Original Article

COVID-19 impacts and videoconference healthcare preferences in relation to depression and sexual risk behaviors among young adults assigned female at birth: a cross-sectional study

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Background: Due to decreased access to sexual and reproductive health (SRH) services and an increase in depressive symptoms, the coronavirus disease 2019 (COVID-19) pandemic has exacerbated the risk of unsafe sexual behaviors among already vulnerable young adults assigned female at birth (AFAB). Despite its potential for improving SRH outcomes, little is known about how young adults view virtual SRH counseling. We designed a survey to examine these perspectives and further characterize pandemic-associated changes in mood and healthcare access in young adults AFAB.

Methods: Patients of a Midwest family planning organization who were AFAB and aged 21–24 years were recruited via convenience sampling between May and September 2021. Participants answered survey questions about how they perceived that the pandemic had affected their mood and healthcare access. The Patient Health Questionnaire (PHQ)-8 assessed depressive symptoms. Additional questions probed SRH risk behaviors and experience with and opinions on virtual healthcare and research. Non-responses to questions were not included in analyses. Associations among these variables were analyzed using non-parametric bivariate tests (chi-square and Mann-Whitney U).

Results: One hundred twenty people participated in the survey. Participants had a median age of 22 years and self-identified predominantly as female and White. Three-quarters of respondents reported their mood worsened as a result of the pandemic and more than 3 in 10 had depression. Those reporting pandemic-worsened mood had more severe depressive symptoms than those who did not (U=722.500, P=0.005). Most reported sexual intercourse in the past 3 months, nearly all of whom reported at least one SRH risk. Pandemic mood impacts were not associated with SRH risk. One in four participants reported pandemic-associated difficulty accessing healthcare, which was not associated with depression or SRH risk. Most reported comfort with videoconference healthcare, including technology, speaking with a provider, and having enough privacy.

Conclusions: The COVID-19 pandemic has increased depression and SRH risk among young adults AFAB and, at the same, impeded their access to healthcare. The study findings suggest that no matter the degree of depression or presence of SRH risk, videoconferencing may be an acceptable option for advancing research and addressing unmet SRH needs in this population.

Keywords: Sexual and reproductive health (SRH); young adults; depression; videoconference healthcare; coronavirus disease 2019 pandemic (COVID-19 pandemic)

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Introduction

Female young adults with depression are at increased risk for engaging in behaviors such as having sex without a condom, having multiple sexual partners, and having sex under the influence of substances. These behaviors are associated with adverse sexual and reproductive health (SRH) outcomes such as unintended pregnancy and sexually transmitted infections (STIs) (1-3). These adverse outcomes have been exacerbated due to an increase in depressive symptoms associated with the coronavirus disease 2019 (COVID-19) pandemic, particularly among young adult females (4-6), as well as financial and logistical barriers impeding access to SRH care (7,8).

Another result of the COVID-19 pandemic was the rapid expansion of telehealth use for clinical services, including SRH services (9,10). Prior studies have found patient satisfaction to be comparable between telehealth and in-person visits (11,12). Thus, virtual SRH counseling has the potential to address the aforementioned barriers to SRH care access among young adults assigned female at birth (AFAB). However, little is known about attitudes and preferences for virtual SRH counseling within this population. Furthermore, although there has been substantial research on opinions regarding videoconference healthcare across diverse patient populations, studies exploring participants' opinions on videoconferencing within a research context are sparse. One qualitative study that utilized videoconferencing to conduct focus groups related to SRH topics found this to be a feasible and acceptable means of data collection among adult participants (13). However, during another study that used videoconferencing to conduct qualitative interviews with adolescents about their sexual experiences, the researchers noted that participants were often hesitant to share their stories out of fear of being overheard by their parents or siblings and many dropped out for this reason (14). Many young adults still live with their families or have roommates, so privacy concerns during videoconference research visits may be prevalent among this population as well. Understanding young adults' perspectives on videoconferencing may have important implications for the feasibility of virtual research and can help inform the development of procedures for virtual studies.

In summary, young adults AFAB who are depressed have increased SRH risks. In response to the pandemic causing constraints on in-person clinical care, videoconferencing presents a novel alternative to in-person medical care as well as research visits. Given the potentially unique needs of young adults AFAB with depressive symptoms and SRH risks, we sought insights into ways to better serve this population within the context of clinical care and research. To do this, we developed a survey with the following aims: (I) to learn about the subjective effects of the pandemic on individuals' mood and healthcare access, (II) to determine the prevalence of depression and SRH risk behaviors, (III) to ascertain perspectives on SRH risk reduction counseling conducted via videoconference, and (IV) to examine associations between these variables. We present the following article in accordance with the SURGE reporting checklist (available at https://mhealth.amegroups.com/article/view/10.21037/mhealth-22-38/rc) (15).

Highlight box

Key findings

- Young adults AFAB reporting perceived COVID-19 pandemic-associated worse mood had more severe depressive symptoms than those who did not. Most participants reporting past 3 months sexual intercourse indicated at least one SRH risk. A quarter of participants reported pandemic-associated difficulty accessing healthcare. Most respondents indicated comfort with videoconference healthcare.

What is known and what is new?

- Depressed young adults AFAB are at increased risk for engaging in risky sexual behaviors. The pandemic has exacerbated this problem via an increase in depressive symptoms in young adults and impeded SRH services access.
- Little is known about how young adults view virtual SRH counseling services, despite its potential for addressing unmet SRH needs amongst this population.

What is the implication, and what should change now?

- Videoconferencing may be an acceptable means for conducting SRH research and addressing unmet SRH needs in this population, regardless of depressive symptoms and SRH risk.

Methods

Eligibility and recruitment

Patients who were AFAB, aged 21–24 years, and had visited a Midwest Family Planning Organization Health Center within the 2 years preceding study enrollment were eligible to participate. Participants were determined to be AFAB if they answered "yes" to the following survey question: "To the best of your knowledge, are you biologically able to become pregnant? Participants using birth control, please answer 'yes' if you could become pregnant while not on birth control". The age range of 21–24 years was selected to capture the end of adolescence/beginning of early adulthood, which is developmentally distinct from younger adolescent years and carries an elevated risk for depressive symptoms, sexually transmitted infections, and unplanned pregnancy (16-19). Using a cross-sectional design, recruitment took place via convenience sampling from May–September 2021. Flyers were posted in 24 health centers and displayed a website link and QR code that patients could scan to view a web page containing information about the survey, provide e-consent, and access the survey. All study materials were written in English. Survey data were collected and managed using REDCap electronic data capture tools (20,21). Participants received a $5 e-gift card for completing the survey, which took less than 10 minutes to complete. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). The study was approved by the Institutional Review Board of Boston Children's Hospital (No. IRB-P00036721) and informed consent was taken from all individual participants.

Measures

Survey questions assessed demographic characteristics, including age in years, gender identity [female, male, transgender female, transgender male, nonbinary or gender queer, other gender (please specify), I don't know, or choose not to disclose], race [American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Pacific Islander, White, or Other race (please specify)], ethnicity (Hispanic or Latinx, or Non-Hispanic or Latinx), and geographic location (urban, suburban, rural, or not sure). Participants were asked whether the COVID-19 pandemic had caused difficulty accessing healthcare [yes, no, or not applicable (N/A)] (22). Additionally, participants were asked how the pandemic had impacted their mood (made it a lot better, made it a little better, made it a little worse, made it a lot worse, or N/A) (22). These latter responses were re-coded during analysis as a binary variable and reported as "made mood worse" (yes or no). The Patient Health Questionnaire (PHQ)-8 was included in the survey to assess depressive symptoms over the prior 2 weeks, with depression defined as PHQ-8 score ≥10 (23). The PHQ-8 was selected instead of the PHQ-9 because study staff did not have the training or clinical resources to respond to endorsement of suicidal ideation or self-harm. The PHQ-8 has been found to be as valid as the PHQ-9 for depression screening (24,25).

To measure SRH risk, participants reporting penile-vaginal intercourse within the past 3 months were asked yes or no questions about whether they had used a condom every time, used low-effectiveness contraception (condoms, diaphragm, cervical cap, spermicide, sponge, fertility awareness, or withdrawal) as their primary birth control method (1), had multiple sexual partners, had intercourse within 2 hours after using alcohol or drugs, or had received treatment for a STI in the past 3 months. SRH risk was indicated by a "no" response to the condom question or a "yes" response to any of the other questions.

Questions were developed to gather information about preferences for and opinions about virtual healthcare and research. Face validity was determined via expert consensus. Participants were asked how they would choose to take an online survey that lasted about 30 minutes (on my smartphone, on my tablet, on my laptop or desktop computer, on a friend's tablet, laptop, or desktop computer, or some other option). Additional questions probed where [in my own home, at a friend or relative's home, in my car, at work, at school, in an outdoor private space, in an outdoor public space, or somewhere else (please specify)] and how [using my personal computer, using a shared computer, using my personal smartphone, using a shared smartphone, or another way (please specify)] they would log on for a 1-hour videoconference with a health educator about sensitive health topics. Preferences for receiving educational materials related to the discussion was also asked [as a package mailed to my house, as an email attachment(s), through a website link, or another way (please specify)].

Participants answered whether they had ever participated in a videoconference healthcare visit and, if so, whether they had felt comfortable with using videoconference technology, talking to a healthcare provider, and having sufficient privacy to discuss sensitive topics. Response options on the survey were a Likert scale (very true,

somewhat true, neutral, somewhat untrue, very untrue, or N/A) and subsequently were re-coded during analysis as a binary variable and reported as comfort "true" (if response was "very true" or "somewhat true") or comfort "not true" (if their response was "neutral", "somewhat untrue", "very untrue", or "N/A"). Participants who had not previously used videoconferencing for healthcare answered the same questions for a hypothetical situation.

Statistical analyses

Participants were able to skip questions, so response rates per question vary. Non-responses were excluded from analyses. Non-parametric bivariate tests (chi-square and Mann-Whitney U) were used to test associations between (I) pandemic impacts on mood and SRH risk, (II) pandemic impacts on mood and PHQ-8 score, (III) difficulty getting healthcare due to the pandemic and PHQ-8 score, (IV) difficulty getting healthcare due to the pandemic and SRH risk, (V) experience and comfort with videoconference healthcare and PHQ-8 score, and (VI) experience and comfort with videoconference healthcare and SRH risk. Analyses were performed using IBM SPSS Statistics for Windows, version 27 (26).

Results

Demographics

Out of 207 people who provided consent to take the survey, 120 met the eligibility criteria and were able to participate. The median age was 22 years and 95.7% (n=112/117) identified their gender as female. Most respondents identified as White (68.4%, n=80/117) or Black or African American (15.4%, n=18/117), and 28.2% (n=33/117) identified as Hispanic or Latinx. Participants lived primarily in urban (42.4%, n=50/118) and suburban (31.4%, n=37/118) areas. Among those who consented to take the survey, the primary reasons for exclusion were not being AFAB (8.4%, n=16/190) and being >24 (19.2%, n=37/193) or <21 years of age (8.3%, n=16/193). Seventeen people were excluded from participation due to not answering all of the questions related to eligibility (8.2%, n=17/207).

Pandemic impacts and SRH risk

More than one-quarter of respondents (26.7%, n=31/116) reported difficulty getting healthcare when needed due to pandemic circumstances (*Table 1*). Most (75.2%, n=88/117) reported mood worsened as a result of the pandemic. Over three in ten (31.5%, n=35/111) had depression based on their PHQ-8 score. Participants reporting worse mood due to pandemic circumstances had significantly higher PHQ-8 scores than those who did not report pandemic-associated worse mood (U=722.500, P=0.005; *Table 2*). Of those reporting PVI in the past 3 months (89.7%, n=105/117), nearly all (96.2%, n=101/105) endorsed at least one SRH risk behavior. No significant associations were found between pandemic impacts on mood and SRH risk, nor between difficulty getting healthcare due to the pandemic and depression or SRH risk.

Virtual healthcare and research preferences

Most respondents (73.3%, n=88/120) would use their smartphone to participate in an online survey, followed by 30.8% (n=37/120) who would use their laptop or desktop computer (*Table 1*). The majority reported that they would prefer to join a videoconference with a health educator about sensitive topics "in my own home" (82.5%, n=99/120) and "in my car" (13.3%, n=16/120). Participants also reported that they would prefer to log on to this videoconference using their personal computer (69.2%, n=83/120) and/or smartphone (44.2%, n=53/120). Over half (60.8%, n=59/97) selected "as an email attachment" as their first choice for receiving educational materials related to the discussion with a health educator about their sexual health.

Experience and comfort with videoconference healthcare

More than one-half of respondents (53.7%, n=58/108) had experience with videoconference healthcare (*Table 1*). Most reported comfort with videoconference technology (72.2%, n=78/108), talking to a provider (65.7%, n=71/108), and having sufficient privacy to discuss sensitive topics during a videoconference (67.6%, n=73/108). There were no associations between experience and comfort with videoconference healthcare and depression or SRH risk (*Table 2*).

Discussion

The pandemic has resulted in increased depressive symptoms and barriers to healthcare access among young adults AFAB, a group that is already vulnerable to SRH risks such as sexually transmitted diseases and unplanned

Table 1 Depressive symptoms, SRH risk behaviors, COVID-19 impacts, and experiences and preferences related to virtual healthcare and research

Variables	Number of respondents (%)*, N=120†
Depressive symptoms (past 2 weeks) (n=111)	
PHQ-8 score, median [IQR]	7 [3–11]
Depression (PHQ-8 score ≥10)	35 (31.5)
SRH risk behaviors (past 3 months) (n=117)	
PVI	105 (89.7)
At least 1 sexual risk behavior (among those who reported PVI; n=105)	101 (96.2)
Inconsistent/no condom use	74 (70.5)
Low-effectiveness contraception	40 (38.1)
Multiple partners	30 (28.6)
Sex within 2 hours after alcohol or drug use	68 (64.8)
STI/STD treatment	39 (37.1)
Impacts of COVID-19 pandemic	
Made mood worse (n=117)	88 (75.2)
Difficulty getting healthcare when needed (n=116)	31 (26.7)
Experience and comfort with videoconference healthcare (n=108)	
Previously participated in videoconference healthcare visit	58 (53.7)
Comfortable with the technological aspects	78 (72.2)
Comfortable talking to a healthcare provider	71 (65.7)
Enough privacy to discuss sensitive topics	73 (67.6)
If you were going to take an online survey that lasted about 30 minutes, how would you take it? Select all that apply (n=120)	
On my smartphone	88 (73.3)
On my laptop or desktop computer	37 (30.8)
On my tablet	9 (7.5)
On a friend's tablet, laptop, or desktop computer	1 (0.8)
If you were having a 1-hour videoconference with a health educator about sensitive health topics … where would you have the videoconference? Select all that apply (n=120)	
In my own home	99 (82.5)
In my car	16 (13.3)
At a friend or relative's home	7 (5.8)
At work or school	2 (1.7)
In an outdoor private space	6 (5.0)
In an outdoor public space	4 (3.3)
If you were having a 1-hour videoconference with a health educator about sensitive health topics … how would you log onto the videoconference? Select all that apply (n=120)	
Using my personal computer	83 (69.2)
Using my personal smartphone	53 (44.2)
Using a shared computer or smartphone	3 (2.5)
Another way	1 (0.8)

Table 1 (*continued*)

Table 1 (*continued*)

Variables	Number of respondents (%)*, N=120†
If you were having a 1-hour videoconference with a health educator about sensitive health topics … how would you prefer to receive educational materials related to this discussion about your sexual health? Rank your first choice (n=97)	
As an email attachment	59 (60.8)
Through a website link	20 (20.6)
As a package mailed to my house	16 (16.5)
Another way	2 (2.1)

*, data are expressed as number of respondents (%) except where noted; †, number of respondents varies based on response to individual items. SRH, sexual and reproductive health; COVID-19, coronavirus disease 2019; PHQ-8, Patient Health Questionnaire-8; IQR, interquartile range; PVI, penile-vaginal intercourse; STI, sexually transmitted infection; STD, sexually transmitted disease.

pregnancy (1-8). In this study, we sought to shed light on the impact of the pandemic on mood and healthcare access and ascertain perspectives on virtual SRH counseling in a sample of young adults AFAB. The study findings revealed that three-quarters of respondents reported subjective worsening of mood that they attributed to the pandemic. This was significantly correlated with higher PHQ-8 scores, supporting previously described associations between the pandemic and increased mental health concerns among young adults (6,27,28). Adverse experiences related to the pandemic have also been associated with a heightened risk for clinically high depressive and anxious symptoms (29). Among the participants who reported having penile-vaginal intercourse in the 3 months prior to taking the survey, nearly all of them endorsed at least one SRH risk behavior. Over a quarter of respondents reported difficulty getting healthcare due to the pandemic. These findings indicate that while there is a high need for mental health care and SRH care among young adults AFAB, the pandemic has hindered access to these resources. This is supported by other research showing an association between disrupted access to in-person SRH services during the pandemic and an increase in unplanned pregnancies and unmet STI testing need (30-33).

Our results showed that most participants felt comfortable with the different aspects of videoconference healthcare. The majority would be willing to participate in a remote discussion about sensitive health topics in a private space of their choosing on their personal computer or smartphone. Most also expressed comfort with the idea of receiving materials related to the discussion remotely. We found no evidence for differences in videoconference preferences or comfort by depressive symptoms or SRH risk. These findings suggest that clinicians might consider utilizing videoconferencing and the digital provision of educational materials to tailor sexual health visits. Moreover, the finding that most participants would prefer to take a survey on their mobile device may inform future research.

It is worth noting that the percentage of participants with depression based on PHQ-8 score (31.5%) was lower than that reported by respondents in another survey study examining the impacts of the pandemic on mental health in young adults across the U.S. (43.3%) (27). However, this could be due in part to data collection for that survey beginning shortly after the lockdown period began (April–May 2020) (27). Our findings are limited by the cross-sectional design and small sample size, the latter likely due to recruiting passively via flyers in health centers, which had fewer in-person visits due to the pandemic. This introduced the possibility for sampling bias, as only people who were able to access SRH care in these health centers were surveyed. Therefore, it is possible that the proportion of young adults AFAB who had difficulty accessing healthcare due to the pandemic was greater and represented a more diverse range of demographics than the 26.7% reported here. The study materials were all written in English, which could have influenced the results given that non-English speakers have previously been found to be more reliant on audio-only healthcare over videoconference healthcare (34,35). The sample was also majority White and participants recruited from one healthcare organization in Wisconsin, limiting generalizability.

This study has several strengths. We were able to survey a population that may have unique healthcare needs during a time in which in-person contact was limited and information about how to optimize virtual health care and

Table 2 Associations of COVID-19 impacts and experience and comfort with videoconference healthcare with depressive symptoms and sexual risk behaviors[†]

Survey question category	Survey question responses and statistics	Depressive symptoms		At least 1 sexual risk behavior
		PHQ-8 score, median [IQR]	PHQ-8 score ≥10, n (%)	Yes, n (%)
Impacts of COVID-19 pandemic	Made mood worse	n=111	n=111	n=114
	Yes	8 [4–11.8]	30 (27.0)	78 (68.4)
	No	4 [1–7]	5 (4.5)	23 (20.2)
	U or χ^2	722.50	2.80	0.41
	P	0.005*	0.09	0.52
	Difficulty getting healthcare	n=110	n=110	n=113
	Yes	8 [4–10.25]	9 (8.2)	26 (23.0)
	No or N/A	7 [3–11]	25 (22.7)	74 (65.5)
	U or χ^2	1,091.50	0.02	0.13
	P	0.47	0.90	0.71
Experience and comfort with videoconference healthcare	Previously participated	n=105	n=105	n=107
	Yes	7 [3.25–1]	18 (17.1)	54 (50.5)
	No	7 [3–11.5]	15 (14.3)	42 (39.3)
	U or χ^2	1,313.00	0.03	3.33
	P	0.70	0.87	0.07
	Comfortable with tech	n=105	n=105	n=107
	Yes	7 [3–10.25]	24 (22.9)	69 (64.5)
	No	6.5 [3–10.25]	9 (8.6)	27 (25.2)
	U or χ^2	1,077.50	0.04	0.004
	P	0.74	0.84	0.95
	Comfort with talking	n=105	n=105	n=107
	Yes	7 [3.5–10.5]	20 (19.0)	62 (57.9)
	No	7 [3–12]	13 (12.4)	34 (31.8)
	U or χ^2	1,223.50	0.56	0.29
	P	0.90	0.46	0.59
	Enough privacy	n=105	n=105	n=107
	Yes	7 [4–12]	23 (21.9)	65 (60.7)
	No	5.5 [3–10.3]	10 (9.5)	31 (29.0)
	U or χ^2	1,047.50	0.10	0.07
	P	0.27	0.76	0.79

[†], some numbers may not add up to the total sample size (n=120) as respondents may have skipped questions; *, P<0.05. COVID-19, coronavirus disease 2019; PHQ-8, Patient Health Questionnaire-8; IQR, interquartile range; N/A, not applicable.

counseling was crucially needed. We also did not limit our study to cisgender females, allowing for participants AFAB with diverse gender identities to participate. Additionally, we asked respondents for their opinions and preferences regarding virtual SRH counseling in the context of research study participation—an area that, to the best of our knowledge, has rarely been explored.

Conclusions

This research offers important insight into pandemic impacts on mood and healthcare access in young adults AFAB. Although further research is needed, these findings suggest that videoconferencing may be an acceptable means of facilitating SRH research and addressing unmet SRH needs within a clinical context in this population, regardless of the severity of their depressive symptoms and presence of SRH risk. Future research should expand upon these findings by using alternative recruitment methods (e.g., social media) to try to survey individuals who may be less likely to access in-person SRH services and may therefore be even more likely to benefit from the use of videoconference healthcare than the participants surveyed for this study.

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Footnote

Reporting Checklist: The authors have completed the SURGE reporting checklist. Available at https://mhealth.amegroups.com/article/view/10.21037/mhealth-22-38/rc

Data Sharing Statement: Available at https://mhealth.amegroups.com/article/view/10.21037/mhealth-22-38/dss

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Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). The study was approved by the Institutional Review Board of Boston Children's Hospital (No. IRB-P00036721) and informed consent was taken from all individual participants.

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