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Short communication

Clinician-perceived barriers to cervical cancer screening before and during the COVID-19 pandemic at three US healthcare systems

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ABSTRACT

Introduction: The COVID-19 pandemic posed serious challenges to cancer screening delivery, including cervical cancer. While the impact of the pandemic on deferred screening has been documented, less is known about how clinicians experienced barriers to screening delivery, and, in particular, the role of pre-pandemic barriers to changes reported during the pandemic.

Methods: Survey of clinicians who performed ≥ 10 cervical cancer screening tests in 2019 from Mass General Brigham, Kaiser Permanente Washington, and Parkland Health, the healthcare systems participating in the Population-based Research to Optimize the Screening Process (PROSPR II) consortium (administered 10/2020–12/2020, response rate 53.7 %).

Results: Prior to the pandemic, clinicians commonly noted barriers to the delivery of cervical cancer screening including lack of staff support (57.6%), interpreters (32.5%), resources to support patients with social barriers to care (61.3%), and discrimination or bias in interactions between staff and patients (31.2%). Clinicians who reported experiencing a given barrier to care before the pandemic were more likely than those who did not experience one to report worsening during the pandemic: lack of staff support (odds ratio 4.70, 95% confidence interval 2.94–7.52); lack of interpreters (8.23, 4.46–15.18); lack of resources to support patients in overcoming social barriers (7.65, 4.41–13.27); and discrimination or bias (6.73, 3.03–14.97).

Conclusions: Clinicians from three health systems who deliver cervical cancer screening commonly reported barriers to care. Barriers prior to the pandemic were associated with worsening of barriers during the pandemic. Addressing barriers to cervical cancer screening may promote resilience of care delivery during the next public health emergency.

1. Introduction

While cervical cancer incidence and mortality have declined in the United States (US) since the introduction of the Papanicolaou (Pap) test (Safaeian et al., 2007), guideline concordant screening rates declined from 2005 to 2019 (Suk et al., 2022). The COVID-19 pandemic posed a serious new challenge to cancer screening delivery. Estimates suggest that cervical cancer screenings dropped by as much as 94 % during 2020 (Chen et al., 2021).

The pandemic's effect on cancer prevention is often discussed in

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terms of missed screenings and increased risks for patients (Chen et al., 2021). Yet how clinicians who conduct cancer screening experienced challenges in providing screenings during the pandemic is less well understood. Even before the pandemic, primary care clinicians reported inadequate systems to support cancer screening (Schapira et al., 2016).

The goal of this study was to describe barriers to cervical cancer screening prior to and during the pandemic by surveying clinicians at three large healthcare systems. This information may inform institutions as they focus renewed efforts on cancer screening and prevention and consider changes to infrastructure to minimize disruptions during future public health crises (Wang, 2023).

2. Methods

This study includes healthcare systems participating in the Population-based Research to Optimize the Screening Process (PROSPR II) consortium (Beaber et al., 2022): Mass General Brigham (MGB), a Boston-area healthcare system; Kaiser Permanente Washington (KPWA), a mixed-model healthcare system in Washington State; and Parkland Health (PH), a safety-net healthcare system for under-/un-insured Dallas County residents (all located in the US). Survey methods have previously been described (Kruse et al., 2023). In brief, an online confidential survey was administered by email, from October-December 2020 to clinicians who performed ≥ 10 cervical cancer screening tests in 2019 and specialized in family medicine, internal medicine, or obstetrics/ gynecology. Institutional review boards at each site approved study activities.

Survey questions included clinicians' sociodemographic characteristics (age, gender, race, ethnicity, employment status, degree and specialty). Clinicians were also asked to report on barriers to cervical cancer screening both before and during the pandemic including: lack of staff support (defined as lack of staff support for at least one of the following three items: scheduling cervical cancer screenings, communicating results or scheduling follow-up of an abnormal result); lack of interpreters to communicate in patient's preferred language; lack of resources to support patients in overcoming social barriers to receiving timely screening; and discrimination or bias in interactions between clinic staff and patients due to race, language, or other patient characteristics. For each category, clinicians were asked to report whether it was a barrier prior to the pandemic (not a barrier, minor barrier, major barrier) which was categorized for the analysis as any vs. no barrier, and compared to during the pandemic whether the barrier was the same, better, or worse than before the pandemic (dichotomized as worse vs. not worse).

For each barrier, we evaluated the association between clinician sociodemographic factors (age, employment status, clinician type and specialty) and the likelihood of reporting that the potential barrier: 1) was a barrier pre-pandemic (versus not a barrier), and 2) worsened during the pandemic (versus did not worsen). We used logistic regression to estimate adjusted odds ratios (aOR) and 95 % confidence interval (CI)s. We additionally evaluated whether reporting the barrier pre-pandemic was related to reporting a worsening of the barrier during the pandemic. We used logistic regression to estimate adjusted odds ratios (aOR) and 95 % confidence interval (CI)s.

3. Results

A total of 501 of 933 eligible clinicians (53.7 %) completed the survey; additional exclusions included 9 who had not performed a cervical cancer screening within 12 months of survey administration, and 3 who did not respond to the questions regarding barriers, leaving 489 clinicians for analyses. Most clinicians were female, white, employed full-time and physicians (Table 1). Prior to the pandemic, clinicians commonly noted barriers to the delivery of cervical cancer screening including lack of staff support (57.6 %), lack of interpreters (32.5 %), lack of resources to support patients in overcoming social barriers to care (61.3 %), and discrimination or bias in interactions between clinic staff and patients (31.2 %) (Table 2). Younger clinicians were more likely than middle-aged clinicians to report that lack of staff support and resources to address social needs were barriers to cervical cancer screening. Full-time clinicians were more likely than part-time clinicians to report lack of resources to address social needs. Physicians were more likely than advanced practice clinicians (APC) to report discrimination/ bias. Obstetrician/ gynecologists and family medicine clinicians were less likely than general internists to report lack of staff support as a barrier.

Table 1
Characteristics of clinician survey respondents, overall and by site (Fall 2020).

	All		MGB		KPWA		PH	
	N	%	N	%	N	%	N	%
Total	489	100	221	100	199	100	69	100
Age (years)								
<40	160	33.3	51	23.2	88	45.4	21	31.3
40–59	246	51.1	125	56.8	85	43.8	36	53.7
≥60	75	15.6	44	20.0	21	10.8	10	14.9
Gender Identity								
Female	407	85.0	193	88.5	153	79.3	61	89.7
Male	72	15.0	25	11.5	40	20.7	7	10.3
Race and Ethnicity								
Black/African American	22	4.7	10	4.8	8	4.6	17	24.6
Hispanic	18	3.8					5	7.2
Asian/Asian American	80	16.9	32	14.7	32	16.8	16	23.2
White/Caucasian	324	68.6	167	77.0	134	70.5	23	33.3
Other	28	5.9	8	3.7	16	8.4	–	–
Employment Status								
Full-time	323	66.1	148	67.0	109	55.1	66	95.7
Part-time	165	33.7	73	33.0	89	44.9	–	–
Clinician Type								
Physician (MD or DO)	344	70.3	182	82.4	142	71.4	20	29.0
Advanced Practice Clinician	145	29.7	39	17.6	57	28.6	49	71.0
Clinician Specialty								
Family Medicine	196	40.1	22	10.0	146	73.4	28	40.6
General Internal Medicine	167	34.2	153	69.2	12	6.0	–	–
Obstetrics and Gynecology	126	25.8	46	20.8	41	20.6	39	56.5

Note: Mass General Brigham (MGB), Boston, MA Kaiser Permanente Washington (KPWA), Washington state; Parkland Health (PH), Dallas, TX. Cell sizes < 5 were suppressed/ combined. Responses were unknown for: age (n = 8), gender identity (n = 10), race/ethnicity (n = 17), and employment status (n = 1).

During the pandemic, approximately one-third of clinicians reported worsening of staff support and resources to address social barriers; fewer reported worsening of interpreter support or discrimination/bias as barriers to cervical cancer screening (Table 2). Clinician reports of experiencing a particular barrier to care before the pandemic was significantly associated with worsening of that barrier across all four barriers: lack of staff support (aOR = 4.70 [2.94–7.52]; lack of interpreters 8.23 [4.46–15.18]; lack of resources to address social barriers 7.65 [4.41–13.27]; and discrimination/bias 6.73 [3.03–14.97]). Clinician characteristics were largely not associated with reports of worsening of barriers after adjusting for reports of experiencing the barrier pre-pandemic.

4. Discussion

Before the COVID-19 pandemic, many clinicians in our survey reported barriers to screening, particularly lack of staff support and resources to support patients. Clinicians who experienced a given barrier to providing cervical cancer prevention before the pandemic were more likely than those who did not to report worsening of that barrier during the public health emergency in the fall of 2020.

While prior work has described patients' experiences in the use of

Table 2
Clinicians' perception of barriers to cervical cancer screening prior to the pandemic and barrier worsening during the COVID-19 pandemic (Fall 2020).

		Before COVID-19		During COVID-19	
		% With anybarrier	Adjusted Odds Ratio (95 % CI)	% Worsening	Adjusted Odds Ratio (95 % CI)
Lack of staff support[§]	**All (n = 488)**	57.6		35.3	
	Pre-COVID Barrier				
	Not a barrier			15.1	Reference
	Minor/major barrier			50.0	4.70 (2.94–7.52)
	Age (years)				
	< 40	67.5	1.74 (1.11–2.74)	38.4	0.76 (0.46–1.24)
	40–59	55.1	Reference	38.3	Reference
	≥ 60	46.7	0.67 (0.39–1.17)	21.3	0.46 (0.24–0.90)
	Employment Status				
	Full-time	55.7	Reference	32.3	Reference
	Part-time	61.6	1.12 (0.72–1.74)	41.4	1.16 (0.72–1.86)
	Clinician Type				
	Physician (MD or DO)	59.0	Reference	38.0	Reference
	Advanced Practice Clinician	54.2	0.85 (0.53–1.36)	28.7	0.90 (0.54–1.52)
	Clinician Specialty				
	Family Medicine	58.7	0.43 (0.22–0.82)	37.9	0.72 (0.35–1.45)
	General Internal Medicine	65.9	Reference	44.6	Reference
	Obstetrics and Gynecology	44.8	0.29 (0.16–0.54)	18.5	0.33 (0.16–0.68)
Lack of interpreters	**All (n = 486)**	32.5		13.8	
	Pre-COVID Barrier				
	Not a barrier			5.2	Reference
	Minor/major barrier			30.8	8.23 (4.46–15.18)
	Age (years)				
	< 40	38.1	1.42 (0.91–2.24)	13.2	0.78 (0.39–1.56)
	40–59	30.5	Reference	14.4	Reference
	≥ 60	28.0	0.93 (0.52–1.68)	13.3	1.07 (0.46–2.49)
	Employment Status				
	Full-time	33.1	Reference	14.0	Reference
	Part-time	31.5	0.96 (0.62–1.51)	13.6	0.81 (0.42–1.57)
	Clinician Type				
	Physician (MD or DO)	34.2	Reference	14.9	Reference
	Advanced Practice Clinician	28.5	0.61 (0.37–1.01)	11.2	1.06 (0.50–2.23)
	Clinician Specialty				
	Family Medicine	33.2	1.00 (0.52–1.92)	12.3	1.06 (0.43–2.63)
	General Internal Medicine	30.3	Reference	16.3	Reference
	Obstetrics and Gynecology	34.4	1.19 (0.65–2.17)	12.9	0.85 (0.36–2.01)
Lack of resources to support patients in overcoming social barriers	**All (n = 488)**	61.3		33.1	
	Pre-COVID Barrier				
	Not a barrier			10.8	Reference
	Minor/major barrier			47.1	7.65 (4.41–13.27)
	Age (years)				
	< 40	68.8	1.64 (1.04–2.59)	41.8	1.52 (0.92–2.53)
	40–59	60.8	Reference	32.1	Reference
	≥ 60	48.0	0.63 (0.36–1.08)	17.6	0.49 (0.24–1.01)
	Employment Status				
	Full-time	65.5	Reference	31.3	Reference
	Part-time	53.3	0.62 (0.40–0.95)	37.0	1.52 (0.93–2.5)
	Clinician Type				
	Physician (MD or DO)	63.6	Reference	36.0	Reference
	Advanced Practice Clinician	55.9	0.63 (0.39–1.02)	26.4	0.72 (0.41–1.25)
	Clinician Specialty				
	Family Medicine	60.5	0.88 (0.46–1.67)	33.2	0.93 (0.46–1.89)
	General Internal Medicine	64.1	Reference	40.6	Reference
	Obstetrics and Gynecology	58.7	0.83 (0.46–1.51)	23.2	0.64 (0.33–1.25)
Discrimination or bias in interactions between clinic staff and patients	**All (n = 487)**	31.2		8.1	
	Pre-COVID Barrier				
	Not a barrier			3.6	Reference
	Minor/major barrier			18.0	6.73 (3.03–14.97)
	Age (years)				
	< 40	31.4	0.98 (0.61–1.56)	7.6	0.84 (0.36–1.95)
	40–59	33.9	Reference	9.1	Reference
	≥ 60	24.0	0.63 (0.34–1.16)	4.0	0.49 (0.13–1.83)
	Employment Status				
	Full-time	31.4	Reference	7.8	Reference
	Part-time	31.1	0.88 (0.56–1.38)	8.7	1.37 (0.60–3.10)

(*continued on next page*)

Table 2 (*continued*)

		Before COVID-19		During COVID-19	
		% With anybarrier	Adjusted Odds Ratio (95 % CI)	% Worsening	Adjusted Odds Ratio (95 % CI)
	Clinician Type				
	Physician (MD or DO)	35.0	Reference	8.8	Reference
	Advanced Practice Clinician	22.2	0.55 (0.32–0.93)	6.3	0.63 (0.23–1.73)
	Clinician Specialty				
	Family Medicine	26.8	0.67 (0.34–1.30)	8.9	3.60 (1.08–12.0)
	General Internal Medicine	34.7	Reference	6.7	Reference
	Obstetrics and Gynecology	33.3	1.09 (0.60–1.98)	8.8	2.15 (0.75–6.16)

Notes:
[§]Lack of staff support was based on the following survey items: lack of staff support for scheduling patients for cervical cancer screening; communicating screening test results to patients; and scheduling patients for follow-up after an abnormal screening result.
ORs were also adjusted for clinician gender identity, race and ethnicity, and health care system.

cancer screenings as well as the effects of the pandemic on their use of screenings (Becker et al., 2021; Buskwofie et al., 2020; Wentzensen et al., 2021; Akinlotan et al., 2017), less is known about the barriers to the delivery of cervical cancer screening experienced by clinicians. The clinician's perspective reflects infrastructure barriers to providing cancer screening (Biddle et al., 2020; Lugten et al., 2022). Disaster management often includes a de-prioritization of preventive health services and a reassignment of staff (Puricelli Perin et al., 2021). Our study, which shows an increase of barriers for clinicians providing cervical cancer screenings during a pandemic, particularly for those experiencing barriers before the pandemic, is consistent with this practice.

Infrastructure to support the delivery of preventive care has historically been under-resourced and the pandemic resulted in a worsening of this infrastructure and a decline in the primary care workforce (Grumbach et al., 2021). Although worse during the COVID-19 crisis, many of these barriers were already present. This study emphasizes the need to develop robust infrastructure to address barriers to cervical cancer screening, including lack of staff support, interpreters, and resources to overcome social barriers, and discrimination and bias in interactions.

Our study's data may be limited by the ability of respondents to retrospectively recall barriers prior to the pandemic. While our settings represent a diversity of care systems, our findings may not be generalizable. We could not fully examine clinician characteristics associated with perceived barriers due to the small sample sizes of some groups. Despite these limitations, we believe that the findings of this survey of clinician experiences across three health systems provide important insights to improve the delivery of cervical cancer screening. Our response rate is higher than a recent international survey of primary care physicians (Gunja et al., 2022).

Across three diverse health systems, we found that many clinicians delivering cervical cancer screening reported barriers to providing care and that those barriers worsened during the pandemic. These findings suggest opportunities to provide structural supports to reduce barriers to cervical cancer screening to promote a resilient preventive care delivery system.

5. Funding and conflicts of interest

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CRediT authorship contribution statement

Veronica M. Boratyn: Writing – original draft, Conceptualization. **Gaia Pocobelli:** Conceptualization, Methodology, Writing – review & editing. **Steven J. Atlas:** Conceptualization, Writing – review & editing. **Cheryl R. Clark:** Conceptualization, Writing – review & editing. **Sarah Feldman:** Conceptualization, Writing – review & editing. **Gina Kruse:** Conceptualization, Methodology, Writing – review & editing. **Anne Marie McCarthy:** Conceptualization, Writing – review & editing. **Meghan Rieu-Werden:** Data curation, Formal analysis, Writing – review & editing. **Michelle I. Silver:** Conceptualization, Writing – review & editing. **Noel O. Santini:** Writing – review & editing. **Jasmin A. Tiro:** . **Jennifer S. Haas:** Conceptualization, Data curation, Funding acquisition, Methodology, Project administration, Supervision, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The data that has been used is confidential.

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