used independently, focus on specific aspects of SRH empowerment such as self-efficacy), but they do not fully distinguish among the components of the empowerment process (from setting goals to taking action). Moreover, few of these scales have been validated in low- and middle-income countries.[18,19]

A major challenge in measuring empowerment across cultures is that SRH attitudes and behaviors are context-dependent;[2,7] research tackling this issue has generally grounded empowerment measures within a framework and then considered contextual variations at the analytic stage, rather than at the measurement stage.[2] An alternative approach for enhancing cross-cultural measurement, or measures developed and tested across different geographic and cultural contexts, would be to use a core set of items that reflect a common framework, which would be useful for cross-site comparisons, and to supplement them with context-specific items for local measurement.

To build on recent advances, we have proposed the Women's and Girl's Empowerment–Sexual Reproductive Health (WGE-SRH) framework,[20,21] which we use in this study as a basis for developing a cross-cultural measure to assess SRH empowerment for research, monitoring and programmatic purposes. The framework, which is described in detail elsewhere,[20,21] brings together two complementary perspectives: the World Bank's Empowerment Framework[22] and the SRH empowerment frameworks discussed above. Specifically, we used the World Bank's Empowerment Framework to explore the psychosocial pathways linking choices to behaviors at the individual level—that is, the power to act according to one's values and goals. As per the World Bank's framework, we conceptualize empowerment as moving from existence of choice to exercise of choice and finally achievement of choice, and adopt the definitions of these constructs used in Donald and colleagues' work on agency.[13] Thus, we view existence of choice or motivational autonomy—having the autonomy to define one's goals—as a step through which one's motivations direct goal-setting. These motivations are informed by the internalization of external pressures and personal values. Subsequently, exercise of choice encompasses self-efficacy (the belief that one can effectively take actions to achieve a goal), decision-making and negotiation that facilitate the achievement of a chosen goal or outcome.

In addition, we adopt a woman-centered approach by defining achievement of choice (e.g., choosing to have sex, use contraceptives or become pregnant) as reflecting women's own preferences, rather than public health targets. Moreover, following both the World Bank and SRH-specific frameworks, our WGE-SRH model recognizes the social and institutional environment that enhances or constrains individual choices and actions. However, in contrast to previous SRH frameworks, we did not include the dimension of "power with,"[23] which is the ability to make change through collaboration and unified societal action, but is less relevant in understanding individual actions (the focus of the current analysis). The WGE-SRH framework (Appendix Figure 1) was refined in accordance with the results of a qualitative study conducted in four geographically and culturally diverse settings in Sub-Saharan Africa. The conceptual model and qualitative study, which are described in detail elsewhere,[20,21] informed the development, organization and analysis of the WGE-SRH quantitative index presented in this article. The index is designed to evaluate women's motivations for choosing to have sex, use contraceptives or become pregnant, and the constraints on their making these choices, across diverse Sub-Saharan African contexts.

## METHODS

The WGE-SRH index was developed using a mixed-methods design[24] comprising a qualitative study conducted between July and August 2017, and a quantitative study conducted between June and July 2018. The studies were conducted under the umbrella of the Performance Monitoring for Action (PMA) project, formerly Performance Monitoring and Accountability 2020 (PMA2020), which utilizes rapid mobile data collection to monitor key family planning indicators in 11 areas in low- and middle-income countries.[25] Data from the qualitative and quantitative phases were collected in urban and rural communities in four areas of three Sub-Saharan African countries: the Amhara Region in Ethiopia, Mukono and Iganga Districts in Central Uganda, Anambra State in southern Nigeria and Kano State in northern Nigeria. These study sites were selected because of long-standing relationships between PMA's US-based researchers and in-country research teams, and because better understanding of women's SRH empowerment in Sub-Saharan Africa was needed.[26] Moreover, the sites represent a variety of East African and West African cultures at distinct stages of the fertility transition. Specifically, Nigeria and Uganda are high-fertility countries in which total fertility rates (TFRs) have declined slowly and currently stand at 5.3 and 5.6 births per woman, respectively;[27,28] Ethiopia, on the other hand, has experienced a steady decline in TFR (from 5.4 in 2005 to 4.2 in 2016).[29] Furthermore, the two Nigerian sites differ in that fertility is higher and the level of economic development level is lower in the northern state of Kano than in the southern state of Anambra. In addition, the four settings, including the two Nigerian sites, are heterogeneous in their languages,

religions and gender norms, which are of particular interest in examinations of cross-cultural factors that shape women's and girls' empowerment.[30]

A common research protocol was developed in collaboration with country partners and implemented in each study site. The project was conducted by researchers from PMA's global network—including Addis Ababa University in Ethiopia, the Centre for Research Evaluation Resources and Development and Bayero University Kano in Nigeria, and Makerere University in Uganda—and researchers from Johns Hopkins Bloomberg School of Public Health (JHSPH) in the United States. The study was approved by JHSPH's internal review board and by the human subject ethics review committee within each site.

### Item Generation

The WGE-SRH index items were generated using information gathered during the qualitative study, which comprised 120 in-depth interviews and 38 focus group discussions with women aged 15–49 and men aged 18 or older across the four study sites. This phase, described in detail elsewhere,[20,21] explored women's motivations and decision-making processes related to sex, contraception and pregnancy. Deductive analysis identified six domains of women's and girls' empowerment in relation to sex, contraception and pregnancy; three reflected existence of choice, and three were related to exercise of choice. The qualitative themes were translated into index items during an analysis workshop in which PMA's in-country partners and researchers from JHSPH reviewed the qualitative data and developed a set of statements that illustrate the major cross-site themes. Items were vetted until consensus was achieved among workshop participants from all sites. Together, the research team generated 61 items representing the two steps of the WGE-SRH process—existence of choice, defined as SRH motivational autonomy, and exercise of choice, defined as SRH self-efficacy, decision-making and negotiation—for the three outcomes: sex, contraceptive use and pregnancy. Items concerned such topics as constraints or motivations surrounding preferences related to sex, contraceptive use and pregnancy (existence of choice), and ways in which women and girls sought to implement these preferences through their decision making and negotiation tactics (exercise of choice).

We also defined two measures related to achievement of choice with respect to women's sexual interactions and contraceptive use. To assess the former, we developed a binary variable for volitional sex that indicated whether a respondent's last sexual intercourse was wanted, was not forced, did not occur as a result of pressure from her partner and did not occur under threat of physical violence; a positive response to each of the items was required for sex to be classified as volitional. Similarly, we created a binary contraceptive use variable indicating reported use of any contraceptive method, including both barrier and traditional methods, at the time of the survey; use was assessed only among women with potential current need (i.e., those who had been sexually active in the last 12 months, were not pregnant and did not want to become pregnant).

We were unable to explore the construct validity of the WGE-SRH instrument's pregnancy empowerment items. Ideally, empowerment should be measured before the assessment of the outcome (in this case, pregnancy by choice), but this study was cross-sectional, and we did not want to extrapolate women's current empowerment levels—which may have changed over time—to their last pregnancy. While restricting the analysis to women with very recent pregnancies (e.g., those in the previous 2–3 months) would have reduced the likelihood that women's empowerment levels had changed, the number of women in our sample who had had a pregnancy just before the survey likely would have been too small for statistical analysis, and thus we did not collect information on the timing of last pregnancy.

### Scale Construction and Pilot Testing

We tested the WGE-SRH instrument for face validity among 20 women per study site, and subsequently made a few wording changes and eliminated 10 items identified as redundant. The resultant 51-item instrument was then pilot tested at the four sites. Specifically, we used the PMA2020 sampling frames to select women from a random sample of households in one urban and one rural community in each setting.[25] All women aged 15–49 from selected households were invited to participate after providing consent or (if younger than 18) assent. Altogether, 1,229 women (334 in Ethiopia, 257 in Uganda, 318 in Anambra and 320 in Kano) agreed to participate and were surveyed by local female interviewers who had been trained by PMA2020. Smartphones were used to collect data on the women's sociodemographic characteristics and their responses to the 51 WGE-SRH items. Women indicated through touchscreen interaction the extent to which they agreed or disagreed with each item on a continuous visual scale from 1 to 10. On the basis of a preliminary analysis of data collected in Uganda and Ethiopia, we added six items to the WGE-SRH survey for Anambra and Kano to refine the WGE-SRH measure, while allowing for cross-site comparisons of the original 51 items. All new items were agreed on by researchers at each site to ensure the saliency of items across the diversity of cultural settings.

### Psychometric Analysis

After assessing patterns of missing data, we explored the distribution of WGE-SRH item responses at each study site. Because the proportion of missing responses for each item was less than 1%, we omitted such responses from the analysis.

We conducted psychometric analysis to identify items that represented each latent WGE-SRH domain (existence of choice and exercise of choice) in relation to the three SRH outcomes (volitional sex, contraceptive use and pregnancy). At each step of the process, we began with site-specific analyses and subsequently identified an

optimal set of common items that scaled across sites. We first conducted principal component analysis and applied psychometric criteria (eigenvalues, scree tests and parallel analysis) to determine if specific sets of items represented a latent construct for each domain and each outcome. Next, we performed an exploratory factor analysis to obtain factor loadings and select a parsimonious set of items that loaded on a single factor per domain and outcome (the minimum factor loading was 0.40). We computed Cronbach's alphas to assess the internal reliability of the final parsimonious item sets.

***TABLE 1. Percentage distribution of women aged 15–49 who participated in pilot testing of WGE-SRH instrument, by selected characteristics, according to study site***

| Characteristic | Ethiopia (N=334) | Uganda (N=257) | Anambra, Nigeria (N=318) | Kano, Nigeria (N=320) |
|---|---|---|---|---|
| **Age** | | | | |
| 15–19 | 24.2 | 16.7 | 14.5 | 30.0 |
| 20–24 | 18.3 | 19.8 | 19.2 | 18.8 |
| 25–34 | 30.8 | 37.7 | 33.0 | 25.3 |
| 35–49 | 2.7 | 25.7 | 33.3 | 25.9 |
| **Marital status** | | | | |
| Never married | 32.6 | 24.9 | 42.1 | 33.8 |
| Not married but in partnership | 1.2 | 34.6 | 1.6 | 0.0 |
| Married | 53.9 | 18.3 | 46.2 | 58.1 |
| Widowed/divorced | 12.3 | 22.1 | 10.1 | 8.1 |
| **Polygamous union†** | | | | |
| Yes | 1.1 | 37.4 | 6.6 | 46.8 |
| No | 98.9 | 62.6 | 93.4 | 53.2 |
| **Education** | | | | |
| None | 32.3 | 4.3 | 0.9 | 44.4 |
| Primary | 34.4 | 43.2 | 61.3 | 44.7 |
| ≥secondary | 33.2 | 52.5 | 37.7 | 10.9 |
| **Residence** | | | | |
| Urban | 55.4 | 51.0 | 51.6 | 50.9 |
| Rural | 44.6 | 49.0 | 48.4 | 49.0 |
| **Ever pregnant** | | | | |
| Yes | 55.1 | 77.0 | 54.4 | 59.4 |
| No | 44.9 | 23.0 | 45.6 | 40.6 |
| **Currently pregnant** | | | | |
| Yes | 4.2 | 8.9 | 6.3 | 6.9 |
| No | 95.8 | 91.1 | 93.7 | 93.1 |
| **No. of births‡** | | | | |
| 0 | 2.7 | 3.9 | 3.1 | 1.6 |
| 1–2 | 27.3 | 26.9 | 18.9 | 13.4 |
| 3–4 | 15.9 | 21.0 | 18.2 | 13.8 |
| ≥5 | 54.2 | 48.3 | 59.7 | 71.3 |
| **Using contraceptives** | | | | |
| Yes | 44.4 | 43.6 | 31.2 | 5.0 |
| No | 55.6 | 56.4 | 68.8 | 95.0 |
| **Ever had sex** | | | | |
| Yes | 72.5 | 91.8 | 83.0 | 65.9 |
| No | 27.5 | 8.2 | 17.0 | 34.1 |
| **Last sex was volitional§** | | | | |
| Yes | 46.7 | 65.2 | 62.7 | 91.4 |
| No | 53.3 | 34.8 | 37.3 | 8.6 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |

†Among women who were married or in a partnership. ‡The mean number of births was 1.8 in Ethiopia, 2.7 in Uganda, 2.0 in Anambra and 3.0 in Kano. §Among women who had ever had sex. *Notes:* Percentages may not total 100.0 because of rounding. WGE-SRH=Women's and girls' empowerment in sexual and reproductive health.

### Construction of the Cross-Site Index

To construct the index, we first computed summary scores for each domain and outcome by averaging scores for relevant items, which had been chosen on the basis of previous psychometric analysis to reflect the best cross-site solutions. We chose to use additive scores, rather than latent scores, for the index to facilitate interpretation, as the WGE-SRH measures are meant to convey the level of women's SRH empowerment at the population level, and help health officials and policymakers track progress. In addition, to examine the combined contribution of existence of choice and exercise of choice to each outcome, we computed three outcome-specific empowerment scores (sexual empowerment, contraceptive empowerment and pregnancy empowerment) by adding the relevant summary scores for the existence of choice and exercise of choice domains. Finally, to examine the contribution of empowerment across the three SRH dimensions, we compiled a multidimensional SRH additive index comprising all 21 items included in the three empowerment subscales. Although all indicators were continuous variables with possible values ranging from 1 to 10, in some analyses (e.g., logistic regressions) we divided scores into tertiles for ease of interpretation and application.

### Construct Validity

The final step of our analysis was to identify any associations between each WGE-SRH measure and our two outcomes of interest: whether respondents' last intercourse had been volitional and whether they were currently using a contraceptive method. The purpose of this step was to examine the construct validity of each component of the WGE-SRH index by assessing domain-specific associations (i.e., whether sexual existence of choice and sexual exercise of choice were related to whether a woman's last sex had been volitional, and whether contraceptive existence of choice and contraceptive exercise of choice were related to contraceptive use). Associations were examined separately for each study site to evaluate the construct validity of the measure in diverse cultural settings. Multivariate logistic regression was used for the analysis, because the WGE-SRH measures were used as additive scores rather than latent scores and the outcomes of interest were dichotomous. Scores for each measure were split evenly into tertiles, rather than treated as continuous variables, and the lowest tertile served as the reference group. All models adjusted for whether women lived in a rural or urban area, since the samples were stratified by residence, and assessed associations both with the existence of choice and exercise of choice measures separately and with the combined empowerment indicators (i.e., sexual empowerment or contraceptive empowerment). We estimated marginal effects to show the predicted probability of each outcome measure when the distribution of women move as a whole across WGE-SRH score tertiles, with urban or rural residence held at the mean level. Lastly, we conducted separate logistic regressions for each outcome,

substituting the SRH multidimensional additive index for the outcome-specific WGE-SRH measures. Regression analyses were restricted to the subsample of women with complete sexual empowerment data (235 women in Ethiopia, 232 in Uganda, 250 in Anambra and 210 in Kano). All analyses were conducted using Stata version 15.

## RESULTS

### Sample Characteristics

Respondents' mean age ranged across study sites from 27 in Kano to 30 in Anambra, and their number of births varied between 1.8 in Ethiopia and 3.0 in Kano. Most women were currently or had previously been in a union; the proportion of partnered women who were in polygamous relationships ranged from 1% in Ethiopia to 47% in Kano (Table 1). Educational attainment varied substantially by site: For example, 44% of women in Kano had never attended school, compared with 1% in Anambra. Between half and three-fourths had ever been pregnant. Furthermore, levels of the contraceptive use and volitional sex outcomes varied widely across sites. Notably, more than 40% of women in the Ethiopian and Ugandan samples were using a contraceptive method, compared with only 5% in the Kano sample. Conversely, the proportion of women who reported their last sex had been volitional was lower in Ethiopia, Uganda and Anambra (47%, 65% and 63%, respectively) than in Kano (91%).

### Existence of Choice

For each study site, a sexual existence of choice scale emerged that illustrated the social pressures that women face from husbands and society related to sexual decisions (Table 2). The number of site-specific measures in the scale ranged from five items in Kano to six in the other sites; the Cronbach's alphas varied from 0.73 to 0.79. Four items—reflecting perceived consequences related to intimate partner violence, forced sex, perceived promiscuity and partner abandonment—were identified across sites and loaded on a single factor in each site (Cronbach's alphas, 0.71–0.79).

The contraceptive existence of choice measure captured the constraints women faced when making decisions about using contraceptives (Table 3). Site-specific loadings ranged from a six-factor solution in Ethiopia to a nine-factor solution in Kano. The internal reliability of site-specific subscales was acceptable (i.e., Cronbach's alpha was at least 0.70) for all sites except Ethiopia (0.61). A five-item cross-site measure, comprising items common to site-specific analyses, loaded on a single factor for each site and yielded Cronbach's alphas ranging from 0.56 to 0.78.

Unlike its counterparts for volitional sex and contraceptive use, the pregnancy existence of choice analysis yielded different solutions for each site (Table 4). The first two sites to pilot the WGE-SRH instrument were Ethiopia and Uganda; we found a one-factor solution for pregnancy existence of choice for Ethiopia (Cronbach's alpha, 0.65), but no factor solution for Uganda (eigenvalues were less than 1.0). Although a subset of items were added and pilot

***TABLE 2. Factor loadings for survey items representing sexual existence of choice, by study site***

| Item | Ethiopia | Uganda | Anambra, Nigeria | Kano, Nigeria |
|---|---|---|---|---|
| **Site-specific analysis** | | | | |
| If I refuse sex with my husband/partner, he may physically hurt me | 0.73 | 0.65 | 0.85 | 0.78 |
| If I refuse sex with my husband/partner, he may force me to have sex | 0.64 | 0.73 | 0.75 | 0.73 |
| If I show my husband/partner that I want to have sex, he may consider me promiscuous | 0.69 | 0.45 | 0.62 | 0.61 |
| If I refuse sex with my husband/partner, he may stop supporting me | 0.75 | 0.65 | 0.63 | 0.46 |
| I have sex with my husband/partner for the sake of our marriage or family | 0.44 | 0.42 | – | – |
| If I refuse sex with my husband/partner, I fear he may seek sex from another partner | – | 0.46 | 0.47 | – |
| Anytime my husband/partner wants sex, I must give in to him | 0.58 | – | – | – |
| If I have/had sex before marrying, I will be/would have been shamed | – | – | 0.42 | – |
| Having sex is important for me to feel loved | – | – | – | 0.49 |
| I have sex with my husband/partner because I enjoy it | – | – | – | – |
| My husband/partner understands when I don't feel like having sex | – | – | – | – |
| I am more willing to have sex with my husband/partner when he treats me well | – | – | – | – |
| *Eigenvalue* | *2.51* | *1.96* | *2.46* | *1.97* |
| *Cronbach's alpha* | *0.75* | *0.73* | *0.79* | *0.74* |
| **Cross-site analysis** | | | | |
| If I refuse sex with my husband/partner, he may physically hurt me | 0.79 | 0.69 | 0.86 | 0.79 |
| If I refuse sex with my husband/partner, he may force me to have sex | 0.69 | 0.76 | 0.76 | 0.72 |
| If I show my husband/partner that I want to have sex, he may consider me promiscuous | 0.64 | 0.46 | 0.63 | 0.62 |
| If I refuse sex with my husband/partner, he may stop supporting me | 0.71 | 0.56 | 0.60 | 0.45 |
| *Eigenvalue* | *2.03* | *1.58* | *2.07* | *1.73* |
| *Cronbach's alpha* | *0.76* | *0.71* | *0.79* | *0.73* |

*Notes*: No values are shown for items that did not load (i.e., those with a factor loading <0.4). Sexual existence of choice measures were pilot tested only among women who had ever had sex.

***TABLE 3. Factor loadings for survey items representing contraceptive existence of choice, by study site***

| Item | Ethiopia | Uganda | Anambra, Nigeria | Kano, Nigeria |
|---|---|---|---|---|
| **Site-specific analysis** | | | | |
| If I use family planning, my husband/partner may seek another sexual partner | 0.46 | 0.53 | 0.66 | 0.40 |
| If I use family planning, I may have trouble getting pregnant the next time I want to | 0.43 | 0.52 | 0.71 | 0.65 |
| There could be/will be conflict in my relationship/marriage if I use family planning | 0.48 | 0.56 | 0.67 | 0.44 |
| If I use family planning, my children may not be born normal | 0.44 | 0.68 | 0.57 | 0.83 |
| If I use family planning, my body may experience side effects that will disrupt my relations with my husband/partner | 0.46 | 0.62 | 0.59 | 0.66 |
| If my husband/partner found out that I was using family planning, he would force me to stop using it | 0.46 | 0.51 | 0.51 | – |
| If I use family planning, people will think I am promiscuous | – | 0.43 | 0.55 | 0.77 |
| I do not need to use a family planning method because it does not matter if I get pregnant | – | – | 0.51 | 0.72 |
| If I use family planning, I will regain strength before I get pregnant again | – | – | – | 0.63 |
| If I use family planning, people will think I am managing my life wisely | – | – | – | 0.66 |
| I will be able to/can choose what to do about family planning regardless of what my husband/partner tells me to do | – | – | – | – |

*continued*

**TABLE 3 (continued)**

| Item | Ethiopia | Uganda | Anambra, Nigeria | Kano, Nigeria |
|---|---|---|---|---|
| My choice of a family planning method will depend on what the provider tells me to do | – | – | – | – |
| *Eigenvalue* | *1.25* | *2.16* | *2.90* | *3.83* |
| *Cronbach's alpha* | *0.61* | *0.74* | *0.81* | *0.86* |
| **Cross-site analysis** | | | | |
| If I use family planning, my husband/partner may seek another sexual partner | 0.46 | 0.47 | 0.66 | 0.40 |
| If I use family planning, I may have trouble getting pregnant the next time I want to | 0.46 | 0.52 | 0.66 | 0.67 |
| There could be/will be conflict in my relationship/ marriage if I use family planning | 0.42 | 0.55 | 0.70 | 0.45 |
| If I use family planning, my children may not be born normal | 0.42 | 0.68 | 0.60 | 0.78 |
| If I use family planning, my body may experience side effects that will disrupt my relations with my husband/partner | 0.53 | 0.67 | 0.63 | 0.75 |
| *Eigenvalue* | *1.05* | *1.72* | *2.11* | 1.97 |
| *Cronbach's alpha* | *0.56* | *0.71* | *0.78* | *0.74* |

*Notes*: No values are shown for items that did not load (i.e., those with a factor loading <0.4).

***TABLE 4. Factor loadings for survey items representing pregnancy existence of choice, by study site***

| Item | Ethiopia | Uganda | Anambra, Nigeria | Kano, Nigeria |
|---|---|---|---|---|
| **Site-specific analysis** | | | | |
| I would have been considered infertile If I do not/did not get pregnant soon after marriage | 0.81 | – | 0.58 | – |
| I would have felt pressured if it had taken a long time for me to get pregnant after marriage | 0.52 | – | 0.58 | – |
| If I space or limit my pregnancies, I will improve my relationship with my husband | – | 0.66 | – | 0.74 |
| If I rest between pregnancies, I can take better care of my family | – | 0.66 | – | 0.85 |
| I will have no one to take care of me when I am old if I do not produce enough children | 0.54 | – | – | – |
| I wanted to complete my education before I have/had a child | – | – | – | 0.69 |
| My children will have a good future no matter how many children I have | – | – | – | – |
| If had gotten pregnant before marrying, I would have brought shame to my family | – | – | – | – |
| I will have as many children as I am meant to have | – | – | – | – |
| If I had gotten pregnant before marrying, it would not have harmed/will not harm my future | – | – | – | – |
| My economic situation prevents me from having all of the children I want | – | – | – | – |
| *Eigenvalue* | *1.23* | *0.22* | *0.68* | *1.75* |
| *Cronbach's alpha* | *0.65* | *0.20* | *0.50* | *0.79* |
| **Cross-site analysis** | | | | |
| If I space or limit my pregnancies, I will improve my relationship with my husband | 0.49 | 0.66 | 0.51 | 0.80 |
| If I rest between pregnancies, I can take better care of my family | 0.49 | 0.66 | 0.50 | 0.80 |
| *Eigenvalue* | *0.48* | *0.88* | *0.52* | *1.27* |
| *Cronbach's alpha* | *0.35* | *0.59* | *0.39* | *0.77* |
| **Additional items pilot tested in Nigeria** | | | | |
| My economic situation prevents me from having all of the children I want | na | na | 0.72 | 0.54 |
| I cannot have all of the children I want because if I did, they would not have all of the opportunities I want them to have | na | na | 0.72 | 0.67 |
| I wanted to complete my education before I have/had a child | na | na | – | 0.66 |
| If I space or limit my pregnancies, I will improve my relationship with my husband | na | na | – | 0.67 |
| My children will have a good future no matter how many children I have | na | na | – | – |

*continued*

tested in the two Nigerian sites, a pregnancy existence of choice construct emerged only for Kano. In contrast to the pregnancy existence of choice subscale for Ethiopia, which reflected social constraints on childbearing decisions, the subscale for Kano primarily captured internal motivations, such as desire for educational attainment. Because of the inconsistencies in results among the four study sites, no optimal cross-site single-factor solution emerged. Nevertheless, we identified two items that loaded consistently across sites; although they did not constitute a subscale—the eigenvalues were less than 1.0 for all sites except Kano (1.27)—we retained these items for our overall WGE-SRH index.

### Exercise of Choice

The WGE-SRH questionnaire included 14 items exploring women's confidence in their ability to decide on and negotiate sexual, contraceptive, and pregnancy matters (Table 5). Four items related to sexual exercise of choice loaded on a single factor for all sites, but the Cronbach's alphas were low (0.47–0.67) for all sites except Kano (0.72). A four-item contraceptive exercise of choice measure also emerged for all sites, again yielding Cronbach's alphas ranging from low to acceptable (0.56–0.88). Finally, we identified a three-item pregnancy exercise of choice measure, though Cronbach's alphas again tended to be low (0.48–0.63). The additional items piloted in Nigeria resulted in improved reliability; the new Cronbach's alphas for Anambra and Kano were 0.74 and 0.72, respectively.

### Construct Validity

Multivariate logistic regression analyses revealed a number of associations between sexual existence of choice and reporting volitional sex (Table 6). The odds that a women's last sexual experience had been volitional were elevated if her sexual existence of choice score was in the highest tertile in Ethiopia (odds ratio, 8.4) or Anambra (3.3), or in the middle tertile in Ethiopia (2.7). Sexual exercise of choice was also related to volitional sex. In Ethiopia and Anambra, the odds that last sex had been volitional were elevated among women whose exercise of choice score was in the highest tertile (2.2 in Ethiopia and 3.0 in Anambra); in Kano, however, exercise of choice was inversely associated with volitional sex, such that women in the highest tertile had reduced odds of volitional sex (0.1). Combining the sexual existence of choice and sexual exercise of choice measures into a single measure of sexual empowerment resulted in stronger associations with volitional sex; odds were elevated among women in both the middle and highest tertiles in Ethiopia (5.6–7.3) and among women in the highest tertile in Anambra (5.0). However, the combined measure was not associated with volitional sex in Kano (where the existence of choice and exercise of choice measures had opposing relationships with the outcome) or in Uganda.

Women in the highest tertile for contraceptive existence of choice were more likely than those in the lowest

tertile to be using contraceptives in Ethiopia and Uganda (odds ratios, 2.8 and 2.4, respectively; Table 7), but not in Anambra. Kano was excluded from this analysis because the prevalence of contraceptive use was too low (5%). Contraceptive exercise of choice was not related to current contraceptive use in any of the three sites examined, but women whose scores on the contraceptive empowerment subscale were in the highest tertile had elevated odds of contraceptive use in Ethiopia (2.5).

The WGE-SRH items retained from psychometric testing and used in construct validity analyses are presented in Table 8. Use of the resulting WGE-SRH index yielded results similar to those for the outcome-specific empowerment measures. Specifically, after adjustment for residence, the difference in the predicted proportion of last sexual acts that were volitional (i.e., difference in marginal effects) between women in the lowest and highest WGE-SRH empowerment tertiles was 36 percentage points in Ethiopia and 34 percentage points in Anambra; no significant changes were seen in Uganda and Kano (Table 6). The predicted difference in contraceptive use between the lowest and highest WGE-SRH empowerment tertiles was 17 percentage points in Ethiopia (p=.08), while no significant difference were noted in the other two sites (Table 7).

## DISCUSSION

This study identifies cross-cultural constructs of women's SRH empowerment in Sub-Saharan Africa. These constructs reflect both the psychosocial pathways that link choices to behaviors (as delineated in the World Bank's empowerment framework) and the power structures, prominent in prior SRH frameworks, that inform individual goal setting and actions. Our results contribute to the literature in three ways. First, our multidimensional empowerment index encompasses diverse aspects of women's sexual and reproductive lives, including their experiences with sex, contraception and pregnancy. Second, our study distinguishes between the concepts of existence of choice and exercise of choice, which are independently related to SRH behaviors. Third, we validated these results, and the index itself, across diverse cultural contexts in Sub-Saharan Africa, allowing for cross-cultural comparisons. By including women from urban and rural communities, polygamous and monogamous unions, and vastly different cultures, this study capitalizes on compositional variation to reflect and capture the range of SRH empowerment experiences.

In developing the pilot-tested items, we identified social expectations that motivate women to engage (or constrain them from engaging) in sex, contraceptive use and childbearing. In all settings, stigma related to female sexuality, perceptions of male sexual entitlement and fear of relational sanctions influenced women's SRH motivations. These findings reflect broad gender inequalities at the couple and societal levels.[31] Social expectations regarding childbearing, fear of infertility and partner abandonment also constrained women's childbearing and contraceptive autonomy. These

**TABLE 4 (continued)**

| Item | Ethiopia | Uganda | Anambra, Nigeria | Kano, Nigeria |
|---|---|---|---|---|
| I would have been considered infertile If I do not/did not get pregnant soon after marriage | na | na | – | – |
| I would have felt pressured if it had taken a long time for me to get pregnant after marriage | na | na | – | – |
| I will have no one to take care of me when I am old if I do not produce enough children | na | na | – | – |
| If had gotten pregnant before marrying, I would have brought shame to my family | na | na | – | – |
| If I rest between pregnancies, I can take better care of my family | na | na | – | – |
| I will have as many children as I am meant to have | na | na | – | – |
| If I had gotten pregnant before marrying, it would not have harmed/will not harm my future | na | na | – | – |
| I cannot delay having children after marriage or else I will be considered infertile | na | na | – | – |
| *Eigenvalue* | *na* | *na* | *1.04* | *1.62* |
| *Cronbach's alpha* | *na* | *na* | *0.68* | *0.73* |

*Notes*: No values are shown for items that did not load (i.e., those with a factor loading <0.4). na=not applicable.

***TABLE 5. Factor loadings for survey items representing exercise of choice for sex, contraceptive use and pregnancy, by study site***

| Item | Ethiopia | Uganda | Anambra, Nigeria | Kano, Nigeria |
|---|---|---|---|---|
| **Sexual exercise of choice†** | | | | |
| I am confident I can tell my husband/partner when I want to have sex | 0.58 | 0.24 | 0.53 | 0.73 |
| I am able to decide when to have sex | 0.47 | 0.46 | 0.62 | 0.54 |
| If I do not want to have sex, I can tell my husband | 0.68 | 0.52 | 0.68 | 0.93 |
| If I do not want to have sex, I am capable of avoiding it with my husband | 0.50 | 0.54 | 0.53 | – |
| *Eigenvalue* | *1.26* | *0.83* | *1.41* | *1.69* |
| *Cronbach's alpha* | *0.64* | *0.47* | *0.67* | *0.77* |
| **Sexual exercise of choice cross-site†** | | | | |
| I am confident I can tell my husband/partner when I want to have sex | 0.58 | 0.24 | 0.53 | 0.67 |
| I am able to decide when to have sex | 0.47 | 0.46 | 0.62 | 0.53 |
| If I do not want to have sex, I can tell my husband | 0.68 | 0.52 | 0.68 | 1.01 |
| If I do not want to have sex, I am capable of avoiding it with my husband | 0.50 | 0.54 | 0.53 | 0.37 |
| *Eigenvalue* | *1.26* | *0.83* | *1.41* | *1.88* |
| *Cronbach's alpha* | *0.64* | *0.47* | *0.67* | *0.72* |
| **Contraceptive exercise of choice** | | | | |
| I would feel/feel confident discussing family planning with my husband/partner | 0.72 | 0.68 | 0.61 | 0.74 |
| I feel confident telling my provider what is important for me when selecting a family planning method | 0.67 | 0.37 | 0.71 | 0.87 |
| If I want to use contraception, I can tell my husband | 0.59 | 0.74 | – | 0.69 |
| I can decide to switch from one family planning method to another if I want to | 0.50 | – | 0.65 | 0.91 |
| If I want to use contraception, I am capable of using it when I want | – | – | – | 0.67 |
| I am only able to decide about using family planning if I have my husband who approves | – | – | – | – |
| *Eigenvalue* | *1.57* | *1.14* | *1.30* | *3.04* |
| *Cronbach's alpha* | *0.70* | *0.62* | *0.69* | *0.88* |
| **Contraceptive exercise of choice cross-site** | | | | |
| I would feel/feel confident discussing family planning with my husband/partner | 0.72 | 0.66 | 0.61 | 0.74 |
| I can decide to switch from one family planning method to another if I want to | 0.50 | 0.24 | 0.67 | 0.92 |
| I feel confident telling my provider what is important for me when selecting a family planning method | 0.67 | 0.43 | 0.68 | 0.87 |

*continued*

**TABLE 5 (continued)**

| Item | Ethiopia | Uganda | Anambra, Nigeria | Kano, Nigeria |
|---|---|---|---|---|
| If I want to use contraception, I can tell my husband | 0.59 | 0.69 | 0.31 | 0.68 |
| *Eigenvalue* | *1.57* | *1.15* | *1.37* | *2.60* |
| *Cronbach's alpha* | *0.70* | *0.56* | *0.65* | *0.88* |
| **Pregnancy exercise of choice** | | | | |
| I can/could decide when to start having/ have another child | 0.62 | 0.62 | 0.63 | 0.85 |
| I can negotiate with my husband/partner when to stop having children | 0.74 | 0.62 | 0.63 | 0.48 |
| I could decide when I wanted to start/stop having children | 0.50 | – | – | 0.51 |
| *Eigenvalue* | *1.19* | *0.77* | *0.80* | *1.21* |
| *Cronbach's alpha* | *0.63* | *0.55* | *0.56* | *0.63* |
| **Pregnancy exercise of choice cross-site** | | | | |
| I could/can decide when I wanted to start/stop having children | 0.50 | 0.27 | 0.34 | 0.51 |
| I feel confident that I can discuss with my husband/ partner when to start having/ have another child | 0.62 | 0.51 | 0.97 | 0.85 |
| I can negotiate with my husband/partner when to stop having children | 0.74 | 0.75 | 0.41 | 0.48 |
| *Eigenvalue* | *1.19* | *0.91* | *1.23* | *1.21* |
| *Cronbach's alpha* | *0.63* | *0.48* | *0.52* | *0.63* |
| **Pregnancy exercise of choice (with additional items pilot tested in Nigeria)** | | | | |
| I could decide when I wanted to start/stop having children | na | na | 0.55 | 0.58 |
| I feel confident that I can discuss with my husband/ partner when to start having/ have another child | na | na | 0.73 | 0.78 |
| I can negotiate with my husband/partner when to stop having children | na | na | 0.43 | 0.47 |
| I could/can negotiate with my husband/partner when to start a family | na | na | 0.73 | 0.67 |
| Once I have child, I can decide when to have another child | na | na | 0.61 | – |
| *Eigenvalue* | na | na | *1.93* | *1.61* |
| *Cronbach's alpha* | na | na | *0.74* | *0.72* |

†Among women who had ever had sex. *Notes*: No values are shown for items that did not load (i.e., those with a factor loading <0.4). na=not applicable.

***TABLE 6. Marginal effects and odds ratios from construct validity regression analyses assessing relationships of sexual existence and exercise of choice, sexual empowerment and SRH empowerment with volitional sex, by study site***

| Measure/tertile | Ethiopia | | Uganda | | Anambra, Nigeria | | Kano, Nigeria | |
|---|---|---|---|---|---|---|---|---|
| | Marginal effect | Odds ratio | Marginal effect | Odds ratio | Marginal effect | Odds ratio | Marginal effect | Odds ratio |
| **Sexual existence of choice subscale†** | | | | | | | | |
| Lowest | 0.23 | ref | 0.61 | ref | 0.52 | ref | 0.85 | ref |
| Medium | 0.45 | 2.71** | 0.67 | 1.31 | 0.60 | 1.40 | 0.95 | 3.62 |
| Highest | 0.72 | 8.44*** | 0.71 | 1.61 | 0.78 | 3.34*** | 0.96 | 4.63 |
| **Sexual exercise of choice subscale** | | | | | | | | |
| Lowest | 0.35 | ref | 0.62 | ref | 0.51 | ref | 0.99 | ref |
| Medium | 0.50 | 1.84 | 0.66 | 1.19 | 0.62 | 1.52 | 0.92 | 0.15 |
| Highest | 0.54 | 2.22* | 0.72 | 1.55 | 0.76 | 3.01** | 0.85 | 0.07* |
| **Sexual empowerment subscale** | | | | | | | | |
| Lowest | 0.19 | ref | 0.64 | ref | 0.47 | ref | 0.93 | ref |
| Medium | 0.57 | 5.60*** | 0.61 | 0.91 | 0.60 | 1.64 | 0.95 | 1.43 |
| Highest | 0.64 | 7.30*** | 0.74 | 1.61 | 0.82 | 4.96*** | 0.84 | 0.67 |
| **Overall SRH empowerment index** | | | | | | | | |
| Lowest | 0.23 | ref | 0.65 | ref | 0.46 | ref | 0.98 | ref |
| Medium | 0.54 | 3.86** | 0.67 | 1.10 | 0.60 | 1.60 | 0.94 | 0.37 |
| Highest | 0.59 | 4.85*** | 0.65 | 0.99 | 0.80 | 4.47*** | 0.80 | 0.10 |

*p<.05. **p<.01. ***p<.001. †Among women who had ever had sex. *Notes*: All analyses adjust for place of residence. SRH=sexual and reproductive health. ref=reference group.

constraints, captured in our cross-site existence of choice subscales, were associated with volitional sex and contraceptive use among women in most sites.

Our measures of SRH existence of choice complement existing measures—such as the Sexual Relationship Power Scale,[32] Sexual Pressure Scale[33] and the Sexual Assertiveness Scale[34]—used in the United States. Our measures are also aligned with the Reproductive Autonomy Scale,[14,] which was recently developed to explore concepts of reproductive coercion. Our work builds on these measures by elucidating social pressures that extend beyond power relations within partnerships, and by including internal motivations, such as health or economic concerns, that inform women's sexual and reproductive decisions. In addition, our results suggest that the concepts of autonomy, self-efficacy and decision making—which are often either conflated or combined in single indicators—should be considered separately, as they are independently related to SRH behaviors. Indeed, in Anambra, we found that the SRH exercise of choice measure had predictive value for outcomes beyond that provided by the SRH existence of choice measure, thus supporting the distinction between these concepts proposed by the World Bank's empowerment framework. For Kano, the direction of the association between existence of choice and volitional sex was the opposite of that between exercise of choice and volitional sex, thereby obscuring any relationship between sexual empowerment and volitional sex, and underscoring the importance of examining these measures both separately and together to understand how motivations, negotiations and decision making may be intertwined.

While we identified a number of cross-cultural constructs of SRH empowerment, we also acknowledge the existence of culturally specific items, evident in the differences among sites in factor loading solutions and in the absence of unique cross-site solutions for pregnancy empowerment measures. Interestingly, manifestations of sexual and reproductive coercion seemed more universally shared across sites than internal motivations for sex, contraceptive use and childbearing. This may explain the absence of a cross-site measure of pregnancy existence of choice; the site-specific items mostly concerned reproductive coercion in Anambra and Uganda—sites that have been experiencing steady fertility declines—but positive internal motivations for birth spacing in Kano, where levels of fertility remain high. Although the tension between global and local conceptualizations of SRH empowerment has been the subject of a long-standing debate in the field of measurement, it does not necessarily need a resolution, as both perspectives serve complementary purposes; standardized measures allow for comparisons across time and space, while measures that incorporate local expressions of empowerment better reflect regional perspectives. We suggest that the WGE-SRH captures the former, but could easily be supplemented with additional site-specific items to enrich analysis of WHE-SRH processes in culturally distinct settings.

## Limitations

This study is not without limitations. First, despite the study's multidimensional scope, including its examination of two domains of empowerment across three outcomes, the subscales we created would have benefited from the inclusion of a greater number of items, as demonstrated by the increase in internal reliability that resulted from the addition of items in Nigeria. We initially decided to limit the number of items to avoid putting undue burden on participants and to improve the quality of responses. However, the relatively small number of items may explain our inability to identify cross-site solutions for the SRH exercise of choice subscale and the low internal reliability of the SRH exercise of choice subscale. Although our pilot study initially included 13 pregnancy existence of choice items (extended to 16 in Nigeria), we were unable to identify a cross-site pregnancy existence of choice subscale. One possible explanation is that because these items covered a range of internal and external motivations for engaging in or avoiding childbearing at different stages of the reproductive life course (e.g., to start or delay having a family, to space or to limit childbearing), the number of items and the sample sizes may have been too small to explore these processes. The complexity of childbearing decisions is unlikely to be captured in a single construct of pregnancy existence of choice, as the differences among sites in factor loadings suggest. Subsequent research should distinguish women's internal and external motivations to avoid pregnancy from their motivations to have more children, thus providing more specificity in assessing motivations that shape pronatal and antinatal preferences. In addition, measures of SRH empowerment should capture the existence and exercise of choice with respect to abortion; although pregnancy termination is a common event in women's reproductive lives, it is highly stigmatized and constrained by the legal and health care environment.

Another limitation of this study is its focus on coercion rather than on positive internal motivations for sex and contraceptive use, as these may influence women's SRH outcomes in distinct ways. Factor loadings for internal motivations were low for all sites except Kano. Additionally, our sample sizes limited our ability to conduct more in-depth analyses. For example, we were unable to perform a confirmatory factor analysis to explore the index's multidimensionality because the samples from each site were too small to split. Similarly, we did not have sufficient statistical power to examine construct validity for Kano, where only 5% of women were using contraceptives and 6% reported nonvolitional sex.

Finally, this cross-sectional study does not allow an exploration of how the empowerment process moves from existence of choice to exercise of choice to achievement of choice. The negative association between sexual exercise of choice and volitional sex that we observed in Kano may signal reverse causality (i.e., women with high scores on the exercise of choice subscale may have been more likely than other women to recognize and report instances of

***TABLE 7. Marginal effects and odds ratios from construct validity regression analyses assessing relationships of contraceptive existence and exercise of choice, contraceptive empowerment and SRH empowerment with volitional sex, by site†***

| Measure/tertile | Ethiopia | | Uganda | | Anambra, Nigeria | |
|---|---|---|---|---|---|---|
| | Marginal effect | Odds ratio | Marginal effect | Odds ratio | Marginal effect | Odds ratio |
| **Contraceptive existence of choice subscale†** | | | | | | |
| Lowest | 0.48 | ref | 0.40 | ref | 0.34 | ref |
| Medium | 0.63 | 1.81 | 0.43 | 1.13 | 0.47 | 1.73 |
| Highest | 0.72 | 2.78** | 0.61 | 2.36* | 0.44 | 1.57 |
| **Contraceptive exercise of choice subscale** | | | | | | |
| Lowest | 0.58 | ref | 0.42 | ref | 0.36 | ref |
| Medium | 0.60 | 1.08 | 0.55 | 1.73 | 0.46 | 1.54 |
| Highest | 0.70 | 1.73 | 0.49 | 1.34 | 0.46 | 1.51 |
| **Contraceptive empowerment subscale** | | | | | | |
| Lowest | 0.49 | ref | 0.49 | ref | 0.31 | ref |
| Medium | 0.65 | 1.97 | 0.31 | 0.48 | 0.47 | 2.06 |
| Highest | 0.71 | 2.52** | 0.65 | 1.96 | 0.47 | 2.00 |
| **Overall SRH empowerment index** | | | | | | |
| Lowest | 0.53 | ref | 0.43 | ref | 0.36 | ref |
| Medium | 0.63 | 1.47 | 0.47 | 1.20 | 0.41 | 1.28 |
| Highest | 0.70 | 1.98 | 0.54 | 1.57 | 0.48 | 1.65 |

*p<.05. **p<.01. †Among women who had had sex in the past year and were not pregnant. *Notes*: Analysis excludes Kano because the prevalence of contraceptive use was too low. All analyses adjust for place of residence. SRH=sexual and reproductive health. ref=reference group.

***TABLE 8. Factor loadings for items constituting the WGE-SRH existence of choice and exercise of choice subscales***

| Measure/item | Factor loading |
|---|---|
| EXISTENCE OF CHOICE | |
| **Sex by choice** | |
| If I refuse sex with my husband/partner, he may physically hurt me | 0.80 |
| If I refuse sex with my husband/partner, he may force me to have sex | 0.75 |
| If I show my husband/partner that I want to have sex, he may consider me promiscuous | 0.58 |
| If I refuse sex with my husband/partner, he may stop supporting me | 0.58 |
| *Cronbach's alpha* | *0.77* |
| **Contraception by choice** | |
| If I use family planning, my husband/partner may seek another sexual partner | 0.55 |
| If I use family planning, I may have trouble getting pregnant the next time I want to | 0.62 |
| There could be/will be conflict in my relationship/marriage if I use family planning | 0.56 |
| If I use family planning, my children may not be born normal | 0.67 |
| If I use family planning, my body may experience side effects that will disrupt my relations with my husband/partner | 0.70 |
| *Cronbach's alpha* | *0.75* |
| **Pregnancy by choice** | |
| If I space or limit my pregnancies, I will improve my relationship with my husband | 0.65 |
| If I rest between pregnancies, I can take better care of my family | 0.65 |
| *Cronbach's alpha* | *0.58* |
| EXERCISE OF CHOICE | |
| **Sex by choice** | |
| I am confident I can tell my husband/partner when I want to have sex | 0.57 |
| I am able to decide when to have sex | 0.63 |
| If I do not want to have sex, I can tell my husband | 0.72 |
| If I do not want to have sex, I am capable of avoiding it with my husband | 0.51 |
| *Cronbach's alpha* | *0.69* |
| **Contraception by choice** | |
| I would feel/feel confident discussing family planning with my husband/partner | 0.73 |
| I can decide to switch from one family planning method to another if I want to | 0.70 |
| I feel confident telling my provider what is important for me when selecting a family planning method | 0.76 |
| If I want to use contraception, I can tell my husband/partner | 0.59 |
| *Cronbach's alpha* | *0.77* |
| **Pregnancy by choice** | |
| I could decide when I wanted to start/stop having children | 0.52 |
| I can/could decide when to start having/ have another child | 0.73 |
| I can negotiate with my husband/partner when to stop having children | 0.65 |
| *Cronbach's alpha* | *0.66* |

nonvolitional sex), a possibility that can be explored only through the use of panel studies to elucidate the dynamic nature of the empowerment process. We suggest that future research build on our study by using a longitudinal design and structural equation modeling to examine WGE-SRH as a multidimensional latent construct, and to explore the ways that the WGE-SRH dimensions interact with women's resources to inform SRH outcomes over time. However, larger samples, and additional information related to women's resources (e.g., knowledge, education, socioeconomic circumstances, access to health care), would be needed to fully evaluate the WGE-SRH pathways using structural equation models in different cultural settings.

## CONCLUSIONS

The multidimensional WGE-SRH index, developed through an iterative process, is grounded in the voices of women from four diverse Sub-Saharan contexts. The salience of the measure to these distinct societies suggests that the index holds promise as a means of monitoring WGE-SRH across time and place. The measure can also serve as a tool for evaluating programs. We encourage future longitudinal research using the WGE-SRH measures as latent constructs to assess how the process of SRH empowerment unfolds over time and how it informs achievement of desired SRH outcomes.

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## RESUMEN

**Contexte:** *Mejorar el empoderamiento de las mujeres es fundamental para los programas de salud pública y de desarrollo; sin embargo, la existencia de definiciones inconsistentes y la falta de medidas interculturales dificultan los esfuerzos de monitoreo.*

**Métodos:** *Utilizamos datos recolectados entre 2017 y 2018 en Etiopía, Uganda y dos sitios en Nigeria para desarrollar un índice intercultural del empoderamiento de mujeres y niñas en materia de salud sexual y reproductiva (EMN-SSR). El desarrollo de sus componentes se basó en entrevistas cualitativas y se sustentó en un marco conceptual que incluyó dominios de existencia de opciones y ejercicio del poder de decisión en relación con las relaciones sexuales, el uso de anticonceptivos y el embarazo. Los componentes del índice se sujetaron a pruebas piloto en 1,229 mujeres en edades de 15 a 49 años en todos los sitios. Se exploraron las propiedades psicométricas para identificar constructos intersitios y regresión logística para evaluar la validez de los constructos de cada dimensión.*

**Resultados:** *Los análisis identificaron subescalas para la existencia de opciones sexuales (Cronbach's alphas, 0.71–0.79) y la existencia de opciones anticonceptivas (0.56–0.78). Una subescala de existencia de opciones de embarazo surgió para solo dos sitios (0.61–0.80). La confiabilidad interna de las subescalas del ejercicio del poder de decisión varió. El análisis de validez de constructos encontró que, para algunos sitios, los puntajes altos en las subescalas de existencia de opciones sexuales y anticonceptivas estuvieron asociados con altas probabilidades de relaciones sexuales voluntarias y uso de anticonceptivos, respectivamente. La combinación de los puntajes resumidos de la existencia de opciones y el ejercicio del poder de decisión para las relaciones sexuales fortaleció las asociaciones con las relaciones sexuales voluntarias.*

**Conclusiónes:** *El índice intercultural EMN-SSR puede usarse para valorar la existencia de opciones relacionadas con la anticoncepción y las relaciones sexuales voluntarias. Se necesita trabajo adicional para mejorar las medidas del ejercicio del poder de decisión y para investigar la multidimensionalidad y las asociaciones del índice con los resultados de SSR.*

## RÉSUMÉ

**Contexte:** *Les programmes de santé publique et de développement dépendent fondamentalement d'une meilleure autonomisation des femmes. Le manque de cohérence dans les définitions et l'absence de mesures transculturelles limitent cependant les efforts de suivi.*

**Méthodes:** *Des données collectées en 2017–2018 en Éthiopie, en Ouganda et sur deux sites nigérians ont servi à l'élaboration d'un indice transculturel de l'autonomisation des femmes et des filles sur le plan de la santé sexuelle et reproductive (l'indice WGE-SRH). Des entretiens qualitatifs ont servi de base à l'élaboration des questions, avec l'aide d'une cadre conceptuel comprenant les domaines d'existence du choix et d'exercice du choix en matière de rapports sexuels, de pratique contraceptive et de grossesse. Les questions ont été testées parmi 1 229 femmes âgées de 15 à 49 ans sur l'ensemble des sites. Les propriétés psychométriques ont été examinées pour identifier les facteurs inter-sites et la validité conceptuelle de chaque dimension a été évaluée par régression logistique.*

**Résultats:** *Les analyses ont identifié des sous-échelles pour l'existence du choix sur le plan sexuel (alpha de Cronbach, 0,71–0,79) et sur celui de la contraception (0,56–0,78). Concernant la grossesse, une sous-échelle d'existence du choix n'est apparue que pour deux sites (0,61–0,80). La fiabilité interne des sous-échelles d'exercice du choix s'est révélée variable. Les analyses de validité conceptuelle ont indiqué que, pour certains sites, les hautes cotes sur les sous-échelles d'existence du choix sur les plans sexuel et contraceptif étaient associées à des probabilités élevées de rapports sexuels volontaires et de pratique contraceptive, respectivement. La combinaison des cotes sommaires d'existence du choix et d'exercice du choix concernant les rapports sexuels renforçait les associations avec les rapports volontaires.*

**Conclusions:** *L'indice transculturel WGE-SRH peut servir à évaluer l'existence du choix concernant la contraception et les rapports sexuels volontaires. Il faut toutefois améliorer les mesures d'exercice du choix en matière de santé sexuelle et reproductive et étudier plus avant la multidimensionnalité de l'indice et les associations avec les résultats de santé sexuelle et reproductive.*

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**APPENDIX FIGURE 1. Conceptual framework for Women's and Girls' Empowerment in Sexual and Reproductive Health**