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Perspectives of stakeholders on enhancing access to self-injectable contraception in rural South Sudan

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Abstract

Background Although self-injectable subcutaneous depot medroxyprogesterone acetate (DMPA-SC) has demonstrated promise, there are significant barriers in promoting initiation and continued use in low-resource settings. This study sought to understand the perspectives of stakeholders on promotion of self-injectable contraception use in rural South Sudan.

Methods The study was conducted in Aweil East County, South Sudan, using a descriptive phenomenological approach. We conducted 22 in-depth interviews and 4 focus group discussions with key stakeholders. The data interpretation was guided by social and behavior change self-care framework.

Results The study showed that users valued the privacy of self-injecting at home, helping them overcome the socio-cultural and geographical barriers. However, they faced challenges such as stigma, side effects, and family interference. The findings further showed that expanding the entry points for self-injectable contraception within the community by involving community health workers (CHW) as providers has the potential to reach a wider audience, including first-time users and marginalized groups. Stakeholders emphasized the need for champions to create awareness of self-injectable contraception, particularly involving community leaders, women-led organizations, and community gatherings. In addition, the users' continuous training and supportive social networks were crucial for successful implementation.

Conclusion Enhancing access to self-injectable contraception requires a multi-faceted approach that prioritizes the perspectives of stakeholders. Support from stakeholders is crucial for user awareness and continued use, while training users to ensure effective self-injectable. This collaborative approach holds the potential to address the complexities surrounding contraception access in rural South Sudan, leading to improved reproductive health for the community.

Keywords Contraception · DMPA-SC · Injectable contraception · Self-injection · Subcutaneous depot medroxyprogesterone acetate · Rural South Sudan

Abbreviations

CHW	Community health workers
DMPA-SC	Subcutaneous depot medroxyprogesterone acetate
FGD	Focus group discussions.
SBC	Social and behavior change

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1 Background

Self-injectable subcutaneous depot medroxyprogesterone acetate (DMPA-SC) contraception holds promise as a transformative approach in accessing contraception, particularly in low-resource settings [1]. In 2023, 54 countries were providing DMPA-SC with 34 of them providing DMPA-SC self-injectable contraception. In Africa, countries such as Burkina Faso, the Democratic Republic of Congo, Madagascar, Malawi, Nigeria, Senegal, Uganda, and Zambia have introduced DMPA-SC self-injectable contraception method to expand family planning options [2]. In South Sudan, provider-administered DMPA-SC is available and accessible but DMPA-SC self-injectable contraception remains limited to pilot programs [3, 4].

Studies conducted in some of the African countries such as Malawi, Nigeria, Senegal, and Uganda have demonstrated potential of self-injectable contraception to increase contraceptive use, with continuation rates and satisfaction comparable to provider-administered injections [5–10]. World Health Organization recommended the rollout of self-injectable DMPA-SC contraception as an additional option for injectable contraception along with other modern contraception methods [11]. In existing studies, self-injectable contraception enhanced autonomy, access, and compliance, eliminated frequent clinic visits and offered privacy, discretion and women empowerment [2, 3, 9–12]. This is promising contraception option for enhancing reproductive health outcomes in regions like South Sudan with significant reproductive health challenges [16].

South Sudan's maternal mortality ratio stood at 1223 per 100,000 live births in 2020, placing it among the highest globally [17]. The country's total fertility rate is 4.4, coupled with a very low contraceptive prevalence rate of 6% among women and a high unmet need for family planning, standing at 29.7% [18]. The UNFPA aims to raise the modern contraceptive prevalence rate (mCPR) from 6 to 15% [18]while the South Sudan government commits to attain mCPR of 20% by 2030 [19]. The contraceptive methods available at healthcare facilities in South Sudan include oral contraceptive pills, male and female condoms, emergency contraceptive pills, injectables such as DMPA (administered intramuscularly or subcutaneously), copper intrauterine devices, and implants [20]. These services are largely provided by international organizations and non-governmental organizations, often free of charge to users [21].The complexities of contraceptive uptake are aggravated in humanitarian settings [1]. Poor healthcare infrastructure, insufficient health workforce capacity, and substandard service delivery complicate access to reproductive health services [9, 22]. These system weaknesses are driven by multiple challenges such as conflict, environmental disasters, and food insecurity. Moreover, users' cultural norms, gender norms, socio-economic status, and geographical accessibility shape their access and utilization of contraceptive methods [8].

Accessibility of contraception interventions is impacted by factors beyond mere physical availability. For self-injectable contraception, these factors include the ease with which individuals can obtain the necessary information, training, and support for successful self-injection [9]. Thus stakeholders, including users and service providers, play pivotal roles in shaping the accessibility of self-injectable contraception. These stakeholders' perspectives and experiences significantly influence in contraception implementation, acceptance, and sustainability [23]. Therefore, understanding stakeholders' perspectives is essential for tailoring future self-injectable contraception interventions to meet user and provider needs and preferences, thereby enhancing accessibility. This study aims to document the stakeholder perspectives and experiences with self-injectable DMPA-SC contraception in rural South Sudan, informing strategies for successful integration into future family planning programs in the country and similar low resource, fragile settings.

2 Methods

2.1 Study design

We adopted a descriptive phenomenological approach [24] to explore stakeholders' perspectives and experiences with self-injectable contraception. This approach focused on common perspectives and experiences of stakeholders and interpretation to inform programmatic implications for improving accessibility of DMPA-SC self-injectable contraception in low resource settings.

2.2 Study sites

The research was conducted between June and July 2023 in Aweil East County, in the eastern region of Northern Bahr el-Ghazal State, South Sudan. The area is predominantly rural, with an estimated population of 309,921, comprised primarily of agro-pastoralists of the Dinka ethnic group whose livelihoods depend on subsistence farming and livestock rearing [25]. In this region, women of reproductive age face multiple barriers to access to health care, as well as poverty and low literacy rates.

2.3 Sampling strategy and participants

Participants were selected based on their involvement in a longitudinal pilot study of the feasibility and demand of self-injectable contraception implemented in Aweil East County, Northern Bahr el Ghazal, South Sudan (unpublished work). The longitudinal pilot study was led by principal investigator (NK) and managed by LAL. All other members of the team were investigators in the study. The longitudinal pilot study had enrolled and trained 274 women on self-injection techniques, following up with them every quarter for 12 months. This subsequent study included a subset of those women hereafter referred as users, the program staff, CHWs, and health care providers to gather multiple stakeholders' perspectives on improving future self-injectable contraception programs or interventions.

We conducted interviews with CHWs involved in recruiting and following up with the users during the longitudinal pilot study, facility-based health care providers involved in supporting users, and program staff who implemented the longitudinal pilot study. While all CHWs involved were interviewed, two health care providers involved in the pilot study were unavailable during the entire data collection period and one program staff declined to be interviewed.

We conducted interviews with 22 participants, the majority (N = 18) based in Aweil East County, while two participants were located in Juba, South Sudan and two in Nairobi, Kenya. Among the participants, 12 were male, and 10 were female. The sample included 11 CHWs and two clinical officers, while program staff comprised four research officers (who had health backgrounds and played dual roles in program implementation and research), two project officers, and three technical advisors. This diverse distribution of participants across various professional roles, expertise and locations ensured a comprehensive exploration of perspectives on implementing self-injectable contraception.

The focus group discussions (FGD) were conducted with the users of self-injectable contraception in the longitudinal pilot study. To ensure a diverse range of perspectives, we segregated the FGDs based on the users' residence and whether they were active or inactive users at the 12-month mark. Active users were defined as users who continued self-injecting up to 12 months while inactive users as those who discontinued self-injecting at any point during the longitudinal pilot study. In total, we conducted four FGDs: two in Omdurman village (active users, N = 8; and inactive users, N = 7) and two in Warawar village (active users, N = 10; and inactive users, N = 8). All participants were women aged 20–35 years, with a median age of 26. The segregation of FGDs by residence, active and inactive users and mixed age group was designed to capture a diverse range of experiences and perspectives regarding contraceptive use. The stratification was aimed at maximizing the diversity of insights while maintaining comparability within and across FGDs.

2.4 Data collection

All interviews and discussions were conducted using semi-structured guides developed from the review of literature and research team discussions. The FGDs were conducted by two researchers: moderator and note taker but for the interviews, they were conducted by one researcher. CHWs were interviewed individually at nearby health facilities, while FGDs were held in women centers where women experiencing violence seek support. The interviews and discussions lasted approximately 60 min for all participants. The topics covered in the guides included documenting the users' experiences (positive and negative) with self-injectable contraception, and their motivation to continued use or reasons for discontinuation. We also documented the program staff, health providers and CHWs role and knowledge about the longitudinal pilot study, perceived benefits and challenges of the self-injection, their experiences, and perspectives providing support to use of self-injectable contraception users, and feedback from users.

The interviews and discussions were conducted in English or Dinka based on participants' preferences. The data collection team comprised five females (SA, AAA, AD, GWK, TM) and one male (LBJ) researcher; four members of the team spoke Dinka (local language) and conducted interviews with the CHWs and facilitated FGDs with users, and the two English-speaking members interviewed health care providers and program staff. FGD participants were provided with a transport reimbursement of 2,000 South Sudanese Pounds (approximately $15). Conversely, CHWs,

program staff, and providers did not receive travel reimbursement as interviews were conducted at their respective duty stations in private settings. Additionally, some program staff interviews were conducted virtually due to the location of the program staff and their availability during data collection.

2.5 Data analysis

Interviews and discussions were audio recorded, transcribed, and translated from Dinka to English. The team created the codebook based on the interview guides and used it to code the data. Subsequently, we conducted further descriptive coding using Dedoose, a qualitative data analysis tool [26]. At the second level of analysis, codes were categorized to determine sub-themes. Data were coded by GWK who held regular meetings with LAL, LJB, and TM to clarify uncertainties and discussed the findings to ensure consistency and credibility of the analysis.

To further aid interpretation, the social and behavior change (SBC) self-care framework [27] was then employed to interpret the data and organize the findings into broader themes. The findings were organized under the critical stages of self-care use according to the framework, including awareness, initiation, continuation, and championing, and the underlying stakeholder perspectives and experiences as shown in Fig. 1.

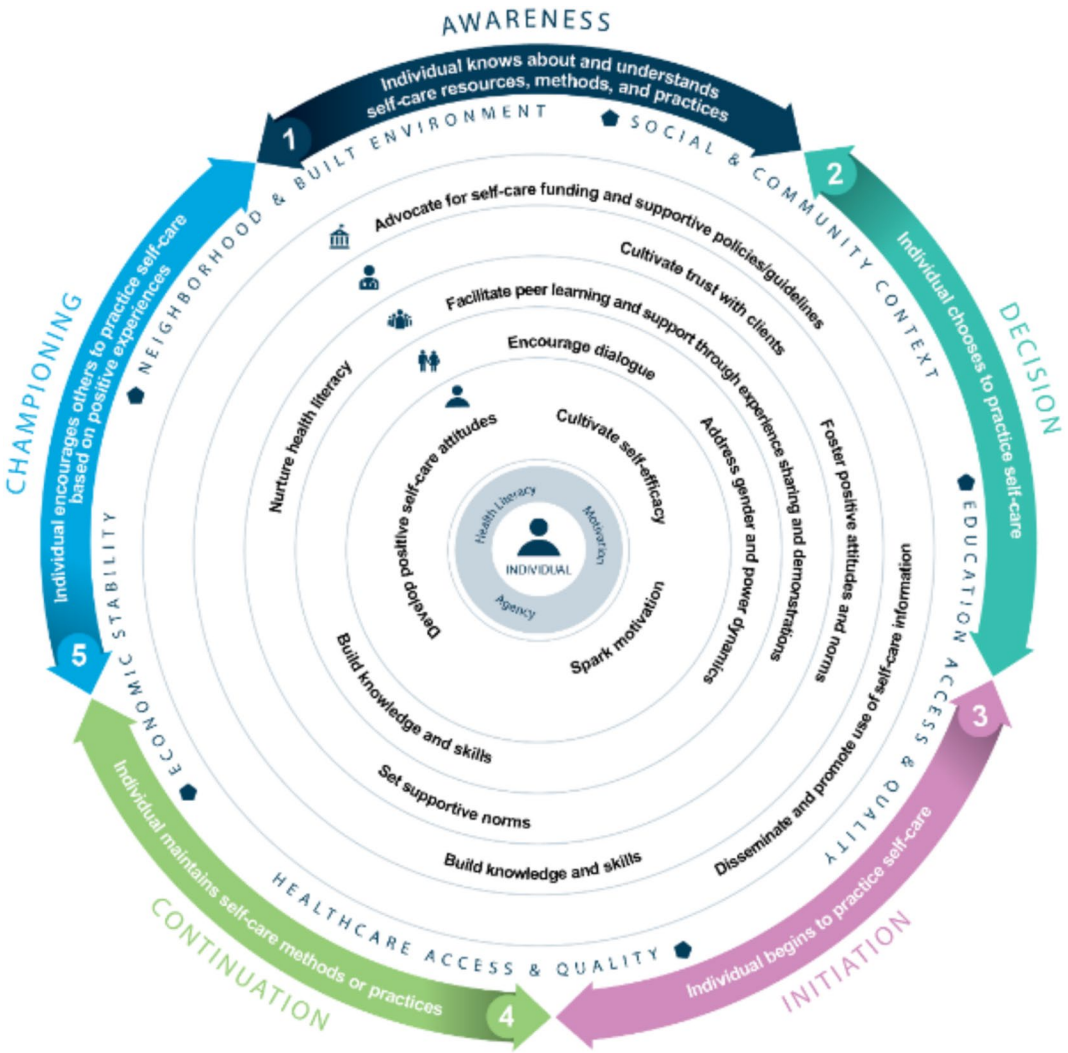

Fig. 1 The SBC conceptual framework for self-care within SRH [27]

2.6 Ethical considerations

The study protocol was reviewed and approved by the Institutional Review Board (IRB) of the International Rescue Committee (H 1.00.028) and South Sudan's Ministry of Health research ethical review board (MoH/RERB 22/2023). Prior to conducting interviews or discussions, researchers obtained informed consent from all participants. Participants were provided with comprehensive information regarding the study's purpose, procedures, potential risks, and benefits, along with assurances of confidentiality and contact information for further support or clarification. This information was conveyed in the participants' preferred language, either Dinka or English, to ensure full comprehension.

Participation in the study was voluntary, and participants were encouraged to share information they felt comfortable with. During the consenting process, FGD participants were informed of the potential risks associated with participating in a group discussion and were reminded that their participation was entirely voluntary. They agreed to participate in a small group discussion with either active or inactive users of self-injectable contraception. Additionally, while some women might be uncomfortable with the idea of others in the community knowing they were using contraception, they may have felt more at ease in a small group of women who shared similar experiences.

Participants were then given the opportunity to ask questions or express concerns, which researchers addressed thoroughly. Once all inquiries and concerns were resolved, participants were asked if they consented to participate in the study. If consent was given, the researcher documented their agreement and requested permission to record the interview. Finally, the researcher signed the consent form, affirming that the participant had voluntarily agreed to participate, and noted the participant's identifier for record-keeping purposes.

3 Results

The SBC self-care framework was employed to structure the findings into four main categories: creating awareness of self-injectable contraception, initiation and experience of use, continuation of self-injectable contraception, and championing the use of self-injectable. Each section of the findings aligns with these broader concepts, highlighting how they shaped stakeholders' perspectives and user experiences.

3.1 Creating awareness of self-injectable contraception

The CHWs were instrumental in mobilizing, recruiting, supporting, and tracking users of self-injectable contraception during the pilot study. CHWs visited households to inform women about the pilot study. Healthcare providers collaborated with program staff and CHWs to manage side effects and provide counseling services. Additionally, program staff provided technical assistance in pilot study implementation, created awareness of the longitudinal pilot study in the community, trained women in self-injection, enrolled them in the study, and carried out quarterly follow-up home visits with the help of CHWs.

Users of self-injectable contraception reported that they obtained information about the pilot study from CHWs, the health facilities, neighbors, and other community members. Some received the information through church meetings and other community gatherings. The self-injectable contraception was introduced as a method that could benefit the entire community, including young women and adolescent girls. A few users heard about self-injectable contraception from other users who had already enrolled in the pilot study.

To further raise awareness and improve access to self-injectable contraception for hard-to-reach potential clients, CHWs suggested that the most efficient way was direct personalized home visits. They noted that this could be implemented through conducting door-to-door visits to women in remote areas and training them on the spot in the privacy of their homes, as described by one of the CHW:

> We can go and move from house to house. You can go to a woman's house and call her in private, explain to her why you visited, and if she accepts…you will train her and give her the doses. CHW 04.

Besides door-to-door awareness, CHWs also recommended leveraging local media channels, such as radio stations and existing community programs.

…If it is something that is to be extended people should come to the community, to conduct community meetings to people and people should go to the radio station and talk there so that everyone knows that this is something that government also agreed. CHW 08.

Furthermore, the program staff emphasized the need to diversify entry points for self-injectable contraception beyond the current channels which are mainly through the health facilities as quoted below.

Currently, when we are looking at self-care, we are focusing on getting it through the health-care provider or health facility … we should now include community health workers … Because they are also injecting. And number two is that community-based distribution … who are actually reaching more clients and more younger clients… more clients that are actually starting methods for the first time. Program staff 06.

The above excerpt emphasized the need to leverage the existing structures in community distribution by engaging CHWs and community-based distributors. This diversification of entry points is an opportunity to reach a broader range of users, including adolescent girls, young women, and first-time contraception users.

Program staff mentioned that while disseminating information about the self-injectable contraception, they encountered resistance from some community members due to negative perceptions associated with contraception. Some individuals associated the use of contraception with promiscuity while older women noted that it went against their traditional ways of child spacing which involved a "*choice to abstaining yourself from your husband*". Stakeholders reported that community leaders, community-based organizations such as women-led, youth-led, and persons with disability-led organizations are critical as they advocate for many sexual issues at the community level and would easily integrate self-injectable contraception into their programs.

3.2 Initiation and experience of use of self-injectable contraception.

Users appreciated the privacy that self-injectable contraception offered and providing them with freedom and autonomy over their reproductive choices. It also significantly reduced the frequency of visits to health facilities for contraception.

The benefit I have gotten is that it has given me freedom. I can take and keep my medicines, and when my injection date comes, then I self-inject at home, and I have freedom. No one can ask me where you went and why did you go there? No one can question you, and if you walk to be seen every day, someone will ask you, why do you keep going there? What's there? They can easily know the reason you go there but cannot know it is a secret you do in your own house, but you can easily show it if you keep going to the hospital. Taking it at home is the benefit 20-year-old, DMPA-SC active user FGD 02.

In some instances, users shared their negative experiences of self-injectable contraception including side effects such as vomiting, headaches, amenorrhea, holes at the injection site (skin dimpling), and abdominal pains. Some of these side effects were temporary, while others persisted longer. In particular, referring to skin dimpling, one of the users stated:

It has not destroyed anything, or it did not destroy the thigh. It is not painful; it is not painful. It's just there. If it was paining, then you can report that it had pained me. It did not add anything; it is just creation of a hole on the thigh, and it is not painful. 22-year-old, DMPA-SC active user, FGD 02.

Users raised concerns about the proper disposal of needles, particularly potential discovery by family members and the potential harm caused by used needles. The healthcare providers interviewed were also concerned about infection prevention and control of the disposal of the device after use. They expressed their doubt about users' disposal of the used device adequately, as narrated by one of the providers:

We don't know how these people discarded sharp and actually, the infection prevention and control …but at least we doubt if these people are really cautious about infection precautions and prevention control and have they appropriately discarded those sharps. Facility-based provider 02.

According to program staff, male partners could play a vital role in supporting self-injectable contraception users to properly store and dispose of used devices if involved in the use of contraception:

… This support could be like a reminder…also ensure proper storage and possible disposal at the household level because you know when the client fears that they doesn't want partner to know, they may actually store it in some places that actually compromise the viability of the commodity Program staff 03.

3.3 Continuation of self-injectable contraception

Users reported that one of the main facilitators for continuing with self-injectable contraception is its ease of use. The program staff stated that they noticed a positive trend in users' ability to self-inject over time. Initially, users struggled to remember some steps of self-injection but in the subsequent follow-ups, there were notable improvements:

> … During month three, the activation (of the device/kit) was challenging, but I didn't mean there were no other challenges; activation was the main one. … but when you come to month six, month nine up to month 12, you find those things are not there anymore. When you ask them how to self-inject, they will start all the way up to the end without any struggle…. they just say it from up to the end and then stop. Program staff 02.

The program staff highlighted that with proper training, users exhibited confidence in self-injection. They observed that the ability of users to confidently inject on their own contributed to their sense of empowerment. Users emphasized the importance of initial training and stressed the need for ongoing education to maintain proficiency. However, concerns about side effects led to dissatisfaction and subsequently withdrawal from the pilot study. One of the CHW reported that "*almost half of them (*users whom they had referred for enrollment) *come with complaints of skin dimpling. Clients are complaining and even more have withdrawn from the use of DMPA-SC self-injection because they cannot stand the fact that DMPA-SC self-injection create hole in their thighs*." CHW 01.

Program staff reported that users struggled to remember the date of reinjection, leading to delayed injections or discontinuation. Following the screening process, the program staff enrolled the users by training them on the injection steps, allowed them to self-inject their first dose under supervision and provided options for quarterly reminder systems of the next injection date. The next reinjection date was written on either the DMPA-SC self-injectable contraception unit cover or a note card. The program staff postulated that if the male partner was aware of the use of self-injectable contraception, they might support the users by reminding them of reinjection dates. Other ways to track the reinjection date proposed by one CHW was creating a simple calendarlike tool and using sticks for tracking as described below:

> …She starts counting from there, and she keeps adding one after the other. She can be helped with sticks or told to get little sticks and keep storing them like today as the day you start, store one stick wherever you would store them and repeat that when tomorrow comes and keep doing that every day. When the month ends, we will see how many days have passed. That is how someone who does not read can monitor. CHW 02.

Interference from spouses or family members, who disapproved and prevented users from self-injectable contraception, emerged as a barrier to the continuation of use as reported by a CHW.

> …Other women stop from continued self-injecting because sometimes they do try to come in secret manner with nobody seeing her, but if it happens somebody sees her, she will stop from continuing because she does not want herself to be known because it can break her marriage if her husband finds out that she is using contraception. CHW 07.

During the FGDs, the users revealed that they supported each other, focusing on sharing experiences and advice. The support extended beyond self-injection to addressing challenges and uncertainties related to the process. At the family level, the women received considerable support from their children, specifically in determining the correct date for self-injection. A user explained how their child supported them by stating the following:

> …For me, when I want to inject myself, I will ask my son what is the date of today, my son and he will tell me the date. 21-year-old, DMPA-SC inactive user FGD 04.

In contrast, some users mentioned that they lacked support from their peers since they did not disclose their use of self-injectable contraception to anyone.

3.4 Championing the use of self-injectable contraception

During the FGDs, we discussed with users whether they would recommend self-injectable contraception with other women in the community. Some users reported that they were using self-injectable contraception in secret, and

they did not share the information with anyone, including their partners. One of the active users in a FGD likened disclosing to other people to a "*hyena who hides and leaves his tail out, then his tail will make him be found (*26-year-old*),"* meaning that the woman might disclose to others, and it would lead to a breach of privacy. The need for privacy and confidentiality was a recurrent theme, with users frequently using phrases such as, "*nobody knows," keeping my mouth shut," and "do not let the public know, even your own relatives"* and therefore, they could not act as champions for self-injectable contraception.

Users also discussed ways of keeping their use of self-injectable contraception private by not sharing the information with neighbors and only informing those they trusted. Users stated that only fellow users they were recruited alongside and the CHWs who recruited them might be aware of their self-injectable contraception use. One user shared an incident where other users violated their privacy.

> … Two women in my neighborhood were injected, and one woman is a friend of her husband, just as it was mentioned here by my sister. She went and told her husband about it then her husband called my husband and tell him that your wife and mine have injected themselves with family planning. My husband came and asked me, but I denied it and asked for evidence. 28-year-old DMPA-SC active user, FGD 01.

Users noted that champions of self-injectable contraception could be drawn from men involved in contraception use in general to create awareness. One of the program staff (05) stated, "*Men listen to other men in such cultures. They don't listen to women, but men listen from men…and men have a position of power. They champion these services even at the community level".* Therefore, men can provide information to their fellow men, challenge misconceptions held by men, and advocate for self-injectable contraception in the community.

Stakeholders noted that community leaders are highly regarded in the community, and therefore, their role in self-injectable contraception is important. With their power, community leaders are sought to mediate and solve disputes emanating from issues around family planning, including self-injectable contraception. They are the gatekeepers; therefore, any health interventions implemented in the community must be approved by the community leaders. Stakeholders reported that from their previous experiences, if community leaders have agreed on a health intervention, the resistance in the community to such intervention is low.

> These community leaders are very important in this program; when we engage them in community meetings and go to them in their traditional court centers (community-based institutions with the authority to resolve legal disputes among community members) they accept the program. CHW 11.
> …Community leaders are trusted in every community we are serving. So, community leaders keep their word as well, and for any intervention to be successful then having the community leaders is very critical. They play a role in advocacy for services. … and part of the roles that they can play in advocating for services for women and girls. Program staff 06.

4 Discussion

This study gathered perspectives from various stakeholders in rural South Sudan about DMPA-SC self-injectable contraception use to inform the future implementation of programs in the country and other low-resource settings. The findings were framed using the SBC self-care framework, which guided the categorization of the interpretation of the results and discussion: The framework emphasis on empowering individuals through knowledge, skills and tools to manage their own health depict our study findings on supporting women in self-injectable contraception use and creating an enabling environment for continued use of self-injectable contraception. This study highlighted users' motivation for continued use, challenges, persistent community-level barriers and how potential users can be supported throughout the journey from awareness to championing use of self-injectable contraception.

4.1 Support women in self-injectable contraception use

Our findings showed that users consistently cited the ease of use of self-injectable contraception as a key motivator for continued use after the initial training. Furthermore, users appreciated the self-injectable contraception for its ability to provide privacy in access and use, autonomy, reduce the need for frequent health facility visits, and help to overcome cultural, and societal barriers in accessing and use of contraception. This resonates with the preferences and needs

expressed by users of self-injectable contraception in other settings [12–15, 23, 28, 29]. While the ability to self-inject at home empowers women to make informed reproductive health decisions, our study documented the challenges, such as side effects, forgetting the injection dates, storage, and disposal, that need to be addressed through tailored interventions.

Studies have revealed the role of in-depth counseling on the possible side effects of DMPA-SC self-injectable contraception, storage, and waste management. Clients in other settings appreciated receiving detailed information, particularly regarding potential side effects [30–32]. Training on proper ways of storage and disposal of used devices contributed to program success in other settings [31]. Programs implementing self-injectable contraception encouraged users to use locally available puncture-proof containers or provided the containers to secure the device before disposal [33]. During the longitudinal pilot study, users were provided with containers for needle disposal, but these containers were often repurposed for other household uses due to size and design. This highlighted the need to design user-centered and context appropriate containers specifically for needle disposal that cannot easily be repurposed for other household purposes.

Although the program staff provided the written dates on the next reinjection dates, some of the users forgot the reinjection dates. Covers et al. [6] suggested the introduction of a voice reminder system although this approach has not been tested in self-injection programs in a low-resource setting. Furthermore, implementing such systems may be challenging particularly given the potential barriers such as limited access to cell phones among those who might need voice reminders. Program implementation could also explore locally used methods of tracking dates and integrate them into program implementation.

The findings of this study are critical for the future scale-up and sustainability of self-injectable contraception in South Sudan and other similar low-resource and conflict-affected settings. The study underscores the need for comprehensive, context-sensitive interventions that address the multi-faceted challenges that users face in utilizing self-injectable contraception. Supporting women with the tools, skills, and information to use self-injectable contraception safely and effectively is essential as well as developing strategies to address challenges such as side effects, re-injection reminders, and safe disposal practices.

4.2 Creating an enabling environment for self-injectable contraception use

Our findings are similar to research conducted in South Sudan and other conflict-affected regions, where CHWs were essential in addressing healthcare disparities [34]. A study in low- and middle-income countries [35] shows that the utilization of CHWs in community mobilization and awareness campaigns for contraception services has proven effective. By leveraging existing trusted networks and providing personalized support, engaging CHWs could effectively create program awareness and improve effectiveness, participant reach and satisfaction [34, 36–39]. The flexibility proposed by CHWs in our study, including personalized visits and continuous training, underscores their importance as frontline facilitators of community-based healthcare initiatives.

Stakeholders in our study also emphasized the importance of recognizing diverse entry points for DMPA-SC self-injectable contraception beyond traditional healthcare settings, emphasizing the role of CHWs as trainers and distributors of self-injection kits [40, 41]. Engaging CHWs as providers could expand access to new users and marginalized populations [42] ultimately increasing the uptake of modern contraception. Furthermore, in South Sudan, CHWs are actively engaged in providing contraception as part of efforts to improve reproductive health services in hard-to-reach areas [4, 43]. However, it is essential to address barriers such as opposition from men and community leaders on the use of contraception to create an enabling environment for scale-up of self-injectable contraception. Therefore, implementers should normalize open dialogues on contraception to shift the social norms, understand and utilize locally relevant participatory approaches, and consider the sociocultural and health system contexts in program implementation [44–46].

The study findings showed that users experienced stigma and family resistance that led to discontinuation of self-injectable contraception. There are reports from South Sudan of women experiencing domestic violence due to use of modern contraception [47]. In Kenya, women who experienced family resistance in using contraception devised different way to continue using contraception including contraception use in secret, switching contraception methods and peer support in accessing and storing contraception when needed [48]. Other suggested strategies include values clarification, counseling, peer support, community interventions, and media strategies [49]. A multi-faceted approach combining education, empathy, and support is essential for overcoming stigma and increasing the uptake of contraception.

Community leaders and influential individuals have been effectively engaged as champions for self-injectable contraception programs in various contexts [50, 51]. Other practical strategies for promoting community-led awareness

campaigns include leveraging CHWs as social marketers of injectable contraceptives, as demonstrated in Ethiopia [52]. By engaging community leaders, influential individuals including men as advocates, community-led awareness campaigns for self-injectable contraception can effectively promote access to and acceptance of self-injectable contraceptive methods.

The finding of this study aligns with existing literature that emphasizes the need for an enabling environment for contraception access. It highlights that addressing structural and community-level barriers, providing comprehensive training for both users and health workers, and creating a supportive policy environment are key to the successful scale-up of self-injectable contraception. As the landscape of reproductive health programs in low-resource and conflict-affected settings evolves, our study reinforces the importance of a holistic, context-specific approach that combines health system strengthening with social and behavioral change interventions to increase access to and acceptance of self-injectable contraception.

4.3 Study limitations

We conducted the study only with stakeholders involved in the longitudinal pilot study who are familiar with self-injectable contraception. This focus may limit the generalizability of the findings to some of the women of reproductive age such as adolescents, unmarried and women from urban settings. Studies conducted with more diverse populations might yield different results. However, the rich description of documentation of the stakeholders' lived experiences has an immense contribution to the future programming of self-injectable contraception in rural South Sudan and other low resource settings. The use of FGDs with contraception users present limitations, such as social desirability bias and dominance by vocal participants. To address this, moderators were trained to engage quieter participants, with note-takers assisting by identifying those hesitant to speak. Participants were also reassured that there are no wrong or right answers. Despite these challenges, FGDs are valuable for understanding user experiences and generating actionable insights for improving programs.

Power dynamic was evident between researchers and CHWs, as the same research officers who trained CHWs conducted the interviews. This might have influenced responses, with CHWs potentially expressing more agreeable or positive views. To mitigate this, efforts were made to build rapport and create a safe environment for open dialogue, emphasizing that participation and responses would have no implications on their current roles. The consent process assured participants of their anonymity and the voluntary nature of their participation. Furthermore, open-ended questions from the interview guide encouraged reflection on both positive and challenging aspects of the program, facilitating candid feedback. While we acknowledge researchers had a vested interest due to their involvement in the longitudinal pilot study and alignment with national family planning policies, the study focused on identifying challenges and recommendations for improvements for self-injectable contraception programs in rural South Sudan.

5 Conclusion

This study documented the importance of gaining the perspectives of users and providers to design appropriate future self-injectable contraception programs. The stakeholders suggested comprehensive counseling and tailored interventions as crucial in informing users about potential side effects and correct self-injection practices. In addition, CHWs are key in creating awareness, supporting initiation and continuation and championing self-injectable contraception. Furthermore, cultural norms and men were identified as potential barriers to the implementation of self-injectable contraception. Program design should incorporate strategies to address these barriers and create an enabling environment for self-injectable contraception. Therefore, program implementers should strive to incorporate locally relevant participatory approaches and diverse entry points for the success and scalability of self-injectable contraception programs. The SBC self-care framework proved appropriate for our study, offering a robust structure to categorize and interpret findings. By focusing on the key elements of creating awareness, initiation, continuation, and championing use, it enabled a nuanced understanding of stakeholder perspectives and user experiences.

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SA, AAA, LBJ, AD: Data collection and reviewing; KN and TJM: Program implementation and reviewing. All authors read and approved the final manuscript.

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Data availability The data collected and analyzed during the current study are available from the corresponding author on reasonable request.

Code availability Not applicable.

Declarations

Ethics approval and consent to participate The study protocol was reviewed and approved by the Institutional Review Board (IRB) of the International Rescue Committee and South Sudan's Ministry of Health research ethical review board. Before commencing the interview, informed consent was obtained from all participants, affirming their willingness to participate.

Consent for publication Not applicable.

Competing interests The authors declare no competing interests.

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