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RESEARCH ARTICLE

HSR Health Services Research

Does telemedicine hold the key for reproductive health care? A quantitative examination of women's intentions toward use and accurate information disclosure

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Abstract

Objective: To investigate women's perceptions of telemedicine for reproductive health care services, focusing on how perceived benefits and privacy risks influence their intentions to adopt telemedicine and their willingness to disclose personal health information.

Study Setting and Design: A cross-sectional survey was conducted. The study applied the privacy calculus theory to the context of telemedicine for reproductive health, using adapted, validated variables to develop the survey. Outcome variables included intentions to adopt telemedicine and willingness to disclose accurate personal health information.

Data Sources and Analytic Sample: Data were collected in May and June 2023 using Qualtrics online panel services, targeting women across the United States who had not used telemedicine for reproductive health. The sample comprised 847 women aged 18 and older. Structural equation modeling was employed using AMOS v28.0 to test the hypothesized relationships between perceived benefits, perceived risks, and adoption intentions. The analysis controlled for age, household income, political affiliation, religious views, and prior births.

Principal Findings: Perceived benefits were positively related to intention to adopt telemedicine for reproductive care (β: 0.600, $p < 0.001$), and willingness to disclose accurate personal health information (β: 0.453, $p < 0.001$). Unexpectedly, perceived privacy risks were positively related to adoption intentions (β: 0.128, $p < 0.001$), but negatively related to willingness to disclose (β: −0.282, $p < 0.001$). Intentions to adopt were positively associated with willingness to disclose (β: 0.089, $p < 0.05$). Lastly, older women and women located in states with abortion restrictions expressed lower intentions to adopt. The model explained 40.2% of variance in intention to adopt and 38.3% of variance in willingness to disclose.

Conclusions: The study demonstrates the importance of perceived benefits and privacy risks in driving telemedicine adoption and disclosure intentions among women in the reproductive health context. These findings suggest the need for targeted strategies to address privacy concerns and support telemedicine adoption, particularly in restrictive regulatory environments.

KEYWORDS
abortion care, benefits, information disclosure, privacy, reproductive health, risk, telemedicine

What is known on this topic

- Emerging legislation and abortion restrictions are likely to lead to drastic changes for the provision of reproductive care and impact access to care in many states.
- Telemedicine represents a solution to improve access to care in many areas including reproductive health.
- The benefits of telemedicine to reproductive health provision include its convenience, improved consultation efficiency, and accessibility, especially access to time-critical services (eg, abortion).

What this study adds

- The privacy calculus theory provides a lens for comparing women's perceptions of benefits and risk associated with telemedicine for reproductive care.
- Perceived health benefits and perceived risk shape women's intentions to utilize telemedicine for reproductive care and disclose accurate personal health information.
- Older women and women located in states with more restrictive abortion regulation expressed lower intentions to utilize telemedicine for reproductive care.

1 | INTRODUCTION

The 2022 Supreme Court decision in Dobbs v Women's Health Organization removed constitutional protections on abortion, resulting in abortion bans in 14 states and stricter gestational age limits in others.[1] In contrast, abortions remain legal in 24 states, some of which have legal protections.[2] These varying approaches may cause equity issues in abortion access and increase maternal and fetal mortality rates.[3] Indeed, the Dobbs decision imposes limitations on both reproductive health patients and providers.[4] Abortion bans and restrictions impact access to sexual and reproductive health (SRH) care services including fertility care, care for miscarriage management, and care for pregnancy complications. Additionally, as the Court relegated the "authority to regulate abortion" to the state legislatures, there is the possibility of more state restrictions in the areas of in vitro fertilization, birth control, and emergency contraception.[5,6] Telemedicine offers a potential solution to these issues and delivers medication abortion and other SRH services.[7]

Telemedicine refers to the use of information and communication technologies to deliver health care.[8] In the SRH context, telemedicine services vary across states and range from consultations for oral and barrier contraceptive services, STI care, urinary tract infection care, routine pregnancy care, counseling services, symptom management, and medication abortion.[9,10] Medication abortion has been proven to be as safe as in-person abortion[11] and can be delivered via telemedicine.[9] Following the Dobbs decision, providers across six states where abortion is legal are operating under telemedicine abortion shield laws to send abortion pills to women in states where abortion has been restricted.[12] In addition, women in states with bans are receiving abortion pills from European clinics.[13] While online vendors may provide access to medication abortion, there are other SRH issues that may be addressed via telemedicine.

Research examining women's acceptance of telemedicine for SRH services is still emerging, but the importance of privacy to telemedicine success across all health contexts has been noted.[14] During the COVID-19 pandemic, there was a huge increase in the use of telemedicine for SRH.[15] The existing literature largely pursues two strands: (1) Determining the efficacy of telemedicine to effectively deliver SRH care, and (2) examining acceptance of this mode of care. The literature largely supports telemedicine to safely deliver SRH care for medication abortion, low-risk pregnancy care, and managing urinary incontinence symptoms.[16] Additionally, multiple studies demonstrate high patient satisfaction rates for telemedicine for SRH.[17,18] Research also highlights benefits associated with telemedicine in an SRH context including reduced wait times, lower costs, and removing transportation requirements and barriers to access.[19,20] While establishing safety and patient satisfaction are imperative, it is also

important to investigate women's perceptions of telemedicine including the risks to patient privacy.

Concerns over privacy in SRH are particularly relevant given the stigmatizing effects of issues such as abortion. In their systematic review of research on abortion stigma, Hanschmidt et al.[21] found that women who have had abortions often experience fear of social judgment, self-judgment, and a need for secrecy, leading to increased psychological distress and social isolation. Furthermore, in jurisdictions where abortion is criminalized or restricted, individuals may face greater stigma if their SRH choices are disclosed,[22,23] potentially compounding barriers to care and increasing psychological distress. Privacy perceptions regarding SRH telemedicine vary in existing research. Among students at a Wisconsin University, the physical privacy of virtual visits was viewed as positive.[18] However, a qualitative study revealed differing views among patients regarding the privacy of virtual medication abortion services,[24] and in other studies, patients believed telemedicine creates greater risks to privacy and confidentiality.[25,26] In addition, research examining the online discourse following the Dobbs decision highlights that privacy concerns reduce individuals' willingness to disclose accurate personal health information (PHI).[27] Indeed, privacy relates to both the physical privacy of patients and the privacy of their SRH data disclosed during care. The use of telemedicine for SRH requires patients to disclose a range of personal information types via intake forms, video conversations, and messaging services. Information disclosed may span the gamut of SRH and related issues, including lifestyle factors, reproductive health history, sexual history, family planning goals, and mental health history and symptoms. Given the generally accepted sensitivity of reproductive, sexual, and mental health data[28] and the potential risks to privacy inherent in their disclosure via technology-mediated means, it is important to investigate patients' privacy concerns in relation to their health data captured when receiving SRH care via telemedicine.

This study leverages the privacy calculus theory (PCT) to explore the competing influence of perceptions of privacy risk and benefits on women's intentions to adopt telemedicine for SRH and willingness to disclose accurate personal data. By doing so, we build upon past research demonstrating the safety and acceptability of telemedicine, to delve into patients' perceptions and investigate how these perceptions impact their intentions toward availing of SRH care via telemedicine. The paper proceeds with a discussion on PCT and the development of hypotheses. The methodology and analysis procedures are presented followed by the presentation of results. The paper concludes with a discussion of the findings and practical implications.

1.1 | Hypothesis development

PCT has been widely applied to understand how perceptions of benefits and risk influence individuals' technology adoption and information disclosure behavior in various settings.[29] PCT posits that prior to engaging in a behavior such as adopting a new technology or disclosing personal information, individuals conduct a cognitive comparison of the costs and benefits associated with this behavior.[30] The individual will engage in the behavior if the perceived benefits outweigh the costs.[30] In the health context, PCT has been leveraged to examine individuals' adoption of contact tracing applications,[31–33] wearable tracking devices,[34] and wearable devices for diagnosing infectious diseases.[35]

In a recent review of the privacy literature in telemedicine, several studies discussed the relevance of benefits and risks in telemedicine adoption, but did not adopt PCT.[36] The authors of the review issue a call to leverage PCT in order to improve our understanding of telemedicine adoption decisions.[36] We answer this call and leverage PCT to understand women's telemedicine adoption decision-making in the SRH context. In this study, we focus on two dependent variables; intentions to use telemedicine for SRH, and willingness to disclose accurate PHI via telemedicine. Due to the importance of accurate information disclosure in developing diagnosis and treatment plans for patients, it is important to investigate patients' willingness to provide accurate PHI. Indeed, prior research shows that patients often withhold health information to protect their privacy.[37]

In this context, benefit perceptions refer to an individual's perceptions of the health benefits they may receive from utilizing telemedicine for SRH.[38] Given the breadth of services relating to SRH, perceived health benefits center on individuals' perceptions that telemedicine may lead to improvements in access to their SRH information, improve their ability to be informed regarding their health, improve their ability to manage their SRH, and lead them to receive improved quality of SRH care. Perceived health benefits have been positively associated with intentions to adopt wearable health devices,[34] and contact tracing applications,[31] and disclose accurate PHI via contact tracing applications.[39] Furthermore, as noted, online discourse highlights that individuals are unwilling to disclose accurate PHI due to privacy concerns following the Dobbs' decision.[27] In line with extant research in other health contexts and PCT, it is proposed that individuals who believe telemedicine can generate benefits for SRH care will express higher intentions toward adopting telemedicine and disclosing accurate PHI.

> **H1a.** Perceived benefits are positively associated with intentions to adopt telemedicine for SRH care.

> **H1b.** Perceived benefits are positively associated with willingness to disclose accurate PHI via telemedicine for SRH care.

This study focuses on privacy risk beliefs, which refer to an individual's expectation that disclosing their PHI will result in a negative outcome.[40] In this study, privacy risk focuses on women's expectations that disclosing their SRH information via telemedicine will result in a negative privacy outcome. As telemedicine technologies require the sharing of PHI via technology-mediated interactions with health professionals, there are inherent privacy risks PHI is exposed to. Risks in this context range from cybersecurity attacks from malicious attackers to accidental disclosure of sensitive data.[38] Prior research

provides support for this relationship. For instance, perceived risk has been found to negatively influence intentions to adopt wearable health devices[34] and contact tracing apps.[31,32] In line with these findings and PCT, we propose that if individuals believe telemedicine will lead to negative outcomes, they are less likely to adopt these technologies or disclose accurate PHI.

H2a. Perceived risks are negatively associated with intentions to adopt telemedicine for SRH care.

H2b. Perceived risks are negatively associated with willingness to disclose accurate PHI via telemedicine for SRH care.

Lastly, we argue that adoption intentions will be related to information disclosure. In prior research, individuals' adoption intentions were positively associated with willingness to disclose accurate PHI to contract tracing applications.[38] We propose a similar relationship. Specifically, we argue that if individuals express higher intentions toward using telemedicine for SRH care, they are more likely to express willingness to provide accurate PHI due to the importance of information in diagnosis and treatment.

H2c. Intentions to adopt telemedicine are positively associated with willingness to disclose accurate PHI via telemedicine for SRH care.

2 | METHOD

2.1 | Questionnaire development

This work forms part of our broader study into women's perceptions related to SRH. The questionnaire was developed using validated scales with slight wording adaptations to ensure suitability to the current context. Perceived benefits (five items) and perceived risk (four items) were adapted from Fox and Connolly,[40] intention to use telemedicine (three items) was adapted from Li et al.,[38] and intention to disclose information was adapted from Fox et al.[39] All survey items are detailed in Appendix A. Several control variables were included based on their inclusion in prior SRH research. These include household income, political affiliation,[41] religious affiliation, and prior births.[42] In addition, much of the SRH research focuses on women of childbearing ages.[43] This practice has led to criticism as the needs of older women may not be fully considered in care settings and policy decisions.[20] As women approach menopause and beyond, they have different SRH needs,[43] many of which can be delivered via telemedicine. Thus, we argue it is important to include adult women of all ages to examine their views toward telemedicine as a method to seek care for these needs. Lastly, given the differing abortion restrictions across states, we include abortion restriction as a control variable. Upon drafting the survey, several quantitative researchers completed a pilot test to ensure the face validity of all items and test the logic of the survey before launch. After this process, the survey was launched.

This study was approved by the University Research Ethics Committee. Respondents were presented with a neutrally-framed description of telemedicine for SRH and asked whether they had previously used telemedicine for SRH. When answering questions related to the perceived benefits and privacy risk beliefs, participants were reminded of the description of telemedicine and asked to indicate their agreement for each statement related to benefits and risks based on this description.

2.2 | Sample

Responses were collected using Qualtrics panel services. Qualtrics was chosen because they provide access to an actively managed pool of vetted respondents.[44] Qualtrics panels recruit from participants from multiple sources and enable researchers to reach participants representing a diverse range of demographic characteristics.[45] Using Qualtrics ensured access to women of varying ages and backgrounds across the United States. Responses were collected over a 1-week period in May–June 2023. Qualtrics removed all incomplete responses, responses failing to correctly answer any of the two attention check questions, and "speeder" responses. Respondents were paid a fee for their participation through the panel service provider. Respondents meeting the sampling criteria were presented with a description of the study and the privacy protection procedures in place and asked to consent to participate. Only participants choosing to provide consent proceeded to the full survey.

This study focuses on women who have not yet utilized telemedicine for SRH, and thus respondents with prior experience of telemedicine for SRH were excluded. A total of 847 responses remained. Abortion restrictions were coded using the state of residence disclosed by respondents and the categories of restrictions outlined by the Guttmacher Institute.[9] For simplicity, the categories were reduced from seven to five categories, with very protective and protective combined to one category and very restrictive and restrictive combined to one category.

2.3 | Statistical analysis

Confirmatory factor analysis (CFA) was conducted in AMOS v28.0. The model demonstrated good fit in line with the fit statistics recommended by Hair et al.[46]: cmin/df: 3.544, CFI: 0.985, RMSEA: 0.055, SRMR: 0.019. The validity and reliability of all constructs were examined using the validity plugin developed by Gaskin et al.[47] To ensure the validity of data, statistical assessments of convergent validity and discriminant validity are required. First, to achieve convergent validity, we must ensure all items within a given construct (e.g., perceived benefits) are measuring the same construct.[48] In other words, all items within a given construct must be strongly correlated. Convergent validity is assessed by calculating the average variance extracted

TABLE 1 Reliability and convergent validity of key constructs in the proposed model.

	CR	AVE	1	2	3	4
1. Risk	0.946	0.814	**0.902**			
2. Perceived benefits	0.953	0.804	−0.186***	**0.896**		
3. Intention to use telehealth	0.962	0.895	0.034	0.613***	**0.946**	
4. Willingness to disclose	0.946	0.855	−0.375***	0.577***	0.365***	**0.925**

Abbreviations: AVE, average variance extracted; CR, composite reliability.

(AVE), which calculates the average variance a construct explains in its items. An AVE above 0.50 is widely considered acceptable as it suggests that the variance within the construct is largely explained by its items.[49] As all variables in the study had AVE scores above 0.50, convergent validity is achieved.[49] Discriminant validity, on the other hand, requires items on one construct to be sufficiently different from items on other constructs.[48] Discriminant validity was tested by comparing the square root of the AVE with the inter-construct correlations.[46] As the square root of AVE was higher than inter-construct correlations, discriminant validity was achieved, as shown by bold diagonal values in Table 1 below. Reliability was assessed by calculating the composite reliability (CR) for each construct. With CR scores above 0.70, all constructs were reliable.[50] The standardized regression weights for all items are presented in Appendix A.

3 | RESULTS

Descriptive statistics are provided in Table 2 for all variables and demographic characteristics.

3.1 | Hypothesis testing

Hypotheses were tested using structural equation modeling (SEM) in AMOS v28. The model demonstrated strong fit above recommended fit thresholds[46]: cmin/df: 2.442, CFI: 0.993, RMSEA: 0.041, SRMR: 0.021. Hypotheses 1a and 1b proposed a positive relationship between perceived benefits and intentions to use telemedicine for SRH and willingness to disclose accurate health data, respectively. The data provided support for both hypotheses (H1a: β 0.600, $p < 0.001$, H1b: β 0.453, $p < 0.001$). H2a and H2b posited a negative relationship between perceived risk and intentions to use telemedicine for SRH and willingness to disclose personal reproductive data to telemedicine. Interestingly, the data revealed a significant, positive association between perceived risk and intentions (β 0.128, $p < 0.001$). As hypothesized, perceived risk had a significant, negative association with willingness to disclose (β. −282, $p < 0.001$). Lastly, H2c proposed that intentions to use telemedicine would be positively related to willingness to disclose data. This was supported in the data (β 0.089, $p < 0.05$).

Interestingly, there were two significant relationships among control variables. Age had a negative influence on intention to use telemedicine for SRH care (β −0.173, $p < 0.001$), with older women expressing lower intentions. Abortion restriction also had a negative relationship with intention (β −0.076, $p < 0.01$), with women residing in states with more abortion restrictions expressing lower intentions to use telemedicine for SRH care. The model explained 40.2% of variance in intention to use and 38.3% of variance in intentions to disclose. All results are presented in Table 3.

4 | DISCUSSION

Our study provides preliminary evidence of the importance of women's perceptions toward a new health technology in shaping their intentions toward use and accurate information disclosure. Perceived benefits of telemedicine was the strongest predictor of intentions to use telemedicine for SRH and willingness to disclose accurate PHI. This finding echoes the findings in other health contexts where perceived health benefits were positively associated with intention to adopt m-health applications[34] and contact tracing applications.[31] This finding supports the argument that patients will utilize technology solutions to avail of health care if they believe that the benefits outweigh the privacy risks. Similar propositions have been made in the broader telemedicine context. For example, it has been argued that when individuals believe using telemedicine will lead to health benefits, they may be more willing to accept the privacy risks associated with use and information disclosure.[51] This study demonstrates the applicability of PCT for understanding how patients consider the competing interests of privacy risk and health benefits when deciding whether to utilize a new technology for accessing SRH care.

The role of perceived privacy risk is more complicated. Perceived privacy risk positively impacted intentions to utilize telemedicine for SRH care. While the direction of this relationship is the opposite than theorized, there are plausible explanations for this finding. Indeed, patients' willingness to accept privacy risks associated with technology-mediated care in order to obtain health benefits has been previously acknowledged, with researchers arguing that patients often see the benefits as greater than the risks (e.g.,[51]). This may add further evidence to support this assertion in the SRH context and ties into the cognitive risk–benefit analysis patients may engage in when considering using telemedicine for SRH. The current legislative climate across the United States brings uncertainty and impacts access to SRH care in many states.[7] The level of uncertainty patients face in this context may further serve as an impetus driving telemedicine adoption, irrespective of the potential privacy risks.

TABLE 2 Characteristics of the participants included in the study.

	Category	%	*N*
Abortion restrictions	Most protective	103	12.2
	Protective–Very protective	140	16.5
	Some restrictions and protections	84	9.9
	Restrictive–Very restrictive	224	26.4
	Most restrictive	296	34.9
Age	18–24	152	17.9
	25–34	214	25.3
	35–44	177	20.9
	45–54	115	13.6
	55–64	115	13.6
	65+	74	8.7
Education	Less than a high school diploma	30	3.5
	High school degree	228	26.9
	Some college, no degree	246	29.0
	Associate degree	116	13.7
	Bachelor's degree	159	18.8
	Master's degree or higher	68	8.1
Number of births	0	332	39.2
	1	135	15.9
	2	184	21.7
	3+	196	23.1
Religious views	Not at all religious/spiritual	232	27.4
	Somewhat religious/spiritual	440	51.9
	Very religious/spiritual	175	20.7
Political views	Very right wing	50	5.9
	Right wing	86	10.2
	Slightly right wing	57	6.7
	Center	426	50.3
	Slightly left wing	62	7.3
	Left wing	112	13.2
	Extremely left wing	54	6.4
Income	Less than $10,000	76	9.0
	$10,000–$19,999	70	8.3
	$20,000–$29,999	126	14.9
	$30,000–$39,999	110	13.0
	$40,000–$49,999	84	9.9
	$50,000–$59,999	80	9.4
	$60,000–$69,999	51	6.0
	$70,000–$79,999	52	6.1
	$80,000–$89,999	26	3.1
	$90,000–$99,999	32	3.8
	$100,000–$149,999	66	7.8
	More than $150,000	42	5.0
	Rather not say	32	3.8

TABLE 3 Structural model results: associations between key variables and control variables.

Hypothesis	Support?	β	*p*-value
H1a: Perceived benefits to >Intention to use telehealth	Yes	**0.600**	$P = <.001$
H1b: Perceived benefits to >Willingness to disclose	Yes	**0.453**	$P = < 0.001$
H2a: Perceived risk to >Intention to use telehealth	Yes	**0.128**	$P = < 0.001$
H2b: Perceived risk to >Willingness to disclose	Yes	**−0.282**	$P = < 0.001$
H2c: Intention to use telehealth to >Willingness to disclose	Yes	**0.089**	$P = < 0.05$
Controls			
Age to >Intention to use telehealth		**−0.173**	$P = < 0.001$
Abortion restriction to >Intention to use telehealth		**−0.076**	$P = < 0.05$
Household income to >Intention to use telehealth		−0.011	$p = 0.69$
Political affiliation to >Intention to use telehealth		−0.001	$p = 0.98$
Religious affiliation to >Intention to use telehealth		0.030	$p = 0.29$
Prior births to >Intention to use telehealth		0.039	$p = 0.18$
Age to >Willingness to disclose		−0.004	$p = 0.88$
Household income to >Willingness to disclose		0.006	$p = 0.81$
Abortion restriction to >Willingness to disclose		0.022	$p = 0.43$
Political affiliation to >Willingness to disclose		−0.022	$p = 0.45$
Religious affiliation to >Willingness to disclose		0.012	$p = 0.68$
Prior births to >Willingness to disclose		−0.001	$p = 0.96$

Furthermore, while perceived privacy risk did not impact intention as expected, there was a negative relationship between privacy risk and intention to disclose accurate information. Thus, patients may be willing to adopt telemedicine for SRH even when they believe engaging with these technologies will generate high privacy risks for their data, but they intend to engage in privacy-protective behaviors to limit the personal information they provide or potentially falsify information disclosed. These practices may provide patients with a perceived ability to reduce privacy risks when engaging with telemedicine, thus enabling them to realize the benefits offered by this mode of care. Additionally, as we measure intention to adopt telemedicine for SRH broadly, patients may be willing to use telemedicine for some SRH issues but not others.

Further research is required to examine the influence of risk perceptions on a more nuanced level. Such research could potentially leverage protection motivation theory to investigate perceptions related to the susceptibility of data to risk and the severity of outcomes stemming from privacy risks. Furthermore, given that the sample comprised patients with no prior telemedicine experience for SRH, the role of privacy risk perceptions could change following adoption. The contextual nature of privacy has been well documented.[52] It is conceivable that the relationship between risk and telemedicine utilization may vary as patients become more cognizant of privacy risks while engaging with telemedicine for SRH. It would also be interesting to explore the changing perceptions of risk across the various SRH services.

Interestingly, two of the control variables had significant relationships with intentions to use telemedicine. Age had a negative relationship with intentions, with older respondents expressing a lower intention to use telemedicine for SRH. There are a number of possible explanations for this finding. For instance, research has shown that older adults are less comfortable using telemedicine for health care in general due to lack of familiarity with technology or a preference for in-person care.[53] It is therefore unsurprising to discover a similar trend in SRH care, which involves sensitive health data. However, it is important to continue to explore the role of age in this context as older women are often omitted from SRH research despite experiencing many health issues, which could be addressed via telemedicine. Future research could further unpack the role of age to determine whether older women are willing to utilize telemedicine for some SRH issues but not others.

Second, abortion restriction was negatively related to intentions with respondents located in states with more restrictive abortion laws expressing lower intentions to adopt. This is an interesting insight as telemedicine can provide individuals in these states with access to abortion and other restricted reproductive care,[1] but our finding suggests that women in these states perceive the potential risks of doing so as outweighing those benefits. There are many possible explanations for this finding including confusion around the legal implications, confusion driven in part by misinformed discourse online related to medication abortion,[13] or a preference for in-person care. There is a need for future research to investigate the experience of patients availing of SRH care via telemedicine including abortion and other services to understand how these services can be improved. In addition, our study does not examine participants' awareness of abortion restrictions in their state or understanding of these restrictions and

what they mean for patients. Further research could delve into these patient perceptions in states with restrictions and abortion bans to unravel their fears and perceptions related to privacy, legal implications, and potential side effects associated with reproductive telemedicine care.

4.1 | Limitations and directions for future research

This study has limitations that can be explored in future research. First, the study adopts a cross-sectional approach to explore perceptions at one point in time. We believe that the insights from this study are important given the many changes to reproductive care patients are currently experiencing. However, future research could adopt a longitudinal approach to explore women's perceptions toward telemedicine for SRH over time and whether those perceptions vary as new regulatory changes emerge. Second, the study sample consists of individuals who have not used telemedicine for reproductive purposes previously, but did not ask whether respondents had used telemedicine for other health purposes. The reason for this decision was to focus on individuals' perceptions toward telemedicine following the recent changes in abortion and other SRH provision. Future research could include both users and nonusers to delve into perceptions related to risk and benefits and add prior use of telemedicine for other health services as a control variable. Similarly, we conducted our study online, and as a result, our sample includes only participants who have access to the internet: individuals from rural or urban areas without broadband access are likely to be underrepresented in our study sample.

Additionally, for parsimony, a simple model was developed in this study. There are many other variables that may influence individuals' intentions to adopt and disclose information via telemedicine in this context including perceptions of the sensitivity of SRH data, trust in technology and the health system, and other privacy covariates such as privacy concerns, and disposition to value privacy. Future studies may also seek to delve into perceived benefits on a deeper level and explore the influence of different types of benefits. Qualitative approaches that allow for exploration of additional potential enablers or barriers particularly among those who are willing to use telemedicine for SRH purposes are likely to be useful to inform theory and policy making in the future. Lastly, the study measures intentions to use telemedicine and disclose information but does not measure actual behavior. While this was not possible due to our research design, it would be interesting to further explore how perceptions of privacy risk impact how individuals use these technologies and whether they engage in any privacy-withholding behaviors such as falsifying or withholding data disclosed in a bid to protect their privacy.[54] As the provision of SRH continues to undergo changes and challenges, research remains critical to inform ongoing discourse.

4.2 | Implications for practice

The COVID-19 pandemic necessitated a surge in telemedicine utilization.[15] The current uncertainty in US reproductive care laws may prompt similar adoption of telemedicine for SRH. Our findings suggest that even with an awareness of the risks involved, women see the benefits of telemedicine in accessing SRH care as outweighing the privacy risks. This finding underscores the importance to women of access to SRH services. Promoting the use of telemedicine could improve access to contraception and other fertility services, especially given the difficulties patients in some states face accessing specific reproductive care, such as terminating unplanned pregnancies.[55]

Health care providers could learn from approaches during COVID-19 and develop a user-friendly approach to address privacy.[15] To ensure privacy does not impede telemedicine utilization, effective, multipronged, communication efforts are required. First, given the influence of benefit perceptions in driving intentions, we suggest that health care providers and specifically those offering telemedicine services should focus on communicating the benefits of telemedicine as a means of receiving SRH care. Effective communication could strengthen awareness of the health benefits among patients who are yet to adopt telemedicine.

Second, communication efforts should also discuss privacy and security risks in a comprehensive but simplified manner. Following concerns that health care providers could potentially disclose personally identifiable SRH information in response to judicial requests would lead to patients withholding SRH information, the Office for Civil Rights within the Department of Health & Human Services proposed an update to the HIPAA privacy rule. This update comes into effect in January 2025 and strengthens the privacy of SRH data.[56] As patients may not be aware of these new protections, all communications regarding the privacy risks should acknowledge the legal obligations providers comply with, including the latest HIPAA privacy rules, the best practice guidelines they follow to minimize risks and protect the privacy of data collected, and provide patients with resources to access further information.

Third, patients should be aware of telemedicine options from a wider range of sources. This communication could initially come from a patient's primary physician to inform patients of telemedicine options available to them and detail the benefits and the measures to minimize privacy risks.[51] In addition, telemedicine providers could highlight the benefits and availability of telemedicine through emails, texts, and robocalls.[55] Social media campaigns from stakeholders such as women's rights and advocacy groups could also highlight the benefits and measures to minimize privacy rights on a broader scale.

5 | CONCLUSION

The Dobbs' decision complicates and in some cases removes access to SRH care, including abortions for patients across the United States. Telemedicine represents one viable means to deliver SRH care to patients virtually. While telemedicine offers potential physical privacy benefits, there are inherent privacy risks associated with the utilization of technology to collect and transfer sensitive data such as SRH data. This study highlights the need to consider women's perceptions of benefits and risks, as these impact their views on adopting and sharing accurate data via telemedicine for SRH care. Addressing

women's perceptions through communication of the benefits to their care, and safeguards to mitigate privacy risks may enable more patients to take advantage of telemedicine as a form of reproductive care.

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REFERENCES

1. Belluck P. Abortion Shield Laws: A New War Between the States. The New York Times. Published February 22, 2024. Accessed March 1st 2024. https://www.nytimes.com/2024/02/22/health/abortion-shield-laws-telemedicine.html
2. Sherman C, Witherspoon A. Abortion rights across the US: we track where laws stand in every state. The Guardian. Published November 10, 2023. Accessed May 15th 2024. https://www.theguardian.com/us-news/ng-interactive/2023/nov/10/state-abortion-laws-us
3. Byron JJ, Avalos M, Xiao KA, Klein AA, Leheste JR. Health equity in a post 'roe versus Wade'America. *Cureus*. 2022;14(12):e32100.
4. Hassan A, Yates L, Hing AK, Hirz AE, Hardeman R. Dobbs and disability: implications of abortion restrictions for people with chronic health conditions. *Health Serv Res*. 2023;58(1):197-201.
5. Adashi EY, O'Mahony DP, Cohen IG. Assisted reproduction post-Dobbs: the prospect of legislative protection. *F&S Rep*. 2023;4(2):128-129.
6. Caffrey N. Abortion in America after roe: an examination of the impact of Dobbs v. Jackson Women's health organization on Women's reproductive health access. Senior Theses and Projects. Published online May 12, 2023. Accessed September 2nd 2024 https://digitalrepository.trincoll.edu/theses/1033/
7. VandeVusse AJ, Mueller J, Kirstein M, Strong J, Lindberg LD. "Technically an abortion": understanding perceptions and definitions of abortion in the United States. *Soc Sci Med*. 2023;335:116216.
8. Telemedicine I of M (US) C on ECA of, Field MJ. *Introduction and Background*. National Academies Press (US); 1996 Accessed August 26th 2024 https://www.ncbi.nlm.nih.gov/books/NBK45440/#:~:text=As%20defined%20here%2C%20telemedicine%20is
9. *Improving Access to Abortion via Telehealth*. Guttmacher Institute Published May 7, 2019. Accessed February 3rd 2024. https://www.guttmacher.org/gpr/2019/05/improving-access-abortion-telehealth
10. Oyediran KA, Makinde OA, Adelakin O. The role of telemedicine in addressing access to sexual and reproductive health services in sub-Saharan Africa during the COVID-19 pandemic. *Afr J Reprod Health*. 2020;24(2):49-55.
11. Upadhyay UD, Koenig LR, Meckstroth K, Ko J, Valladares ES, Biggs MA. Effectiveness and safety of telehealth medication abortion in the USA. *Nat Med*. 2024;30(4):1191-1198.
12. Belluck P. Abortion Shield Laws: A New War between the States. The New York Times. Published February 22, 2024. Accessed May 1st 2024 https://www.nytimes.com/2024/02/22/health/abortion-shield-laws-telemedicine.html
13. Alone in a bathroom: The fear and uncertainty of a post-Roe medication abortion. Washington Post. Published April 11th 2024. Accessed April 30th 2024 https://www.washingtonpost.com/politics/interactive/2024/abortion-pill-experience-stories/
14. Houser SH, Flite CA, Foster SL. Privacy and security risk factors related to telehealth services—a systematic review. *Perspect Health Inf Manag*. 2023;20(1).
15. Shachar C, Engel J, Elwyn G. Implications for telehealth in a postpandemic future: regulatory and privacy issues. *JAMA*. 2020;323(23):2375-2376.
16. DeNicola N, Grossman D, Marko K, et al. Telehealth interventions to improve obstetric and gynecologic health outcomes: a systematic review. *Obstet Gynecol*. 2020;135(2):371-382.
17. Stifani BM, Smith A, Avila K, et al. Telemedicine for contraceptive counseling: patient experiences during the early phase of the COVID-19 pandemic in new York City. *Contraception*. 2021;104(3):254-261.
18. Hurtado AC, Crowley SM, Landry KM, Landry MS. Telehealth contraceptive care in 2018: a quality improvement study of barriers to access and patient satisfaction. *Contraception*. 2022;112:81-85.
19. Elias C, Sherris J. Reproductive and sexual health of older women in developing countries. *BMJ*. 2003;327(7406):64-65.
20. Banke-Thomas A, Olorunsaiye CZ, Yaya S. "Leaving no one behind" also includes taking the elderly along concerning their sexual and reproductive health and rights: a new focus for reproductive health. *Reprod Health*. 2020;17:1-3.
21. Hanschmidt F, Linde K, Hilbert A, Riedel-Heller SG, Kersting A. Abortion stigma: a systematic review. *Perspect Sex Reprod Health*. 2016;48(4):169-177.
22. Shellenberg KM, Moore AM, Bankole A, et al. Social stigma and disclosure about induced abortion: results from an exploratory study. *Glob Public Health*. 2011;6(sup1):S111-S125.
23. Shellenberg KM, Hessini L, Levandowski BA. Developing a scale to measure stigmatizing attitudes and beliefs about women who have abortions: results from Ghana and Zambia. *Women Health*. 2014;54(7):599-616.
24. Ruggiero SP, Seymour JW, Thompson TA, et al. Patient and provider experiences using a site-to-site telehealth model for medication abortion. *Mhealth*. 2022;8:8.
25. Sundstrom B, DeMaria AL, Ferrara M, Smith E, McInnis S. "People are struggling in this area": a qualitative study of women's perspectives of telehealth in rural South Carolina. *Women Health*. 2020;60(3):352-365.
26. Sundstrom B, DeMaria AL, Ferrara M, Meier S, Billings D. "The closer, the better": the role of telehealth in increasing contraceptive access among women in rural South Carolina. *Matern Child Health J*. 2019;23:1196-1205.
27. Swanson K, Ravi A, Saleh S, Weia B, Pleasants E, Arvisais-Anhalt S. Effect of recent abortion legislation on twitter user engagement, sentiment, and expressions of trust in clinicians and privacy of health information: content analysis. *J Med Internet Res*. 2023;25:e46655.
28. Soni H, Ivanova J, Grando A, et al. A pilot comparison of medical records sensitivity perspectives of patients with behavioral health conditions and healthcare providers. *Health Informatics J*. 2021;27(2):14604582211009925.
29. Li Y. Theories in online information privacy research: a critical review and an integrated framework. *Decis Support Syst*. 2012;54(1):471-481.
30. Laufer RS, Wolfe M. Privacy as a concept and a social issue: a multidimensional developmental theory. *J Soc Issues*. 1977;33(3):22-42.
31. Duan SX, Deng H. Exploring privacy paradox in contact tracing apps adoption. *Internet Res*. 2022;32(5):1725-1750.
32. Tran CD, Nguyen TT. Health vs. privacy? The risk-risk tradeoff in using COVID-19 contact-tracing apps. *Technol Soc*. 2021;67:101755.
33. Fox G, Clohessy T, van der Werff L, Rosati P, Lynn T. Exploring the competing influences of privacy concerns and positive beliefs on citizen acceptance of contact tracing mobile applications. *Comput Hum Behav*. 2021;121:106806.
34. Li H, Wu J, Gao Y, Shi Y. Examining individuals' adoption of healthcare wearable devices: an empirical study from privacy calculus perspective. *Int J Med Inform*. 2016;88:8-17.

35. Frangopoulou MS, van der Laan LN, Ebbers W. The privacy calculus in the context of novel health technology for diagnosing and tracking infectious diseases: the role of disease severity and technology's evidence base for effectiveness in adoption and voluntary health data-sharing. *Technol Soc*. 2024;102616:102616.
36. Pool J, Akhlaghpour S, Fatehi F, Gray LC. Data privacy concerns and use of telehealth in the aged care context: an integrative review and research agenda. *Int J Med Inform*. 2022;160:104707.
37. Campos-Castillo C, Anthony DL. The double-edged sword of electronic health records: implications for patient disclosure. *J Am Med Inform Assoc*. 2015;22(e1):e130-e140.
38. Li H, Gupta A, Zhang J, Sarathy R. Examining the decision to use standalone personal health record systems as a trust-enabled fair social contract. *Decis Support Syst*. 2014;57:376-386.
39. Fox G, van der Werff L, Rosati P, Lynn T. Investigating Citizens' acceptance of contact tracing apps: quantitative study of the role of trust and privacy. *JMIR Mhealth Uhealth*. 2024;12(1):e48700.
40. Fox G, Connolly R. Mobile health technology adoption across generations: narrowing the digital divide. *Inf Syst J*. 2018;28(6):995-1019.
41. Smith MH, Turner AN, Chakraborty P, et al. Opinions about abortion among reproductive-age women in Ohio. *Sex Res Soc Policy*. 2021;19:909-921.
42. Cockrill K, Upadhyay UD, Turan J, Greene FD. The stigma of having an abortion: development of a scale and characteristics of women experiencing abortion stigma. *Perspect Sex Reprod Health*. 2013;45(2):79-88.
43. Alspaugh A, Im EO, Reibel MD, Barroso J. The reproductive health priorities, concerns, and needs of women in midlife: a feminist post-structuralist qualitative analysis. *Qual Health Res*. 2021;31(4):643-653.
44. Arndt AD, Ford JB, Babin BJ, Luong V. Collecting samples from online services: how to use screeners to improve data quality. *Int J Res Mark*. 2022;39(1):117-133.
45. Miller CA, Guidry JP, Dahman B, Thomson MD. A tale of two diverse qualtrics samples: information for online survey researchers. *Cancer Epidemiol Biomark Prev*. 2020;29(4):731-735.
46. Black WC, Babin BJ, Anderson RE. *Multivariate Data Analysis: A Global Perspective*. Pearson; 2010.
47. Gaskin J, James M, Lim J, Steed J. 1CFA - Gaskination StatWiki. Gaskinationcom Published 2015. Accessed March 11, 2024. http://statwiki.gaskination.com/index.php?title=CFA
48. Straub D, Boudreau MC, Gefen D. Validation guidelines for IS positivist research. *Commun Assoc Inf Syst*. 2004;13(1):24.
49. Fornell C, Larcker DF. Evaluating structural equation models with unobservable variables and measurement error. *J Mark Res*. 1981;18(1):39-50.
50. Raykov T. Estimation of composite reliability for congeneric measures. *Appl Psychol Meas*. 1997;21(2):173-184.
51. Hale TM, Kvedar JC. Privacy and security concerns in telehealth. *AMA J Ethics*. 2014;16(12):981-985.
52. Walker J, Ahern DK, Le LX, Delbanco T. Insights for internists: "I want the computer to know who I am". *J Gen Intern Med*. 2009;24:727-732.
53. Mao A, Tam L, Xu A, et al. Barriers to telemedicine video visits for older adults in independent living facilities: mixed methods cross-sectional needs assessment. *JMIR Aging*. 2022;5(2):e34326.
54. Son JY, Kim SS. Internet users' information privacy-protective responses: a taxonomy and a nomological model. *MIS Q*. 2008;32(3):503-529.
55. Manze M, Romero D, Johnson G, Pickering S. Factors related to delays in obtaining contraception among pregnancy-capable adults in New York state during the COVID-19 pandemic: the CAP study. *Sex Reprod Healthc*. 2022;31:100697.
56. Alder S. HIPAA journal. New HIPAA regulations in 2024. *HIPAA J*. Published August 20, 2024. Accessed September 2nd 2024 https://www.hipaajournal.com/new-hipaa-regulations/

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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