Understanding factors that influence pregnancy self-test use among women in western Kenya: A qualitative analysis

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Abstract

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Despite increasing evidence that women who use pregnancy self-tests are more likely to present for antenatal care early in pregnancy, approximately 22% of women attending antenatal care in western Kenya use a pregnancy self-test to confirm their pregnancies. From April 2021 – to July 2021, we interviewed 48 women from four antenatal care clinics in Homa Bay and Siaya counties to understand why women do not use pregnancy tests in early pregnancy. Women had a median age of 28 years (IQR: 24.5, 32.5) and a median of 2 pregnancies (IQR: 1.5, 3.0). Barriers to pregnancy self-test use included mistrust of the accuracy of pregnancy self-tests, unawareness of pregnancy self-tests and their detection capabilities, and test cost. Efforts to employ trusted community advisors to educate women about pregnancy self-tests, how they work, and their

benefits, and developing more affordable options to make pregnancy self-tests widely accessible could increase the use of pregnancy self-tests.

INTRODUCTION

Sub-Saharan Africa (SSA) has one of the highest maternal mortality burdens globally, with half of all projected cases across the region [1]. Although early presentation for antenatal care (ANC) services provides many impactful benefits for pregnant women, numerous structural and individual-level challenges prevent them from accessing and receiving care during the first trimester of pregnancy [19]. Recently, there has been growing interest to understand whether using pregnancy self-tests can improve early ANC attendance. Previous studies suggest that women who use pregnancy self-tests are more likely to present for ANC, with one study indicating a three-to-four week decrease in gestational age at ANC presentation. However, in SSA, there is limited literature assessing which women use self-tests, and the key influences on their decisions to use them.

In a cross-sectional survey we conducted among women presenting to antenatal care clinics in western Kenya, 22% of women reported having used a pregnancy self-test to confirm their pregnancy. Women who did not use a pregnancy self-test indicated that they did not know about them, could not afford them or did not think it was necessary[3]. A better understanding of women's knowledge and attitudes toward pregnancy self-testing and motivations for use could facilitate improved uptake of pregnancy self-tests and earlier access to ANC and its affiliated benefits, such as clinical evaluation of mother-baby wellbeing and preventive care.

We conducted an exploratory study to further understand the factors influencing women's decisions on pregnancy self-test use within Homa Bay and Siaya counties in western Kenya. In this thesis, we evaluate why women did not use pregnancy self-tests to confirm their pregnancy status during early pregnancy.

CONCEPTUAL FRAMEWORK

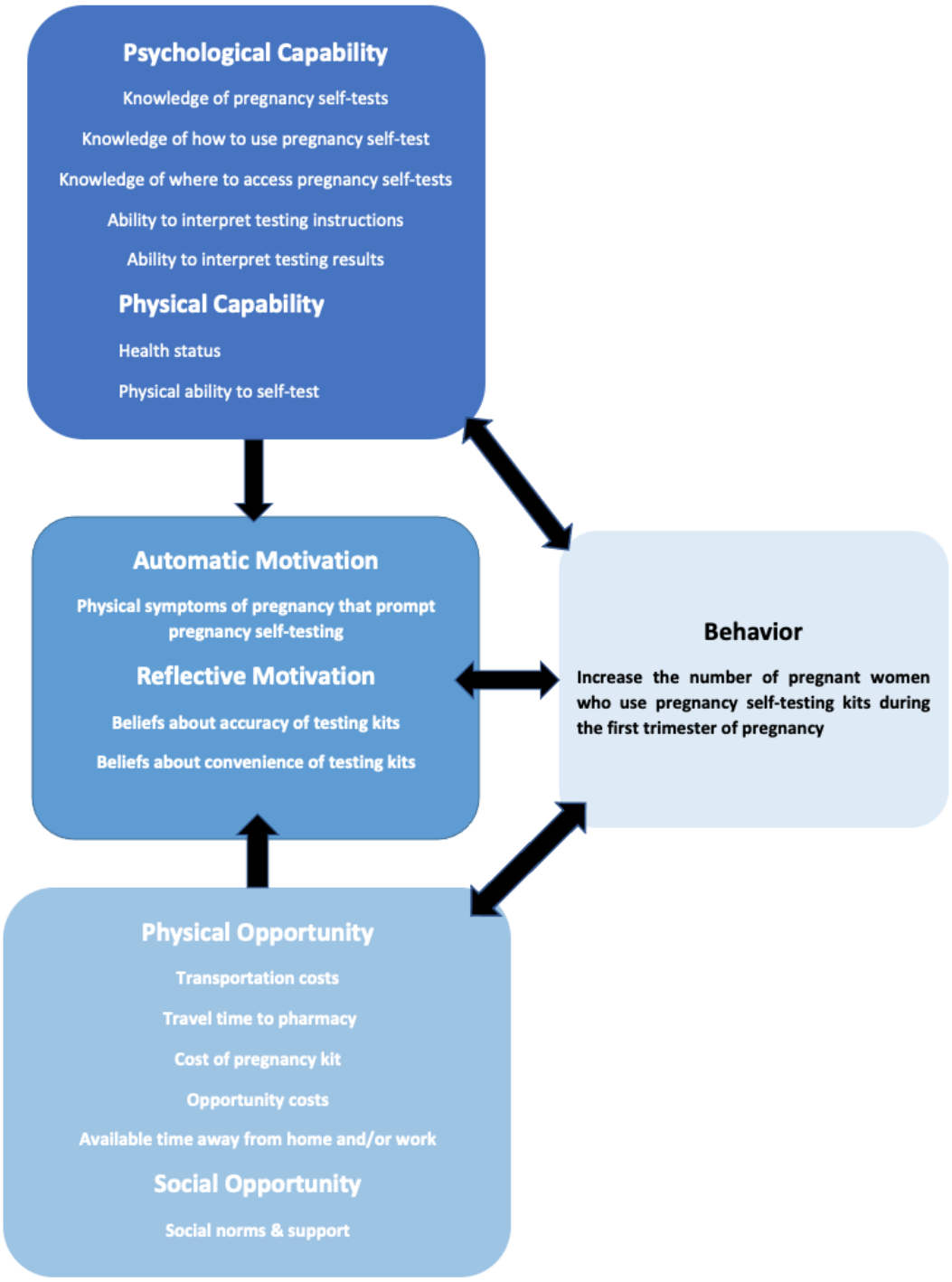
The Capability, Opportunity, Motivation, and Behavior (COM-B) model of behavior change is a widely used framework that defines behavior as being dependent on the following three factors: capability, opportunity, and motivation [7,8]. Although the framework includes three distinct constructs, it posits that behavior is impacted by their interaction. Therefore, no single construct can lead to a chosen behavior as they all play a significant role in the action of interest. COM-B has been used to assess decision-making regarding use of health products in various healthcare settings [9,10,11]. For example, COM-B was used as the analytical framework in one systematic review that combined qualitative, quantitative, and mixed methods studies to map barriers and facilitators associated with behaviors towards chlamydia testing in primary care settings [10]. By integrating the COM-B model into our qualitative analysis, we aimed to investigate how various influential factors impacted decision-making behaviors around pregnancy self-testing. For example, a woman might not choose to use a pregnancy self-test if the purchase cost (i.e., opportunity) creates a barrier to accessing the test, regardless of feeling symptoms suspicious of pregnancy that prompt or motivate use of the self-test. Understanding these intersecting factors that influence consumer behavior, is an important consideration that may impact overall intervention strategies geared towards product uptake.

Drawing from previous literature assessing the use of pregnancy self-testing kits in addition to studies that have applied the COM-B model to guide behavior research, we developed a set of theoretical constructs of interest to guide our data analysis (Figure 1.). These constructs include:

- Beliefs about test accuracy in detecting pregnancy [2]
- Beliefs about test importance [3]

- Knowledge and awareness of pregnancy self-tests [2] and
- Test cost [3]

Figure 1: COM-B model of pregnancy self-testing behavior



METHODS

Research team and reflexivity

Due to my positional and power dynamics as a European-American graduate student educated by a western institution, I cannot attest to possessing the intellectual, cultural and contextual tools necessary to interpret what the women in this study are willing to describe. We, therefore, utilized the expertise of local Kenyan study staff to conduct individual, semi-structured interviews in local dialects, while I participated in the analysis of transcripts post-translation. I additionally acknowledge my privilege of living and working in the global north, where pregnancy self-tests are well-promoted, easily accessible, and considered affordable to much of the population.

Study setting

This study recruited women previously enrolled in the PrEP Implementation for Mothers in Antenatal care (PrIMA) trial from January 2018 to January 2021. PrIMA, a cluster-randomized trial conducted between January 2018 and January 2021, evaluated the best approaches for implementing PrEP medication in 20 maternal and child health clinics in Homa Bay and Siaya counties in western Kenya [4].

Participant sampling and recruitment

We recruited a purposive sample of women aged 15 – 44 who had previously participated in the PrIMA trial, completed a baseline survey on pregnancy self-testing practices, and agreed to be re-contacted after the trial. Women were eligible to participate in the trial if they were pregnant, HIV negative, at least 15 years of age, planning to reside in the study area for at least one year, and planned to receive postpartum and infant care services at the facility. Based on the sample size and

interview logistics, we selected four of the 20 health facilities, two in Homa Bay and Siaya counties, from which to recruit the women. We developed a list of potentially eligible women from these facilities - our sampling frame – represented by four unique decision-making perspectives, resulting in four strata (Appendix 1.): 1) women who used a pregnancy self-test and presented early for ANC, 2) women who used a pregnancy self-test and did not present for ANC, 3) women who did not use a pregnancy self-test and presented for ANC, and 4) women who did not use a pregnancy self-test and did not present for ANC (Appendix 1.).

A study nurse called each individual on the list to determine whether they would be interested in participating and could be contacted via phone. We then developed randomized lists of potential study participants stratified by health facility and strata. Study interviewers systematically went down the lists, called and screened potential participants for eligibility, and scheduled interviews with women who were eligible to participate in the study. Women were eligible to participate if they were between the ages of 15 – 44 years, HIV negative, able and willing to provide informed consent for participation, and have ever received antenatal care from health facilities involved in the PrIMA study. Additionally, HIV negative women of childbearing age (aged 15 – 44 years) in the local community including those who have used pregnancy tests and/or community pharmacies in early pregnancy, able and willing to provide informed consent for participation, and recommended for inclusion by health care providers in the facilities were eligible for participation in the study.

Data Collection

Per COVID-19 social distancing measures, four qualitative interviewers based in western Kenya conducted individual interviews via phone. The interviews took place between April 2021 and July 2021 and averaged about 30-35 minutes. Participants were advised by study staff to find a private and comfortable location for the duration of the interview session. An audio recording device was used to capture each study participant's voices in their comfort language, primarily Dholuo, Swahili, or English. Throughout the call, each interviewer placed their phone on speaker with an audio recording device nearby to aid in capturing all content. When study participants could not engage via phone interview, a private room within the research office was made available to accommodate an in-person interview session. In-person interviews adhered to COVID-19 social distancing guidelines, including room sanitization, sitting six feet apart, and using facial coverings. The interviewers used an interview guide (see Appendix 3.) with questions and probes centered on five key points of information:

1. The strategies and sources of care that women use to confirm and manage early pregnancy
2. The factors that enable or prevent women from seeking care in early pregnancy
3. The reasons why women do not use pregnancy self-tests to confirm their pregnancy
4. Women's experiences using pregnancy self-tests, opportunities for improvement, and preferences for pharmacy-based delivery and
5. Women's experiences with HIV self-testing and PrEP preferences for pharmacy-based delivery

Before the interviews, study staff and interviewers familiar with the study context reviewed the guide to ensure that questions and probes would be relevant and understandable to the study population. At the beginning of each interview, the interviewers obtained consent from all

participants and conducted a brief survey covering participant demographics, pregnancy history, and experiences with community pharmacies. After the sessions concluded, interviewers prepared short debrief reports summarizing the interview's major outcomes. All interviews were audio-recorded, later transcribed, and then translated into English. All data were saved in a secure, shared drive accessible only by study team members.

Data analysis

Before coding, CM reviewed all 48 debrief reports and transcripts to better understand the debrief reports provided by the interviewers and to deepen insight into what the women expressed verbatim. CM then conducted an initial round of coding to highlight all references related to pregnancy self-testing. We used a deductive approach to develop a preliminary codebook using relevant constructs from the COM-B conceptual framework (Figure 1). We identified transcripts representing users and non-users of pregnancy self-tests. Using Microsoft Excel, we listed participant IDs corresponding to each transcript, randomized participant IDs by users and non-users, then selected a random sample of 10 transcripts from each group. CM uploaded portions of the transcripts on pregnancy self-testing to ATLAS.ti software [6] for analysis and codebook development [6] for analysis and codebook development. The codebook was updated to reflect any additional themes emerging from the data. In total, 23 codes were developed and entered into the codebook. To ensure consensus and intercoder agreement with the analysis of this thesis, two additional team members (MLM and MM) acted as secondary coders. Together, they used a mix of manual coding methods and qualitative software to co-code 10 of the 20 randomized transcripts. After the coding process concluded, all coders discussed the application of codes and the recognition of major themes. Minimal discrepancies were found, which involved adjusting child

code definitions and sharing deeper perspectives relating to intersecting themes. We used a thematic analysis approach to identify recurrent responses and patterns in the data [12,13,14].

Ethics

The institutional review boards of the University of Washington and Kenyatta National Hospital approved this study. We obtained written informed consent from all participants and informed them of their right to withdrawal from the study at any time point.

RESULTS

Participant characteristics

Table 1 shows the participant characteristics stratified by pregnancy self-test use. Overall, we analyzed data from 20 participants as part of this study. The participants were all Kenyan women with a median age of 30 years (IQR: 24.5, 33.5) and a median number of 2 lifetime pregnancies (IQR: 2, 3). Eleven interviews were conducted in Siaya county and 9 interviews were conducted in Homa Bay county.

Table 1 Participant characteristics stratified by pregnancy self-test use

Variable	Users of Tests (N = 10)	Non-users of Tests (N = 10)
Age[1]	29 (27, 32)	30.5 (24,35)
Number of lifetime pregnancies[1]	2 (1,2)	3 (2,5)
Current Education Level[2]		
Primary School	0	2
Secondary/High School	3	3
University/College	5	2
Polytechnic	2	0
Not Currently Enrolled	0	3
Employment status[2]		
Unemployed	4	2
Salaried	3	3
Regular hourly work	0	2
Irregularly hourly work	2	1
Other	1	2
Income earned per month[1, 3]	10,500 (3000, 30,000)	5000 (2000, 9000)
Travel time to nearest community pharmacy[2]		
0 – 15 minutes	4	7
15 – 30 minutes	6	3
30 minutes - 1 hour	0	0
Over 1 hour	0	0
Travel time to nearest clinic[2]		
0 – 15 minutes	2	2
15 – 30 minutes	8	5

30 minutes - 1 hour	0	2
Over 1 hour	0	1
Number of times visited pharmacy in the last 12 months[2]		
Every month	1	0
Every 2 or 3 months	6	1
1 or 2 times a year	3	5
Never	0	4

[1]Presented as a median (interquartile range)
[2]Presented as the number of participants per category
[3]Outside of employment, women reported other sources of income from spouses, friends, and relatives.

Below, we describe the participant-reported reasons for not using a pregnancy test kit and the underlying factors that influence these behaviors, organized by the COM-B constructs. Illustrative quotes are referenced along with key themes and their corresponding constructs (Table 2.).

THEME 1: Mistrust impacted women's decision to use pregnancy tests

Mistrust of pregnancy self-tests is a multi-dimensional theme across the data, linked to trust in the product, purchasing location, and cost (Theme 3). Many non-users stated they did not trust pregnancy self-tests to provide accurate results (**Quotes A-B**). The women's lack of trust in the product to provide accurate results led to decreased desire to spend money on the product, spend money on transport to access the product, and outweighed the risk of asking male partners or family members for money to purchase the product. Other factors that contributed to mistrust of the kits were related to lack of trust in pharmacy staff to provide a supportive environment and lack of trust in pharmacy-supplied products due to beliefs that pharmacies may contain expired products (**Quotes C-F**). The theme of mistrust falls under the construct of reflective motivation,

which involves conscious thought processes such as plans and evaluations related to purchasing a pregnancy self-test [12].

THEME 2: Lack of awareness towards the product, including early detection capabilities, was a factor related to non-use of pregnancy self-tests

Participants indicated that they were unaware of how to use a pregnancy self-test or where to access the product (**Quotes G-I**). Some participants who were aware of product accessibility and functions were unaware of a pregnancy test's ability to detect pregnancy as early as the first missed menstrual cycle (**Quotes J-L**). Other reasons for lack of awareness are related to unawareness of physical signs and symptoms of pregnancy, which contributed to some participants being unaware of their pregnancy status (**Quote M**). Without this awareness, the women were not prompted to obtain a pregnancy self-test. Lack of awareness is related to two constructs in the COM-B model: psychological capability and automatic motivation. Psychological capability relates to whether women understand how to use a test and where to access it. Automatic motivation involves instinctive, drive-related processes and desires related to decisions around obtaining a pregnancy self-test [12].

THEME 3: Cost was a barrier for women on a limited budget, particularly when health facilities offer free alternatives for pregnancy testing

Participants expressed that pregnancy testing can be provided for free at local health facilities and reasoned that this could help avoid cost burdens for those on a limited budget (**Quotes N-P**). As previously mentioned, cost intersected with trust, and many participants described unwillingness to spend money on a product they do not trust. The theme of cost as a barrier falls under the

construct of physical opportunity which involves financial and material resources needed to access pregnancy self-tests [12].

Table 2. **Reasons for non-use of pregnancy self-tests**

Key Themes	COM-B construct	Illustrative quote
Lack of trust in product accuracy	**Motivation**: Reflective	(A) "I did not test by myself; I knew that after I was tested in the lab then that was the truth. I did not bother to test by myself, I knew that if I test by myself then it would cheat me. I mean I cannot believe in it.." *(22-year-old female)* (B) "…if you want to know the truth, you have to go to the hospital." *(38-year-old female)*
Lack of trust in pharmacy staff		(C) "These are people who are not experienced. So, anytime you realize you are pregnant, you need to just visit public hospital that is; the government officers." *(25-year-old female)* (D) "If you go there and you start being asked some very funny questions…*'Who is the father?... do your parents know? Are they aware?'* and things like that, then you would rather not go there…they will stay away from the pharmacy" *(20-year-old female)*
Lack of trust in pharmacy supplied product		(E) "Usually, I don't trust the pregnancy test at the pharmacy shelf" *(24-year-old female)* (F) "Sometimes one can use that which has already expired and therefore give inaccurate result." *(33-year-old female)*
Lack of awareness towards pregnancy self-tests	**Capability**: Psychological	(G) "It is because I do not know how to use it. So, I will go to the hospital." *(38-year-old female)* (H) "I did not have any (tests). I didn't know where to acquire one...have only a small idea (on how to use a pregnancy test kit)" (*36-year-old female)* (I) "I don't know where they are bought or even how to use them" *(24-year-old female)*

Lack of awareness towards product detection capabilities—ability to detect pregnancy after first missed menstrual cycle		(J) "That on, I don't know." *(30-year-old female)* (K) "I don't think so." *(35-year-old female)* (L) "I do not think so." *(24-year-old female)* *Responses to the question, *"Are you aware that pregnancy tests can be used to confirm pregnancy after the first day that you miss your period?"*
Lack of awareness towards pregnancy status	**Motivation**: Automatic	(M) "It did not come into my mind that I was pregnant…I just thought I was unwell." *(33-year-old female)* (N) "Like for me, I went there (hospital) because I did not know that I was pregnant by that time." *(25-year-old female)*
Purchasing pregnancy tests create cost burden; health facilities offer free testing services	**Opportunity**: Physical	(O) "I did not want to go to the chemist because of the expenses of using money to buy a pregnancy test kit. Because I knew at the hospital the services were to be done for free." *(39-year-old female)* (P) "…lack of money can also cause one not to use a pregnancy test kit" *(35-year-old female)* (Q) "Yes, it's expensive so you just decide and go to the hospital and to be tested" (*24-year-old female)*

DISCUSSION

To better understand pregnancy self-test use among women in western Kenya, we conducted individual interviews with users and non-users of pregnancy self-tests from maternal and child health clinics in Homa Bay and Siaya counties. Participants described barriers to use such as mistrust of pharmacy staff and the accuracy of pregnancy self-tests, unawareness of pregnancy self-tests and their detection capabilities, limited understanding of pregnancy signs and symptoms during early pregnancy, and the expense of purchasing pregnancy self-tests from a pharmacy versus obtaining free testing in a health facility.

Our findings are consistent with other studies that have reported a lack of awareness of pregnancy self-tests, mistrust of pregnancy self-test accuracy, and financial accessibility as barriers to self-test use [2,3,26]. A cross-sectional survey among women attending antenatal care and abortion services in South Africa found that most women did not know that a pregnancy self-test could be used to confirm pregnancy status two weeks after a missed period [2]. A qualitative study in South Africa described trust concerns among young women who used pregnancy self-tests – specifically, upon repeated testing efforts; the women did not trust the results and felt the need to confirm their results at the clinic [27]. A survey conducted in the US found that concerns about test accuracy were more pronounced in adolescents. The authors hypothesized that irregular menstrual periods or uncertainty in knowing the date of one's last menstrual period might interfere with pregnancy test result interpretation and compound the notion that the test results are inaccurate [26].

In this study, mistrust in test accuracy was compounded by mistrust in pharmacy staff, given the perception of pharmacies stocking poor quality or expired products and pharmacy providers being less well-trained. Strategies that employ trusted community advisors and maternal and child health facility staff to endorse and normalize pregnancy self-testing will be essential to overcoming issues of mistrust. Community sensitization efforts that educate women on identifying pregnancy signs and symptoms early in the gestational period, how pregnancy tests work, and where to obtain them will also be pivotal in addressing mistrust and lack of awareness.

An assessment of the pregnancy test market in Kenya suggests that pregnancy tests are widely available in both private and public sectors and with prices ranging from USD 0.30 to USD 4. Interestingly, public sector clinics might sometimes charge more for the tests than pharmacies,

with prices ranging from USD 0.99 to USD 1.40 among public facilities visited. In our study, one user of a pregnancy self-test pointed out that the pharmacy charged approximately USD 0.30 for a test while the health facility charged USD 1.50, therefore she selected the cheaper option. However, given the variability in price points among pharmacies, some prices may remain out of reach of the average woman from the study region [28, 29]. While the WHO recommends making pregnancy self-tests available outside of the health facility setting and studies have advocated for free pregnancy testing options, there have not been wide-scale efforts to ensure the availability of free or subsidized test kits in western Kenya [30].

Study strengths and limitations

We acknowledge that this study recruited women who previously participated in an implementation trial at antenatal care clinics in Homa Bay and Siaya counties. Their perspectives might not reflect the broader population. Secondly, we acknowledge that the interviews were conducted remotely via mobile phone, which depends upon reliable coverage and the availability of sufficient airtime minutes. In a few instances, connectivity issues limited the extent to which interviewers could probe or clarify some of the topics discussed. We acknowledge that the youngest participant was 22 years old, and we could not include adolescents. This priority population brings a unique perspective, especially when assessing knowledge and acceptability of pregnancy self-tests, social norms, and opportunity issues. Despite these limitations, this is one of the few studies to qualitatively explore barriers to pregnancy self-test use among antenatal care populations in sub-Saharan Africa. We interviewed a sufficiently large sample of women in their language of choice - English or the local languages - which allowed us to understand women's perspectives on pregnancy self-testing better. Future studies should prioritize understanding

decision factors among adolescents and incorporate the perspective of their partners, including the extent to which partners are involved and find pregnancy self-test use acceptable.

CONCLUSION

Trust, awareness, and cost impact pregnancy self-test use. These factors intersect and display symptoms of health inequity in the global south. While pregnancy is a unique experience in a woman's life, pregnancy self-tests are a simple tool that can protect mother and child from poor outcomes through early linkage to antenatal care services, where many benefits are offered. Recommendations to improve pregnancy self-testing during early pregnancy center on improving community knowledge on test use and associated benefits and reducing cost burdens by making test kits more affordable, or potentially free.

ACKNOWLEDGEMENTS

I would like to acknowledge my entire thesis committee for their thorough guidance and mentorship, the PrIMA study team for making this opportunity possible, our Kenya-based colleagues for their work and expertise, and the women who were willing to share their unique, valuable perspectives on pregnancy self-test use within their communities. Additionally, without the dedicated support of my family and members of my cohort, the completion of this thesis would not have been possible.

APPENDIX

Appendix 1. Overall Recruitment Schematic

Interview Topic #3: Pregnancy Self-Testing				
Description Category	**ANC Pharmacy Study Participants n=64**			
Sample Size	**Homa Bay County #1**		**Siaya County #2**	
	Facility #1: **(n=12)**	Facility #2: **(n=12)**	Facility #3: **(n=12)**	Facility #4: **(n=12)**
Purposive Sampling Category	Women who used a pregnancy test & early ANC attendance; **(n=3)**	Women who used a pregnancy test & early ANC attendance; **(n=3)**	Women who used a pregnancy test & early ANC attendance; **(n=3)**	Women who used a pregnancy test & early ANC attendance; **(n=3)**
	Women who used a pregnancy test & no early ANC attendance; **(n=3)**	Women who used a pregnancy test & no early ANC attendance; **(n=3)**	Women who used a pregnancy test & no early ANC attendance; **(n=3)**	Women who used a pregnancy test & no early ANC attendance; **(n=3)**
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Appendix 2. Qualitative Codebook

The following codebook is based on the COM-B model for behavior change [Figure 1., 7, 8,12]. Codes will help identify factors related to participants' reasons for NOT USING a pregnancy self-test in early pregnancy. Bolded codes indicate parent codes with child codes following.

CAPABILITY An attribute of a person that together with opportunity makes a behavior possible or facilitates it	
capability	**Psychological capability that defines woman's mental functioning (e.g., understanding and memory) regarding pregnancy self-test use**
capability_exist	This code will be used to indicate the participant's knowledge regarding existence of pregnancy self-test kits
capability_purpose	This code will be used to indicate the participant's knowledge regarding the purpose of pregnancy self-test kits
capability_use	This code will be used to indicate the participant's awareness regarding how to use a pregnancy self-test
capability_detection	This code will be used to indicate knowledge regarding the ability of pregnancy self-tests to detect pregnancy as early as the first day of a missed menstrual cycle
capability_access	This code will be used to indicate participant's knowledge and/or awareness regarding where pregnancy self-test kits can be accessed
physicalcapability	**Physical capability that involves a person's physical ability to utilize pregnancy test. Potential use could be to identify any physical disabilities that impacted test use.**
MOTIVATION An aggregate of mental processes that energizes and directs behavior	
automaticmotivation	**Is motivation that involves instinctive, drive-related processes and desires related to decisions around seeking a pregnancy kit for self-testing**
motivation_symptoms	This code will be used to indicate that the presence of pregnancy-related signs and/or symptoms motivated decision-making around product use
motivation_missedmenses	This code will be used to indicate that a missed menstrual period motivated decision-making around pregnancy self-testing
motivation_asymptomatic	This code will be used to indicate that the absence of pregnancy related signs and/or symptoms motivated decision-making around product use
reflectivemotivation	**Is motivation that involves conscious thought processes (e.g., plans and evaluation) that involve decisions and beliefs related to pregnancy self-testing**
motivation_accuracy	This code will be used to indicate beliefs regarding the accuracy of pregnancy self-test results which guided decision-making around product use

motivation_pharmefficacy	This code will be used to indicate beliefs regarding efficacy of pharmacy-supplied pregnancy kits which guided decision-making around product use
motivation_complacency	This code will be used to indicate beliefs regarding pregnancy self-test use and complacency after receiving test results
motivation_convenience	This code will be used to indicate that convenience of knowing pregnancy self-test results within a short time frame is motivation for decisions related to pregnancy kit use or non-use
motivation_preparation	This code will be used to indicate that pregnancy self-test results prepare the participant prior to presenting for ANC and is motivation for decisions related to use or non-use of pregnancy kits
motivation_privacy	This code will be used to indicate that pregnancy self-testing provides the participant with privacy and was motivation behind decisions related to pregnancy kit use or non-use
motivation_pharmadvice	This code can be used to indicate that pharmacist engagement is motivation for decisions related to pregnancy kit use or non-use
motivation_confirmation	This code can be used to indicate that confirming one's pregnancy status for personal knowledge was the motivation behind decisions related to pregnancy self-testing
motivation_pharmtrust	This code will be used to indicate beliefs around trust or mistrust in pharmacists' abilities to provide guidance around pregnancy self-testing
motivation_safety	This code will be used to indicate beliefs concerning safety outcomes of users of pregnancy kits after receiving pregnancy self-testing results
Opportunity Is an attribute of an environmental system that together with capability makes a behavior possible or facilitates it	
opportunity	**Physical opportunity that involves financial and material resources related to ability to access pregnancy self-testing kits**
opportunity_transportation	This code will be used to indicate whether transportation guided decision-making around pregnancy test use
opportunity_cost	This code will be used to indicate whether the cost of a pregnancy kit guided decision-making around pregnancy test use
opportunity_accessibility	This code will be used to indicate that experiences and beliefs towards accessibility guided decision-making around pregnancy test use
socialopportunity	**Is opportunity that involves other people and organizations (e.g., culture and social norms) that influences decisions around pregnancy self-test use**
socialopportunity_norms	This code will be used to indicate beliefs surrounding social norms of pregnancy self-testing guided decision-making around product use

Juicy Quotes e.g., capabilityknowledge_jq	Juicy quotes will be flagged per category to indicate high quality responses that capture experiences, perspectives, and beliefs that describe the woman's decision-making process towards pregnancy test kits

Appendix 3. Interview guide

Interview guide contains the following questions pertaining to pregnancy self-testing:

1. "In your current pregnancy did you use the kit?"
2. "What made you not to use?"
3. "Do you know how to use the pregnancy test kit?"
4. "Do you think the pregnancy test kit is accurate?"
5. "Do you think it's necessary to use?"
6. "Have you ever been interested to use it during your pregnancy?"
7. "Do you think there is anything that can influence you in the future to use this kit?"

REFERENCES

1. WHO Regional Office for Africa (2021). *Health Topics: Maternal Health.* Accessed at: https://www.afro.who.int/health-topics/maternal-health

2. Morroni, C., Moodley, J. The role of urine pregnancy testing in facilitating access to antenatal care and abortion services in South Africa: a cross-sectional study. *BMC Pregnancy Childbirth* 6, 26 (2006). https://doi.org/10.1186/1471-2393-6-26

3. Nganga N, Dettinger J, Kinuthia J, Baeten J, John-Stewart G, Gómez L, et al. (2021) Prevalence and correlates of pregnancy self-testing among pregnant women attending antenatal care in western Kenya. PLoS ONE 16(11): e0258578. https://doi.org/10.1371/journal.pone.0258578

4. Dettinger JC, Kinuthia J, Pintye J*, et al*. PrEP Implementation for Mothers in Antenatal Care (PrIMA): study protocol of a cluster randomised trial. *BMJ Open* 2019;9:e025122. doi: 10.1136/bmjopen-2018-025122

5. Harris, P.A. Research Electronic Data Capture (REDCap) - planning, collecting and managing data for clinical and translational research. *BMC Bioinformatics* 13, A15 (2012). https://doi.org/10.1186/1471-2105-13-S12-A15

6. Hwang, S. (2008) 'Utilizing Qualitative Data Analysis Software: A Review of Atlas.ti', Social Science Computer Review, 26(4), pp. 519–527. doi: 10.1177/0894439307312485.

7. Fiona Barker, Lou Atkins & Simon de Lusignan (2016) Applying the COM-B behaviour model and behaviour change wheel to develop an intervention to improve hearing-aid use in adult auditory rehabilitation, International Journal of Audiology, 55:sup3, S90-S98, DOI: 10.3109/14992027.2015.1120894

8. Robert West, Susan Michie. (2020). A brief introduction to the COM-B Model of behaviour and the PRIME Theory of motivation. Qeios. doi:10.32388/WW04E6.2.

9. Coons, S J et al. "The use of pregnancy test kits by college students." *Journal of American college health : J of ACH* vol. 38,4 (1990): 171-5. doi:10.1080/07448481.1990.9938438

10. McDonagh, L.K., Saunders, J.M., Cassell, J. *et al.* Application of the COM-B model to barriers and facilitators to chlamydia testing in general practice for young people and primary care practitioners: a systematic review. *Implementation Sci* 13, 130 (2018). https://doi.org/10.1186/s13012-018-0821-y

11. Heneghan, M.B., Hussain, T., Barrera, L., Cai, S.W., Haugen, M., Duff, A., Shoop, J., Morgan, E., Rossoff, J., Weinstein, J., Hijiya, N., Cella, D., & Badawy, S.M. (2020). Applying the COM-B model to patient-reported barriers to medication adherence in pediatric acute lymphoblastic leukemia. *Pediatric Blood & Cancer, 67(5).* https://doi.org/10.1002/pbc.28216

12. The Decision Lab: *The COM-B Model for Behavior Change* (2022). Accessed at: https://thedecisionlab.com/reference-guide/organizational-behavior/the-com-b-model-for-behavior-change

13. Clarke, Victoria, Virginia Braun, and Nikki Hayfield. "Thematic analysis." *Qualitative psychology: A practical guide to research methods* 222 (2015): 248.

14. Ryan, G.W. and Bernard, H.R., 2003. Techniques to identify themes. *Field methods*, *15*(1), pp.85-109.

15. Maguire, Moira and Delahunt, Brid (2017). Doing A Thematic Analysis: A Practical, Step-by-Step Guide for Learning and Teaching Scholars. Dundalk Institute of Technology, 8(3), 3352 – 3353.

16. Allison Tong, Peter Sainsbury, Jonathan Craig, Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups, *International Journal for Quality in Health Care*, Volume 19, Issue 6, December 2007, Pages 349–357, https://doi.org/10.1093/intqhc/mzm042

17. National AIDS Control Council of Kenya (2014). "Kenya AIDS Response Report 2014: Progress towards Zero" [pdf].

18. Drake AL, Wagner A, Richardson B, John-Stewart, G. Incident HIV during Pregnancy and Postpartum and Risk of Mother-to-Child HIV Transmission: a Systematic Review and Meta-Analysis. PLoS Medicine, vol. 11, no. 2, 2014, p. e1001608.

19. Pell C, Meñaca A, Were F, Afrah NA, Chatio S, Manda-Taylor L, et al. Factors affecting antenatal care attendance: results from qualitative studies in Ghana, Kenya and Malawi. PloS one. 2013;8(1):e53747.

20. Indravudh PP, Choko AT, Corbett EL. Scaling up HIV self-testing in sub-Saharan Africa: a review of technology, policy and evidence. Current Opinion in Infectious Diseases. 2018;31(1):14-24

21. UNAIDS, 2019. Focus Areas: *Country factsheets, Kenya 2019.* Accessed at: https://www.unaids.org/en/regionscountries/countries/kenya

22. Ronen, Keshet PhD[*]; McGrath, Christine J. MPH, PhD[†]; Langat, Agnes C. MBChB, MMed, MPH[‡]; Kinuthia, John MBChB, MMed, MPH[§]; Omolo, Danvers MSc[‖]; Singa, Benson MBChB, MPH[‖]; Katana, Abraham K. MBChB, MSc[‡]; Ng'Ang'A, Lucy W. MBChB, MMed[‡]; John-Stewart, Grace MD, MPH, PhD[¶] Gaps in Adolescent Engagement in Antenatal Care and Prevention of Mother-to-Child HIV Transmission Services in Kenya, JAIDS Journal of Acquired Immune Deficiency Syndromes: January 1, 2017 - Volume 74 - Issue 1 - p 30-37 doi: 10.1097/QAI.0000000000001176

23. Tekelab T, Chojenta C, Smith R, Loxton D (2019) The impact of antenatal care on neonatal mortality in sub-Saharan Africa: A systematic review and meta-analysis. PLoS ONE 14(9): e0222566. https://doi.org/10.1371/journal.pone.0222566

24. Alison B Comfort, Randall C Juras, Sarah E K Bradley, Justin Ranjalahy Rasolofomanana, Anja Noeliarivelo Ranjalahy, Cynthia C Harper, Do home pregnancy tests bring women to community health workers for antenatal care counselling? A randomized controlled trial in Madagascar, *Health Policy and Planning*, Volume 34, Issue 8, October 2019, Pages 566–573, https://doi.org/10.1093/heapol/czz080

25. Ali, S.A., Dero, A.A., Ali, S.A. and Ali, G.B., 2018. Factors affecting the utilization of antenatal care among pregnant women: a literature review. *J Preg Neonatal Med*, *2*(2).

26. Ralph LJ, Foster DG, Barar R, Rocca CH. Home pregnancy test use and timing of pregnancy confirmation among people seeking health care. Contraception. 2022 Mar 1;107:10-6.

27. Somefun OD, Harries J, Constant D. Reproductive awareness and recognition of unintended pregnancy: young women, key informants and health care providers perspectives in South Africa. Reproductive health. 2021 Dec;18(1):1-8.

28. USAID. The SHOPS Plus Project: Assessment of the Pregnancy Test Market in Kenya. July 2017. PDF. Accessed at: https://www.rhsupplies.org/uploads/tx_rhscpublications/Assessment_of_the_Pregnancy_Test_Market_in_Kenya.pdf

29. FHI 360. The Science of Improving Lives: Quality and Performance Guidance on Selection of Pregnancy Tests for Procurement. May 2017. Accessed at: https://www.fhi360.org/resource/quality-and-performance-guidance-selection-pregnancy-tests-procurement

30. WHO guideline on self-care interventions for health and well-being. Geneva: World Health Organization; 2021. Licence: CC BY-NC-SA 3.0 IGO. Accessed at: https://apps.who.int/iris/rest/bitstreams/1356501/retrieve