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Impact of Result Displays in an Anogenital Symptom Checker App on Health-seeking Behaviours: A Cross-sectional, Vignette-based Study

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Introduction. The Melbourne Sexual Health Centre developed an artificial intelligence–powered app called AiSTI to help the public identify potential sexually transmitted infection (STI)-related anogenital lesions. This research sought to explore how individuals respond to the application's result displays and recommendations and how this might affect their health-seeking behavior.

Methods. From April to July 2024, participants completed an anonymous online survey, responding to hypothetical scenarios related to STI and non-STI conditions before and after viewing the randomized AiSTI application's result displays. They were asked how soon they would seek healthcare and how concerned they would be about each scenario. We reported descriptive statistics and used logistic regression analyses to explore associations between result displays and health-seeking behaviors.

Results. Our study included 512 participants (median age, 32 years; interquartile range: 25–40.5). Approximately 65% (n = 330) were assigned male at birth. For the STI scenario, intention to seek care within 24 hours increased from 75% to >90% after viewing probable STI diagnosis displays ($P < .001$). For the non-STI scenario, 46% initially intended to seek urgent care, but this was significantly reduced to below 25% after viewing non-STI result displays ($P < .001$). All result displays (concise text, full text, and meter) significantly increased the likelihood of seeking care within 24 hours for the STI scenario (adjusted odds ratios: 3.6–4.0, $P < .001$) and within a week for the non-STI scenario (adjusted odds ratios: 2.4–2.5, $P < .001$).

Conclusions. Our study found that digital health interventions with effective result displays could encourage urgent care-seeking for STI cases.

Keywords. digital health intervention; health-seeking behavior; sexually transmitted infections; artificial intelligence; risk communication.

The global burden of sexually transmitted infections (STIs) continues to rise, with more than a million new cases every day [1–3]. Despite improved public awareness, delayed presentation of STI cases remains a challenge for effective STI prevention and control [4–7]. Factors contributing to this delay include limited accessibility of healthcare services, difficulties in securing timely appointments, and inadequate knowledge about STI symptoms [5, 8, 9]. Sexual health services face challenges because of the increasing demand and the struggle to provide accessible care amidst the lack of prioritized funding for sexual health [10]. To address these issues, it is crucial to promote timely healthcare-seeking for STI symptoms [11] while implementing strategies to prioritize the clinical review and treatment of STIs and manage other sexual health conditions within a reasonable timeframe.

The World Health Organization recommends adopting innovative approaches to improve STI prevention and control [3]. Mobile health technologies have emerged as valuable tools in STI and HIV prevention, with a wide range of applications, including SMS-based medication adherence reminders, appointment scheduling systems, mobile applications for sexual health education, risk assessment tools, and platforms facilitating linkage to care services [12, 13]. The Melbourne Sexual Health Centre (MSHC) has developed a suite of digital health tools, including an HIV/STI risk assessment tool (MySTIRisk) [14, 15] for asymptomatic individuals and a symptom checker (iSpySTI) [16]. Also in development is an artificial intelligence (AI)-based lesion detection application

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(AiSTI) for common STIs and non-STI genital conditions [17–20]. The AiSTI application aims to eventually provide an accessible online symptom checker for individuals with anogenital lesions. Currently, users in the presence of a clinician can upload a photo of their lesion(s), and the AI algorithm will predict how likely it is to be an STI and provide possible diagnoses and recommendations [21].

Well-designed displays in digital health tools for communicating results can positively influence healthcare seeking and reduce unnecessary distress [22]. Previous studies have investigated how various presentations of risk information can encourage health-seeking behaviors, such as increasing colonoscopy screening uptake [23–26]. However, only 1 Australian study has specifically investigated the impact of different display formats of an AI-based risk assessment tool on users' intentions to get tested for HIV/STIs [27]. This study demonstrated that a risk meter display was the most effective in motivating users to seek testing. Currently, there are no studies that examine users' intentions to seek care using the AiSTI symptom checker for those presenting with anogenital skin lesions. Given this knowledge gap, our study has 2 key objectives: (1) to understand whether potential users would seek healthcare after seeing result displays and suggestions from the AiSTI application and (2) to identify the most effective and preferred display format for implementation in our actual AiSTI application.

METHODS

We conducted this cross-sectional vignette-based study at MSHC, Australia's largest public sexual health center, with an average of 60 000 consultations annually. In reporting the study methods and results, we adhered to the Strengthening the Reporting of Observational Studies in Epidemiology [28] guidelines.

Study Population

From April to July 2024, we recruited participants aged 18 years or older who were sexually active within the past 12 months. The participants were recruited from MSHC (details of this clinic can be found in the annual report https://www.mshc.org.au/about/corporate-publications), Thorne Harbour Health (THH, thorneharbour.org) Centre Clinic, Monash University, and Facebook to ensure a diverse sample. At MSHC, we sent direct SMS invitations containing the survey link directly to clients who had agreed to receive SMS from MSHC. At the THH clinic, Victoria's largest HIV/AIDS and LGBTQ+ health service, we displayed posters with QR codes linking to the survey. For university students, we shared the survey link via student email groups. We also posted these survey posters with QR codes on Facebook.

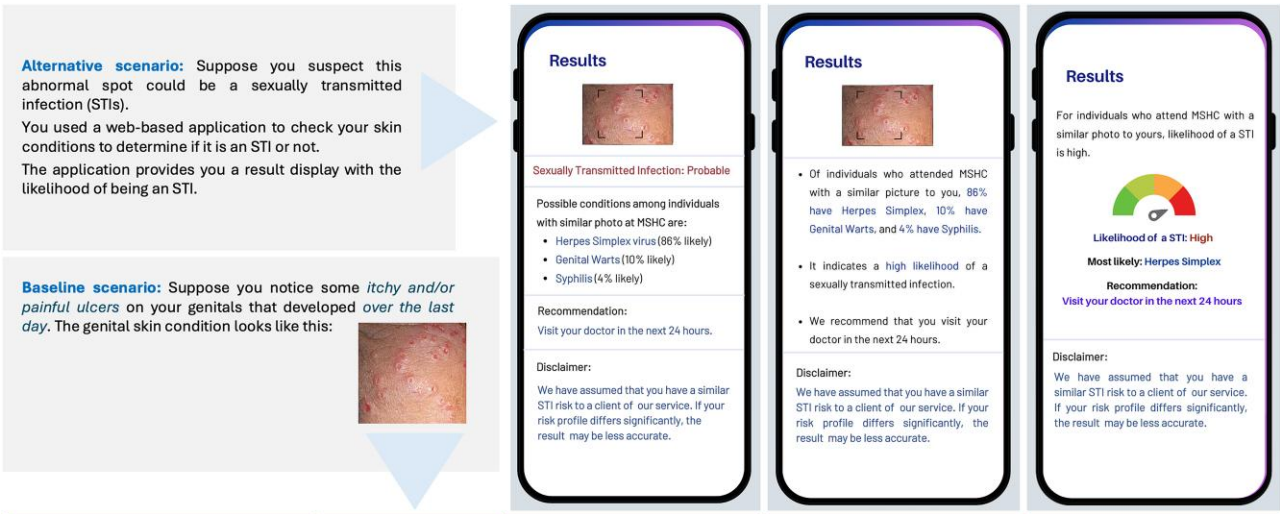
Result Display Format Development

First, we designed 2 baseline scenarios based on the expert opinions of sexual health physicians and researchers at MSHC. The first baseline scenario (Figure 1) represented an STI-related genital condition. For this, we selected an image of genital herpes accompanied by the description: "itchy and/or painful ulcers on genitals that developed over the last day." The second baseline scenario (Figure 2) represented non–STI-related genital conditions. We selected an image of genital dermatosis with the accompanying description: "red itch area on genitals that developed over the last few weeks." We chose genital lesion images that were not specific to any particular sex.

We then designed 3 distinct result display formats for scenarios where participants used the AiSTI application to check a photograph of their genital condition for STIs, and the application provided a result display with the likelihood of being an STI. The display formats were: (1) a concise text with bullet points for overall STI and possible conditions with likelihood percentages; (2) a full text, explaining the results using complete sentence structures; and (3) a color-code meter that used a green-orange-red scale to indicate STI likelihood (green indicating low likelihood and red indicating high likelihood of an STI). We included consistent recommendations for each display where we advised them to visit a doctor within 24 hours for STI or visit a doctor in the next week for non-STI conditions [29].

Procedures

We developed an anonymous online survey consisting of 3 parts (see Supplementary material) using the Qualtrics platform (Qualtrics, Provo, UT). The survey began with a participant information sheet explaining the study, followed by a consent form to proceed. In the first part of the survey, participants were presented with baseline scenario 1, which represented an STI-related condition through an image and accompanying description. Participants were asked to imagine that they were experiencing this condition and then prompted to indicate how soon they would plan to see a doctor and to rate their level of concern about the presented condition. We measured participants' level of concern using a 5-point Likert scale ranging from "very concerned" to "not at all concerned." In the next step, participants were asked to imagine they had used the AiSTI application to check their symptoms, and they were shown 1 randomly selected result display out of 3 formats. After viewing this display, they were again asked the same questions regarding how soon they would plan to see a doctor and their level of concern. This process was repeated for all 3 display formats for STI. In the second part of the survey, participants were presented with the baseline scenario 2, which represented a non-STI condition. We then repeated the full process of survey part 1 for non-STI conditions. In the third part of the survey, we presented all 3 display formats together and asked participants which format was the easiest to understand and which they would prefer to see in the actual application, regardless of the results. At the end of the survey, we collected



How soon do you plan to see doctor?	Baseline scenario	Display 1: Concise text	Display 2: Full text	Display 3: Meter
In next 24 hours	385 (75.2%)	468 (91.4%)	467 (91.2%)	466 (91.0%)
In a week	88 (17.2%)	42 (8.2%)	40 (7.8%)	39 (7.6%)
In over a week	4 (0.8%)	0 (0.0%)	2 (0.4%)	3 (0.6%)
Wait and see if it persists or changes	35 (6.8%)	2 (0.4%)	3 (0.6%)	4 (0.8%)
Concern level about your condition?	**Baseline scenario**	**Display 1: Concise text**	**Display 2: Full text**	**Display 3: Meter**
Low	9 (1.8%)	8 (1.6%)	9 (1.8%)	10 (2.0%)
Moderate	120 (23.4%)	107 (20.9%)	110 (21.5%)	93 (18.2%)
High	383 (74.8%)	397 (77.5%)	393 (76.8%)	409 (79.9%)

Figure 1. Participants' responses regarding when to see a doctor and concern level for sexually transmitted infection (STI)-related genital condition.

sociodemographic information, previous HIV/STI diagnoses, and experience with any anogenital skin conditions.

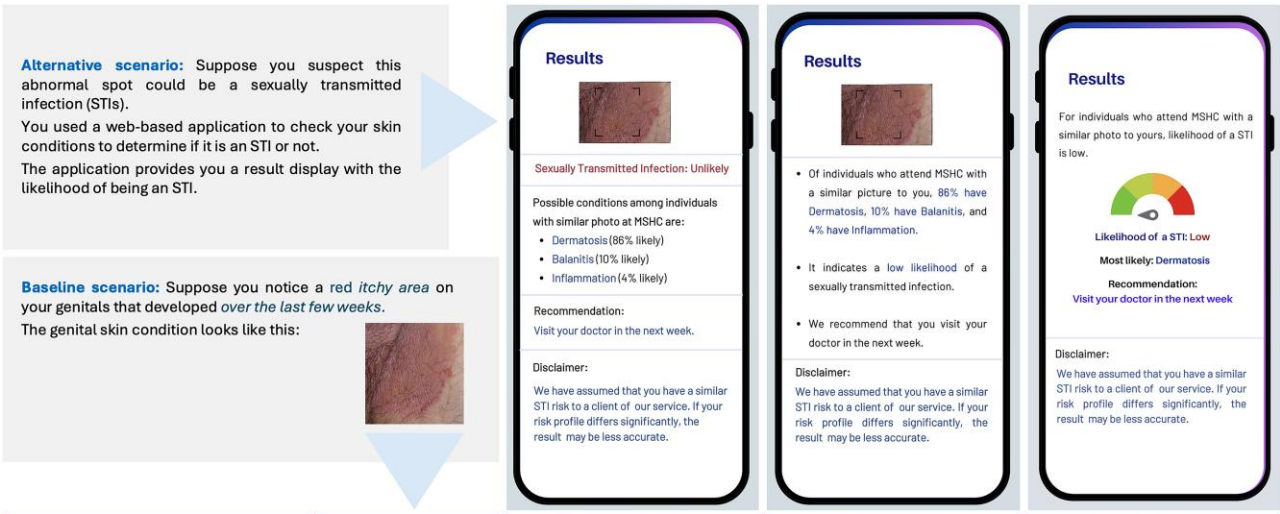
Statistical Analysis

We conducted all data analysis using Stata 18 software. The observations with a ReCAPTCHA score lower than 0.4 were removed to ensure data quality. We used descriptive statistics to summarize data for sociodemographic characteristics of the participants and their responses on the easiest and most preferred display formats. We performed univariable and multivariable logistic regression analyses to explore the association between display formats and intended outcomes. The intended outcomes were transformed into binary variables: "see a doctor in next 24 hours" for STI conditions and "see a doctor within a week" for non-STI conditions. We calculated the crude odds ratios for each predictor variable for univariable logistic regression. We included all available predictor variables from our dataset in multivariable logistic regression to calculate the adjusted odds ratios (AORs). We used a backward stepwise elimination approach to identify the strongest predictors by removing variables that did not meet the predetermined significance threshold ($P > .05$). We applied the clustering method in the multivariable logistic regression to account for the repeated measure design of our study, where multiple responses were collected from each participant.

RESULTS

Study Populations

During the survey period, 573 people started the survey and 549 completed it. The median time to complete the survey was 5.0 minutes (interquartile range: 3.8–7.1 minutes). After screening by ReCAPTCHA score, a final sample of 512 participants remained. The majority of participants (80.0%, n = 415) were recruited from MSHC and the remaining participants were recruited from THH (10.6%, n = 54), Facebook (5.1%, n = 26), and university sources (3.3%, n = 17) (Table 1). The median age of participants was 32.0 years (interquartile range: 25.0–40.5 years). Males, as assigned at birth, constituted the majority of participants (64.5%, n = 330). In terms of gender identity, participants identified as cisgender men (63.5%, n = 325), cisgender women (33.4%, n = 171), and nonbinary or gender-fluid individuals (2.93%, n = 15). Regarding sexual orientation, 44.0% (n = 225) of participants identified as lesbian, gay or homosexual, 34.0% (n = 174) as straight or heterosexual, 15.0% (n = 77) as bisexual, and 4.3% (n = 22) as queer. Nearly two-thirds (n = 326) of participants reported having experienced a genital lesion at



How soon do you plan to see doctor?	Baseline scenario	Display 1: Concise text	Display 2: Full text	Display 3: Meter
In next 24 hours	237 (46.3%)	120 (23.4%)	125 (24.4%)	84 (16.4%)
In a week	184 (35.9%)	253 (49.4%)	248 (48.4%)	230 (44.9%)
In over a week	15 (2.9%)	50 (9.8%)	46 (9.0%)	69 (13.5%)
Wait and see if it persists or changes	76 (14.8%)	89 (17.4%)	93 (18.2%)	129 (25.2)
Concern level about your condition?	**Baseline scenario**	**Display 1: Concise text**	**Display 2: Full text**	**Display 3: Meter**
Low	54 (10.6%)	165 (32.2%)	162 (31.6%)	228 (44.5%)
Moderate	170 (33.3%)	136 (26.6%)	120 (23.4%)	100 (19.5%)
High	287 (56.2%)	211 (41.2%)	230 (44.9%)	184 (35.9%)

Figure 2. Participants' responses regarding when to see a doctor and concern level for Non-STI related genital condition.

least once in their lifetime. Most participants (90.4%, n = 463) reported they had ever tested for HIV/STI.

Changes in Intended Health-seeking Behavior After Viewing Result Displays

In the baseline scenario 1 (Figure 1), depicting an STI condition, 75.2% (n = 385) of participants intended to seek medical attention within the next 24 hours, whereas 6.8% (n = 35) preferred to wait and observe for changes. Participants' intended behavior changed significantly when presented with STI result displays from the hypothetical AiSTI application ($P < .001$). More than 90.0% reported intention to consult a doctor within the next 24 hours, whereas less than 1.0% still decided not to seek healthcare. There was no significant difference ($P > .05$) in the level of concern between the baseline scenario and the alternative scenarios with concise text and full text displays. However, there was a significant increase in the level of concern with the meter display ($P < .05$).

In baseline scenario 2 (Figure 2), depicting a non-STI condition, 35.0% (n = 184) of participants indicated an intention to seek medical attention in a week, aligning with our intended outcome. However, the greater proportion (46%, n = 237) would have opted for urgent care, intending to see a doctor within 24 hours. After presenting the non-STI result displays, participants' intended health-seeking behavior changed significantly ($P < .001$). About half of those initially opting for urgent care changed their decision to see a doctor within a week. There was a slight increase in the intended outcome of seeing a doctor in a week, however, there was also an increase in intention to seek a doctor after more than a week or wait and adopt a wait-and-see approach. There was a significant reduction ($P < .001$) in the level of concern after viewing the displays, compared to the baseline scenario.

Participant Understanding and Preference for Result Displays

Participants reported the color-coded meter (39.8%, n = 204), followed by the concise text displays (38.5%, n = 197), and full text (19.3%, n = 99) as the easiest displays to understand (Figure 3). Similarly, the concise text (40.8%, n = 209), followed by the meter displays (32.2%, n = 165), and full text (24.4%, n = 125) were reported as the most preferred displays to be used in the actual AiSTI application. Subgroup analysis by gender and sexual orientation also showed similar results, consistently ranking the full-text display as the least preferred option across all groups.

Association Between Result Display Formats and Intended Healthcare-seeking Behavior: Univariable and Multivariable Logistic Regression Analysis

Table 2 shows the crude and adjusted ORs for the intended outcomes (seeking medical attention within an appropriate timeframe) for STI and non-STI conditions.

Table 1. Summary of Participant Characteristics

	All (n = 512, 100%)	MSHC (n = 415, 81.1%)	Facebook (n = 26, 5.1%)	THH (n = 54, 10.6%)	University (n = 17, 3.3%)	*P* Value (χ^2)
Age (y, median, IQR)	32 (25–40.5)	30 (25–38)	43.5 (29–55)	39.5 (35–48)	27 (24–33)	
Sex assigned at birth						
Male	330 (64.5%)	252 (60.7%)	19 (73.1%)	53 (98.2%)	6 (35.3%)	<.001
Female	181 (35.4%)	162 (39.0%)	7 (26.9%)	1 (1.9%)	11 (64.7%)	
Prefer not to answer	1 (0.2%)	1 (0.24%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Gender						
Male	325 (63.48%)	246 (59.3%)	21 (80.8%)	52 (96.3%)	6 (35.29%)	<.001
Female	171 (33.40%)	157 (37.8%)	3 (11.5%)	0 (0.0%)	11 (64.7%)	
Non-binary/gender fluid	15 (2.93%)	11 (2.7%)	2 (7.7%)	2 (3.7%)	0 (0.0%)	
Different identity	1 (0.20%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Sexual orientation						
Lesbian/gay/homosexual	225 (44.0%)	164 (39.5%)	14 (53.9%)	47 (87.0%)	0 (0.0%)	<.001
Bisexual	77 (15.0%)	65 (15.7%)	5 (9.3%)	5 (9.3%)	2 (11.8%)	
Straight/heterosexual	174 (34.0%)	155 (37.4%)	5 (9.3%)	0 (0.0%)	14 (82.4%)	
Queer	22 (4.3%)	18 (4.3%)	2 (7.7%)	1 (1.9%)	1 (5.9%)	
Prefer not to answer	14 (2.7%)	13 (3.1%)	0 (0.0%)	1 (1.9%)	0 (0.0%)	
Education						
Secondary school	57 (11.1%)	51 (12.3%)	2 (7.7%)	4 (7.4%)	0 (0.0%)	<.001
Undergraduate degree	303 (59.2%)	259 (62.4%)	12 (46.2%)	28 (51.9%)	4 (23.5%)	
Postgraduate degree	152 (29.7%)	105 (25.3%)	12 (46.2%)	22 (40.7%)	13 (76.5%)	
Missing	…	…	…	…	…	
Employment						
Yes (full-time, part-time)	433 (84.6%)	355 (85.5%)	19 (73.1%)	45 (83.3%)	14 (82.4%)	>.05
No	71 (13.9%)	53 (12.8%)	7 (26.9%)	9 (16.7%)	2 (11.8%)	
Other	8 (1.6%)	7 (1.7%)	0 (0.0%)	0 (0.0%)	1 (5.9%)	
Genital lesion history						
More than once	173 (33.8%)	145 (34.9%)	10 (38.5%)	14 (25.9%)	4 (23.5%)	>.05
Once	153 (29.9%)	130 (31.3%)	4 (15.4%)	13 (24.1%)	6 (35.3%)	
Never	186 (36.3%)	140 (33.7%)	12 (46.2%)	27 (50.0%)	7 (41.2%)	
Previous tested for STI						
Yes	463 (90.4%)	381 (91.8%)	21 (80.8%)	52 (96.3%)	9 (52.9%)	<.001
No	44 (8.6%)	30 (7.2%)	5 (19.2%)	2 (3.7%)	7 (41.2%)	
Prefer not to answer	5 (1.0%)	4 (1.0%)	0 (0.0%)	0 (0.0%)	1 (5.9%)	
Participant subgroups						
GBMSM	254 (49.6%)	188 (45.3%)	15 (57.7%)	50 (92.6%)	1 (5.9%)	<.001
Heterosexual men	59 (11.5%)	51 (12.3%)	4 (15.4%)	0 (0.0%)	4 (23.5%)	
Homosexual women	47 (9.2%)	44 (10.6%)	2 (7.7%)	0 (0.0%)	1 (5.9%)	
Heterosexual women	115 (22.5%)	104 (25.1%)	1 (3.9%)	0 (0.0%)	10 (58.9%)	
Trans and gender diverse	34 (6.6%)	25 (6.0%)	4 (15.9%)	4 (7.4%)	1 (5.9%)	
Prefer not to answer	3 (0.6%)	3 (0.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	

Abbreviations: GBMSM, gay, bisexual and other men who have sex with men; IQR, interquartile range; MSHC, Melbourne Sexual Health Centre; THH, Thorne Harbour Health.

For the STI scenario, all 3 display formats were significantly associated with seeing a doctor within the next 24 hours. The full text exhibited the highest significance (AOR = 4.03; 95% confidence interval: 2.89–5.63; $P < .001$), followed by the concise text (AOR = 3.90; 2.79–5.45, $P < .001$), and the meter display (AOR = 3.63; 2.55–5.17; $P < .001$) after adjusting for concern level, age, education level, and STI testing history. The level of concern was also significantly associated with seeing a doctor within the next 24 hours, with high concern (AOR = 16.04; 6.00–42.87; $P < .001$) and moderate concern (AOR = 4.33; 1.60–11.70; $P = .004$). Participants who had never been tested for HIV/STIs before were less likely to seek care (AOR = 0.51; 0.29–0.91; $P < .05$) within the next 24 hours compared to those with prior testing experience.

For the non-STI scenario, all 3 display formats were also significantly associated with seeing a doctor in a week with the meter display showing the highest significance (AOR = 2.58; 2.04–3.28; $P < .001$) followed by the concise text (AOR = 2.52; 2.02–3.15; $P < .001$), and the full text (AOR = 2.44; 1.94–3.06; $P < .001$). Similar to the STI scenario, a moderate level of concern was significantly associated with seeing a doctor in a week (AOR = 2.92; 2.00–4.27; $P < .001$). In both STI and non-STI scenarios, there was no association between the predictor

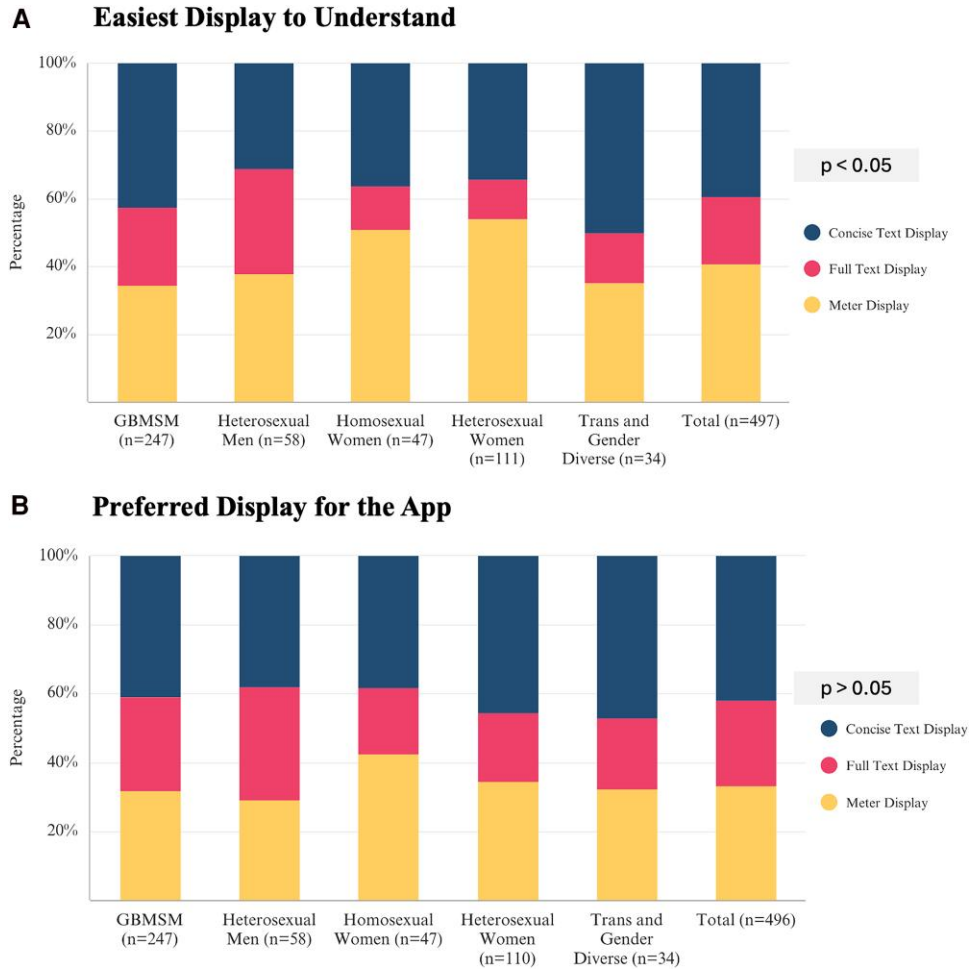


Figure 3. The easiest and preferred display formats by participant sub-groups.

variables (sex assigned at birth, education, employment status, and source of recruitment) and seeing a doctor at the recommended time.

DISCUSSION

Our study explored how individuals would respond to the identification of a potential STI or non-STI by the AiSTI application and a recommended timeframe for seeking care, specifically the effect of different result displays on their health-seeking behavior and level of concern. For the STI scenario, approximately 75% of participants initially intended to seek care within 24 hours, whereas nearly 7% would have waited for self-resolution or delayed seeking care more than 7 days, contrary to provider recommendation. After viewing the different result displays indicating a probable STI diagnosis, the intention to seek healthcare within 24 hours improved significantly. For the non-STI scenario, the result display indicating a probable non-STI diagnosis had the reverse effect of decreasing their intention to seek urgent healthcare within 24 hours. Only 36% initially intended to seek care in a week, whereas 46% intended to seek urgent healthcare within 24 hours. After viewing the AiSTI result displays of the likely non-STI diagnosis, the intention to seek urgent care significantly reduced to less than 25%. All 3 result display formats (concise text, full text, and meter display) were strongly associated with an increased likelihood of timely care-seeking in both STI and non-STI scenarios compared to baseline. The meter display indicating a probable STI diagnosis increased the level of concern, whereas all result displays indicating a probable non-STI diagnosis significantly reduced the level of concern. Participants consistently preferred and found it easier to understand the meter and concise text displays over the full-text display across gender groups.

Although most participants with hypothetical STI conditions intended to seek timely care, a notable proportion delayed or avoided care, highlighting ongoing challenges in STI prevention and control. Our findings align with previous research. Denison et al [4] found that delayed healthcare-seeking beyond

Table 2. Predictors of Intention to See a Doctor in the Next 24 Hours for STI Scenario and in a Week for Non-STI Scenario based on Univariable and Multivariable Logistic Regression Analysis

	STI Scenario With Genital Herpes Outcome: Seeing a Doctor in the Next 24 h				Non-STI Scenario With Genital Dermatosis Outcome: Seeing a Doctor in a Week			
Predictor Variables	Crude OR	*P* Value	Adjusted OR[a]	*P* Value	Crude OR	*P* Value	Adjusted OR[a]	*P* Value
Display								
No display (baseline)	Ref		Ref		Ref		Ref	
Concise text	3.51 (2.58–4.77)	<.001	3.90 (2.79–5.45)	<.001	2.28 (1.86–2.79)	<.001	2.52 (2.02–3.15)	<.001
Full text	3.42 (2.50–4.69)	<.001	4.03 (2.89–5.63)	<.001	2.12 (1.72–2.62)	<.001	2.44 (1.94–3.06)	<.001
Meter	3.34 (2.41–4.63)	<.001	3.63 (2.55–5.17)	<.001	2.21 (1.79–2.73)	<.001	2.58 (2.04–3.28)	<.001
Level of concern								
Low	Ref		Ref		Ref		Ref	
Moderate	5.27 (2.02–13.78)	.001	4.33 (1.60–11.70)	.004	2.25 (1.59–3.20)	<.001	2.92 (2.00–4.27)	<.001
High	19.60 (7.60–50.54)	<.001	16.04 (6.00–42.87)	<.001	0.66 (0.49–0.88)	.300	0.80 (0.59–1.09)	.156
Sex assigned at birth								
Male	Ref		-	-	Ref		-	
Female	0.95 (0.66–1.37)	.793	-	-	1.24 (0.93–1.64)	.140	-	-
Age	1.02 (1.00–1.03)	.027	1.02 (1.00-1.04)	.017	1.00 (0.99–1.01)	.800	-	-
Education								
Secondary school	Ref		Ref		Ref		-	
Undergraduate degree	1.09 (0.63–1.89)	.760	1.13 (0.61-2.09)	.691	0.67 (0.44–1.04)	.075	-	-
Postgraduate degree	0.67 (0.37–1.19)	.170	0.66 (0.34-1.27)	.211	0.74 (0.46–1.18)	.203	-	-
Employment								
Yes	Ref		-	-	Ref		-	
No	0.89 (0.55–1.44)	.631	-	-	1.15 (0.78–1.71)	.479	-	-
Ever tested for STIs								
Yes	Ref		Ref		Ref		-	
No	0.43 (0.26–0.71)	.001	0.51 (0.29–0.91)	.023	1.05 (0.66–1.67)	.839	-	-
History of anogenital lesions								
More than once	Ref		-	-	Ref		-	
Once	1.09 (0.71–1.69)	.690	-	-	1.28 (0.91–1.80)	.152	-	-
Never	1.13 (0.74–1.72)	.580	-	-	0.97 (0.70–1.35)	.872	-	-
Recruitment at								
MSHC	Ref		-		Ref		-	
Facebook	0.52 (0.28-0.95)	.030	-	-	1.13 (0.58–2.21)	.710	-	-
THH	1.11 (0.60–2.08)	.730	-	-	1.08 (0.68–1.72)	.735	-	-
University	0.59 (0.28–1.25)	.170	-	-	1.76 (0.80–3.86)	.159	-	-

Abbreviations: MSHC, Melbourne Sexual Health Centre; OR, odd ratio; STI, sexually transmitted infections; THH, Thorne Harbour Health Centre Clinic.

[a]Variables were excluded in the final model with the backward stepwise regression approach ($P > .05$).

7 days was common among symptomatic individuals attending sexual health clinics in New Zealand, and nearly one third reported sexual activity while symptomatic. International studies have also consistently shown that delaying healthcare-seeking beyond 7 days after the onset of symptoms is common (28%–82% of cases) [4–7, 30]. Malek et al [30] also found that young individuals who recognized STI symptoms themselves without external prompting were significantly more likely to delay seeking care (OR, 5.3; 95% confidence interval, 2.58–10.98). Farquharson et al [5] found that individuals with limited access to healthcare and those living further from clinics were significantly more likely to delay seeking sexual healthcare ($P < .05$). Our study showed that the AiSTI application, with result displays and recommendations, significantly shortened participants' intention to seek care on time (AOR = 3.63–4.03, $P < .001$). Our findings suggest that such an application, when designed with effective result displays and recommendations, could potentially improve healthcare accessibility and health-seeking behavior.

Over the past decade, there has been an increase in attendance at sexual health services due to the increasing number of STI cases and greater public awareness. The number of STI cases continues to rise, meanwhile, funding for sexual health services has failed to keep pace with demand, compared with other health sectors [10]. Sexual health service users reported difficulties in obtaining appointments, overcrowded services, and long wait times in accessing public sexual health services [8]. Providers are trying to prioritize urgent symptomatic cases by allowing walk-ins for these clients. For example, clients are advised to see a doctor within 24 hours for genital

sores, ulcers, or lower abdominal pain while advising those with less urgent symptoms, such as genital rashes or lumps, to see a doctor within a week [29]. However, our study found that 46.0% (n = 237) of participants with a hypothetical non-STI condition intended to seek urgent care within 24 hours, potentially contributing to clinic overcrowding. Hartley et al [31] also found that nearly half of the patients (75 of 164) presented at 9 services across the United Kingdom were non-STI genital dermatological conditions. Kumar et al [32] also found that 65.4% of male genital ulcers presented at a sexual health clinic in India were non–STI-related. In our study, after viewing the result displays with recommendations, half changed their plans to seek care in a week instead. Identifying nonurgent or non-STI cases and encouraging them to see general practitioners might alleviate overcrowding at sexual health clinics. However, this approach would require a reasonable result accuracy by the AiSTI application. In addition, after viewing the meter result display indicating a low likelihood of STI, 25% of participants reported an intention to wait and see if the lesion resolved without treatment. We need to be cautious with this because all symptomatic individuals should still seek medical evaluation for potential STIs, albeit less urgently for low likelihood cases. Further studies might focus on the feasibility of such an intervention.

Our study found that all 3 result display formats (concise text, full text, and meter display) were significantly associated with the intention to seek healthcare within 24 hours for the STI scenario and the intention to seek care within a week for the non-STI scenario. In our previous study [27] examining the effectiveness of 5 different displays for the risk of having common STIs among asymptomatic individuals [27], the risk meter was the most effective in encouraging STI testing (AOR = 2.44; 1.49–4.01; $P < .001$) compared with detailed text. However, our current study found no significant differences in AORs among the 3 display formats. These results are not directly comparable because our current study compared the effectiveness of displays against a baseline scenario of self-judgment without external checking in symptomatic individuals, whereas the previous study compared different risk displays only. Regarding user preferences, participants across genders and sexual orientations preferred the meter and concise text displays over the full-text display for ease of understanding and potential integration into the actual application. This preference aligns with our previous findings, where visual displays were preferred over lengthy text formats [27].

Our study's strengths include recruiting diverse participants from clinics, a university, and a social media platform. We included scenarios for both high likelihood and low likelihood of STI conditions for result displays, unlike our previous study, which only used high-risk profiles. However, our study has some limitations. First, the intended outcome of the participants seeking care within 24 hours for STIs may not be feasible in real-world scenarios, as we did not account for clinic availability and potential overcrowding. Second, we selected genital herpes for STI and dermatosis for non-STI scenarios, which may not be representative of all STI and non-STI cases. We attempted to mitigate this by providing detailed descriptions of lesions and durations closely resembling typical STIs and non–STI-related conditions. Third, our study focused only on the high and low likelihood of STI scenarios in our result displays to simplify the study design. Excluding the moderate likelihood scenario may have affected our findings. Fourth, we tested 3 preset display formats without options for codesigning them. More than 10 participants reported that a combination of meter and concise text displays was preferred to be seen on the actual application. Fifth, although we recruited participants from diverse sources, the sample sizes from social media and university were small compared to those from MSHC. This imbalance could have led to a biased sample, an overrepresentation of urgent intention to seek care and an underrepresentation of delayed care in our study. Moreover, we did not provide information about the accuracy of the application to participants, although we have demonstrated a reasonable accuracy, and it could have affected their responses. Finally, understanding why participants would or would not seek healthcare after viewing STI results would require a dedicated qualitative study, which was beyond our study's scope.

CONCLUSION

Our study demonstrates that digital health interventions with effective result displays can effectively address the challenges of self-judgment for genital symptoms without external prompting. These interventions have the potential to encourage urgent care-seeking for STI cases while allowing clinics to prioritize such cases by adjusting recommended care-seeking times for non-STI conditions. Participants preferred visual displays with concise text over lengthy textual explanations for the result.

Supplementary Data

Supplementary materials are available at *Open Forum Infectious Diseases* online. Consisting of data provided by the authors to benefit the reader, the posted materials are not copyedited and are the sole responsibility of the authors, so questions or comments should be addressed to the corresponding author.

Notes

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Author Contributions. C.K.F. and N.S. conceptualized this study, with C.K.F. and L.Z. providing overall supervision. C.K.F., P.L., and N.S. collaboratively developed the study design and result displays. N.S., P.L., and D.L. were responsible for data collection. N.S. conducted data analysis and drafted the initial manuscript. All authors contributed to the manuscript's revision for improvement.

Patient consent statement. This study received ethical approval from the Alfred Hospital Ethics Committee (Project Number: 88/24). All research procedures were conducted following the established ethical regulations and guidelines. The consent was obtained at the beginning of the anonymous survey in this study.

Data availability. The dataset used in this study is not publicly available due to privacy considerations. The corresponding author may provide access to the data upon reasonable request.

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Potential conflicts of interest. The authors: No reported conflicts of interest.

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