

INFERTILITY IN SUB-SAHARAN AFRICA

A LITERATURE REVIEW TO INFORM
A SBC PROGRAM APPROACH

April 2023



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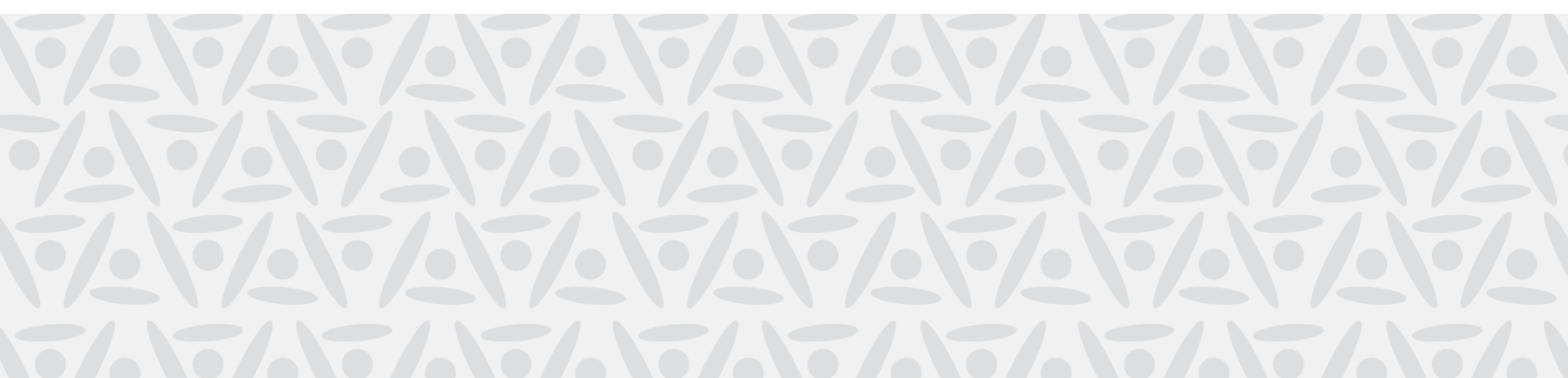


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EXECUTIVE SUMMARY

To-date, infertility has not been a major focus of global sexual and reproductive health (SRH) research and programming. While there are varying types of infertility, across contexts, recent data show that prevalence of primary and secondary infertility is elevated in sub-Saharan Africa, relative to other regions (4). To better understand the range of infertility experiences, we conducted a rapid literature review of primary and secondary infertility in the region of sub-Saharan Africa, with the goal of informing a future social and behavior change (SBC) intervention/s that supports women and couples to build agency to achieve their self-determined reproductive goals by increasing fertility-related knowledge and decreasing infertility-related stigma.

The literature review sought to explore perceptions of infertility causes and myths, social consequences of infertility, and cross-cutting factors related to reproductive agency and infertility, and to identify SBC interventions addressing infertility. We screened 559 articles and included a total of 106 articles in the final review. Most of the available literature was from West Africa (primarily Ghana, Nigeria, and The Gambia), followed by East Africa (Malawi, Uganda, Kenya), and Southern Africa (South Africa and Zimbabwe). We recognize that experiences of infertility are not homogeneous and, therefore, we highlight findings by countries where evidence has been built in this literature review. We present our review findings by socio-ecological themes—including individual, interpersonal, societal, and structural levels—which are summarized below:

- Individuals living with infertility may face high infertility-related stress, depressive symptoms, loneliness, sadness, social isolation, suicidal thoughts, and overall lower quality of life due to the increased pressure to bear children.
- In a range of different contexts, individuals perceive infertility as a side effect of contraceptive use.
- Couples living with infertility face higher rates of divorce, separation, infidelity, and polygamy than those not living with infertility.
- Socially constructed beliefs about the causes of infertility are common across different contexts in Sub-Saharan Africa; often attributed to modern contraceptive use, abortion, belief in spiritual matters and witchcraft, and reckless behaviors during pregnancy or previous birth(s).
- Holding women responsible for infertility is well documented in literature from the region. Fertility is often perceived as a female inadequacy; a woman who fails to have children for her husband is regarded as a failure in her marital role.
- Social norms and societal expectations place pressure on couples—especially women—to bear children upon marriage/union, and further marginalize men from the discourse on infertility. Because of a high social value on childbearing in Sub-Saharan Africa, there is pressure to prove fertility at an early age in some African countries.
- The health policy landscape on infertility in sub-Saharan Africa is mixed and evidence is sparse. There is little documentation of government programming that supports funding, attention, and awareness of infertility.
- In general, SRH services in Sub-Saharan Africa do not include biomedical infertility treatment services within public health financing or strategy. Assisted reproductive technologies (ART),

such as in vitro fertilization (IVF), are available in many countries, but are centralized in urban areas, come with high cost and economic burden, and in some cases are unregulated.

- Outside of service provision, there is growing evidence that interventions that support women and men experiencing infertility can have profound impact. Interventions include psychosocial approaches (using cognitive behavioral therapy), peer support groups, mass media, and social media approaches, which seek to support those experiencing infertility, build assets and spread awareness within communities.

Overall, the lack of attention to infertility in Sub-Saharan Africa calls for further exploration and development of approaches to increase in/fertility awareness, reduce related stigma, and increase access to information and services so that individuals and couples can achieve their reproductive goals. Where health policy and health system and care investment are lagging, our literature review found that SBC interventions have the potential to improve infertility knowledge and address social norms to mitigate the individual and social consequences of infertility. In line with this, these literature review findings will inform a future formative research study to understand the diversity of experiences with infertility more deeply, with the goal of developing an SBC intervention in the contexts of Cameroon and Kenya.

PROJECT BACKGROUND

[Agency for All](#) is a five-year (2022-2027) USAID-funded project that generates evidence on the role of agency in effective SBC programming to improve health and well-being for individuals and communities. Agency for All's goal is to improve and sustain health and agency for individuals and communities, advancing health and cross-sector development outcomes, including family planning and reproductive health, maternal, newborn and child health, nutrition, infectious disease, and HIV/AIDS. Through locally led, equitable partnerships and innovative research, Agency for All works to generate new evidence to understand agency and empowerment within health and SBC programs. Agency for All works across three Result Areas to strengthen evidence on effective SBC strategies to foster empowerment; develop culturally relevant constructs of agency; and increase the agency of local partners to generate their own research agendas and lead the application of knowledge. Agency for All's research aims to understand how SBC programs can impact and affect agency and empowerment at individual, community, and systems levels, leading to multiple downstream behavior changes for improved health outcomes. USAID's Bureau for Africa has provided support to Agency for All for two distinct and focused research workstreams in Sub-Saharan Africa on: 1) contraceptive hesitancy and 2) infertility. Both seek to contribute evidence on how best to support individuals and couples to build agency toward achieving their self-determined reproductive goals. This literature review is for the infertility activity.

LITERATURE REVIEW RATIONALE

Globally, approximately one in six people experience infertility in their lifetime(4). Infertility is a health problem of varying magnitude across and within regions of the world, with more than 186 million people and 45 million couples experiencing it, with the majority from low-and middle-income countries (LMIC) (5, 6). Infertility is described as “a disease of the male or female reproductive system and is defined by the failure to achieve a pregnancy after 12 months or more of regular unprotected sexual intercourse”(4). Infertility can be categorized as primary or secondary. *Primary infertility* exists when a pregnancy has never been achieved by a person (4). *Secondary infertility* indicates that at least one prior pregnancy has been achieved (4). According to the World Health Organization (WHO), approximately 8-12% of couples in reproductive age experience infertility, with women and men accounting for approximately 50% of cases of infertility each (4). **Based on a 2023 WHO meta-analysis, the pooled estimate of *lifetime infertility* in Africa is 13.1%, while the pooled estimate of *period infertility* (the proportion of individuals/couples with infertility at a specific point in time) in Africa is 16.4%, the highest globally (4, 7)¹.**

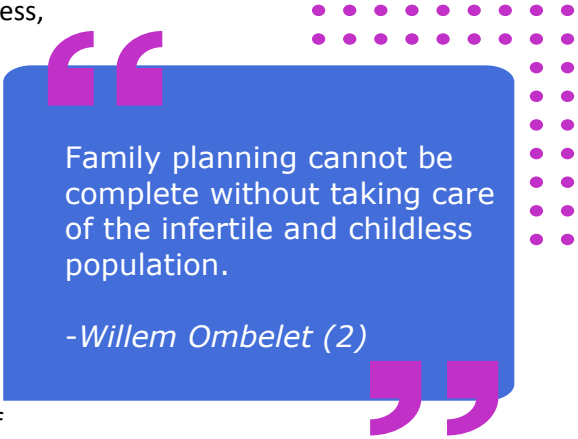
While there is variance across Sub-Saharan African countries, childbearing remains greatly valued and the inability to bear children is severely stigmatized (8). Infertility in Sub-Saharan Africa is highly gendered, with women often held responsible, even in cases where it has been medically proven that a male partner may be infertile (9, 10). Females living with infertility are often presumed to have made poor or risky health or lifestyle decisions, a narrative that has been used to justify divorce, abandonment, male polygamy, social stigma, and instances of violence against women.

¹ There continues to be variance in definitions of infertility and subsequent measures of infertility. We provide the WHO definition and most recent estimates of prevalence, however, the literature included in this review may have used slightly differing definitions and criteria for inclusion in their studies.

Further, common myths and misconceptions about the causes of infertility cause confusion, judgement, and ostracization of women, men and couples living with infertility (11-16). The confluence of these presumptions and narratives contribute to adverse health and well-being outcomes among those living with infertility, including economic hardship, psychosocial distress, and compromised health (17). This highlights the importance of understanding the complex interplay between infertility experiences, fertility knowledge, myths, misconceptions, and social norms related to fertility or infertility, especially in Sub-Saharan African contexts, where social consequences may be both common and harsh (5, 16, 18).

Empowerment is the process of enhancing the capacity of individuals or groups to make choices and to transform those choices into desired actions and outcomes (19). The empowerment process involves individuals and groups building consciousness of choice and self-efficacy to create change, enabling them to achieve their self-determined goals within the opportunities and constraints of social and institutional structures (20-24). **Reproductive empowerment** is defined as “both a transformative process and an outcome, whereby individuals expand their capacity to make informed decisions about their reproductive lives, amplify their ability to participate meaningfully in public and private discussions related to sexuality, reproductive health and fertility, and act on their preferences to achieve desired reproductive outcomes, free from violence, retribution or fear” (25).

Agency is situated at the center of the empowerment process, and involves individuals or groups being aware of their ability to make choices, setting individual or collective goals, and taking action to reach those goals. These choices, goals, and actions are informed and affected by internal and external resources (e.g. resilience, social support) and social norms (the perceived informal, mostly unwritten, rules that define acceptable, appropriate, and obligatory actions within a given group or community). They are also preceded by the development of critical consciousness, or the awareness of the rights and opportunities to pursue a given goal. Individual and collective agency are then the power to create change based on increased capacities (can) and supported actions and reactions (act and resist) (26). Enhancing an individual’s **reproductive agency** – to make intentional choices and to transform those choices into desired actions and outcomes – whether economically, socially, or personally, has the potential to significantly increase women’s ability to address or cope with infertility (25).



Family planning cannot be complete without taking care of the infertile and childless population.

-Willem Ombelet (2)

Despite more recent investments, infertility has not been a major focus of global SRH research and programming (2). In particular, it has yet to be prioritized in SRH programming in many parts of Sub-Saharan Africa—from policy to research to implementation—where social consequences of experiencing infertility are much higher (1, 27). There is a notable gap in healthcare coverage in Sub-Saharan Africa, which prioritizes pregnancy prevention while failing to support individuals and couples from seeking help to conceive pregnancy. This highlights infertility as both a human right and a health issue. As stated by the WHO, “individuals and couples have the right to decide the number, timing and spacing of their children and infertility can negate the realization of these

essential human rights” (28). However, in order to holistically support a rights-based, reproductive agency and empowerment-centered perspective to SRH programming, efforts to support individuals and couples to achieve pregnancy should be as central as efforts to prevent or space pregnancies (29).

SBC programming that recognizes the lived experiences, stigma, norms, attitudes and behaviors of individuals and couples living with infertility, combined with improved fertility awareness (i.e. a basic understanding of the menstrual cycle and conception) can shift knowledge, attitudes, norms, and beliefs around infertility (1). To address infertility-related knowledge and stigma, SBC programming centered on infertility education, counselling, and stigma reduction activities—inclusive of improving fertility awareness—has the potential to increase the self-efficacy, agency, and well-being of women and men individually and as couples, and to expand the reach of SRH programming (1).

This literature review seeks to summarize existing knowledge on causes and consequences of infertility in Sub-Saharan Africa, and identify existing infertility-related SBC programming, to inform design of an intervention that supports women and couples to build agency to achieve their self-determined reproductive goals by increasing fertility-related knowledge and decreasing infertility-related stigma. This literature review includes **three main findings sections**. The first presents a brief overview of infertility causes in Sub-Saharan Africa. The second section examines the existing evidence on experiences and consequences of infertility across the socio-ecological model. The third section presents what is documented on infertility-focused SBC programming in Sub-Saharan Africa, providing insights to inform future work in this area.

METHODS

This was a rapid literature review conducted from December 2022–January 2023. The literature review sought to explore perceptions of infertility causes and myths, social consequences of infertility, cross-cutting factors related to agency and infertility, and to identify interventions (specifically SBC) addressing infertility. The search was conducted on PubMed, EBSCOHost, and Cochrane for evidence on infertility in Sub-Saharan Africa. We used a search string of terms about infertility and the Sub-Saharan Africa region with retrieval filters set to English language and a period of January 2010 to November 2022 (**Table 1**). The search returned a total of 559 articles, 106 of which were eligible for full text review based on relevance to review goals of understanding perceptions, causes, myths, consequences and cross-cutting factors related to infertility in Sub-Saharan Africa. All types of research, including primary or secondary research published in journal articles and books, and grey literature were included for review. In addition to the executed search for literature, additional resources were identified through snowballing from reference lists of included publications and programmatic reports to inform the rationale section.

Table 1. Literature Search Strategy

| | CONCEPT | SEARCH TERMS | OPERATOR |
|-----------------|-------------|--|----------|
| FILTERS: | Infertility | ((Infertil*[tiab], Infertility[mesh], Infertile, Infertility, male, Infertility, female[mesh], Fertility[tiab], Infertility[tiab], Reproductive health[tiab]), Subfertility, Sterile* Sterility, Childless*ness, | OR |

| | | | |
|---|---|---|----|
| DATE RANGE: JAN 2010-NOV 30, 2022 ENGLISH LANGUAGE | | Unresolved infertility, Subfecundity, Infecundity, Barrenness, Barren*, Fruitless*, Impotent* | |
| | AND | | |
| | Knowledge, attitude, beliefs | Knowledge*; Experience*; Attitude* Belief*; Awareness; Behavior*; Belief*; Perception; Myth*; Misconception; Norm*; Comprehension*; Appraisal; Stigma; Understand* | OR |
| | AND | | |
| | Intervention | Social behavior change; Community engagement; Intervention* | OR |
| | AND | | |
| Sub-Saharan Africa | Sub-Saharan Africa; East* Africa; West* Africa; Angola; Benin; Botswana; Burkina Faso; Burundi; Cape Verde; Cameroon; Central Africa; Chad; Comoros; Congo; Cote D'Ivoire; Democratic Republic Of The Congo; Djibouti; Eswatini; Ethiopia; Eritrea; Equatorial; Gabon; Gambia; Ghana; Guinea; Guinea-Bissau; Kenya; Lesotho; Liberia; Madagascar; Malawi; Mali; Mauritania; Mauritius; Mozambique; Namibia; Niger; Nigeria; Rwanda; Senegal; Seychelles; Sierra Leone; Somalia; Somaliland; Tanzania; Togo; Sao Tome And Principe; South Africa; Uganda; Zambia; Zimbabwe | OR | |

The title/abstract results from each database were reviewed for relevance and, of the literature deemed eligible, pertinent information was compiled in a spreadsheet for full title/abstract screening and extraction of findings. Most of the available literature was from West Africa, specifically Ghana, Nigeria, and The Gambia (in that order), this was followed by East Africa (Malawi, Uganda, Kenya), and finally Southern Africa (South Africa and Zimbabwe) (see **Annex 1** for an overview of infertility-specific literature reviewed).

Initial efforts to synthesize the findings were done by theme (such as social norms, myths and misperceptions). During revisions, findings in section two were organized across the socio-ecological model: **individual** comprising subthemes such as beliefs or attitudes, **interpersonal** comprising subthemes such as marital dynamics, **societal** comprising subthemes such as social norms and stigma, and **structural** comprising subthemes such as clinical treatments and economic hardship. We acknowledge that presenting the findings this way results in notable overlaps, for example, myths and misperceptions on infertility are held as individual beliefs that may, in turn, be reinforced in social norms within a context.

SECTION 1

OVERVIEW OF IN/FERTILITY IN SUB-SAHARAN AFRICA

Across Sub-Saharan African countries, differences in the prevalence of both primary and secondary infertility vary within and across regions, races and individuals, and are determined by a host of

factors that can individually or collectively cause infertility (11, 28, 30, 31). According to Abebe and colleagues, the two most common categories for causes of infertility are 1) anatomical, genetic, endocrinological and immunological problems, and 2) preventable problems such as reproductive tract infections (e.g. STIs), risky healthcare practices, and exposure to toxic substances, either in the diet or environment (32). The most common male-related factors associated with infertility are centered around challenges with ejaculation, as well as sperm quality, quantity, function, and motility, whereas female-related factors are primarily due to abnormalities in reproductive hormonal expression, ovaries, fallopian tubes and the uterus (32). **Though different factors may cause infertility, pregnancy-related infections or bilateral tubal occlusion due to STIs are the most common causes of infertility in Sub-Saharan Africa (32).**

Estimates of the burden of primary vs. secondary infertility vary. **In a global analysis of 277 countries' demographic and health surveys (DHS) of women aged 20-44 years, the prevalence rate of primary infertility was 1.9%, whereas the prevalence rate of secondary infertility was 10.5% (5).** Based on the Abebe and colleagues' analysis, the pooled proportion of primary and secondary infertility in Africa is approximately equally distributed among those experiencing infertility (49.91% and 49.79%, respectively) (32). In Central Africa, primary infertility was estimated to be 2.5% or greater for countries such as Equatorial Guinea, Mozambique, Angola, Gabon, Cameroon, and the Central African Republic, whereas Southern and East African countries (Kenya, Zimbabwe and Rwanda) had a lower prevalence of primary infertility at 1.1% (3). However, given persistent challenges in measurement and little research, estimated rates of primary and secondary infertility vary across contexts within Sub-Saharan Africa. Tabong and colleagues note the lack of consensus on the prevalence of infertility largely stems from the differing definitions of the term, the varying periods of time over which it is studied, and a failure to differentiate analytically between voluntary and involuntary childlessness (33). Secondary infertility is the most common form of infertility in LMICs (3, 34), again, largely attributable to high prevalence of STIs and pregnancy-related infections (including sepsis and puerperal sepsis), as well as female and male genital tract infections, that lead to adhesions and obstruction in the reproductive tract (30, 31, 35-38).

Despite variances in defining infertility in the literature, there is consensus that, compared to other regions in the world, **there are elevated rates of primary and secondary infertility in Sub-Saharan Africa (3).**

Fertility awareness, simply defined as a basic understanding of the menstrual cycle and conception, is very low in Sub-Saharan Africa, limiting the agency of women and men to manage their fertility (39, 40). Most recent estimates of DHS data from women in 29 countries across Sub-Saharan Africa found the highest levels of incorrect knowledge about fertility and ovulation to be present in younger women (15-24 years) (40). This lack of knowledge and understanding of fertility and infertility in Sub-Saharan Africa may lead to delayed or inadequate diagnosis or treatment of infertility and have negative health impacts for individuals and couples. Further, it may perpetuate social stigmas surrounding infertility and further discourage help-seeking behaviors.

SECTION 2

STATE OF THE LITERATURE ON INFERTILITY IN SUB-SAHARAN AFRICA

Individual Findings

Psychological Distress

Across Sub-Saharan Africa, those living with infertility face high infertility-related stress, depressive symptoms, loneliness, suicidal thoughts, and overall lower quality of life due to the increased pressure to bear children (11, 12, 15, 41, 42). In a qualitative study of women experiencing infertility in Uganda, Asimwe and colleagues identified inadequate social support, psychological torture, continued grief, marital instability, felt failure (to conceive), and financial constraint as emerging themes in women's lives (15). Specifically, these women experienced consistent name-calling, emotional abuse, stigma, and blame for being infertile (15). Women recounted experiencing unstable marriages dissolving, which often led to feelings of distress and grief, including anger, irritability, sadness, stress, and feelings of despair (15). In a study in Tanzania, 169 women attending an infertility clinic expressed higher infertility-related stress compared to those in lower-fertility countries (including the United States of America, Canada and Italy), a sentiment that was true irrespective of education attainment (43). These participants explained that infertility-related stress permeated all aspects of their lives, causing concern with social relationships especially, largely due to the felt social pressures of desire for parenthood and the overall rejection of childfree lifestyles (43). Interestingly, infertility-related stress levels among Ghanaian women with infertility were found to be lower than those among Tanzanian women, suggesting that within two African countries, infertility-related stress differs substantially (43). Notably, women living with infertility in other studies in Ghana reported high levels of infertility-related stress with depressive symptoms (44, 45). This was supported in Malawi, where Malawian women experiencing infertility were more likely to report depressive symptoms compared to women without infertility (45). In Nigeria, Omoaregba and colleagues found that women experiencing infertility expressed sentiments of no longer enjoying sexual intercourse and had lower quality of life than their fertile counterparts, which participants explicitly attributed to the psychological distress of infertility (46-48). While men less frequently face the brunt of stigma, stress and feelings of loneliness were also reported by men experiencing infertility. For example, in The Gambia, men expressed feelings of receiving even less social support than women living with infertility (16). In Zimbabwe, male infertility has been linked to depression and suicide, where men expressed that living with infertility is considered a failure as a male and is one of the main causes of social ostracization (49). Higher socioeconomic status and education levels have been documented as facilitating factors in coping with infertility-related stress in Tanzania (43), whereas women with infertility who had low education and economic status were more likely to experience intimate partner violence (IPV), as found in Nigeria (50).

Fears of Infertility from Contraceptive Use

Several studies across Sub-Saharan Africa found that individuals, couples, and communities perceive that one of the main side effects of modern contraception use is infertility (9, 51-55). This finding is supported by a scoping review across Africa, where Boivin and colleagues also found beliefs about modern contraception causing a range of infertility outcomes (permanent infertility, to semi-permanent, to temporary infertility) (56, 57). The perception that contraceptive use and

infertility is directly correlated is a well-documented reason that adolescent girls and women or couples choose not to initiate or continue using effective contraceptive methods in Sub-Saharan Africa (9, 51, 58, 59). In Malawi, community members and spouses assumed that Malawian women with secondary infertility had used modern contraception (60). Perceived causes of infertility mentioned in a study amongst men in The Gambia were related to past behavior of women, including the belief that the use of contraception 'blocked', or otherwise affected the womb (16). **While the delay in return to fertility after hormonal method use (especially injectables) does vary in duration, the use of modern contraceptives has not been found to have long-term and permanent effects on fecundability (61).**

Boivin and colleagues **identified two types of fears about female infertility in their review across Africa: (1) fear of triggering infertility due to specific contraceptive choices and (2) fear of dire future social consequences of infertility (56).** Within fear of triggering infertility, this was largely tied to the choice of contraceptive methods that are believed to affect fertility via internal accumulation and blockage (e.g. of menstrual blood), structural damage (e.g. burnt eggs), and internal movement of contraceptive material (56). This was especially pertinent for oral contraceptives, which were believed to potentially accumulate and "block" the reproductive tract, and cause too much or too little bleeding, [and thus impact fertility], as well as beliefs that contraceptive self-injection, intrauterine device, and contraceptive use (in general) can cause structural damage to the female reproductive tract (56). This is supported by studies in Kenya, Senegal, Nigeria and Ethiopia which found that communities hold a wide-spread belief that modern contraceptives harm one's health and womb (58, 62). In Kenya, a qualitative study was conducted in three rural communities revealing a wide-spread belief that modern contraceptives were perceived to be a direct cause of infertility (58), and, for this reason, the use of these methods at a young age or even before child birth was perceived as widely unacceptable (57, 63). This perception also was found to hinder adolescents and young women in Kenya and Tanzania from using modern contraceptive methods (64, 65), as well as postpartum first-time young mothers in Ghana (42), and post-abortion youth and adult clients in Kenya (66).

Interpersonal Findings

Marital Instability or Dissolution

Across Sub-Saharan Africa, those living with infertility face higher rates of divorce, separation, infidelity, and polygamy (8, 11, 14). Marital instability is a common phenomenon experienced by couples living with infertility across Sub-Saharan Africa, a region where children are regarded as essential for stability of a marriage (12, 16, 67) and infertility is often used as a justification for males having multiple partners (11, 68, 69). Marital challenges in Sub-Saharan Africa (e.g. divorce, polygamy) arising from infertility are rooted in the expectation that procreation is the women's responsibility (8, 11, 12, 70). Failure of a union or marriage to result in childbearing is frowned upon and commonly ends with suspicion and scapegoating of women being infertile (12, 71). A woman who does not produce children for her husband is regarded as having failed in her marital role (11, 33). Various studies have documented that even when men are found to be infertile, it is the female who is more often taunted, blamed, and scapegoated for infertility (12), especially when the couple experiencing infertility remains married (10). In cases of suspected contraceptive use as the assumed cause of secondary infertility, polygamy and divorce were common results in studies in Ghana (33).

Among married women experiencing infertility in Ghana, feelings of uselessness and discontent in one's marriage were expressed, especially when a husband's other wives taunted and teased the wife (72). Similar findings of marital discord due to infertility were found in Nigeria, Mali, The Gambia, and Senegal, where an inability to have children a marriage resulted in divorce or separation where spouses, most often, Husbands sought new marriages in order to conceive children (14, 16, 41, 44, 73). Similarly, in Southern and East Africa, findings of marital instability due to infertility were reported by women and men in Malawi, Zimbabwe and Rwanda (9, 35, 49, 74).

Marital Infidelity: A Result or Solution to Infertility

Infertility is associated with increased rates of infidelity and polygamy, which comes with an associated increase in the risk of STIs (33). Ofosu and colleagues found that amongst married women struggling with infertility in Ghana, there was familial pressure (specifically from their own mothers) to “change partners and try their luck with another man” (72). Similarly, research in The Gambia and Nigeria found that although a man may not want to engage in an extramarital affair, they are pressured by relatives to seek other women to fulfill pregnancy desires (16, 73). However, the inverse was also true in The Gambia; in scenarios where the men suspected or knew that they were the cause of infertility, they avoided polygamy and extramarital affairs (16). Resorting to extramarital affairs to achieve fertility desires was also prevalent in Southern and East Africa. In Malawi and Zimbabwe, communal narratives of ‘solutions’ to infertility were for individuals to find other partners (9, 75). In a qualitative study using focus group discussions with 104 men and women in rural Malawi, Bornstein and colleagues found that in scenarios where a man is suspected to be the cause of infertility, it would be acceptable to find a fertile man to impregnate the woman; this was done by hiring another man (with a history of having fathered many children) to impregnate the man living with infertility's wife in order to achieve a successful pregnancy, despite the risks of STI exposure (76). Similarly, in the Masai culture in Kenya, men experiencing infertility may permit their wives to have an extramarital affair to try to conceive; conversely in this same context, women have conceived covertly with other men (77).

Societal Findings

Cultural Beliefs about the Causes of Infertility

Despite well-established medical and physiological causes of infertility, there are widespread and socially constructed alternative beliefs about perceived causes of infertility, including supernatural causes, voodoo, curses by ancestors or deities, evil spirits and witchcraft, abortion, engaging in masturbation and promiscuity, and recklessness during pregnancy or previous births (9, 10, 16, 33, 74). While these cultural beliefs generally persist across Sub-Saharan Africa, different countries and regions hold the weight of such factors to different degrees. Findings from Malawi and The Gambia indicated that people perceived both social and biomedical reasons as causes of infertility (9, 10, 16, 33, 74). In Northern Ghana, urban communities with higher educational status attributed biological causes to infertility, whereas rural populations referred to cultural beliefs as causes of infertility (33), highlighting how geographic location, level of educational attainment, and socioeconomic status may intersect with wider cultural beliefs about the causes of infertility (8, 33, 26).

Beliefs that infertility is attributable to spirits, sorcery, black magic, offending ancestors, being bewitched, or the result of being a witch yourself are not uncommon in Sub-Saharan Africa (16, 33,

78, 79). In Northern Ghana, a perceived supernatural consequence of breaking the “codes of marriage” (e.g. behaving within ones marriage against social expectations) was that ancestors would condemn a couple to experience infertility (33). Similarly, in studies from Nigeria, South Africa, and The Gambia, infertility was perceived to be caused by supernatural powers, black magic and evil spirits, or simply was “one’s destiny” (10, 16, 80). Communities in rural Malawi, Uganda, and Zimbabwe believed that women or couples living with infertility were bewitched or cursed by parents or relatives, with some believing that couples with infertility exchanged having children for wealth (9, 11). Persistent beliefs around infertility being “God’s will” (i.e. a punishment from God as retribution for sins) also emerged (15, 80). Strong beliefs of supernatural or religious causes of infertility contributed to narratives of women experiencing infertility being “deserving” of childlessness in Ghana, The Gambia, South Africa, Malawi, and Uganda (9, 11, 16, 33, 78, 79)

In Sub-Saharan Africa, there is a sentiment that women who experience infertility have had an abortion(s) and generally are suspected of being promiscuous and reflecting poor character (13, 16, 33, 72). This was highlighted in prominent social narratives in Malawi, where women with infertility were presumed to be promiscuous and reckless in their sexual life, and as such, resorting to abortion (9). This finding was reaffirmed in focus group discussions in Ghana, where participants expressed beliefs that a woman is born with a predetermined number of children and, therefore, any form of abortion leads to infertility (33). In Nigeria, social narratives included beliefs that abortion and masturbation are the main causes of infertility (50). In some contexts, there was evidence that lifestyle choices (including consuming certain substances or engaging in certain activities such as sports) can cause infertility for either the man or the woman. For example, when men in the Upper West Region of Northern Ghana were prompted to list factors responsible for infertility, they mentioned alcohol and smoking as prominent causes of male infertility (33). Among men living with infertility in The Gambia, there was a belief that women engaging in sports activities and smoking were perceived causes of their infertility (16).

Social Norms and Stigma surrounding In/fertility

Common social norms in Sub-Saharan Africa generally maintain that a marriage/union is expected to result in children to carry on the family lineage (11, 33, 70, 81). In many parts of Sub-Saharan Africa, childbearing is greatly valued, evident in DHS data that shows a consistently high desire for larger family sizes in the region as compared to other regions of the world (69, 82). The desire for large families has been related to “prestige, insurance in old age, and replacement in case of child deaths” (17). Other reported benefits of having many children include children as a source of assistance with labor, adhering with religious beliefs that encourage families to have many children as well as conferring social status and respect and being a source of joy in African communities (33, 70). In Ghana, children are also seen as companions to parents and grandparents in old age, a sign of familial achievement and provide parents with a befitting funeral (as rituals during burial are different for people without children) (33). In addition to childlessness being highly stigmatized, it is also heavily gendered in Sub-Saharan Africa (9, 33, 70).

Across Sub-Saharan Africa, it is well documented that individuals and couples with infertility face immense stigma (11, 13-16). Fear of infertility and stigma surrounding infertility are often cited as reasons that prevent couples from seeking help to conceive or prevent pregnancy (41, 78). Often

this is due to social pressure to prove their fertility at an early age because of the high social value of childbearing (12, 28, 69, 73). Due to commonly held beliefs about the causes of infertility in Sub-Saharan Africa, it is not uncommon for couples to be presumed guilty of poor-decision making (9, 33, 49, 72) and therefore 'deserving' of infertility (Nigeria: (50), Zimbabwe: (49), Ghana: (33), Malawi: (9), Ghana: (33); South Africa: (78)). These beliefs increase felt stigma of being infertile, often placing pressure on couples experiencing infertility to seek solutions (most commonly turning to traditional/spiritual healers and religious leaders for help) (9, 16, 72). A study in Mali reported that the stigma of infertility is persistently felt throughout the life course, irrespective of age (14). In West Africa, studies from Ghana, Nigeria, The Gambia, and Senegal found that both individuals and couples experiencing infertility are heavily stigmatized by their wider social networks, including spouses, co-wives, in-laws, families, and community members (12, 16, 33, 41, 44, 69, 72, 73). Men with infertility reported that their infertility often led others to question their masculinity (11, 35, 49). In Malawi, Zimbabwe, Uganda, and Rwanda, individuals and couples living with infertility expressed that they are often called derogatory names, most often by spouses, in-laws, friends, and community members (9, 11, 35, 49, 74).

Gendered stigma surrounding infertility

Even though infertility affects men as commonly as women in Sub-Saharan Africa, women are seen as responsible for fertility (and thus responsible for real or perceived infertility) to maintain the family lineage and reap the familial and social benefits derived from having children (9, 10, 33, 69, 71). Holding women responsible for infertility, even in cases where it has been medically proven that the male partner is the cause, is well documented in Sub-Saharan Africa (9, 10). For example, in The Gambia, men expressed the belief that marrying older women is the main cause of infertility, leading to justifications of marrying younger women (10). **Fertility—and fear of infertility later in life—is also used as justification for early marriage for women (followed by early childbirth) which emerged as common practice to prevent stigma, gossip and speculation of infertility in the literature in Niger, Ghana, and Malawi (9, 11, 12).**

Gendered stigma towards women is further complicated by son preference in some African countries. Not having a male child is considered equal to being infertile in some communities in Uganda, a concept engrained early and evident in youth expressing that not having a male child was equal to not having had any children at all (83). In Nigeria and Malawi, cultural preference for male children has also been used as justification for a man to marry more women in the quest for male offspring as males seek to maintain the family lineage (9, 80). These findings highlight the extreme stigma that comes with childlessness in Sub-Saharan Africa along with pervasive unequal gender roles (69).

Unequal gender roles and infertility blame can manifest in gender-based violence (GBV), specifically IPV, including verbal and physical abuse towards women experiencing infertility, as reported in Nigeria, Ghana, and Senegal (33, 50, 67). GBV against women living with infertility has also been documented in parts of East Africa, namely in Rwanda and Uganda (11, 36). For example, in Mali, women with infertility (who have husbands with offspring from other wives) were reported as being teased, taunted, and insulted by co-wives and the children of co-wives (14). Across these studies, however, the most common perpetrators of emotional or physical violence against women with infertility were male spouses (11, 33, 36, 46, 73).

Across Sub-Saharan Africa, women living with infertility rely on various coping mechanisms to deal with the stigma and challenges they face. Studies in Senegal, Ghana and The Gambia found that even though women with infertility often suffer from stigma and marital instability, support groups like the *Kanyaleng Kafoos* in The Gambia, help foster collective well-being of women (16, 67). Seeking treatment, consistently attending support groups, engaging in economic activities to ensure financial independence, becoming foster parents to relative's children, and avoiding painful/sensitive situations/conversations were also mentioned as coping mechanisms of women living with infertility across Sub-Saharan Africa (16, 67, 84).

Female Genital Mutilation

Various beliefs connect female genital mutilation/cutting (FGM/C) and in/fertility in Sub-Saharan Africa. FGM/C is a cultural practice prevalent in some societies of Sub-Saharan Africa. It is practiced for perceived benefits such as serving as a rite of passage, enhancing men's sexual pleasure, preserving virginity, enhancing fertility, adhering to religious obligations, and protecting hygiene (85). Rooted in socio-cultural and religious beliefs in Africa, FGM/C may encompass a sequence of procedures carried out on the genitals of females of different ages, including the total or partial removal of the female external genitalia or other injuries to the female genital organs for non-medical reasons (86). In Northern Ghana, focus group discussions (and some key informant interviews) with couples of varying fertility status identified paradoxical beliefs, with some expressing concerns that FGM/C causes infertility, while others stating that FGM/C can cure infertility, a belief that was largely due to the "extra-germination" of the clitoris being removed (33). The latter was supported in The Gambia, where men living in rural and urban communities in the West Coast region of The Gambia suggested that a lack of female circumcision was a likely cause of infertility (16). Despite the perceived benefits as identified by the communities that practice it, FGM/C is a human rights violation that leads to numerous negative outcomes in women including scarring and keloid, monthly menstrual difficulties, urinary tract infections, infertility, obstetric complications during pregnancy and labor, decreased sexual function, depression, anxiety, and post-traumatic stress disorder (85).

Structural Findings

Availability of Infertility Treatments

There are no records that SRH services in Sub-Saharan Africa include biomedical infertility treatment services within public health financing or strategy (8, 28, 87). As with other regions, a wide variety of people, including heterosexual couples, same-sex partners, older persons, individuals who are not in sexual relationships, and those with certain medical conditions, such as some HIV sero-discordant couples and cancer survivors, may require infertility management and fertility care services (28). Improved diagnostic technology and assisted reproduction technologies (ART) (including invitro fertilization (IVF), intracytoplasmic sperm injection, cryopreservation of gametes or embryos, and fertility medication) have helped many individuals and couples to circumvent challenges such as tubal blockage, evident in over five million babies delivered through these technologies globally (8). Interventions for infertility treatment are mostly concentrated in higher income countries, yet they are still largely unavailable, inaccessible, and unaffordable in Sub-Saharan Africa (8). Specific challenges include high costs of treatment, limited technology, equipment, and infertility treatment service points, inadequate training of personnel, and unregulated and poor

quality of service provision (8, 28, 88). This not only leaves individuals and couples to bear the financial burden of seeking private infertility treatment, but it also makes biomedical intervention options for infertility largely inaccessible in Sub-Saharan Africa (8, 28, 89). While ART treatments are not widely available, they are provided mostly in urban settings in several countries in Sub-Saharan Africa. A 2019 review by Omlete and Onofre outlined ART and counselling being available in only 16 Sub-Saharan countries in Africa, primarily centralized in Nigeria and South Africa (88, 90).

Socioeconomic Hardship

Individuals and couples experiencing infertility often face some form of economic hardship from infertility, most commonly due to seeking expensive fertility treatment and experiencing divorce and property inheritance challenges due to marital deterioration. In a study in Mali among married women with infertility, participants reported that their husbands had stopped supporting them financially, saying there was “no reason to provide for them since they were childless” (14). Even when these infertile women sought work outside of the home to support themselves, they expressed that they were taunted as to the reason they were working, when a women’s ‘job’ was to support her children (14). In Nigeria, women from the Ijo community expressed financial loss due to experiences of denial of property inheritance, attributed to sentiments of patrilineage in the community (41). Women in the Ijo community resorted to trade to pay for expensive infertility treatments, however, if unsuccessful, most returned to their fathers’ home after divorce (73). Biomedical interventions for infertility, like IVF, are largely inaccessible due to limited-service points and sparse technology, coupled with exorbitant pricing, private sector provision and subsequent out-of-pocket costs (16, 91). While some countries such as Nigeria and South Africa have introduced inexpensive ART programs, in Ghana, The Gambia, and Kenya they are not only extremely expensive (~\$4,000 per round of IVF, with other associated costs), but also largely unregulated and inaccessible (16, 84, 91). Couples in Northern Ghana who attribute social-cultural beliefs as the cause of infertility (such as spiritual curses) and seek alternative solutions such as traditional/spiritual healers have been financially exploited, with healers requiring long lists of goods to sacrifice to the gods (33).

Policy Perspectives on Prioritizing Infertility in the SRH Agenda

There were no peer-reviewed articles or other literature that provided an overview of current national policies on infertility across the Sub-Saharan region. According to the UN’s World Population Policies 2021 report, three countries have fertility policies to raise fertility levels, while 35 have policies to lower present fertility levels, two countries have policies to maintain fertility rates, and eight countries have no fertility policies (92). Notably within that same report, infertility is not mentioned once within the policy landscape (92). In 2020, the WHO published a fact sheet on identifying the causes of fertility, why addressing infertility is important and the challenges of doing so in most countries (a lack of resources and infrastructure, trained personnel, and financing) (28). The WHO advocated for government policies to mitigate inequitable access to safe and effective fertility care, starting with prevention of infertility (and thereby mitigating the need for costly treatment). **Though these recommendations from the WHO**

Specifically, the WHO recommended policy and programming interventions **including fertility awareness, reducing sexual risk-taking behaviors, early diagnosis and treatment of STIs, preventing complications of unsafe abortion and delivery, enabling laws and policies to support and regulate ART services, ongoing monitoring of ART services, and service strengthening** (28).

are idealistic, many policymakers in Sub-Saharan Africa are hesitant to advocate for infertility coverage due to the cost of providing care and other more immediate health priorities (including strong beliefs that overpopulation is more of a pertinent issue) (93).

Largely, infertility has yet to be prioritized with limited attention given to it within SRH policies and programs in Sub-Saharan Africa, despite the growing documentation on socioeconomic and psychosocial impacts of infertility (93). This was evident at the United Nations Population Fund (UNPFA) International Conference on Family Planning (ICPD+25) in Nairobi Kenya in 2019, which “recognized the reproductive health and empowerment of women and gender equality as pillars of sustainable development” (94). ICPD+25 was one of the largest conferences on SRH - bringing together global governments, United Nations agencies, private sector organizations, women's groups, and youth networks to discuss and agree on initiatives that further advanced the implementation of the ICPD Programme of Action – however, infertility was never explicitly prioritized as a topic, with the primary focus of the conference instead centering around curbing rapid population growth in developing countries (94). For example, at the country level, a study in The Gambia found that key stakeholders (including health workers, governmental and non-governmental organizations) held variable levels of interest and involvement in infertility efforts; some stakeholders were highly concerned with addressing the plight of women with infertility, while some were interested in preventing perceived biomedical causes of infertility and others rejected infertility as a priority citing high fertility rates in the region (16). **Evidence shows that receiving a diagnosis even without access to treatment can alleviate suffering of individuals and couples. This suggests that education, consultation, and diagnostic examinations could be a first step to providing care (93).** Indeed, where health policy and health system and care investments are lagging, interventions that improve infertility knowledge and reduce the individual and social consequences of infertility can fill an important gap. **The lack of focused attention on infertility in Sub-Saharan Africa calls for exploration of approaches to increase fertility awareness, reduce stigma and connect couples with the information and services they need to address their infertility concerns.**

SECTION 3

INFERTILITY PROGRAMMING IN SUB-SAHARAN AFRICA

Past and Current SBC Programming on Infertility

Interventions that support women and men experiencing infertility can have profound impact. At the individual and social levels, these may be interventions that improve fertility (and infertility knowledge) (e.g. fertility awareness interventions) which help individuals and couples identify the fertile window while also addressing myths or misperceptions surrounding contraceptive use. In addition, interventions can identify and seek to shift social norms to prevent stigma, in particular stigma directed at women experiencing infertility. At the service level, intervention models can provide psycho-social support for those experiencing infertility, along with or in addition to the provision of infertility care services such as ART to directly support individuals and couples seeking to become pregnant, coupled with supporting increased awareness of and demand for these services.

In a very timely scoping review on interventions addressing infertility-related gendered stigmatization in LMICs, Gerrits and colleagues identified several interventions in Sub-Saharan Africa operating at the individual, interpersonal, community and structural levels. The review concluded that while many interventions addressed stigma, there is very little evidence of infertility interventions, and of interventions documented, rarely did they work across socioecological levels (**See Box 1**) (1). Also notable was their finding that other than counselling, group therapy and support programs, there have been few infertility interventions evaluated to assess intervention effectiveness and impact in low- and middle-income countries (1).

Our literature review identified several interventions addressing infertility operating at multiple levels. We briefly describe the most relevant SBC-oriented interventions below, with additional details in **Table 2**.

- A forthcoming study in Nigeria (Reducing anxiety and depression in infertility among Nigerian women: an exploratory psycho-educational intervention trial [RADIANT]) has been developed to test an educational intervention aimed at increasing awareness and reduction of symptoms of anxiety and depression faced by individuals living with infertility (95), with hopes for integration into routine clinic settings and educational psychosocial fertility awareness campaigns to address the impact of infertility in the country (95).
- Similar work by researchers from the University of Liverpool have developed the Fertility Life Counselling Aid (FELICIA), a cognitive behavioral therapy approach that teaches participants living with infertility to identify and modify unhealthy ways of thinking and apply mindfulness strategies to help them live more satisfying lives (96).
- With no external support, a women-led NGO in The Gambia took a three-pronged approach to support those experiencing infertility. First, holding community marches for visibility. Second, using informational radio jingles broadcasted in multiple languages to share information on infertility treatment, protesting the stigma of infertility, and elevating infertility on the public agenda. And third, leveraging social media to spread information on reproductive health, biomedical causes and treatments of infertility, activities for awareness raising, and strategies that have been effective around the globe (16).
- Oh Happy Day Classes (OHDCs) were adapted from the United States to Ghana to provide cognitive behavioral therapy to individuals experiencing infertility. Topics included the definition of infertility, health beliefs, prevalence, types, risk factors, and the available treatment options for women and men, facilitated by trained psychologists (97).
- Dimbayaa for Fertility in The Gambia is a collective of professionals supporting fertility awareness and infertility in the country and throughout West Africa. In addition to provision

Box 1. Key Findings from Gerrits et al Scoping Review on interventions addressing infertility-related stigmatization (1) relevant to this Literature Review

1. Effectiveness of interventions was rarely assessed, and when it was, study design was challenging and follow up wasn't conducted.
2. In cases where infertility counselling was central to intervention design, individual and couple access to activities was limited (e.g. socioeconomically).
3. Men were rarely addressed in the intervention designs.
4. Interventions addressing infertility stigma at individual or interpersonal levels rarely effected social or structural levels.
5. Messaging within infertility programming should consistently support destigmatizing those living with infertility while also helping people achieve pregnancy.

of care, they work with traditional groups called *Kanyaleng* (98), which bring together women struggling with infertility and/or child loss. These groups create strong social cohesion and empower women to create and maintain support networks to improve their health and social status (1, 99).

- Peer support groups were also identified to provide the space for those experiencing infertility to share and comfort each other. Across Sub-Saharan Africa groups identified were: the Joyce Fertility Support Centre in Uganda, the Infertility Awareness Association of South Africa (IFAASA), Footsteps to Fertility in Kenya, the Association of Childless Couples of Ghana (ACCOG), the Safe Haven Foundation in The Gambia, and BeiBei haven in Nigeria (13). Some groups were modelled as peer-to-peer, while others were connected to clinics; online or in person (13).

Table 2. SBC interventions addressing infertility implemented or planned in Sub-Saharan Africa

| Country | Program Name | Project Aim | Socio Ecological Level | Overview of Intervention Activities | Evaluation Conducted |
|--------------|---|--|---|--|--|
| The Gambia | -- | To improve access to biomedical treatment and decrease stigma | Community | Community-wide marches; radio jingles; social media campaign | -- |
| The Gambia | Dimbayaa for Fertility (<i>Organization</i>) | Infertility awareness, counselling, testing, diagnosis, treatment and future planning | Individual Interpersonal Societal | Organization runs several activities. Of note, they work with <i>Kanyaleng</i> social groups to build social capital, social networks, and spread awareness and reduce stigmatization | -- |
| Ghana | Oh Happy Day Classes (OHDCs) | To treat depression in African American adults experiencing infertility (adapted for Ghana) | Individual | Uses combination of cognitive behavior therapy framework, psycho-education, and a support group format over 12 weeks to unpack thinking patterns and teach coping skills | Yes. Findings indicate psycho-educational counseling can reduce infertility-induced depression and stress. |
| Nigeria | Reducing anxiety and depression in infertility among Nigerian women: an exploratory psycho-educational intervention trial (RADIANT) | To conduct an evaluation of eHealth intervention to support coping skills for infertility | Individual (activities conducted in clinic settings) | Psychosocial support, psychoeducational programming by use of locally informed and designed IEC materials (e.g. videos, stories, film) | -- |
| Nigeria | The Fertility Life Counselling Aid (FELICIA) | To manage the psychological morbidity associated with infertility using cognitive behavioral therapy (CBT) based strategies. | Individual Structural (designed to be used in group settings or by health providers) | 6-week-long counselling program for individual experiencing infertility; addressing coping skills, emotional and mental health, financial impact, infertility treatment and resilience | Pilot underway; evaluation planned. |
| Nigeria, The | BeiBei haven, Safe Haven Foundation, | To convene groups of peers experiencing | Individual Interpersonal | -- | -- |

| | | | | | |
|--|---|--|----------|--|--|
| Gambia, Uganda, Kenya, South Africa, Ghana | Joyce Fertility Support Centre, Footsteps to Fertility, Infertility Awareness Association of South Africa, Association of Childless Couples | infertility to exchange information and find connection in experience. | Societal | | |
|--|---|--|----------|--|--|

Finally, there is evidence of activities at the societal level such the National Infertility Awareness Week in South Africa which began in 2020 to raise awareness and the International Infertility Awareness Week in The Gambia (1). These and other efforts have leveraged celebrities and public figures, such as Faith Leaders, or for example, the First Lady of Namibia Monica Geingos, to advocate for increased awareness (1).

Lessons Learned from other SBC Program Approaches

Despite the limited number of current SBC programs addressing infertility, there is great potential to address infertility in Sub-Saharan Africa by applying lessons from other programmatic approaches implemented and evaluated, such as fertility awareness and norms-shifting approaches².

Fertility Awareness Programming to improve Knowledge, Attitudes and Behaviors

Broadening SRH programs to include fertility awareness (including infertility counseling) could be a feasible first step in improving infertility knowledge and decreasing infertility-related stigma (93). Fertility awareness is a concept that varies in definition and terminology; DHS data often assesses a woman’s fertility knowledge by asking basic questions such as when pregnancy is most likely to occur during the menstrual cycle (39). In the broader literature, however, many studies do not have a precise fertility awareness definition but rather seek to understand “**multiple aspects of knowledge and beliefs about fertility throughout the life course and during different life circumstances, as well as some associated attitudes and behaviors**” (100). A comprehensive definition of fertility awareness encompasses influences across the life course that shape behavior, including cognitive, social, environmental and developmental factors (39). In some cases, the fertility awareness concept has broadened to also include information about body changes during puberty and the onset of fertility (for girls and boys); postpartum or post-abortion/miscarriage return to fertility; pregnancy risk for both breastfeeding and non-breastfeeding women; variable fertility and fertility risk during the menstrual cycle; observable changes throughout the menstrual cycle including signs of a woman’s fertility; male fertility; mechanisms by which family planning methods affect likelihood of pregnancy; possible side effects of family planning methods; and circumstances associated with infertility/subfertility and aging (100).

There is consensus that a lack of fertility awareness negatively influences SRH attitudes and behaviors across the life course, including non-use of family planning methods, delayed method use postpartum or post abortion, method discontinuation, ineffective method use, unintended pregnancy, and false perceptions of infertility (101). **Although it is challenging to measure the effect of incorporating fertility awareness into programs, several studies suggest there is significant**

² **Note:** These approaches might not be mutually exclusive. A FAM intervention may include norms-shifting activities, and vice-versa.

value-add of integrating fertility awareness into interventions at the individual- and community-level, resulting in increased knowledge and positive shifts in social norms around fertility and infertility (100-102).

Examples of successful fertility awareness programs implemented in Sub-Saharan Africa include:

- EDEAN Community Theatre, a pilot project in **Uganda**, used community theatre and peer learning to diffuse fertility awareness and family planning information amongst marginalized Karimojong communities in a gender synchronized way. Through theatre performances, dialogue is centered on deconstructing norms and beliefs around protecting fertility, couple communication, menstruation, and family planning. When compared to non-viewers, individuals who attended the performances had 16% higher fertility awareness, were 32% more likely to use family planning, 1.6 times as likely to have improved couple and community communication about family planning and were 32% more likely to seek family planning information from a health worker post-engagement with the productions (102).
- A similar approach was taken in **Rwanda**; *Impano n'Impamba* (A Gift for Today That Will Last a Long Time) is a serial radio drama that used a 104-episode series to address a variety of topics including family planning, gender-based violence, and fertility-related concerns, specifically incorporating information about the menstrual cycle, when/how pregnancy occurs, who's fertile and when, into story lines. The performances centered on deconstructing norms and beliefs related to fertility awareness and family planning and sharing accurate knowledge throughout their community. Results indicated that the serial radio drama was well received and consistently improved fertility awareness and created a more supportive environment for family planning (103).
- *Wake ki Lago Nywal* (WALAN), a community-based group learning approach also implemented in **Uganda**, found improvements in fertility awareness method use through youth groups leading their communities in learning about fertility awareness and family planning (96). Using a youth-led facilitation model, information sessions leveraged low-literacy tool kits and participatory learning activities amongst pairs of men and women to increase acceptance of family planning and improve fertility awareness. Fertility awareness included body literacy, fertile window, optimal child spacing, family planning options, the lactational amenorrhea method (LAM), breastfeeding and how to protect fertility (and prevent infertility) (100).

Though fertility awareness interventions have momentum in Sub-Saharan Africa, there is generally a lack of SBC interventions across the Sub-Saharan Africa region that are intentionally tailored to both address underlying negative perceptions around infertility and provide ways to support shifts in norms and behavior. This is further confounded by short project timeframes, funding partner priorities, and challenges in scaling and sustaining effective models. Broadening SRH programs to include links to infertility counseling may catalyze changes across program areas, improving quality of life and reducing social morbidity, while also enhancing reproductive knowledge and improving health outcomes (71).

Norms-shifting Programming to Enable Supportive Environments

Social norms are the perceived informal, mostly unwritten, rules that define acceptable, appropriate, and obligatory actions within a given group or community (104). Social norms are learned explicitly or implicitly and shift over the life course (104). Social norms are central to SBC programming, as they can encourage or discourage behavior and, as a result, influence individual and community well-being (105). Norms-shifting interventions seek to improve the health of women and girls and men and boys by addressing the social norms that prop up harmful health-related behaviors (106). Norms-shifting interventions are informed by the analysis of social norms, led by communities through a process of critical reflection, and often result in positive new norms rooted in contextual values (106). These interventions may be standalone yet often complement other strategies to change behavior, such as transforming individual attitudes and addressing structural drivers of behavior (106). **Through directly identifying and addressing social norms, these interventions can create enabling environments for individuals and couples to achieve their reproductive goals** (107). Specifically, social norms can constrain reproductive agency, contraceptive use and decision-making, couples' communication, timing and spacing of pregnancies, and access to healthcare (107). The literature mentions a number of social norms that influence the infertility experience. For example, women are expected to be fertile, to have children, and to have children soon after marriage. Further, those who do not or in this case cannot adhere to those social norms experience stigma. Stigma, a type of sanction which enforces social norms, can have cross-cutting impacts at different levels—individual (internalized), interpersonal (acts of stigma or verbal or physical experiences) and institutional stigma (dynamics within healthcare centers or marginalizing policies or practices)(1). Given the growing evidence that multi-component norms-shifting interventions can be effective in addressing SRH-related social norms (and associated stigma) and helping individuals achieve their reproductive goals, these interventions hold great potential for expansion to improve SRH outcomes.

Examples of successful norms-shifting programs implemented in Sub-Saharan Africa include:

- CARE's Family Planning Results Initiative in **Kenya** trained influential community members to facilitate reflective dialogues on gender and family planning, with participants serving as role models. In tandem, the program strengthened health services to support the community-level work. This program addressed social norms around acceptability and use of modern contraception and resulted in an increase of contraceptive use as well as improved timing and spacing of pregnancies (108)
- *Tékponon Jikuagou* in **Benin** used social network mapping to identify key influencers who then engaged in reflective dialogue with community members about family planning-related norms. To support the diffusion of new ideas, community radio stations broadcasted the reflective dialogues. Influencers were encouraged to discuss new ideas and behaviors with their networks. At the systems level, health providers received refresher training in family planning and a referral system between the community groups and providers was put in place. Intervention activities addressed norms related to the acceptability of couple and community discussion of family planning. The program resulted in a significant increase of contraception use in the intervention communities (109).
- In Nigeria, the **Nigerian** Urban Reproductive Health Initiative addressed both contraceptive supply and demand by working with healthcare professionals and community clinics to improve health care quality and access to contraception while simultaneously engaging with

community and religious leaders, government officials, and even popular singers, to convey the benefits of family planning. The goal was to make family planning an ordinary, socially accepted part of Nigerian life—fostering demand for services. The intervention addressed norms to decrease stigma related to contraceptive use, improving social approval of contraceptive use, and ultimately supporting behavior change (110).

IMPLICATIONS FOR FUTURE RESEARCH AND PROGRAMMING

Below we outline the implications gathered from the literature and program review, which will inform the subsequent stages of this activity and can inform future investments in research and development.

- 1. Deep and nuanced understanding of the ways that fear of infertility materialize and impact behavior** among men and women within and across various contexts (e.g. abstinence, ineffective use of contraception, presumptions of infertility) is needed to effectively design and implement SBC initiatives to address infertility and its related consequences.
- 2. It is paramount to value community perspectives and other stakeholders on how to best design and sustain infertility SBC programs.** Communities that do not trust or feel valued by a health care team are less likely to accept the recommendations of public health providers and experts. Community-based organizations and/or existing community groups are important research, design, and implementation partners – not just “platforms” – to deliver high-quality fertility awareness programming and amplify local actors, voices, and perspectives and to ensure community engagement with SBC interventions. Similarly, for SBC interventions to yield maximum results in changing attitudes, behaviors, and norms related to infertility in a given context, it is important to talk with, engage, and listen to a variety of stakeholders, including government officials, policy makers, health providers/professionals, opinion leaders, members of community-based organizations, celebrities, sports stars, influencers, and other role models to understand their perspectives on infertility and eventually, engage them as champions to increase fertility awareness and reduce infertility-related stigma.
- 3. Interventions should seek to address and evaluate the array of social networks of influence** (including some key influencers listed in 2. above and others working on infertility in LMICs) and importantly be accompanied with evaluation research to assess their effectiveness and strengthen buy-in. Education and awareness-raising interventions to address shared knowledge and beliefs and social consequences of infertility could be beneficial approaches.
- 4. Engage traditional healers and religious leaders (as well as medical providers) as individuals and audiences and channels to leverage influencers and support an enabling environment.** Additionally, providing infertility training to health care providers, traditional healers, and religious leaders to enable them to counsel patients may reduce widespread

misconceptions around contraception and infertility and result in broad improvements in reproductive knowledge, behavior and outcomes related to both fertility and contraception.

- 5. There is currently a limited focus on, and awareness of, the challenges faced by men with infertility, perpetuating the perception that infertility is a woman's issue, and further stigmatizing men.** As such, interventions should apply a gender transformative approach to addressing the repercussions of infertility, so that women, men, and couples alike can benefit. Being explicit about gender discrepancies in infertility experiences in community-based/interpersonal platforms, including community-based groups like women's groups, men's groups, discussion groups, and peer groups will be important. Incorporating notions of gender equity, agency, empowerment, and autonomy in these group discussions will bring infertility to the forefront of individual, community, and global agendas.
- 6. Infertility will need to be addressed through multi-pronged interventions that may leverage or compliment the work of other ongoing interventions** across the socio-ecological levels, supported by a shift in the global SRH discourse towards reproductive agency and empowerment:
 - Interventions geared to individuals experiencing infertility should go beyond clinical settings to improve fertility knowledge, thus demystifying infertility and addressing stigma.
 - Interventions at the interpersonal level should aim to combat stigmatizing attitudes and fertility-related social norms of family or community members.
 - Interventions at the structural level should aim to design and implement supporting infertility health policies; improve service provision by trained healthcare workers; scale up early diagnosis and ART programs; provide insurance and financial support to individuals and couples who experience infertility.
- 7. SBC approaches and channels used by fertility awareness and norms-shifting programs may have relevance for infertility-focused intervention design,** such as one-on-one counselling. Consider using a variety of platforms such as schools, women's groups, workplaces, sports clubs, churches, health clinics, savings and loans groups, nutrition groups, WASH groups, youth clubs, mass media, vocational training programs, etc., to reach large numbers of people (96). Mass media—TV, radio, posters, social media, mhealth, smartphone apps, as well as printed materials (comic books, magazines, booklets, online courses)—may be effective channels to expand the reach of new information and ideas related to infertility.

ANNEXES

Annex 1. Overview of Literature from Africa or LMICs, by Region

| Region | Country | Author(s)/Date | Study Type | Aim |
|-------------|------------|------------------------------|--|---|
| West Africa | Cameroon | Egbe et al., 2020 | Quantitative | To determine the prevalence and associated factors of infertility in Douala, Cameroon |
| | The Gambia | Dierickx, et al., 2019 | Qualitative | Long-term ethnographic study |
| | The Gambia | Dierickx, et al., 2021 | Qualitative | Long-term ethnographic study |
| | The Gambia | Dierickx, et al., 2022 | Qualitative | Long-term ethnographic study |
| | Ghana | Adofu, 2021 | Quantitative | To explore factors that influence family planning uptake after the first delivery, including fear of infertility. |
| | Ghana | Alhassan et al., 2014 | Quantitative | To examine prevalence and severity of depression in relation to age, type of infertility and duration of infertility in Ghanaian infertile women. |
| | Ghana | Anokye, et al., 2017 | Quantitative | To determine the psychosocial effects of infertility among couples |
| | Ghana | Anaman-Torgbor et al., 2021` | Qualitative | To explore the experiences of women undergoing ART treatment |
| | Ghana | Fledderjohann, J.J., 2012 | Qualitative | To explores the implications of infertility for women in Ghana |
| | Ghana | Osofu & Hanninen, 2020 | Qualitative | To document lived experiences of infertile women and on how they can be helped to improve their own condition |
| | Ghana | Naab et al., 2013 | Quantitative | To describe infertile women's psychosocial health problems and their infertility-related beliefs |
| | Ghana | Tabong & Adongo, 2013 | Qualitative | Exploratory study on causes of infertility |
| | Mali | Hess, et al., 2018 | Mixed Methods | To examine infertility-induced psychological distress and coping strategies among women in Mali |
| | Niger | Samandari et al., 2019 | Qualitative | To examine the underlying social, individual and structural factors influencing married girls' early first birth |
| | Nigeria | Abarikwu, 2013 | Literature review and secondary data analysis | Review to identify risk factors for male-factor infertility in Nigeria |
| | Nigeria | Adegbola & Akindele, 2013 | Quantitative | To examine the pattern of infertility cases amongst infertile couples seeking care |
| | Nigeria | Aduloju, 2018 | Quantitative | To examine the quality of life in women of reproductive age and compare the quality-of-life scores among fertile and infertile women |
| | Nigeria | Bello et al., 2021 | Mixed methods Implementation Research Protocol | To assess psychoeducational intervention package and to evaluate its effectiveness for reducing symptoms of anxiety and depression in infertile populations |

| Region | Country | Author(s)/Date | Study Type | Aim |
|----------------|-----------------|---------------------------|-------------------------|--|
| | Nigeria | Dimka & Dein, 2013 | Qualitative | Ethnographic study documenting impact of infertility on women's lives |
| | Nigeria | Ibisomi & Mudege, 2013` | Qualitative | To explore societal perception and acceptance of childlessness in Nigeria |
| | Nigeria | Ikimalo & Babatunde, 2012 | Quantitative | To investigate perceptions of infertility among urban residents of Port Harcourt, Nigeria |
| | Nigeria | Iliyasu et al., 2013 | Quantitative | To determine the public perception of infertility, its causes and factors associated with acceptability of ART |
| | Nigeria | Larsen et al., 2010 | Mixed methods | To examine the experiences of women with infertility in Nigeria |
| | Nigeria | Okafor et al., 2017 | Quantitative | To explore the perceptions of infertility and IVF and how to enhance the use of IVF treatment among married couples |
| | Nigeria | Omoaregba et al., 2011 | Quantitative | To determine the prevalence of psychological distress as well as its associated socio-cultural characteristics among women attending infertility clinics |
| | Nigeria | Ndubuisi et al., 2021 | Quantitative | To assess the impact of infertility on the sexual life of women with infertility seeking care |
| | Nigeria | Whitehouse & Hollos, 2014 | Qualitative | To explore experiences of infertility by types of infertility (low, childless) |
| Central Africa | Rwanda | Dhont et al., 2011 | Mixed methods | To understand the socio-cultural consequences of infertility |
| | Rwanda | Dhont, 2011 | Quantitative | To examine predictors for infertility and treatment-seeking behavior |
| East Africa | Ethiopia | Akalewold, et al. 2022 | Quantitative | Hospital-level survey on factors driving infertility |
| | Kenya | Ochako et al., 2015 | Qualitative | To explore reasons for contraceptive hesitancy, for which fear of infertility was a major factor |
| | Kenya | Njogu et al., 2022 | Qualitative | To describe women's fertility treatment and experiences |
| | Kenya | Sedlander et al., 2018 | Qualitative | To understand how beliefs that modern contraceptives cause infertility shapes behavior? Unclear |
| | Kenya | Sedlander et al., 2021 | Quantitative | To conduct sociocentric network analysis to explore if beliefs that contraceptives effect infertility result in low use |
| | Kenya, Tanzania | WHO (Bulletin) | Key Informant Interview | Interview with healthcare providers on Maasai experiences of infertility |
| | Malawi | Bornstein, et al, 2020 | Qualitative | To understand the production and impact of infertility-related stigma |
| | Malawi | Chipeta et al., 2010 | Qualitative | To explore factors that affect the intentions of men and women to use family planning methods |
| | Malawi | Parrot, 2014 | Qualitative | Ethnographic research on how men's reproductive bodies are problematized and biomedically defined diagnoses contribute to the visibility of male infertility |

| Region | Country | Author(s)/Date | Study Type | Aim |
|---|--------------|------------------------------|--------------------------------------|---|
| | Malawi | Roa et al., 2018 | Quantitative | To explore the relationship between infertility and women's health more broadly |
| | Tanzania | Systematic Review | Primary/Secondary Quantitative | To measure infertility-related stress in Tanzania and compare with rates of higher income/lower fertility countries |
| | Tanzania | Hollos & Larsen, 2008 | Mixed methods | To explore the personal and social ramifications of infertility in an African urban population with low fertility |
| | Uganda | Asiimwe, et al., 2022 | Qualitative | To explore the experiences of women living with involuntary childlessness |
| | Uganda | Beyeza-Kashesy, et al., 2010 | Qualitative | To explore perceptions and influences of fertility motivation among young people |
| | Uganda | Kudesia et al., 2018 | Quantitative | To explore reproductive knowledge, quality of life, and infertility-related social morbidity |
| | Uganda | WHO (Bulletin) | Commentary (World Health Bulletin) | A commentary advocating for inclusion of infertility in SRH global agenda |
| Southern Africa | South Africa | Dyer et al., 2002 | Mixed Methods | To document the knowledge that infertile women have about fertility and the causes of infertility, their treatment-seeking behavior and their expectations of an infertility clinic |
| | South Africa | Makoa, 2005 | Qualitative (Thesis) | To explore lived experiences of infertile women and the influence of culture |
| | South Africa | Mabasa, 2002 | Qualitative (Thesis) | To apply an African feminist frame to explore psychological impacts of infertility |
| | Zimbabwe | Moyo, 2013 | Qualitative | To explore the experiences and indigenous efforts to support of male infertility |
| Africa (North & Sub-Saharan) & Multiple Country Studies | | Abebe et al, 2020 | Systematic review with meta-analysis | To analyze the proportion of primary and secondary infertility in the region |
| | | Aiyenigba et al., 2019 | Intervention Design Paper | Theoretical model of a Cognitive Behavioral Therapy for people experiencing infertility with proposed applicability in Africa |
| | | Atake & Ali, 2019 | Secondary analysis | To examine association between women's empowerment and fertility preferences in Burkina Faso, Mali, Niger and Chad |
| | | Ackerson & Zielinski, 2017 | Literature Review | Review of research that inhibit or promote family planning and contraceptive use among refugee women in Sub-Saharan Africa |
| | | Boivin, 2020 | Literature Review | To document the evidence on the fear of infertility in Africa |
| | | Ombelet & Onofre, 2019 | Mixed Methods | To provide an overview of IVF in Africa |
| | | Olamijuwon et al., 2021 | Secondary Research | Use of DHS data to investigate the relationship between infertility, marital infidelity, and how it may be |

| Region | Country | Author(s)/Date | Study Type | Aim |
|--------|---------|----------------------|----------------------------|--|
| | | | | moderated by women's educational attainment in Cameroon, Gabon, Lesotho, Liberia, and Sierra Leone |
| | | Tanywe et al., 2018 | Systematic Review Protocol | Protocol to conduct systematic review on clinical and socio-cultural dimensions of infertility for women |
| LMICs | | Gerrits, et al, 2023 | Scoping Review | Review of interventions addressing infertility-associated stigma |
| | | Ombelet et al., 2008 | Literature Review | To document infertility services worldwide |

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