Title

A qualitative study of primary care clinician’s approach to ending cervical cancer screening in older women in the United States

Authors

Holt, Hunter K
Flores, Rey
James, Jennifer E
et al.

Publication Date

2023-12-01

DOI

10.1016/j.pmedr.2023.102500

Peer reviewed

Preventive Medicine Reports 36 (2023) 102500

Contents lists available at ScienceDirect

Preventive Medicine Reports

journal homepage: www.elsevier.com/locate/pmedr

A qualitative study of primary care clinician's approach to ending cervical cancer screening in older women in the United States

Hunter K. Holt [a,*], Rey Flores [a], Jennifer E. James [b], Catherine Waters [c], Celia P. Kaplan [d], Caryn E. Peterson [e], George F. Sawaya [f]

[a] *Department of Family and Community Medicine, University of Illinois at Chicago, USA*
[b] *Department of Social & Behavioral Sciences, and UCSF Bioethics, University of California, San Francisco, CA, USA*
[c] *Department of Community Health Systems, School of Nursing, University of California, San Francisco, USA*
[d] *Department of Medicine, Division of General Internal Medicine University of California, San Francisco, USA*
[e] *Department of Epidemiology and Biostatistics, University of Illinois at Chicago, Chicago, USA*
[f] *Department of Obstetrics, Gynecology, and Reproductive Sciences, University of California, San Francisco, USA*

ARTICLE INFO

Keywords:
Cervical cancer screening
Ending screening
US Preventive Services Task Force
Cervical cancer
Qualitative study
Screening guidelines

ABSTRACT

The United States Preventive Services Task Force (USPSTF) recommends that cervical cancer screening end in average-risk patients with a cervix at 65 years of age if adequate screening measures have been met, defined as having 1) at least three normal consecutive cytology (Pap) tests, or 2) two normal cytology tests and/or two negative high-risk human papillomavirus tests between ages 55–65; the last test should be performed within the prior 5 years. Up to 60 % of all women aged 65 years and older who are ending screening do not meet the criteria for adequate screening. The objective of this study was to understand the process and approach that healthcare clinicians use to determine eligibility to end cervical cancer screening. In 2021 we conducted semi-structured interviews in San Francisco, CA with twelve healthcare clinicians: two family medicine physicians, three general internal medicine physicians, two obstetrician/gynecologists and five nurse practitioners. Thematic analysis, using inductive and deductive coding, was utilized. Three major themes emerged: following guidelines, relying on self-reported data regarding prior screening, and considering sexual activity as a factor in the decision to end screening. All interviewees endorsed following the USPSTF guidelines and they utilized self-report to determine eligibility to end screening. Clinicians' approach was dependent in part on their judgement about the reliability of the patient to convey their screening history. Sexual activity of the patient was considered when making clinical recommendations. Shared decision-making was often utilized. Clinicians voiced a strong reliance on self-reported screening history to end cervical cancer screening.

1. Introduction

All major organizations (including United States Preventive Services Taskforce [USPSTF], American Cancer Society [ACS], and the American College of Obstetricians and Gynecologists) in the United States recommend that cervical cancer screening begin at age 21 or 25 and end at the age of 65 in an average-risk person with a cervix who has had prior adequate screening (United States Preventive Services Task Force, 2018; Fontham et al., 2020; 'Updated Cervical Cancer Screening Guidelines', 2021). Adequate screening was defined by the ACS/American Society for Colposcopy and Cervical Pathology (ASCCP)/American Society for Clinical Pathology joint statement in 2012 as three consecutive negative cytology tests or two or more consecutive prior human papillomavirus (HPV) test results (with or without cytology) within the prior 10 years with the last normal test documented within the prior five years (if an HPV test) or three years (if a cytology test) ('Screening for Cervical Cancer: U.S. Preventive Services Task Force Recommendation Statement', 2012; 'ACOG Practice Bulletin Number 131: Screening for cervical cancer', 2012; Pollack et al., 2012; Saslow et al., 2012).

Unlike other cancer screening guidelines that end screening at an older age and with a shared decision-making process, cervical cancer screening stops at age 65 if the patient has met adequate screening

---

* Corresponding author at: Department of Family and Community Medicine, University of Illinois at Chicago, 1919 West Taylor Street, Room 196, Chicago, IL 60612, USA.

E-mail address: hholt2@uic.edu (H.K. Holt).

https://doi.org/10.1016/j.pmedr.2023.102500
Received 8 August 2023; Received in revised form 18 October 2023; Accepted 5 November 2023

recommendations (Siu, 2016; US Preventive Services Task Force, 2021). In fact, the USPSTF gives screening after age 65 a "D" recommendation, indicating that there is no net screening benefit or screening harms outweigh screening benefits in this population (United States Preventive Services Task Force, 2018).

Despite these guidelines, a significant percentage of patients over 65 are being both potentially under screened and over screened (Qin et al., 2022). Recently, studies have found that 24–65 % of women did not meet the definition of adequate cervical cancer screening by age 65 in various healthcare settings (Cejtin and Schmidt, 2020; Chao,Xu,and Lonky, 2019; Mills,Morgan,Dhaliwal,and Perkins, 2021). Underscreening is especially relevant because over 20 % of cervical cancer cases are diagnosed in women older than 65 years of age in the United States, and over 36 % of cervical cancer-related deaths occur in this age group ('Cancer Stat Facts: Cervical Cancer', 2022).

Given the high rate of underscreening it is important to assess how health care clinicians make decisions regarding stopping screening and the difficulties they face in implementing these guidelines. Thus, the objective of this study was to understand through qualitative interviews the process and approach that healthcare clinicians use to end cervical cancer screening in older women.

2. Materials and methods

2.1. Interview guide development

We conducted semi-structured qualitative interviews of healthcare clinicians at an academic medical institution and safety-net hospital system in San Francisco, California. Using our clinical experience, we created an interview guide to evaluate healthcare clinicians' approach to ending cervical cancer screening in older individuals (Appendix). The interview guide was designed to help understand healthcare clinicians' 1) current attitudes and beliefs about cervical cancer screening guidelines, 2) the decision-making process they use to end screening, 3) the barriers and facilitators to ending cervical cancer screening, 4) the patient's role in the decision-making process, and 5) the patient-clinician communication regarding ending screening.

In addition, we utilized two clinical scenarios to explore their medical decision-making processes. Scenario 1 concerned a patient older than age 65 who was being seen in the clinic and self-reported a normal screening history, but upon obtaining records only had one screening Pap test 10 years prior. Scenario 2 involved a patient older than age 65 who had recently emigrated from another country and had no medical records and self-reported normal screening history (Table 1).

2.2. Recruitment

Eligibility criteria included: healthcare clinicians working in a primary care setting (family medicine physicians, internal medicine physicians, obstetrician/gynecologists, and advanced practice practitioners) and perform cervical cancer screening in older women over the age of 60. Potentially eligible healthcare clinicians were contacted by internal academic listservs. Interested healthcare clinicians contacted the study team for enrollment. After determining study eligibility, individual healthcare clinicians were invited to participate in a virtual or telephone interview.

Table 1
Clinical scenarios utilized in interview guide.

Clinical Scenario 1
A patient older than age 65 enters your clinic and reports routine normal cervical cancer screening tests and never having had an abnormal test result. After trying to obtain records, you are only able to verify that the patient had one normal Pap test 10 years ago.
Clinical Scenario 2
A patient older than age 65 who just immigrated from another country enters your clinic to establish care. The patient does not have any medical records and self-reports normal testing their whole life.

2.3. Interviews

All interviews were conducted by the same family medicine physician interviewer (HH). Verbal informed consent was obtained from each participant. Each participant completed a brief demographic survey (age, gender identity, clinician specialty, self-identified race/ethnicity, and years in practice). Semi-structured interviews lasted approximately 45 to 60 min. The study was approved by the University of California, San Francisco Institutional Review Board.

2.4. Data analysis

Interviews were transcribed by a professional transcription service and coded by two of the authors (HH, RF) using Dedoose software 9.0.17. An inductive and deductive thematic analysis approach was utilized (Braun and Clarke, 2006). The codebook was developed initially after conducting all interviews to identify themes related to ending cervical cancer screening in older patients. After independently coding each transcript, the two authors met to discuss and further refine the codebook with new codes to further isolate various aspects of clinician decision-making. During these meetings, consensus regarding the codes' definitions were also obtained.

An a priori sample size of approximately 10–15 participants was selected was selected based on previous studies and the anticipated complexity for our research questions (Lewis,Griffith,Pignone,and Golin, 2009; Oshima et al., 2021). Data were analyzed after 12 interviews were conducted (Fusch and Ness, 2015; Saunders et al., 2018), and it was decided that inductive thematic saturation was indeed reached (Saunders et al., 2018).

3. Results

Of the participants, two identified as male, one as non-binary, and nine as female. The average age of participants was 46 (range: 32–60). Two were obstetrician/gynecologists, three were internal medicine physicians, two were family medicine physicians, and five were nurse practitioners that worked in a variety of primary care settings. Average years in practice was 17.3 (range: 4–34) (Table 2).

Table 2
Participant Characteristics, N = 12.

Characteristic	Total N (%)
Age (mean, range)	46 (32–60)
Gender	
Female	9 (75.0)
Male	2 (16.7)
Non-Binary	1 (8.3)
Clinician Type	
Obstetrician/gynecologist	2 (16.7)
Internal Medicine physician	3 (25.0)
Family Medicine physician	2 (16.7)
Nurse practitioner	5 (41.6)
Race	
White	6 (50.0)
Black/African American	1 (8.3)
Asian	5 (41.7)
Years in Practice (mean, range)	17.3 (4–34)

Key themes and subthemes identified from the clinicians' perspectives are presented in the following sub-sections (Fig. 1).

3.1. *Following clinical guidelines/recommendations*

All the participants reported following the USPSTF guidelines and/or American Society for Colposcopy and Cervical Pathology (ASCCP) cervical cancer screening management guidelines. In general, healthcare clinicians had a good understanding of the requirements to end screening in patients older than 65.

3.1.1. *65 is a magic number*

Despite the understanding of "adequate screening" many clinicians treated 65 as a binary cut off rather than a timepoint in which careful consideration of a patient's screening history is needed. Several clinicians acknowledged that while ending cervical cancer screening at age 65 is arbitrary, they embrace the cut off and actively use it in their practice. The usage of age 65 as a cut off was most prominent when clinicians needed to address many issues but had limited clinic time to review a patient's screening history (Table 3, Quote 1).

3.1.2. *Utilizing shared decision-making*

Despite no recommendations by the USPSTF regarding shared decision-making to end screening, clinicians tended to approach ending screening in their older patients in a shared decision-making manner, giving the patient a larger role in the decision-making process. Clinicians described how they would review the history of their patients, and if they met requirements to end screening, would discuss with patients those results, the guidelines, and their recommendation to end screening. Per most clinicians, this would result in very little pushback from patients, who were generally happy to end screening (Table 3, Quote 2). Some clinicians who employed shared decision-making also found that this approach could lead to additional screening.

Several clinicians described counseling their patients without a shared decision-making approach. If the patient met adequate screening recommendations, they would discuss with their patient that screening is no longer necessary, leaving little room for a patient's input in the decision-making processing. When faced with patient pushback, these clinicians would explain that insurance would likely not cover the screening test despite the clinician not knowing if this was necessarily true (Table 3, Quote 3).

3.1.3. *Bending of the guidelines*

When clinicians were asked to reflect on the prepared clinical scenarios, clinicians would default to the guidelines' recommended review of 10 years of screening history but would approach this in a shared decision-making fashion. When discussing their recommendations, clinicians leaned towards recommending at least one more screening test rather than the guidelines' recommended 2–3 screening tests. A minority of clinicians recommended that two additional screening tests over the next 10 years were necessary prior to end screening (Table 3, Quote 4).

3.2. *Relying on self-report*

3.2.1. *Difficulty obtaining medical records*

All clinicians, when encountering a new patient, voiced that they would do their best to obtain medical records for previous medical history. Many participants acknowledged obtaining records was a time consuming, tedious, and often unsuccessful task. Moreover, obtaining 10 years of history, especially as patients may change their healthcare clinicians/health systems multiple times over the years, can be even more difficult to obtain records and provide optimal care (Table 3, Quote 5).

When questioned regarding patients who do not have records easily available, all clinicians shared that they would accept self-reported cervical cancer screening history to aid in their recommendation to end cervical cancer screening. Even if the records were available for established patients, some clinicians would default to the self-reported screening history rather than review the electronic health record to verify the patient's reported history (Table 3, Quote 6). Some clinicians even went as far to state that it is the patient's responsibility to know their own screening history (Table 3, Quote 7). At the same time, clinicians would also acknowledge the fact that many patients often mistake a pelvic (speculum) examination for a cervical cancer screening test (Table 3, Quote 8). Thus, clinicians often created a decision-making framework or paradigm to evaluate the credibility of the patient's self-reported history to determine if further screening was indicated.

3.2.2. *Evaluating reliability of self-reported screening history*

Clinicians relied on their ability to perceive the reliability of the patients' self-reported screening history. Clinicians tended to believe that their patients had excellent understanding of their results if they reported an abnormal screening result in the past, especially a screening

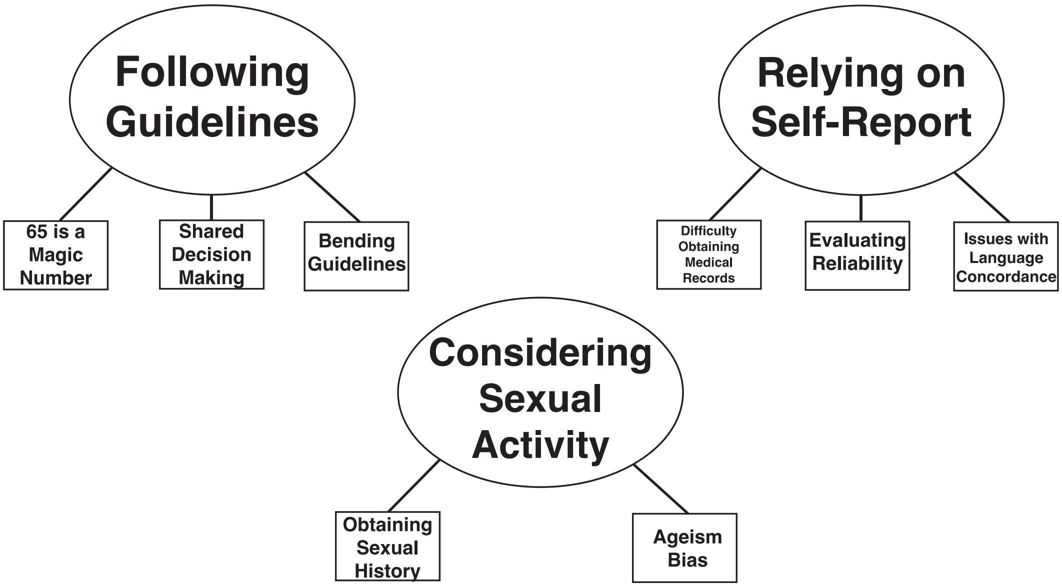

Fig. 1. Key themes and subthemes identified.

Table 3
Key Themes and Subthemes representing clinician perspectives on ending cervical cancer screening in older women.

Theme	Subtheme	Quote #	Representative Quote
Following Clinical Guidelines	65 is a Magic Number	1	"65 is not a magical number. Just like 35 is not a magical number for pregnancy…But it's kind of become this like set thing. And I think 65 is the same thing. But, I screen them up to age 65. And then after 65, I just say, 'we don't need to do it anymore.' (Internal Medicine Physician)
	Utilizing Shared Decision Making	2	"I'll share what the guidelines are, what my recommendations are, based on the evidence, and then, ask how the patient feels about proceeding with that recommendation. Most of the time, when I say, 'Hey. You're done with, whether that's cervical cancer screening or any cancer screening,' they're like, 'Great. Awesome. I don't have to do that anymore.' They're pretty happy about it." (Internal Medicine Physician)
	Utilizing Shared Decision Making	3	"I usually tell them that it is very unlikely that Medicare would pay for that. If they feel that strongly, then they would have to petition Medicare on their own, because I can't do it. I don't have the medical justification to petition them. And that usually that settles it. Because Medicare is not going to pay for it. And most people don't want to pay for both the Pap smear and its interpretation." (Obstetrician/Gynecologist)
	Bending of the Guidelines	4	"It would be shared decision-making with the patient. I'd tell them that they would need two tests in the last ten years that were negative for us to feel really comfortable ending screening…Then, I would see what they're comfortable with, in terms of doing another [screening test] or not." (Internal Medicine Physician)
Relying on Self-Report	Difficulty Obtaining Medical Records	5	"I will say in our very fragmented health care system, that is a significant disadvantage to people who don't see the same provider. Or who don't have easy access to their records. That can be challenging." (Obstetrician/Gynecologist)
		6	"If the patient says to me, I've had Pap smears in the past. They've always been normal. I don't feel compelled to look at every single Pap that they've [had]. I don't have to look in our system to document that. I usually take that on faith" (Internal Medicine Physician)
		7	"I have to go on good faith. They're adults." (Nurse Practitioner)
		8	"I think that sometimes people think they had a Pap smear, but what they had was a pelvic exam. And oftentimes, patients don't know the difference, and don't know necessarily what was done." (Nurse Practitioner)
	Evaluating Reliability of Self-Reported Screening History	9	"I mean most people usually know if their Pap smear is abnormal because they like colposcopies even less than Pap smears…They usually can tell you whether they've had to have follow-up for their Pap smear."(Obstetrician/Gynecologist)
		10	"If they are able to report to me…accurately about their past history of tests, they are low risk in terms of lifestyle and they say, 'yeah, I definitely have had no history of abnormal Paps, my previous provider told me that I can go every five years,' if they can tell me that type of information, I would be very comfortable stopping testing…even if I didn't have the records." (Nurse Practitioner)
		11	"People are often confused about dates. I just think that it's hard to remember time…the way that human memory works, one year feels like it could turn into two years." (Nurse Practitioner)
	Issues with Language Concordance and Patients from Countries Outside the United States	12	"My guess is that I bring some bias between European and 'developed countries' and those that are lesser developed or developing nations. My guess is that I bring bias, in weighing the results from more developed countries as more 'legitimate' and probably their screening practices to be more in-line with the United States than I do of countries that are from developing nations. I think that's a bias. (Obstetrician/Gynecologist)
		13	"If I had someone who came from some third world country who is now going to be living here, they were healthy and they'd never had Paps…I might pap and HPV and then do another one and talk to them about it and tell them this doesn't really follow the guidelines…but you haven't had Paps before. Let's do another one or two

(*continued on next page*)

Table 3 (*continued*)

Theme	Subtheme	Quote #	Representative Quote
			and just make sure everything looks normal." (Nurse Practitioner)
Considering Sexual Activity		14	"You're 68, you had one normal Pap smear that you got 10 years ago. And are you with the same sexual partner that you've had 10 years ago? And have you ever had any other sexual partners? And if the answer is, 'Yes, I'm with the same sexual partner. And no, I have no other sexual partners in the 10 years and only that one,' I would probably say, 'Okay it's not ideal, but we're done.'" (Internal Medicine Physician)
		15	"While number of sexual partners, etc. don't determine whether or not we screen, when I'm off guidelines, they will inform my recommendations for the patients." (Obstetrician/ Gynecologist)
	Obtaining Sexual History	16	"It is a hard conversation about sexual history. They don't want to talk about it. And if you try to talk to them about it, they're kind of like brushing it off." (Internal Medicine Physician)
	Agism Bias	17	"Am I more likely to ask someone who is of reproductive age, if they have multiple sexual partners? Probably. Whereas, I don't know that I'm going to ask a 60-year-old if they have multiple sexual partners." (Obstetrician/Gynecologist)

test that required a colposcopy and/or treatment procedure (Table 3, Quote 9).

The ability to provide a coherent and accurate medical history was another factor that clinicians cited in helping to improve their view of their patients' reliability. The more specific a patient can be with the types of tests and the course of care received, the more likely a clinician viewed the patient's recall as reliable. A patient's perceived cognitive function and health literacy were other considerations that influenced clinicians' assessment of patients' recall. Other clinicians voiced that if the patient was in the healthcare field, it improved their perceived reliability of the patient's recall (Table 3, Quote 10). Another consideration in clinicians' evaluation of the reliability of patients' recall of their health history was the time since the last screening test. If the test was greater than a year ago, some clinicians expressed doubts about the accuracy of the reported history (Table 3, Quote 11).

3.2.3. *Issues with language concordance and patients from countries outside the United States*

Language concordance and nativity outside of the US were other factors that influenced the clinicians' decision to end cervical cancer screening. While clinicians endorsed utilizing dedicated interpreters, they were concerned about the accuracy and quality of the interpreters' translation. As a result of this skepticism, many clinicians recommended additional screening tests in their older patients rather than engaging in a shared decision-making process.

Similarly, when encountering a patient like in Clinical Scenario 2, clinicians admitted that they had complete lack of knowledge regarding screening guidelines in other countries, especially in lower- and middle-income countries. Clinicians admitted their bias against the countries a patient emigrated from (Table 3, Quote 12). Because of their bias about the unknown standard guidelines for cervical cancer screening in other countries, many clinicians stated they would recommend at least one additional screening test (Table 3, Quote 13).

3.3. *Considering sexual activity*

The USPSTF does not make any recommendations based on a person's sexual activity. In fact, the USPSTF recommends that if screening has ended and a patient initiates sex with a new partner, that screening should not resume (United States Preventive Services Task Force, 2018). Despite this, all the participants voiced that sexual activity was a factor in helping them determine if ending screening was an option versus if additional screening was necessary (Table 3, Quote 14). Some clinicians stated while they understood that sexual activity was not a factor that changed screening guidelines, HPV is a very common sexually transmitted infection and is the primary cause of cervical cancer ('Genital HPV Infection – Basic Fact Sheet'). Thus, for their patients with a self-reported history or limited screening history, sexual activity is a major factor in their decision-making, especially when they know they are already in a gray zone regarding screening guidelines (Table 3, Quote 15).

3.3.1. *Obtaining sexual history*

Many clinicians cited the difficulty in obtaining patients' sexual histories, especially for new patients. The following quote illustrates the frustration of some clinicians when patients do not want to talk about their sexual history, making it difficult to explore their sexual history with them (Table 3, Quote 16).

3.3.2. *Agism bias*

Clinician perceptions of older patient's sexual activity was another bias expressed by the participants. Many clinicians made assumptions about the sexual activity of patients, based on age; thus, diminishing clinicians' perceived risk for their older patients acquiring sexually transmitted infections such as HPV (Table 3, Quote 17).

4. Discussion

This study sought to explore healthcare clinicians' approach to ending cervical cancer screening in their older patients. The participants universally stated they follow the USPSTF cervical cancer screening recommendations and the ASCCP management guidelines. Despite commitment to these guidelines and recommendations, clinicians recognized how difficult it is to follow them due to the inability to obtain medical records consistently. In these situations, healthcare clinicians would accept patients' self-report of their screening history to make the decision whether to end cervical cancer screening, though clinicians acknowledged they would work harder to obtain the records of patients that self-report prior abnormal testing as this would affect their recommendations on ending screening. When clinicians are making recommendations to patients that do not have readily available medical records, clinicians considered sexual activity as the main risk factor to help them decide to continue or end cervical cancer screening.

While approximately 20 % of cervical cancer cases occur in women older than 65 years of age, Black/African American and Hispanic/Latina patients older than age 65 have over twice the incidence rate of cervical cancer compared to Non-Hispanic White patients (Yoo et al., 2017; Musselwhite et al., 2016; 'SEER*Explorer: An interactive website for SEER cancer statistics'). Most of these cases are in women who were likely never screened or under screened (Benard et al., 2021; Leyden et al., 2005). Thus, it is important to properly evaluate screening history so that patients are properly screened until they meet requirements to end screening.

A previous study identified that up to 60 % of the patients in a safety-net hospital system were not adequately screened after the age of 65 with approximately 39 % not receiving any additional screening (Cejtin and Schmidt, 2020). Another study found that approximately 24 % of patients in a managed care health system did not meet adequate screening, with over 88 % of these patients not receiving any additional screening after age 65 (Chao,Xu,and Lonky, 2019). One reason for the prevalence of inadequate screening could be due to overreliance on self-report, a major theme in our study. Self-report for cervical cancer screening is unreliable, with reported specificities less than 50 %, possibly due to any form of pelvic examination being misconstrued as a screening test (Howard,Agarwal,and Lytwyn, 2009). This underscores the importance of verifying screening records and approaching self-reported screening history with caution.

In a study evaluating a national insurance claims database, over 65 % of cisgender women did not have sufficient data to meet the adequate screening requirements (Mills,Morgan,Dhaliwal,and Perkins, 2021), indicating the fragmentation and lack of interoperability among health systems ('Primary Care Physicians' Role In Coordinating Medical And Health-Related Social Needs In Eleven Countries', 2020). Efforts to link healthcare systems are already being implemented but continue to fall short to provide a unified medical record (Reisman, 2017; Ross et al., 2020). Future efforts must find ways to link records and allow clinicians' access to screening histories so appropriate recommendations are made (Saraiya et al., 2022).

The 2018 USPSTF recommendations and ASCCP guidelines provide clear requirements for patients to end cervical cancer screening (Saslow et al., 2012; United States Preventive Services Task Force, 2018). These recommendations and guidelines make no mention of shared decision-making. Our study, in contrast found that most clinicians generally preferred to approach ending screening in a shared decision-making fashion for patients older than 65 regardless of if they were previously adequately or inadequately screened. This is likely reflective of the changing culture of medicine and focus on patient centered care, specifically in cancer screening (Barry and Edgman-Levitan, 2012). Our study specifically found that healthcare clinicians will both under screen and over screen based on a shared decision-making process, potentially explaining the amount of cervical cancer screening seen in populations over age 65 (Qin et al., 2022).

Finally, neither the 2019 ASCCP Guidelines nor the 2018 USPSTF recommendations use sexual activity to change screening recommendations or manage abnormal cervical cancer screening results. Despite this, our study suggests that clinicians might use a patient's reported sexual activity to inform their recommendations for continued screening in patients with unknown or inadequate prior screening history. While sexual activity and HPV prevalence declines in older age, a significant portion of women over the age of 65 engage in sexual activity and have a detectable HPV infection (Lindau et al., 2007; Herbenick et al., 2010; Dunne et al., 2007; Clarke et al., 2021). This is relevant as previous studies investigating the natural course of acquisition and reactivation of HPV in older women were conducted almost exclusively in women younger than age 60 and predominately in non-Hispanic White women (Fu et al., 2016; Rositch et al., 2012; Winer et al., 2016). Future studies should investigate the role of sexual activity, HPV, and disease progression in older populations. In addition, future USPSTF recommendations could add clinical considerations for shared decision-making, specifically in populations older than 65 who are sexually active and/or who previously received healthcare outside of the US. Age-specific recommendations that factor in a patient's life expectancy, sexual activity, and comorbidities may help clinicians focus their time on the most relevant patient issues. These clinical considerations regarding shared decision-making could aid healthcare clinicians and prevent both over and under screening.

5. Limitations

There are several limitations to consider when interpreting our study. First, our study population was a small convenience sample of healthcare clinicians working at an urban academic and/or safety-net healthcare center. These findings may not be applicable to other clinicians working in other settings. Future studies could explore the prevalence of the themes identified in this study and an investigation of preferred solutions through a large-scale survey. Finally, the findings are self-reported and may not reflect what healthcare clinicians do in actual practice especially as most clinicians endorsed using shared decision-making, but in other studies, few patients recalled such discussions with their clinicians (Kotwal,Walter,Lee,and Dale, 2019).

6. Conclusion

Our study found that the healthcare clinicians we interviewed attempt to follow national guidelines but that obtaining 10 years of medical history to end cervical cancer screening for many of their patients is difficult. In such situations where medical history is unavailable, clinicians may be relying on self-report to guide their medical recommendations and discussions with their patients, potentially exacerbating under screening. Systems that seek to aggregate and collect medical records so that clinicians may have the most accurate screening history could help clinicians make informed and personalized recommendations to their patients.

CRediT authorship contribution statement

Hunter K. Holt: Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Writing – review & editing, Funding acquisition. **Rey Flores:** Validation, Formal analysis, Writing – review & editing. **Jennifer E. James:** Writing – original draft, Writing – review & editing. **Catherine Waters:** Conceptualization, Formal analysis, Writing – review & editing. **Celia P. Kaplan:** Conceptualization, Writing – review & editing. **Caryn E. Peterson:** Writing – review & editing. **George F. Sawaya:** Conceptualization, Supervision, Writing – review & editing.

Funding

Research reported in this publication was supported by the National Institute on Aging of the National Institutes of Health under Award Number P30AG015272. In addition, Hunter Holt was supported by the University of Illinois Chicago's (UIC) Building Interdisciplinary Research Careers in Women's Health (BIRCWH) grant K12HD101373 from the National Institutes of Health (NIH) Office of Research on Women's Health (ORWH). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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.

Acknowledgements

Prior Presentations: Presented as a poster presentation on November 17, 2022, at the North American Primary Care Research Group (NAPCRG) Conference.

References

ACOG Practice Bulletin Number 131: Screening for cervical cancer'. 2012. Obstet Gynecol, 120: 1222-38.

Barry, M.J., Edgman-Levitan, S., 2012. Shared decision making — The pinnacle of patient-centered care. N. Engl. J. Med. 366, 780–871.

Benard, V.B., Elizabeth Jackson, J., Greek, A., Senkomago, V., Huh, W.K., Thomas, C.C., Richardson, L.C., 2021. A population study of screening history and diagnostic outcomes of women with invasive cervical cancer. Cancer Med. 10, 4127–4137.

Braun, V., Clarke, V., 2006. Using thematic analysis in psychology. Qual. Res. Psychol. 3, 77–101.

'Cancer Stat Facts: Cervical Cancer',, 2022. NIH. Accessed Feb 17. https://seer.cancer.gov/statfacts/html/cervix.html.

Cejtin, H.E., Schmidt, J.B., 2020. Prevalence of inadequate cervical cancer screening in low-income older women. J. Womens Health 29, 1350–2133.

Chao, C.R., Xu, L., Lonky, N.M., 2019. Adherence to cervical cancer screening guidelines among women aged 66–68 years in a large community-based practice. Am. J. Prev. Med. 57, 757–764.

Clarke, M.A., Risley, C., Stewart, M.W., Geisinger, K.R., Hiser, L.M., Morgan, J.C., Owens, K.J., Ayyalasomayajula, K., Rives, R.M., Jannela, A., Grunes, D.E., Zhang, L., Schiffman, M., Wagner, S., Boland, J., Bass, S., Wentzensen, N., 2021. Age-specific prevalence of human papillomavirus and abnormal cytology at baseline in a diverse statewide prospective cohort of individuals undergoing cervical cancer screening in Mississippi. Cancer Med. 10, 8641–8650.

Dunne, E.F., Unger, E.R., Sternberg, M., McQuillan, G., Swan, D.C., Patel, S.S., Markowitz, L.E., 2007. Prevalence of HPV infection among females in the United States. JAMA 297, 813.

Fontham, E.T.H., Wolf, A.M.D., Church, T.R., Etzioni, R., Flowers, C.R., Herzig, A., Guerra, C.E., Oeffinger, K.C., Shih, Y.-C., Walter, L.C., Kim, J.J., Andrews, K.S., Desantis, C.E., Fedewa, S.A., Manassaram-Baptiste, D., Saslow, D., Wender, R.C., Smith, R.A., 2020. Cervical cancer screening for individuals at average risk: 2020 guideline update from the American Cancer Society. CA Cancer J Clin 70, 321–346.

Fu, T.-C., Carter, J.J., Hughes, J.P., Feng, Q., Hawes, S.E., Schwartz, S.M., Xi, L.F., Lasof, T., Stern, J.E., Galloway, D.A., Koutsky, L.A., Winer, R.L., 2016. Re-detection <i>vs</i>. new acquisition of high-risk human papillomavirus in mid-adult women. Int J Cancer 139, 2201–2212.

Fusch, PI, and LR Ness. 2015. "Are we there yet? Data saturation in qualitative research. Qual Rep. 2015; 20 (9): 1408–16." In.

'Genital HPV Infection – Basic Fact Sheet'. CEnters for Disease Control and Prevention, Accessed March 13. https://www.cdc.gov/std/hpv/stdfact-hpv.htm#:~:text=You%20can%20get%20HPV%20by,have%20no%20signs%20or%20symptoms.

Herbenick, D., Reece, M., Schick, V., Sanders, S.A., Dodge, B., Fortenberry, J.D., 2010. Sexual behavior in the United States: results from a national probability sample of men and women ages 14–94. J Sex Med 7 (Suppl 5), 255–265.

Howard, M., Agarwal, G., Lytwyn, A., 2009. Accuracy of self-reports of Pap and mammography screening compared to medical record: a meta-analysis. Cancer Causes Control 20, 1–13.

Kotwal, A.A., Walter, L.C., Lee, S.J., Dale, W., 2019. 'Are we choosing wisely? Older adults' cancer screening intentions and recalled discussions with physicians about stopping'. J. General Internal Med. 34, 1538–1545.

Lewis, C.L., Griffith, J., Pignone, M.P., Golin, C., 2009. Physicians' decisions about continuing or stopping colon cancer screening in the elderly: a qualitative study. J. Gen. Intern. Med. 24, 816–821.

Leyden, W.A., Manos, M.M., Geiger, A.M., Weinmann, S., Mouchawar, J., Bischoff, K., Yood, M.U., Gilbert, J., Taplin, S.H., 2005. Cervical cancer in women with comprehensive health care access: attributable factors in the screening process. J. Natl. Cancer Inst. 97, 675–683.

Lindau, S.T., Philip Schumm, L., Laumann, E.O., Levinson, W., O'Muircheartaigh, C.A., Waite, L.J., 2007. A study of sexuality and health among older adults in the United States. N. Engl. J. Med. 357, 762–774.

Mills, J.M., Morgan, J.R., Dhaliwal, A., Perkins, R.B., 2021. Eligibility for cervical cancer screening exit: Comparison of a national and safety net cohort. Gynecol. Oncol. 162, 308–314.

Musselwhite, Laura W., Cristina M. Oliveira, Tendai Kwaramba, Naitielle De Paula Pantano, Jennifer S. Smith, José Humberto Fregnani, Rui M. Reis, Edmundo Mauad, Fabiana De Lima Vazquez, and Adhemar Longatto-Filho. 2016. 'Racial/Ethnic Disparities in Cervical Cancer Screening and Outcomes': 518-26.

Oshima, S.M., Tait, S.D., Fish, L., Greenup, R.A., Grimm, L.J., 2021. Primary care provider perspectives on screening mammography in older women: A qualitative study. Prev. Med. Rep. 22, 101380.

Pollack, C.E., Platz, E.A., Bhavsar, N.A., Noronha, G., Green, G.E., Chen, S., Ballentine Carter, H., 2012. Primary care providers' perspectives on discontinuing prostate cancer screening. Cancer 118, 5518–5524.

'Primary Care Physicians' Role In Coordinating Medical And Health-Related Social Needs In Eleven Countries'. 2020. Health Affairs, 39: 115-23.

Qin, J., Holt, H.K., Richards, T.B., Saraiya, M., Sawaya, G.F., 2022. Use Trends and Recent Expenditures for Cervical Cancer Screening-Associated Services in Medicare Fee-for-Service Beneficiaries Older Than 65 Years. JAMA Intern Med.

Reisman, M. 2017. 'EHRs: The challenge of making electronic data usable and interoperable', P t, 42: 572-575.

Rositch, A.F., Burke, A.E., Viscidi, R.P., Silver, M.I., Chang, K., Gravitt, P.E., 2012. Contributions of recent and past sexual partnerships on incident human papillomavirus detection: acquisition and reactivation in older women. Cancer Res. 72, 6183–6190.

Ross, M.K., Sanz, J., Tep, B., Follett, R., Soohoo, S.L., Bell, D.S., 2020. Accuracy of an electronic health record patient linkage module evaluated between neighboring academic health care centers. Appl. Clin. Inf. 11, 725–732.

Saraiya, M., Colbert, J., Bhat, G.L., Almonte, R., Winters, D.W., Sebastian, S., O'Hanlon, M., Meadows, G., Nosal, M.R., Richards, T.B., Michaels, M., Townsend, J. S., Miller, J.W., Perkins, R.B., Sawaya, G.F., Wentzensen, N., White, M.C., Richardson, L.C., 2022. Computable guidelines and clinical decision support for cervical cancer screening and management to improve outcomes and health equity. J. Womens Health (Larchmt) 31, 462–548.

Saslow, D., Solomon, D., Lawson, H.W., Killackey, M., Kulasingam, S.L., Cain, J.M., Garcia, F.A.R., Moriarty, A.T., Waxman, A.G., Wilbur, D.C., Wentzensen, N., Downs, L.S., Spitzer, M., Moscicki, A.-B., Franco, E.L., Stoler, M.H., Schiffman, M., Castle, P.E., Myers, E.R., 2012. American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology Screening Guidelines for the Prevention and Early Detection of Cervical Cancer. J. Low. Genit. Tract Dis. 16, 175–204.

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., Jinks, C., 2018. Saturation in qualitative research: exploring its conceptualization and operationalization. Qual. Quant. 52, 1893–1907.

'Screening for Cervical Cancer: U.S. Preventive Services Task Force Recommendation Statement'. 2012. Annals of Internal Medicine, 156: 880-91.

*'SEER*Explorer: An interactive website for SEER cancer statistics'. Surveillance Research Program, National Cancer Institute, Accessed May 10. https://seer.cancer.gov/statistics-network/explorer/.

Siu, A.L., 2016. Screening for Breast Cancer: U.S. Preventive Services Task Force Recommendation Statement. Ann Intern Med 164, 279–296.

United States Preventive Services Task Force, 2018. Screening for Cervical Cancer: US Preventive Services Task Force Recommendation Statement. JAMA 320, 674–686.

'Updated Cervical Cancer Screening Guidelines', 2021. American College of Obstetricians and Gynecologists. Accessed March 28. https://www.acog.org/clinical/clinical-guidance/practice-advisory/articles/2021/04/updated-cervical-cancer-screening-guidelines.

US Preventive Services Task Force, 2021. Screening for Colorectal Cancer: US Preventive Services Task Force Recommendation Statement. JAMA 325, 1965–1977.

Winer, R.L., Hughes, J.P., Feng, Q., Stern, J.E., Xi, L.F., Koutsky, L.A., 2016. Incident detection of high-risk human papillomavirus infections in a cohort of high-risk women aged 25–65 years. J Infect Dis 214, 665–675.

Yoo, W., Kim, S., Huh, W.K., Dilley, S., Coughlin, S.S., Partridge, E.E., Chung, Y., Dicks, V., Lee, J.-K., Bae, S., 2017. Recent trends in racial and regional disparities in cervical cancer incidence and mortality in United States. PLoS One 12, e0172548.