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An Uncomfortable Standard: Why Speculum-Based Cervical Cancer Screening Persists

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Abstract: This paper explores why speculum-based cervical cancer screenings persist despite patient discomfort and emerging alternatives, arguing that institutional conformity, normalized pain in gynecological care, and slow adoption of new technologies contribute to their continued use.

INTRODUCTION

Cervical cancer screening is a critical preventive medical practice that significantly reduces cervical cancer mortality. Screening primarily detects the human papillomavirus (HPV), a sexually transmitted disease that can cause changes in cervical cells that may eventually develop into cervical cancer over time. One of the most common screening methods is the Pap smear test, a procedure used to detect abnormal cervical cells. During the exam, a metal or plastic speculum is inserted into the vaginal canal to hold open the vaginal walls, so a clinician can access the cervix and collect cells using a small brush. The pap smear, named after physician George Papanicolaou, was introduced in 1941 and has since become one of the most widely used screening tools.

The modern vaginal speculum design often credits physician Dr. James Marion Sims, who has been referred to as the “Father of Gynecology.” Sims created his first prototype in 1845 using a bent gravity spoon while attempting to repair a vesicovaginal fistula (VVF). However, Sims developed this tool while experimenting “on enslaved women ... without the use of anesthesia,” [4] a history which has raised ethical concerns that continue to shape discussions within gynecology.

Cervical cancer is the fourth most common cancer among women worldwide, but it is also highly preventable through early detection. Despite this, many women report negative experiences with pelvic exams, including anxiety, embarrassment, and pain, often associated with the use of speculums. In 2024, the Food and Drug Administration (FDA) approved HPV self-swab testing, allowing patients to collect samples without undergoing a traditional speculum exam. However, speculums still remain widely used in gynecology. This raises important ethical questions about how patient experiences are considered in medical practice and innovation. This paper argues that institutional conformity, normalized pain in gynecological care, and slow adoption of new technologies contribute to the continued use of painful cervical cancer screening tools. This work is in partial fulfillment of the ENGR184 course using the blueprint curriculum in Ref [1,2] and captured in a collection [3].

METHODS

This paper aims to investigate the continued use of speculum-based Pap smear examinations despite reports of patient discomfort and the development of alternative cervical cancer screening technologies and methods. Understanding why this practice persists requires examining both medical practices and patient experiences within gynecological care.

A review of public health guidelines, medical literature available through PubMed, news articles, opinion pieces, and case studies related to cervical cancer screening and pelvic examinations was conducted. These sources were analyzed to better understand how cervical cancer screenings are performed, how patients experience these exams, and how alternative screening technologies are being developed and implemented.

The analysis applies standpoint theory and disability studies as conceptual frameworks. Standpoint theory argues that marginalized groups can offer novel insights shaped by their social positions and lived experiences, which may be overlooked by dominant institutions. Disability studies examine how social systems and technologies are often designed around assumptions of a “normal” body, which can create barriers for individuals whose bodies fall outside of those assumptions.

RESULTS AND INTERPRETATION

Findings from the literature suggest that several factors contribute to the continued reliance on speculum-based Pap smear procedures for cervical cancer screenings. These factors include the decades-long institutional use of the device in medical practice, the normalization of discomfort in gynecological care, and the slow integration of alternative screening technologies.

Institutional Conformity in Medicine

One reason speculum-based screening procedures remain widely used is due to institutional conformity within medicine. Specula have existed since ancient Rome, and the modern form was largely shaped by French surgeon Édouard-Gabriel Cusco in 1870. The models most frequently used today, the Graves and Pederson speculums, were developed in the late nineteenth and early twentieth centuries, meaning these devices have remained largely unchanged for more than 150 years.

According to Cascade Health, “the evolution of the speculum has focused less on shape and more on materials and integrated technology”. [5] Over time, the only changes that have been made have focused on materials, such as the introduction of disposable plastic and built-in lighting. Because speculum-based examinations have been used reliably for decades, they remain the most familiar and widely taught method for cervical cancer screening. Since HPV self-testing has only recently been introduced, the speculum continues to function as the standard clinical tool.

Normalization of Women’s Pain

Another explanation for the continued use of speculums is the normalization of women’s pain in gynecological care. In a study conducted on the anxiety and fear that women experience before and during pelvic exams, they found that “21%-64% of women” reported feeling scared or anxious. Out of the 433 women surveyed in an outpatient setting, “more than half (54.8%) of the women reported feeling anxious or worried, while another 64% of women experienced anxiety and fear. Additional studies have reported women experiencing embarrassment of up to 52%, anxiety in 21%-49% and pain in 22%-68%.” [6] These findings suggest that emotional distress during pelvic exams is not uncommon but rather a widespread experience among patients. This discomfort may also influence whether women seek care. A 2024 survey found that “among over 1,100 adult women in the U.S. ... despite 62% of women understanding that cervical cancer is preventable with regular screenings, 72% reported having delayed a gynecology visit, with 54% saying it was due to fear or discomfort”. [7]

From a standpoint theory perspective, this dynamic highlights a gap between the perspectives of medical professionals and patients. The hegemonic group here is specifically the physicians or gynecologists, as the ones performing the procedure; they hold institutional authority and expertise regarding the medical necessity of the exam. On the other side, the marginalized group is the female patients who experience the procedure physically. Standpoint theory suggests that the viewpoints and experiences of patients may be underrepresented in shaping medical practices, even when those experiences influence healthcare participation. If discomfort during exams discourages women from seeking screening, then incorporating patient perspectives into the medical design and practice becomes extremely important.

Insights from disability studies further highlight how medical tools may fail to accommodate diverse bodies. One article published in the Columbia Undergraduate Research Journal noted that at the time of the study, only five articles acknowledged the relationship between “obese patients and the vaginal

speculum". This limited research attention makes it difficult to fully understand how speculum-based exams affect patients of different body types. The authors also noted that "physicians are often not equipped to handle obese patients during pelvic examinations, mostly due to the lack of larger specula". [8] Although speculums are available in different sizes, their design generally assumes an "average" patient anatomy. The lack of research and limited design considerations for larger bodies suggest a broader structural oversight in the development of gynecological medical tools.

Slow Adoption of Alternatives

The development of alternative cervical cancer screening technologies has occurred gradually over several decades. In the 1980s, research confirmed that HPV is the leading cause of cervical cancer. This discovery led to HPV testing and later the development of the HPV vaccine, first approved by the FDA in 2006 for women aged 9-26 years and later extended to men of the same age range in 2009.

HPV screening can now be performed in multiple ways, including HPV testing and co-testing with Pap smears. More recently, new technologies have begun to reduce the need for speculum-based procedures. In 2024, the FDA approved HPV self-collection testing, allowing patients to collect vaginal samples using a swab rather than a speculum-based exam. While the patient can perform the collection themselves, the test must still be conducted within a clinical setting. In 2025, the FDA approved the first truly at-home cervical cancer screening kit in the United States. One of these devices currently on the market is the Teal Wand, a self-collection tool designed to resemble the shape of a tampon and intended to collect samples without the use of a speculum.

Despite these developments, several barriers continue to limit widespread adoption of self-collection. According to family physician Dr. Mara Gordon, home testing raises logistical concerns regarding specimen transportation and storage delays, such as delays or temperature changes during mailing, which can affect the validity of the sample. [9] Dr. Gordon points out that insurance coverage plays a role. While HPV self-swab tests have received FDA approval, "HPV-only self-swab testing is not yet recommended by the U.S. Preventive Services Task Force" and "many insurers only pay for what the UPSTF recommends." [9] As a result, newer technologies may take time to become widely implemented within standard medical practice.

CONCLUSIONS

Cervical cancer screening has significantly reduced mortality through early detection, but continued reliance on speculum-based Pap smear procedures raises important questions about how medical practices evolve and whose experiences are considered within healthcare systems.

Evidence suggests that their persistence is not solely due to medical necessity. Instead, institutional conformity, the normalization of women's pain in gynecological care, and the slow implementation of alternative technologies contribute to their continued use. While speculums remain effective tools, research indicates that discomfort, fear, anxiety, and embarrassment are common during pelvic exams and may discourage women from seeking screening. Simultaneously, newer technologies such as HPV self-collection tests face regulatory, logistical, and insurance barriers that slow their widespread adoption. From a theory-of-change lens, significant improvements in cervical cancer screening may occur when medical researchers, device designers, and healthcare institutions start to prioritize innovation centered on all types of patient experiences. Incorporating patient perspectives into medical technology design could increase screening participation and improve long-term health benefits.

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