Digital Health and Chatbots to Promote Sexual and Reproductive Healthcare among Lesbian, Bisexual, and Queer Women of Color in the U.S.: Cross-Sectional Survey Study

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Abstract

Background: Cisgender lesbian, bisexual, and queer (LBQ+) women of color (WOC) experience barriers to accessing sexual and reproductive health (SRH) services in the U.S. Barriers such as lack of health insurance, less access to healthcare providers, and discrimination in healthcare settings prevent LBQ+ WOC from utilizing sexual and reproductive healthcare. Compared to their heterosexual counterparts, they report higher rates of poor SRH outcomes. Digital health, including telemedicine, mHealth, and artificial intelligence-enabled chatbots, may help facilitate access and uptake of SRH information and services among LBQ+ WOC.

Objective: This study investigated attitudes toward sexually transmitted infection (STI) and cervical cancer prevention methods and the acceptability and concerns of using digital health, including telemedicine (e.g., video calls on a mobile phone), mHealth (a mobile app, text messaging), and artificial intelligence-enabled chatbots to promote sexual and reproductive healthcare uptake and access to SRH information among LBQ+ WOC in the U.S.

Methods: : From November 2020 to March 2021, 350 LBQ+ WOC in the U.S. were recruited through social media and emails sent via listservs to complete a self-administered, web-based survey. The survey collected sociodemographic data and consisted of questions regarding mobile phone and chatbot use,
awareness and attitudes toward using HIV prevention medication, awareness and knowledge of HPV and cervical cancer prevention, and the acceptability and concerns of using digital health modalities to facilitate access and uptake of SRH services and information. The data was analyzed using descriptive statistics and thematic analysis.

Results: The findings (N=135) showed that LBQ+ WOC were most comfortable using video calls to communicate with a healthcare provider (79%) to receive support utilizing sexual and reproductive health services compared to a mobile app (65%) or SMS text messages (43%). Respondents showed high acceptance of the use of a chatbot (86.7%) to self-assess the risk for cervical and 88.9% to self-assess the risk of acquiring STIs. The results revealed high levels of agreement that a mobile app tailored to the information needs of LBQ+ WOC would increase comfort in seeking SRH services (89.6%). There was high acceptability for using a chatbot (84.4%) and SMS text messages (80%) to obtain SRH information during health crises. The primary concerns were data privacy and confidentiality, lack of affective communication, and technology connectivity and adoption issues. Finally, LBQ+ WOC reported low awareness and knowledge of HIV, HPV, and cervical cancer prevention.

Conclusions: The results suggest that LBQ+ WOC hold favorable views of digital health, including chatbots, as a means of supporting sexual and reproductive healthcare uptake and engagement. Culturally tailored digital health interventions that utilize chatbots and mHealth would be advantageous for improving sexual and reproductive knowledge, access, and uptake of these critical services among LBQ+ WOC. Future work should consider the user-centered design preferences and SRH information needs of LBQ+ WOC and address technology access and adoption issues.

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Keywords:
Digital health; generative artificial intelligence; ethnic and racial minorities; sexual health; reproductive health; sexual and gender minorities; mhealth; women; cervical cancer; telemedicine

Introduction

There is scarce research examining the sexual and reproductive healthcare experiences of cisgender, lesbian, bisexual, and queer (LBQ+) women of color (WOC) in the United States. However, the existing body of research indicates that LBQ+ WOC face pronounced barriers to accessing critical sexual and reproductive health (SRH) services such as human papillomavirus (HPV) vaccination, cervical cancer screening, human immunodeficiency virus (HIV) and sexually transmitted infection (STI) testing, breast cancer screening, and contraception [1-5].
In comparison to their white heterosexual counterparts, LBQ+ WOC are less likely to utilize SRH services due to barriers such as lack of health insurance, lack of a usual healthcare source, and discrimination in healthcare settings [6-9]. Due to these barriers, research indicates that LBQ+ WOC may experience poorer health outcomes, including delayed care, late diagnosis of HIV and STIs, diagnosis of cancers at later stages, and higher incidence and mortality rates [10-15].

While there is limited research investigating the experiences of LBQ+ WOC regarding their access to and utilization of SRH services, existing research suggests that they report limited access to SRH information as well as patient-provider communication, and care that centers their information needs, communication preferences, priorities, and cultural norms [16-18]. LBQ+ WOC report experiences of interpersonal discrimination in healthcare settings due to the racist, classist, weight-based, and heterosexist biases of healthcare providers [8, 16, 19]. Previous research shows that LBQ+ WOC feel shamed, unheard, and dismissed during their interactions with healthcare providers, which has led to them delaying or forgoing the utilization of sexual and reproductive healthcare [17, 20, 21]. Improving access to and uptake of SRH services and information among LBQ+ WOC is critical for improving healthcare outcomes and advancing health equity.

Digital health modalities such as mobile applications, SMS text messages, video calls, and artificial intelligence (AI)-enabled chatbots may help facilitate access to and uptake of SRH services and information among LBQ+ WOC in the US [22-24]. While empirical data on the use of digital health modalities among LBQ+ WOC is limited, existing studies show that LBQ+ women use mobile apps for information seeking [25], social support building [26], and to seek romantic partnerships [27]. Past digital health interventions using modalities such as text messages [28, 29] and mobile apps [30, 31] increased the uptake of SRH among WOC, such as contraception, and improved their knowledge of HIV and other STIs [32, 33]. Chatbots and telehealth video calls also hold promise for increasing access to SRH services and information [22, 34]. Furthermore, digital health modalities may be especially appropriate for LBQ+ WOC in the U.S. who may be uncomfortable accessing SRH services face-to-face due to experiences of discrimination in healthcare settings or the anticipation of compounding stigma due to their sexual orientation and race/ethnicity [35, 36]. Additionally, given that LBQ+ WOC may be at an increased risk for breast, cervical, and ovarian cancer compared to heterosexual women due to

the underutilization of preventive screening and treatment, new approaches to improving care access and uptake are needed [37-39].

The purpose of this study was to investigate the attitudes of cisgender, LBQ+ WOC in the US toward sexually transmitted infection (STI) (e.g., HIV and HPV) and cervical cancer prevention methods and the acceptability and concerns of using digital health, including telemedicine, mHealth and AI-enabled chatbots to promote sexual and reproductive healthcare uptake and engagement. To the author's knowledge, this is the first study to explore this phenomenon among this understudied population. The following research questions were examined: (1) What are the attitudes and awareness of LBQ+ WOC toward HIV prevention medication? (2) What are the awareness and knowledge of LBQ+ WOC regarding HPV and cervical cancer? (3) Is using digital health acceptable to LBQ+ WOC to receive SRH and information? (4) Are there digital health modalities that are more acceptable than others (e.g., mobile app, chatbot, video call, or SMS text messaging) to facilitate access and uptake of SRH information and services to LBQ+ WOC? (4) What are the primary concerns about using digital health to receive SRH and information?

Methods

Recruitment and Sampling

A convenience sample of women of color who identified as lesbian, bisexual, queer, or women who have sex with women (LBQ+) aged 18 or older residing in the U.S. were recruited to complete a cross-sectional, self-administered online survey between November 2020 and March 2021. A total of 350 respondents were recruited using posts on social media (e.g., Twitter, Instagram, Facebook) and through an anonymous link distributed through community-based organizations and university study group listservs whose membership was comprised of LBQ+ women of color. A snowball sampling technique was utilized to encourage respondents to share the anonymous survey link with members of their networks who fit the eligibility criteria for the study. To be eligible, participants needed to identify as American Indian, Asian, Black/African American, Hispanic/Latina, Middle Eastern/North African, Native Hawaiian or other Pacific Islander woman, LBQ+, aged 18 or older, and live in the U.S. or a U.S. territory. Participants provided informed consent at the start of the survey, and the Rutgers University Institutional Review Board approved all research activities.

Measures

Overview

The cross-sectional survey was administered using Qualtrics software (Qualtrics, Provo, UT). Survey domains included (1) sociodemographic characteristics, (2) mobile phone use, (3) chatbot use, (4) the acceptability of using digital health for sexual and reproductive healthcare, (5) sexual and reproductive health information-seeking behaviors, 6) awareness and attitudes about HIV prevention medications, (7) awareness and knowledge of HPV and cervical cancer prevention, (8) sexual and reproductive health access and use, and (9) discrimination in healthcare settings. See Multimedia Appendix 1 for the survey instrument.

Most questions about sociodemographic characteristics, including gender identity, sexual

orientation, race/ethnicity, and country and state of residence, were asked at the beginning of the survey to determine eligibility for participation in the research study. The race/ethnicity, sexual orientation, gender identity, age, and country of residence questions were used as screener questions to determine eligibility to continue the survey. Individuals who did not meet the eligibility criteria for the study were routed directly to the end of the survey. To prevent false responses from bots, indexing, and multiple submissions were not allowed. The author reviewed the data weekly for suspicious responses. Individuals who passed the eligibility screening were informed that they could choose not to answer any questions on the survey and could discontinue their participation in the study at any time for any reason.

Mobile Phone and Chatbot Use

Mobile phone use was assessed with the following items adapted from McCall et al. 2023 [40]: (1) mobile phone ownership (yes or no), (2) the ability to send/receive text messages on a mobile phone (yes or no), (3) the frequency of sending SMS text messages (never, <1 time/week, 1-6 times/week, 1-3 times/day, and ≥4 times day), (4) use of mobile applications (yes or no), (5) the frequency of using a mobile phone to access mobile applications (never, <1 time/week, 1-6 times/week, 1-3 times/day, and ≥4 times day), (6) the ability to complete video calls on a mobile phone (yes or no) and (7) the frequency of using a mobile phone to complete video calls (never, <1 time/week, 1-6 times/week, 1-3 times/day, and ≥4 times day). Moreover, respondents were asked if they have used any of the following types of mobile applications to support their sexual and reproductive health: "period tracking app, patient portal, fertility/pregnancy planning, birth control app" (yes or no).
Participants were provided with the following definition of a chatbot adapted from Palanica et al. 2019, p. 3 [41].

Chatbots, also known as conversational agents, are artificial intelligence-enabled programs designed to imitate human conversations. Chatbots enable verbal and/or text communication with human users and can generate and retrieve information. Chatbots may be programmed to provide information relevant to specific user groups.

Chatbot use was assessed with the following items: (1) "Have you ever used a chatbot or conversational agent for any purpose (even if unrelated to sexual and reproductive health)?" (2) "Have you ever sought sexual and reproductive health support from a chatbot or conversation agent", (3) "In the past 12 months, have you sought sexual and reproductive health support from a chatbot or conversational agent?", and (4) "Would you be willing to use a chatbot to assist you with finding sexual and reproductive health information."

Acceptability of Using Digital Health for Sexual and Reproductive Healthcare

The acceptability of using digital health for sexual and reproductive healthcare uptake and engagement was measured by the comfortability of (1) communicating with a healthcare provider through a video call, mobile app, or SMS text messaging to support utilizing sexual and reproductive health services and (2) using a chatbot, SMS text messages, or a mobile app to assess risk for STIs and cervical cancer. Measures to assess the acceptability of using digital health, including chatbots for sexual and reproductive healthcare, were adapted from McCall et al. 2023 and Nadarzyski et al. 2020 [40, 42]. Moreover, the following statements were presented to assess the acceptability of using digital health modalities: (1) "Would having the

option to use a [chat bot/mobile app] to seek sexual and reproductive health information when you have an urgent health concern increase your comfort seeking sexual and reproductive services?", and (2) "Would having a [chatbot/mobile app] tailored to the information needs of LBQ+ women of color increase your comfort utilizing sexual and reproductive services?" Response options were yes or no.

At the end of the question block, respondents were asked: "Do you have any concerns about using a [mobile app/chatbot] to receive sexual and reproductive health information?" and "Do you have any concerns about using a [mobile app/video call/text messages] to communicate with a healthcare provider about your sexual and reproductive health needs? If they answered "yes" to these questions, they were presented open-ended questions along with a text-entry box to make note of their concerns.

Awareness and Attitudes toward HIV Prevention Medication

Participants were asked about their awareness and attitudes toward biomedical HIV prevention methods, including daily oral pre-exposure prophylaxis (PrEP) and the dapivirine vaginal ring (DAP). Awareness of biomedical HIV prevention methods was assessed by asking two questions: (1) "Have you ever heard of PrEP (pre-exposure prophylaxis)? PrEP is when HIV-negative people take anti-HIV medications (anti-retrovirals like Truvada) BEFORE HAVING SEX to prevent HIV" and 2) "Have you ever heard of dapivirine vaginal ring (also referred as the DAP ring)? The dapivirine vaginal ring is a form of pre-exposure prophylaxis. HIV-negative people with a vagina insert the ring which releases daprivine (a topical anti-retroviral) monthly to prevent HIV." Response options to both questions were yes or no.

To assess attitudes towards the use of biomedical HIV prevention methods, participants were asked, "If a pill (drug/medication) that could be taken daily to prevent transmission of HIV from an HIV-positive sex partner to an HIV-negative partner were available I would take it"; "If a flexible, silicone ring that could be inserted into a vagina and provide sustained release of an anti-HIV drug monthly to prevent the transmission of HIV from an HIV positive sex partner to an HIV negative partner were available I would use it." Response options included yes or no. Participants who selected no were asked the following question, "why would you not take the pill/use the ring?" Response options included: "I'm not at risk of HIV infection"; "I would not want to pay for it"; "I would be afraid that someone would find out that I was taking it"; "I'm afraid of potential side effects"; "I don't like taking pills daily"; "I don't like having objects inserted in my vagina"; "I don't believe it would work."

HPV and Cervical Cancer Awareness and Knowledge

Respondents' knowledge and awareness of HPV and cervical cancer were measured using questions adapted from a survey instrument developed by Lyson et al. 2019 [43]. HPV and HPV prevention awareness was assessed by asking four questions: (1) "Have you ever heard of HPV? HPV stands for Human Papillomavirus." (2) "Have you ever heard of the HPV vaccine or shots to prevent cervical cancer?" (3) "Have you ever heard of an HPV test?" and (4) "Have you ever heard of a pap test?"

Eight questions assessed knowledge of HPV and cervical cancer prevention:
(1) "Do you think HPV can cause cervical cancer?", (2) "Do you think you can get HPV through sexual contact?", (3) "Do you think HPV causes AIDS?", (4) "Do you think HPV can go away on its

own without treatment?" (5) "Do you think an HPV test can detect cervical cancer?", (6) Do you think you think you need a pap test in order to receive a cervical cancer diagnosis?", (7) "Do you think you only need one dose of the HPV vaccine?" and (8) "Do you think you can get the HPV vaccine if you're over the age of 45?" Response options were yes or no.

Data Analysis

Data were analyzed using descriptive statistics (i.e., means, percentages, standard deviations) to characterize attitudes toward STI and cervical cancer prevention methods and the acceptability and concerns of using digital health modalities to promote sexual and reproductive healthcare uptake and engagement among LBQ+ WOC in the U.S. Microsoft Excel (Microsoft Corporation) was used to conduct the analysis. In addition, responses to the questions, "What are your concerns about using a [mobile app/chatbot/text messages] to receive sexual and reproductive health information?" and "What are your concerns about using a [mobile app/video call/text messages] to communicate with a healthcare provider about your sexual and reproductive health needs?" were imported into NVivo 13 software (QSR International) for thematic analysis [44]. Using the six phases of thematic analysis outlined by Braun & Clarke (2006), the first author (MT, an experienced qualitative and mixed methods researcher) familiarized herself with the data by reading through each of the responses and creating codes based on emergent themes that appeared frequently across survey entries. MT independently reviewed the final themes for reliability and consistency in coding.

Results

Participants

Table 1 summarizes the sociodemographic characteristics of the LBQ+ WOC survey respondents. Of the 350 respondents who started the survey and were deemed eligible, 135 completed it (38.5% completion rate). Respondents were primarily Black or African American (65%, 87/135), identified as bisexual (55.5%, 75/135), and ranged in age from 18 to 55 years (mean age 25). Most respondents lived in the Northeastern United States (48.1%, 65/135) and had some college or an associate's degree (46.7%, 63/135). The annual household income was reported to be $25,000-$49,999 for 41% of respondents and $50,000-$100,000 for 35% of respondents. Most respondents reported having health insurance (77%, 104/135) and a usual source of health care.

Table 1. Sociodemographic characteristics of the survey respondents (N=135).

	Characteristics	n	%
Age range (years),			
	18-24	45	33.3
	25-34	70	51.9
	35-44	18	13.3
	45-55	2	1.5
Race/ethnicity			

	Asian	13	9.6
	Black or African American	88	65.2
	Hispanic or Latino	34	25.2
Sexual orientation identity			
	Lesbian	25	18.5
	Bisexual	75	55.6
	Pansexual	23	17
	Queer	9	6.7
	Another sexual identity	3	2.2
Educational attainment			
	High school diploma or GED[a]	15	11.1
	Some college or associate's degree	63	46.7
	Bachelor's degree	32	23.7
	Master's degree or above	25	18.5
Income (US $)[b]			
	< $10,000	2	1.5
	$10,000-$24,999	6	4
	$25,000-$49,999	56	41
	$50,000-$100,000	48	35
	> $100,000	22	16
Geographic Region			
	Midwest	13	9.6
	Northeast	65	48.1
	South	40	29.6
	West	17	12.6
Health Insurance Status	Uninsured	31	23
	Insured	104	77
Usual Place of Care	Yes	98	72.6
	No	37	27.4

[a]GED: General Educational Development tests.

[b]The total sample size N=135 and percentages may not sum up to 100% because of item missingness (n=2) and rounding.

Mobile Phone and Chabot Use

Table 2 presents the mobile phone use of survey respondents. All participants reported owning

a mobile phone and being able to send SMS text messages (100%, 135/135). Most respondents (79.9%, 108, 135) indicated texting ≥1 times per day, and that their phones had video call capability (89.6%, 121/135). Respondents who indicated that their phone had video call capability, reported making video calls at least 1-6 times per week (51.1%, 69/135). Most respondents reported ever using a menstrual cycle or fertility tracking app (71.1%, 96/135), and a little more than half indicated using a patient portal app (58.5%, 79/135). The majority of respondents accessed a mobile app on their phone 1-3 times per day. Most respondents had not used a pregnancy tracking app (87.4%, 118/135) nor a birth control app (68.9%, 93/135). Approximately half of the respondents reported using a chatbot for any purpose (50.4%, 68/135), and few respondents (16.3%, 22/135) had used a chatbot to obtain SRH information. See table 3 for details.

Table 2. Mobile phone use (N=135)

	Characteristics	n	%
Mobile phone ownership			
	Yes	135	100
	No	0	0
Mobile phone text message capability			
	Yes	135	100
	No	0	0
Frequency of sending SMS text messages[a]			
	Never	5	3.7
(	< 1 time/wk	9	6.7
	1-6 times/wk	13	9.6
	1-3 times/d	33	24.4
	≥4 times/d	75	55.5
Mobile phone video capability			
	Yes	121	89.6
	No	14	10.4
Frequency of video call use[b]			
	Never	11	8.1
	< 1 time/wk	36	26.7
	1-6 times/wk	69	51.1
	1-3 times/d	11	8.1
	≥4 times/d	8	5.9
Frequency of accessing mobile			

apps			
	Never	0	0
	< 1 time/wk	8	5.9
	1-6 times/wk	15	11.1
	1-3 times/d	98	72.6
	≥4 times/d	14	10.3
Use of period, fertility or menstrual cycle tracking mobile app			
	Yes	96	71.1
	No	39	28.9
Use of patient portal, MyChart mobile app			
	Yes	79	58.5
	No	56	41.5
Use of pregnancy tracking app			
	Yes	17	12.6
	No	118	87.4
Use of birth control app			
	Yes	42	31.1
	No	93	68.9

[a]The total sample size N=135 and percentages may not sum up to 100% because of item missingness (n=2) and rounding.

[b]Respondents who indicated that they did not have video call capability (n=14) were not presented with the frequency of use question.

Table 3. Chatbot Use (N=135)

	Characteristics	n	%
Chatbot Use (any purpose)			
	Yes	68	50.4
	No	67	49.6
Chatbot Use (SRH)[a]			
	Yes	22	32.4
	No	46	67.6
Chatbot Use (SRH-past 12 months)[a]			
	Yes	8	36.4

	No	14	63.6

[a]Respondents who indicated that they have not used a chatbot for any purpose were not presented with questions on chatbot use for sexual and reproductive health support.

Awareness and Attitudes toward HIV Prevention Medication

The awareness of and attitudes toward HIV prevention medication among respondents are summarized in Table 4. While 66% of respondents were aware of PrEP, when taken as a daily pill to prevent HIV transmission from an HIV positive partner to an HIV-negative partner, most respondents (97%) had not heard of the dapivirine vaginal (DAP) ring, a vaginal insert, to prevent HIV acquisition during vaginal sex. About half (52.6%) of respondents would take PrEP as a daily pill to prevent acquiring HIV. There were far less favorable attitudes toward the DAP ring with 89.6% reporting that they would not use it as a form of HIV prevention. The top three reasons respondents indicated that they would not take PrEP as a daily pill were: 1) "I'm not at risk of HIV infection" (80%, 108/135), 2) I'm afraid of potential side effects (85.2%,115/135), and 3) I would not want to pay for it (56.3%, 76/135). Similarly, the top reasons respondents would not use a DAP ring for HIV prevention were: 1) "I'm not at risk for HIV infection" (82.2%, 111/135), 2) I'm afraid of potential side effects (88.1%,119/135), and 3) "I don't like having objects inserted in my vagina" (67.4%, 91/135).

Table 4. Awareness of and Attitudes toward PrEP (N=135)

Characteristics	n (%)	n (%)
	Yes	No
PrEP Awareness		
Ever heard of PrEP	89 (66)	46 (34)
Ever heard of a DAP ring[a]	2 (1.5)	132 (97)
PrEP Attitudes		
Would you take PrEP?	64 (47.4)	71 (52.6)
Would you use a DAP ring?[b]	2 (1.48)	121 (89.6)

[a] The total sample size N=135 and percentages may not sum up to 100% because of respondents answering unsure/don't know (n=1).

[b] The total sample size N=135 and percentages may not sum up to 100% because of respondents answering unsure/don't know (n=12).

HPV and Cervical Cancer Awareness and Knowledge

Awareness about HPV was high among the sample (76.3%, 103/135) (Table 5). Most respondents were aware of HPV screening measures, including an HPV test (67.4%, 91/135) and a pap test (85.2%, 115/135). There was low awareness of the HPV vaccine (41.5%, 56/135) among respondents. A knowledge score was calculated for each respondent. The knowledge score was the total number of correct responses to the eight knowledge questions.

Respondents who answered a question incorrectly or “don’t know” were given a score of zero. Knowledge of HPV and cervical cancer prevention was low among the sample. The mean knowledge score was 3.94/8. Approximately 50.74% of all knowledge item responses were incorrect.

Table 5. HPV and Cervical Cancer Awareness and Knowledge (N=135)

Characteristics	n (%)	n (%)
	Yes	No
Awareness of HPV (prevention)		
Ever heard of HPV[a]	103 (76.3)	21(15.5)
Ever heard of HPV vaccine[b]	56 (41.5)	66 (48.9)
Ever heard of an HPV test[c]	91 (67.4)	28 (20.7)
Ever heard of pap test[d]	115 (85.2)	18 (13.3)
HPV Knowledge		
HPV causes cervical cancer[e]	129 (95.5)	2 (1.5)
Get HPV from sexual contact[f]	118 (87.4)	12 (8.8)
HPV causes AIDS[g]	9 (6.7)	125 (92.6)
HPV can go away without treatment	7 (5.2)	128 (94.8)
HPV test can detect cervical cancer	128 (94.8)	7 (5.2)
Pap test needed for cervical cancer diagnosis	77 (57)	58 (43)
Only need (1) dose of the HPV vaccine[h]	66 (48.8)	48 (35.5)
Can get the HPV vaccine over the age of 45[i]	94 (70)	40 (29.6)

[a] The total sample size N=135 and percentages may not sum up to 100% because of respondents answering don’t know (n=11).

[b] The total sample size N=135 and percentages may not sum up to 100% because of respondents answering don’t know (n=13).

[c] The total sample size N=135 and percentages may not sum up to 100% because of respondents answering don’t know (n=16).

[d] The total sample size N=135 and percentages may not sum up to 100% because of respondents answering don’t know (n=2).

[e] The total sample size N=135 and percentages may not sum up to 100% because of

respondents answering don't know (n=4).
[f] The total sample size N=135 and percentages may not sum up to 100% because of respondents answering don't know (n=5).
[g] The total sample size N=135 and percentages may not sum up to 100% because of respondents answering don't know (n=1).
[h] The total sample size N=135 and percentages may not sum up to 100% because of respondents answering don't know (n=21).
[i] The total sample size N=135 and percentages may not sum up to 100% because of respondents answering don't know (n=1).

The Acceptability of Digital Health to Promote Sexual and Reproductive Health Uptake and Engagement

LBQ+ WOC in the sample were most comfortable using video calls to communicate with a healthcare provider (79%, 107/135) to receive support utilizing SRH services, followed by a mobile app (65%, 88/135) and SMS text messages (43%, 58/135). Survey results revealed that most respondents (86.7%, 117/135) indicated agreement (71.85%, 97/135 agree and 14.8% 20/135 somewhat agree), 4.4% (6/135) were undecided, and 8.9% (12/135) showed disagreement that they would be comfortable using a chatbot to self-assess risk for cervical cancer. Furthermore, 72.6% (98/135) of respondents agreed (57.8%, 78/135 agree, and 14.8% 20/135 somewhat agree) that they would be comfortable with using a mobile app, and 44.4% agreed (60/135) they would be comfortable with using text messaging (27.4%, 37/135 agree and 17%, 23/135 somewhat agree) to self-assess the risk for cervical cancer. (Figure 1)

Most respondents (88.9%, 120/135) were comfortable (57%, 77/135 agree, and 31.6%, 43/135 somewhat agree) with using a chatbot to self-assess the risk for STIs (e.g., HIV, HPV, gonorrhea). About 6.7% (9/135) of respondents were uncomfortable using a chatbot to self-assess the risk for STIs, while 4.4% (6/135) were undecided. Approximately 68.9% (93/135) of respondents agreed (46%, 62/135 agree, 22.96%, 31/135 somewhat agree) that they would be comfortable using a mobile app, and 57.8% (78/135) using text messaging (21.5%, 29/135 agree and 36.3%, 49/135 somewhat agree) to self-assess the risk for STIs (Figure 2).

Most respondents (89.6%, 121/135) indicated that having a mobile app tailored to the information needs of LBQ+ WOC would increase their comfort in utilizing SRH services. Fewer respondents reported that a chatbot (69.6%, 94/135) would increase their comfort utilizing SRH; however, there was still high support for this modality. (Table 6) A chatbot (84.4%, 114/135) and text messaging (80%, 108/135) were highly acceptable modalities for obtaining SRH information during crises; however, respondents indicated that using a mobile app would not be acceptable. (Table 7)

Table 6. A modality tailored to the information needs of LBQ+ WOC would increase comfort utilizing sexual and reproductive health services (N=135)

Characteristics	n (%)	n (%)
	Yes	No
Modality		

Chatbot	94 (69.6)	41 (30.4)
Mobile app	121 (89.6)	14 (10.4)

Table 7. Having the option to use the modality to seek sexual and reproductive health information when an urgent health concern arises would increase comfort utilizing sexual and reproductive health services (N=135)

Characteristics	n (%)	n (%)
	Yes	No
Modality		
Chatbot	114 (84.4)	21 (15.6)
Mobile app	45 (33.3)	90 (66.7)
Text messaging	108 (80)	27 (20)

Qualitative Results

Respondents were asked if they had concerns about using a chatbot or a mobile app to receive SRH information. Approximately 51.6% (70/135) of respondents indicated concerns about using a chatbot, and 46.7% (63/135) indicated concerns about using a mobile app to receive SRH information. Fewer participants indicated concerns about using digital health modalities to communicate with a healthcare provider. About 22.2% (30/135) of the sample reported concerns with using text messages, and 10.4% with using a mobile app (14/135) or video call (14/135) to communicate with a healthcare provider. Thematic analysis revealed the following concerns: data privacy and confidentiality, lack of affective communication (e.g., emotions and feelings), and connectivity issues. Each theme is discussed below.

Data Privacy and Confidentiality

Data privacy and confidentiality were key concerns among respondents. Respondents noted the sensitive nature of SRH information and indicated the need for data storage, use, and access transparency. The potential risk of data misuse and the fear of having their SRH history and sexuality made public were also concerns among the sample. These concerns include using a chatbot and mobile app to share SRH information and communicate with a healthcare provider. Several respondents noted that they did not have a private place to speak with a healthcare provider via video call about SRH services.

“Who will have access to my stuff? What will happen to it once I close the window? I don’t want this kind of stuff being hacked. I need it to be safe.”

“I like the option to chat on video, but I wouldn’t want the wrong person hear me talk about this stuff.”
“Don’t want my STD treatment showing up in ads on my phone now. Or it being linked to an account I didn’t give it access to.”

Lack of Affective Communication

Respondents were concerned that obtaining SRH information from a chatbot or mobile app would be impersonal. They were skeptical of the chatbot's ability to imitate a human's affective (e.g., emotions, and feelings) traits. They also expressed concerns about chatbots' generic communication style. The lack of empathy conveyed when communicating SRH information through a chatbot or mobile app was a concern among respondents. Similarly, communicating with a healthcare provider via text messaging was described as "impersonal" among respondents.

Illustrative quotes from the thematic analysis are below:

"Chatbot would be dry. It won't know how I'm feeling in the moment."

"With text you can't always read emotion. I need to know that they care."

"Just an impersonal feeling. It can give me the information, but can it communicate?"

"No empathy or understanding what I'm going through."

Technology Connectivity and Adoption

An emergent theme was technology connectivity issues and a lack of experience using a particular modality to obtain SRH information or communicate with a healthcare provider. Respondents anticipated problems with internet access, device malfunctions, or the digital health modality (e.g., mobile app, chatbot) used to obtain SRH information or services. Some of the concerns mentioned include an application crash, a chatbot not working, a video call dropping, or a text message not being delivered.

"I might lose wi-fi during a call."

"The text might not go through, or it might go to the wrong person."

"I'm not sure about how to use it. Technology can be great but you can't assume people will know what to do."

Discussion

Principal Results

The results of this study also provide new empirical contributions regarding attitudes towards STIs (e.g., HPV, HIV) and cervical cancer prevention methods among LBQ+ WOC. While there has been extensive research regarding PrEP awareness among sexual minority men in the U.S., the author found no such study exploring its awareness among LBQ+ WOC. More than half (66%) of respondents were aware of PrEP when taken as a daily pill to prevent HIV transmission from an HIV-positive partner to an HIV-negative partner. Extant literature reports

low PrEP awareness among cisgender Black heterosexual women in the U.S [45-47]. These results may indicate that LBQ+ WOC have greater awareness of PrEP than their heterosexual counterparts. About half of the respondents (52.6%) indicated they would be willing to take PrEP. Respondents who were not willing to take PrEP reported a belief that they were not at risk for acquiring HIV and a fear of the potential side effects of the medication as the primary reasons. These findings are consistent with research literature among cisgender women of color in the U.S. who report being less willing to take PrEP due to their low perception of HIV risk [47, 48]. 65.2% of the sample was comprised of cisgender Black women. Given that cisgender Black women accounted for nearly 50% of new HIV diagnoses among US women in 2022 while comprising less than 15% of the population of women, there is a need to increase the accuracy of HIV risk awareness and awareness of PrEP as an HIV prevention method among LBQ+ WOC [49].

There was high awareness about HPV (76.3%) and screening methods for HPV and cervical cancer, including the HPV test (67.4%) and the pap test (85.2%) among respondents. However, there was low awareness of the HPV vaccine (41.5%) and low knowledge about cervical cancer prevention and HPV. Extant literature reports high awareness of the HPV vaccine among LBQ+ women and high awareness of HPV among Black and Latina women in the US. [50-52] The results indicate there is a need to improve knowledge and awareness about cervical cancer prevention and HPV among LBQ+ WOC. The findings from this study indicate that LBQ+ WOC may not perceive themselves to be at risk for STIs such as HPV and HIV. Future work should focus on the development of resources, tools, and interventions aimed at improving HPV and cervical cancer awareness and knowledge among LBQ+ WOC.

All respondents owned a mobile phone that could send SMS text messages, and most of their phones had video call capability (89.6%). While there is scarce literature regarding mobile technology ownership among LBQ+ WOC, this finding is consistent with explorations among similar populations (e.g., women of color and LBQ+ women)[40, 53]. Most studies exploring mobile app usage among LBQ+ women have focused on their use of dating applications for partner-seeking[54, 55]. This study found that most respondents had experience using a menstrual or fertility tracking app (71.1%), and more than half had used a mHealth patient portal app (58.5%). This provides a key finding about the use of mHealth among LBQ+ WOC for their sexual and reproductive healthcare. It also contributes to the growing body of research literature that explores the sexual and reproductive healthcare experiences of LBQ+ WOC [21, 56-58]. Among the sample, 65% indicated they would be comfortable using a mobile app to communicate with a healthcare provider to receive support utilizing SRH services. Most of the sample (89.6%) agreed that having a mobile app tailored to their information needs would increase their comfort utilizing SRH services. These findings indicate that mHealth is acceptable for delivering SRH health information and services among LBQ+ WOC. Future mHealth modalities should be leveraged to improve HPV and cervical cancer awareness and knowledge among LBQ+ WOC in the U.S.

Despite only half of the respondents (50.4%) reporting past use of a chatbot for any purpose, most respondents indicated that they would be comfortable using a chatbot to self-assess the risk for STIs (88.9%) and to self-assess the risk for cervical cancer (86.7%). Moreover, the results demonstrated that 69.6% of respondents agreed that a chatbot tailored to the SRH information needs of LBQ+ WOC would increase their comfort utilizing sexual and reproductive healthcare. These findings indicate that leveraging chatbots can help address the barriers to SRH access that LBQ+ WOC face – such as discrimination in health care settings and patient-

provider communication - by providing nonjudgement, non-stigmatizing information that centers their information needs and cultural norms in a safe environment [24].

Some of the sample reported concerns about data privacy and confidentiality, lack of affective communication (when using a chatbot or communicating with a healthcare provider via text messaging), technology connectivity, and adoption. All these concerns may pose challenges to the adoption and sustained use of digital health modalities to support SRH uptake and engagement among LBQ+ WOC, especially impersonal or detached communication when using a chatbot to obtain SRH health information or texting a healthcare provider, lack of experience using a particular modality, or issues connecting to the internet [59]. Data privacy and confidentiality concerns are especially pertinent given the high use of menstrual cycle and fertility-tracking apps among respondents in the sample. A recent assessment of the privacy policies of popular reproductive health apps found that US-based apps received low privacy and security scores due to their use of IP address tracking and sharing of data with third parties for advertising [60]. To promote SRH among LBQ+ WOC, steps must be taken to address the concerns about using digital health modalities, such as (1) providing easy-to-understand communication and transparency about user data collection, storage, and use, (2) assessing the content, features, and key design considerations for a mobile app or chatbot tailored to LBQ+ WOC, (3) tutorials on how to use the modality, (4) structural interventions to address broadband internet access, and (5) screening and intake to identify preferred modalities for facilitating access and uptake of SRH information and services [40].

Strengths and Limitations

The study's main strengths were the new empirical insights about LBQ+ WOC in the US, a population significantly underrepresented in research literature. To the author's knowledge, this is the first study offering empirical insights about the acceptability and concerns of using digital health, including telemedicine (e.g., video calls on a mobile phone), mHealth (a mobile app, text messaging), and artificial intelligence-enabled chatbots to promote sexual and reproductive healthcare uptake and access to SRH information among LBQ+ WOC in the U.S. Research suggest that may LBQ+ WOC experience greater incidence for cervical, breast and ovarian cancer in the U.S. due to the underutilization of preventive SRH services such as HPV vaccination and screening measures. The findings from this study may be used in developing and implementing digital health interventions to reduce these disparities [37-39]. The results of this study are not without limitations, including the sample size and the recruitment methods. Given the size of the sample, the author was not able to accurately determine reliable p-values. Thus, only descriptive statistics of the sample are reported [61]. Convenience and snowball sampling were used to recruit study participants, limiting the generalizability of the results.

Conclusions and Future Directions

This study was conducted before the US Supreme Court overturned Roe v. Wade in the Dobbs v Jackson case on June 24, 2022. This landmark decision, coupled with executive orders targeting lesbian, gay, bisexual, transgender, and queer communities (LGBTQ), people of color, and women, the mass deletion of government consumer health information websites and data sets,

and sweeping cuts to federal agencies that provide millions of Americans with access to technology, the internet, health services, and information, will undoubtedly have a detrimental impact on the SRH outcomes of LBQ+ WOC in the US [62-66]. The findings showed that LBQ+ WOC in the sample were comfortable using video calls and a mobile app to communicate with a healthcare provider to receive support utilizing SRH services. Additionally, participants were asked if they had concerns about using digital health modalities to receive SRH information and communicate with a healthcare provider to receive support utilizing SRH. Given the recent federal policy changes, I hypothesize there will be less comfort in using digital health modalities such as chatbots for SRH information and services due to concerns related to privacy and confidentiality. There will be more significant concerns about data misuse and the potential for legal prosecution depending on the types of SRH services accessed [67]. Owing to the mass deletion of critical government consumer health information websites, particularly those featuring the already limited information available for LBQ+ WOC, I hypothesize that it will become more difficult to find accurate and trustworthy sources of information online. Because HPV and cervical cancer awareness and knowledge were low among LBQ+ WOC in the sample, efforts to improve information access, awareness, knowledge, and combat misinformation will become even more critical. Efforts to address these new challenges to adopting digital health modalities to promote SRH uptake and engagement among LBQ+ WOC in the U.S. must center the needs, preferences, and cultural norms of LBQ+ WOC [68, 69].

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Conflicts of Interest

None declared.

Abbreviations

AI: artificial intelligence
HIV: human immunodeficiency virus
HPV: human papillomavirus
LBQ+: lesbian, bisexual and queer
LGBTQ: lesbian, gay, bisexual, transgender and queer
mHealth: mobile health
SRH: sexual and reproductive health
STI: sexually transmitted infection
WOC: women of color

References

1. Agénor, M., et al., *Sexual Orientation and Sexual and Reproductive Health among African*

American Sexual Minority Women in the U.S. South. Women's Health Issues, 2016. **26**(6): p. 612-621.
2. Agénor, M., et al., *At the intersection of sexual orientation, race/ethnicity, and cervical cancer screening: Assessing Pap test use disparities by sex of sexual partners among black, Latina, and white U.S. women.* Social Science & Medicine, 2014. **116**: p. 110-118.
3. Agénor, M., et al., *Sexual Orientation Identity, Race/Ethnicity, and Lifetime HIV Testing in a National Probability Sample of U.S. Women and Men: An Intersectional Approach.* LGBT Health, 2019. **6**(6): p. 306-318.
4. Agénor, M., et al., *Human Papillomavirus Vaccination Initiation Among Sexual Orientation Identity and Racial/Ethnic Subgroups of Black and White U.S. Women and Girls: An Intersectional Analysis.* Journal of Women's Health, 2018. **27**(11): p. 1349-1358.
5. Baumann, K., et al., *Sexual Orientation and Cervical Cancer Screening Among Cisgender Women.* JAMA Network Open, 2024. **7**(5): p. e248886-e248886.
6. Scott, S.B., et al., *Sexual Minority Women and Discriminatory Health Care Experiences: An Intersectional Evaluation Across Race and Ethnicity.* Women's Health Issues, 2023. **33**(2): p. 160-166.
7. Noh, M., et al., *Association Between Health Care Discrimination and Medical Mistrust Among Black Assigned Female at Birth Adults with Minoritized Sexual and Gender Identities in the United States.* LGBT Health, 2025.
8. Singh, S., et al., *Weight-Based Health Care Discrimination and Cervical Cancer Screening Among Black Sexual and Gender Minoritized Assigned Female at Birth Adults in the United States.* Health Equity, 2025. **9**(1): p. 22-30.
9. Agénor, M., et al., *Differences in Health Insurance and Usual Source of Care Among Racial/Ethnic and Sexual Orientation Subgroups of U.S. Women and Men.* Population Research and Policy Review, 2023. **42**(3): p. 33.
10. Poteat, T.C., et al., *Delays in breast cancer care by race and sexual orientation: Results from a national survey with diverse women in the United States.* Cancer, 2021. **127**(19): p. 3514-3522.
11. Gopalani, S.V., A.E. Janitz, and J.E. Campbell, *Cervical Cancer Incidence and Mortality among Non-Hispanic African American and White Women, United States, 1999–2015.* Journal of the National Medical Association, 2020. **112**(6): p. 632-638.
12. Cohen, C.M., et al., *Racial and Ethnic Disparities in Cervical Cancer Incidence, Survival, and Mortality by Histologic Subtype.* Journal of Clinical Oncology, 2022. **41**(5): p. 1059-1068.
13. Society, A.C. *Key Statistics for Cervical Cancer*
. 2025 [cited 2025 March 7]; Available from: https://www.cancer.org/cancer/types/cervical-cancer/about/key-statistics.html.
14. Bond, K.T., et al., *Using an Intersectional Framework to Understand the Challenges of Adopting Pre-exposure Prophylaxis (PrEP) Among Young Adult Black Women.* Sexuality Research and Social Policy, 2022. **19**(1): p. 180-193.
15. Ramos, S.R., et al., *A State of the Science on HIV Prevention Over 40 Years Among Black and Hispanic/Latinx Communities.* Journal of the Association of Nurses in AIDS Care, 2021. **32**(3).
16. Cerezo, A., S. Ching, and A. Ramirez, *Healthcare Access and Health-Related Cultural Norms in a Community Sample of Black and Latinx Sexual Minority Gender Expansive Women.* Journal of Homosexuality, 2023. **70**(5): p. 782-805.
17. Agénor, M., et al., *Exploring the Cervical Cancer Screening Experiences of Black Lesbian, Bisexual, and Queer Women: The Role of Patient-Provider Communication.* Women & Health, 2015. **55**(6): p. 717-736.
18. Baker, A.M., et al., *Sexual Health Information Sources, Needs, and Preferences of Young*

Adult Sexual Minority Cisgender Women and Non-binary Individuals Assigned Female at Birth. Sexuality Research and Social Policy, 2021. **18**(3): p. 775-787.
19. Rahman, M., et al., *Exploring Factors Affecting Patient–Provider Interactions and Healthcare Engagement Among a Diverse Sample of Women Who Have Sex with Women in New York City.* Archives of Sexual Behavior, 2023. **52**(2): p. 833-849.
20. Greene, N., et al., *"This is some mess right here": Exploring interactions between Black sexual minority women and health care providers for breast cancer screening and care.* Cancer, 2021. **127**(1): p. 74-81.
21. Adams, R.B. and M.E. Ellithorpe, *Black Queer Being/Knowing/Feeling: Storytelling of Barriers to Reproductive Healthcare.* Qualitative Health Research, 2024. **34**(11): p. 1039-1052.
22. Bull, S., et al., *Feasibility of using an artificially intelligent chatbot to increase access to information and sexual and reproductive health services.* DIGITAL HEALTH, 2024. **10**: p. 20552076241308994.
23. Mills, R., et al., *Chatbots to Improve Sexual and Reproductive Health: Realist Synthesis.* J Med Internet Res, 2023. **25**: p. e46761.
24. Bragazzi, N.L., et al., *The Impact of Generative Conversational Artificial Intelligence on the Lesbian, Gay, Bisexual, Transgender, and Queer Community: Scoping Review.* J Med Internet Res, 2023. **25**: p. e52091.
25. Flanders, C.E., et al., *Young Sexual Minority Women's Evaluation Processes of Online and Digital Sexual Health Information.* Health Communication, 2021. **36**(10): p. 1286-1294.
26. Gordon, J.D., et al., *Social Support–Seeking Strategies on Social Media at the Intersection of Lesbian, Gay, Bisexual, Transgender, and Queer Identity, Race, and Ethnicity: Insights for Intervention From a Qualitative Study.* JMIR Form Res, 2023. **7**: p. e51702.
27. Smith, M.G., *Queer enough to swipe right? Dating app experiences of sexual minority women: A cross-disciplinary review.* Computers in Human Behavior Reports, 2022. **8**: p. 100238.
28. Castaño, P.M., et al., *Effect of Daily Text Messages on Oral Contraceptive Continuation: A Randomized Controlled Trial.* Obstetrics & Gynecology, 2012. **119**(1).
29. Chernick, L.S., et al., *Texting to Increase Contraceptive Initiation Among Adolescents in the Emergency Department.* Journal of Adolescent Health, 2017. **61**(6): p. 786-790.
30. Manlove, J., et al., *Short-Term Impacts of Pulse: An App-Based Teen Pregnancy Prevention Program for Black and Latinx Women.* Journal of Adolescent Health, 2020. **66**(2): p. 224-232.
31. Jones, R., D.R. Hoover, and L.J. Lacroix, *A randomized controlled trial of soap opera videos streamed to smartphones to reduce risk of sexually transmitted human immunodeficiency virus (HIV) in young urban African American women.* Nursing Outlook, 2013. **61**(4): p. 205-215.e3.
32. Chandler, R., et al., *Developing Culturally Tailored mHealth Tools to Address Sexual and Reproductive Health Outcomes Among Black and Latina Women: A Systematic Review.* Health Promotion Practice, 2021. **23**(4): p. 619-630.
33. Chandler, R., et al., *Promoting Optimal Sexual and Reproductive Health with Mobile Health Tools for Black Women: Combining Technology, Culture and Context.* Perspect Sex Reprod Health, 2020. **52**(4): p. 205-209.
34. Koenig, L.R., J. Ko, and U.D. Upadhyay, *Virtual Clinic Telehealth Abortion Services in the United States One Year After Dobbs: Landscape Review.* J Med Internet Res, 2024. **26**: p. e50749.
35. Thorpe, S., A.E. Tanner, and C.N. Hargons, *Sexual identity factors and minority stressors associated with healthcare stereotype threat and access to care among Black sexual*

minority women. Journal of Gay & Lesbian Social Services, 2023. **35**(2): p. 183-203.
36. Milner, G.E. and R.J. McNally. *Nonadherence to breast and cervical cancer screening among sexual minority women: Do stigma-related psychological barriers play a role?* American Psychological Association [doi:10.1037/hea0000887]. 2020.
37. Society, A.C. *Cancer Facts for Lesbian and Bisexual Women*. 2025 [cited 2025 March 8]; Available from: https://www.cancer.org/cancer/risk-prevention/understanding-cancer-risk/cancer-facts/cancer-facts-for-lesbian-and-bisexual-women.html.
38. McElroy, J.A., J.J. Wintemberg, and A. Williams, *Comparison of Lesbian and Bisexual Women to Heterosexual Women's Screening Prevalence for Breast, Cervical, and Colorectal Cancer in Missouri.* LGBT Health, 2015. **2**(2): p. 188-192.
39. Quinn, G.P., et al., *Cancer and lesbian, gay, bisexual, transgender/transsexual, and queer/questioning (LGBTQ) populations.* CA: A Cancer Journal for Clinicians, 2015. **65**(5): p. 384-400.
40. McCall, T., M. Foster, and T.A. Schwartz, *Attitudes Toward Seeking Mental Health Services and Mobile Technology to Support the Management of Depression Among Black American Women: Cross-Sectional Survey Study.* J Med Internet Res, 2023. **25**: p. e45766.
41. Palanica, A., et al., *Physicians' Perceptions of Chatbots in Health Care: Cross-Sectional Web-Based Survey.* J Med Internet Res, 2019. **21**(4): p. e12887.
42. Nadarzynski, T., et al., *Acceptability of artificial intelligence (AI)-enabled chatbots, video consultations and live webchats as online platforms for sexual health advice.* BMJ Sexual & Reproductive Health, 2020. **46**(3): p. 210.
43. Lyson, H.C., et al., *Social Media as a Tool to Promote Health Awareness: Results from an Online Cervical Cancer Prevention Study.* Journal of Cancer Education, 2019. **34**(4): p. 819-822.
44. Braun, V. and V. Clarke, *Using thematic analysis in psychology.* Qualitative Research in Psychology, 2006. **3**(2): p. 77-101.
45. Johnson, A.K., et al., *Awareness and Intent to Use Pre-exposure Prophylaxis (PrEP) Among African American Women in a Family Planning Clinic.* Journal of Racial and Ethnic Health Disparities, 2020. **7**(3): p. 550-554.
46. Willie, T.C., et al., *Where's the "Everyday Black Woman"? An intersectional qualitative analysis of Black Women's decision-making regarding HIV pre-exposure prophylaxis (PrEP) in Mississippi.* BMC Public Health, 2022. **22**(1): p. 1604.
47. Knight, D., et al., *Experiences of Black Women in the United States Along the PrEP Care Continuum: A Scoping Review.* AIDS and Behavior, 2023. **27**(7): p. 2298-2316.
48. Nydegger, L.A., J. Dickson-Gomez, and T. Ko Ko, *A Longitudinal, Qualitative Exploration of Perceived HIV Risk, Healthcare Experiences, and Social Support as Facilitators and Barriers to PrEP Adoption Among Black Women.* AIDS and Behavior, 2021. **25**(2): p. 582-591.
49. Prevention, C.f.D.C.a. *Fast Facts: HIV in the US by Race and Ethnicity* 2024 May 21 [cited 2025 March 24]; Available from: https://www.cdc.gov/hiv/data-research/facts-stats/race-ethnicity.html.
50. Agénor, M., et al., *Sexual Orientation Identity Disparities in Awareness and Initiation of the Human Papillomavirus Vaccine Among U.S. Women and Girls.* Annals of Internal Medicine, 2015. **163**(2): p. 99-106.
51. Ojeaga, A., et al., *Racial Disparities in HPV-related Knowledge, Attitudes, and Beliefs Among African American and White Women in the USA.* Journal of Cancer Education, 2019. **34**(1): p. 66-72.
52. Kohler, R.E., et al., *HPV Vaccination Information Access, Needs, and Preferences Among Black and Hispanic Mothers.* Journal of Health Communication, 2024. **29**(9): p. 566-579.

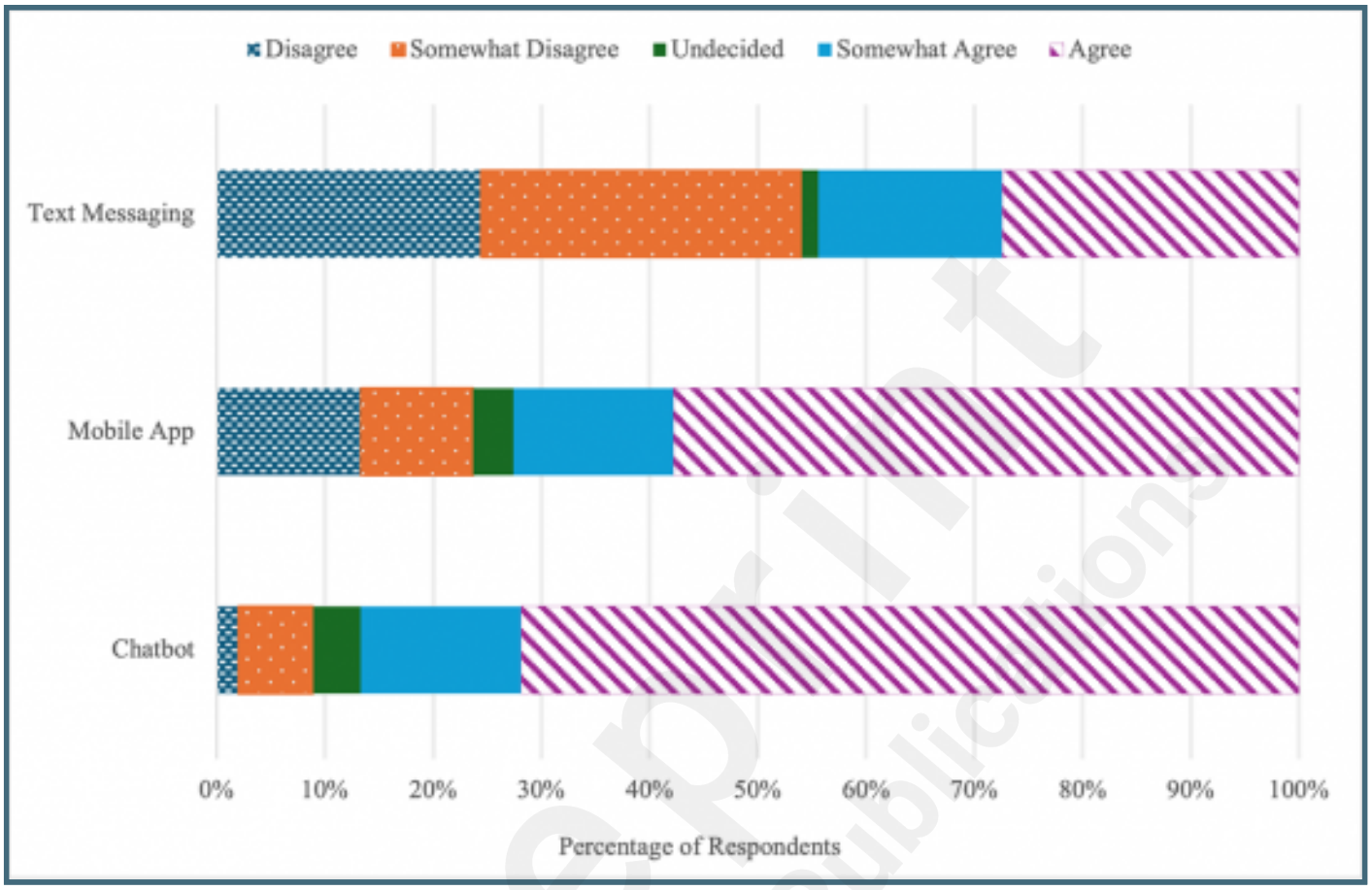
53. Vincent, W., *Willingness to Use Digital Health Screening and Tracking Tools for Public Health in Sexual Minority Populations in a National Probability Sample: Quantitative Intersectional Analysis.* J Med Internet Res, 2024. **26**: p. e47448.
54. Duguay, S., *"There's no one new around you": Queer Women's Experiences of Scarcity in Geospatial Partner-Seeking on Tinder*, in *The Geographies of Digital Sexuality*, C.J. Nash and A. Gorman-Murray, Editors. 2019, Springer Nature Singapore: Singapore. p. 93-114.
55. Tang, D.T.-S., *All I get is an emoji: dating on lesbian mobile phone app Butterfly.* Media, Culture & Society, 2017. **39**(6): p. 816-832.
56. Adams, R.B., *Reimagining the Future of Reproduction from a Black Queer Lens: An Art-Based Approach to the Study of Reproductive Health Care.* Health Communication, 2024: p. 1-11.
57. Santos, C.A., et al., *Sexual Health in a Social and Cultural Context: a Qualitative Study of Young Latina Lesbian, Bisexual, and Queer Women.* Journal of Racial and Ethnic Health Disparities, 2017. **4**(6): p. 1206-1213.
58. Sutton, M.Y., et al., *Racial and Ethnic Disparities in Reproductive Health Services and Outcomes, 2020.* Obstetrics & Gynecology, 2021. **137**(2).
59. Benda, N.C., et al., *Broadband Internet Access Is a Social Determinant of Health!* American Journal of Public Health, 2020. **110**(8): p. 1123-1125.
60. Zadushlivy, N., R. Biviji, and K.S. Williams, *Exploration of Reproductive Health Apps' Data Privacy Policies and the Risks Posed to Users: Qualitative Content Analysis.* J Med Internet Res, 2025. **27**: p. e51517.
61. Sullivan, G.M. and R. Feinn, *Using Effect Size-or Why the P Value Is Not Enough.* J Grad Med Educ, 2012. **4**(3): p. 279-82.
62. Feldscher, K. *As health data disappear from government websites, experts push back*. 2025 [cited 2025 March 25]; Available from: https://hsph.harvard.edu/news/as-health-data-disappear-from-government-websites-experts-push-back/.
63. Warbelow, S. *Understanding Executive Orders and What They Mean for the LGBTQ+ Community*. 2025 [cited 2025 March 25]; Available from: https://www.hrc.org/news/understanding-executive-orders-and-what-they-mean-for-the-lgbtq-community.
64. Sherman, C.a.G., Jessica. *CDC webpages go dark as Trump targets public health information*. 2025 2025; Available from: https://www.theguardian.com/us-news/2025/feb/04/dcd-pages-trump-public-health.
65. Hall, C., *Michigan libraries, museums brace for loss of federal funds after Trump executive order*
, in *Detroit Free Press*. 2025.
66. Johnson, C. *Trump administration cancels at least 68 grants focused on LGBTQ health questions*. 2025 [cited 2025 March 25]; Available from: https://apnews.com/article/lgbtq-research-grants-terminated-trump-5b2810312de1420ca3df875314b0a1e9.
67. Bernstein, S. *The role of digital privacy in ensuring access to abortion and reproductive health care in Post-Dobbs America*. 2024 [cited 2025 March 25]; Available from: https://www.americanbar.org/groups/crsj/publications/human_rights_magazine_home/technology-and-the-law/the-role-of-digital-privacy-in-ensuring-access-to-reproductive-health-care/.
68. Musgrave, T., A. Cummings, and S. Schoenebeck, *Experiences of Harm, Healing, and Joy among Black Women and Femmes on Social Media*, in *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. 2022, Association for Computing Machinery: New Orleans, LA, USA. p. Article 240.

69. Iacobelli, F., et al., *Designing an mHealth application to bridge health disparities in Latina breast cancer survivors: a community-supported design approach.* Design for health (Abingdon, England), 2018. **2**(1): p. 58-76.

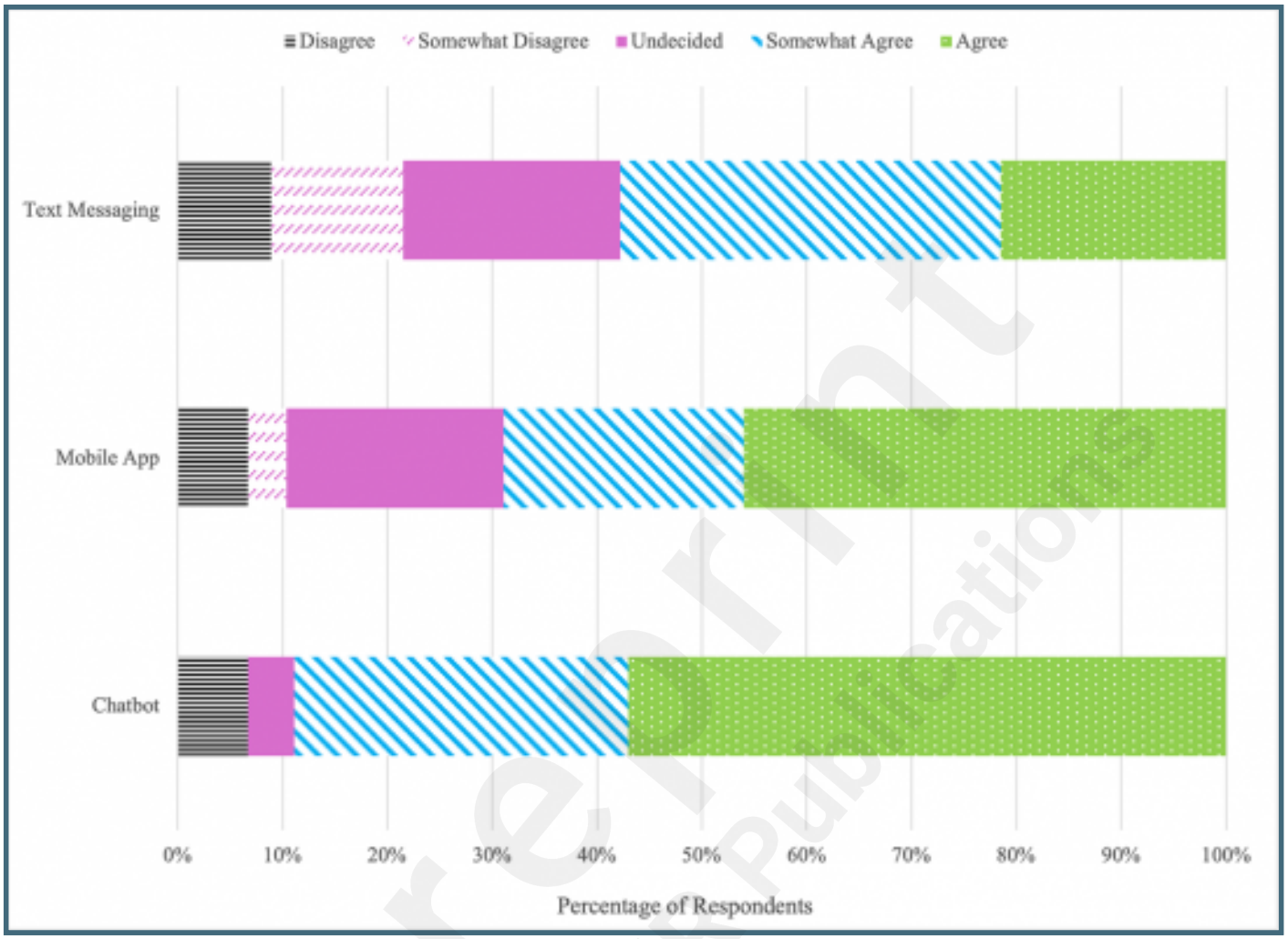
Supplementary Files

Figures

Sample percentages, by modality, for response to the statement, "I would feel comfortable using a [modality] to assess my risk for cervical cancer.".



Sample percentages, by modality, for response to the statement, "I would feel comfortable using a [modality] to assess the risk for acquiring STIs (e.g., HPV, gonorrhea, chlamydia).".



Multimedia Appendixes

Survey.
URL: http://asset.jmir.pub/assets/dac4a469f0ef66bdf3a06f3eff15c941.docx