

THE USE, QUALITY AND EFFECTIVENESS OF PELVIC EXAMINATION IN PRIMARY CARE FOR THE DETECTION OF GYNAECOLOGICAL CANCER

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ABSTRACT

Introduction: Pelvic examinations are vital for timely detection of gynecological cancers in primary care, yet discomfort can deter some women from seeking them. General practitioners face challenges in managing intimacy during exams, impacting their skills and confidence. Understanding these complexities using behavior change models like COM-B can aid in developing interventions to enhance pelvic examination uptake and address barriers in primary care settings for early cancer detection. A systematic review aims to consolidate qualitative studies on GPs' perceptions and experiences regarding pelvic exams, focusing on their role, barriers, and factors influencing GP behavior.

Methods: The researchers in this study followed the 2020 Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines to ensure that their work met the required standards. This was done to ensure the precision and reliability of the conclusions derived from the research.

Result: The search produced 18 results. After looking at the titles and summaries, we found 10 papers that fit our criteria. At first, we excluded several articles because they were written in review style. But after reading the full papers carefully, we included five papers in our final analysis. These papers included a cross sectional study, randomized control trial, and several guidelines.

Conclusion: Understanding and predicting healthcare provider behavior in gynecological examinations is complex. The Theory of Planned Behavior provided some insights into intentions but didn't fully explain actual behaviors, which were influenced by external factors like workload. Recommendations suggest tailored approaches for high-risk groups and aligning pelvic exams with cervical screening intervals. However, concerns arise from potential overuse of exams and the impact of fee-for-service payments. More comprehensive research is needed to guide noncervical malignancy screenings and comprehend the various factors influencing healthcare provider behavior in these clinical practices.

Keywords: pelvic examination, gynecological cancer, general practitioner

INTRODUCTION

The utilization of pelvic examinations (PE) within primary care for the detection of gynecological cancers is deeply rooted in clinical practice. This essential procedure involves a comprehensive assessment, including vulva inspection, bimanual examination of pelvic organs, and visualization of the cervix via speculum examination. However, the intimate nature of PE presents challenges for both clinicians and patients, potentially triggering feelings of discomfort, embarrassment, and vulnerability.¹

Evidence suggests that the absence of a PE might lead to diagnostic delays, emphasizing its critical role in timely detection. Despite its importance, the discomfort associated with the examination can dissuade some women from seeking it altogether.^{1,2} General practitioners (GPs) bear the responsibility of managing the intimacy of these exams while ensuring their clinical necessity, a duty underscored by guidelines from the General Medical Council. Interestingly, studies indicate a potential decline in clinicians' skills and confidence regarding PE due to infrequent practice, impacting their ability to discern normal from abnormal findings. Moreover, the reluctance to conduct these exams might stem from various barriers, including discomfort and the perceived complexity of the procedure.³

To delve into this complex landscape, qualitative studies have explored GPs' perceptions and experiences regarding the role of PE in primary care, as well as the obstacles and catalysts influencing its implementation. The COM-B behavior change model serves as a theoretical framework to understand the factors influencing clinician behavior, dissecting elements such as capability, opportunity, and motivation, crucial for effective intervention strategies. This model aids in comprehending the nuances of behavior change, a concept crucial in addressing challenges related to PE implementation, similar to how it has been applied in understanding social awkwardness issues in other medical contexts. Aligning with the broader behavioral change wheel, it facilitates the development of interventions aimed at overcoming barriers and enhancing the uptake of pelvic examinations in primary care settings for the early detection of gynecological cancers.^{4,5} The purpose of a systematic review in this context would be to comprehensively gather and analyze existing qualitative studies that explore general practitioners' perceptions and experiences regarding pelvic examinations (PE) in primary care. The review aims to synthesize findings related to the role of PE, barriers to its implementation, and factors influencing GP behavior in conducting these examinations.

METHODS

Protocol

The researchers in this study followed the 2020 Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines to ensure that their work met the required standards. This was done to ensure the precision and reliability of the conclusions derived from the research.

Criteria for Eligibility

For inclusion in the study, published articles had to meet particular requirements. They had to be research papers written in English, focusing on the use, quality and effectiveness of pelvic examination in primary care for the detection of gynaecological cancer. The studies had to meet the following criteria: they needed to have been published after 2018 but within the applicable timeframe for this systematic review. Articles falling into categories like editorials, lacking a DOI, review articles that were already published, or duplicating previously published journal papers were excluded from the assessment.

Search Strategy

We conducted a comprehensive literature search using PubMed, focusing on studies published from 2016 to 2023. The search terms employed were as follows ("gynecological examination"[MeSH Terms] OR ("gynecological"[All Fields] AND "examination"[All Fields]) OR "gynecological examination"[All Fields] OR ("pelvic"[All Fields] AND "examination"[All Fields]) OR "pelvic examination"[All Fields]) AND ("primary health care"[MeSH Terms] OR ("primary"[All Fields] AND "health"[All Fields] AND "care"[All Fields]) OR "primary health care"[All Fields] OR ("primary"[All Fields] AND "care"[All Fields]) OR "primary care"[All Fields]) AND ("detect"[All Fields] OR "detectabilities"[All Fields] OR "detectability"[All Fields] OR "detectable"[All Fields] OR "detectables"[All Fields] OR "detectably"[All Fields] OR "detected"[All Fields] OR "detectible"[All Fields] OR "detecting"[All Fields] OR "detection"[All Fields] OR "detections"[All Fields] OR "detects"[All Fields]) AND ("gynaecologic"[All Fields] OR "gynecologic"[All Fields] OR "gynecologically"[All Fields] OR "gynecology"[MeSH Terms] OR "gynecology"[All Fields] OR "gynaecological"[All Fields] OR "gynecological"[All Fields]) AND ("cancer s"[All Fields] OR "cancerated"[All Fields] OR "canceration"[All Fields] OR "cancerization"[All Fields] OR "cancerized"[All Fields] OR "cancerous"[All Fields] OR "neoplasms"[MeSH Terms] OR "neoplasms"[All Fields] OR "cancer"[All Fields] OR "cancers"[All Fields])

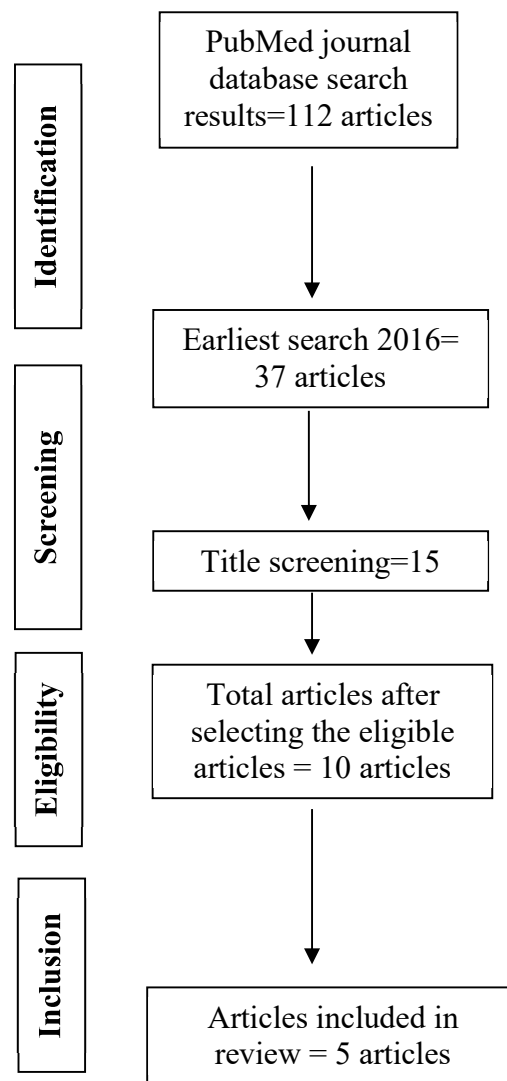


Figure 1. Article search flowchart

Inclusion and exclusion criteria

Inclusion criteria for the studies were as follows: (1) original research that assesses the use, quality, and effectiveness of pelvic examination in primary care for the detection of gynaecological cancer; (2) Randomized Controlled Trials (RCTs) or observational studies (cohort or case-control studies); (3) availability of relevant data. Exclusion criteria were as follows: (1) ongoing studies or studies without available data; (2) duplicate publications. In cases of duplicate publications, the most recent article was chosen; (3) Non-English language studies were excluded.

Data Retrieval

The authors conducted a thorough examination of relevant studies, specifically selecting those that met precise inclusion criteria. They focused on original, unpublished papers in English to ensure a refined and high-quality selection. The analysis covered essential information, such as study particulars, authors, publication dates, locations, and research methodologies, aligning with the study's objectives.

Author	Origin	Method	Sample Size	Result
Mwaliko et al., 2021. ⁶	Kenya	This was a cross-sectional survey using the theory of planned behaviour (TPB).	A total of 108 eligible primiparas were enrolled from January to April 2018.	Measures such as Direct Measures of Subjective Norms (DMSN), Direct Measures of Perceived Behavioral Control (DMPBC), and Indirect Measures of Attitude were indicative of the inclination to perform patient examinations. Interestingly, unfavorable attitudes toward examining women had a dampening effect on health workers' intentions, impacting their predictive capability. However,

Janjua et al., 2017. ⁷	UK	Randomized control trial.	492 final year medical students.	among the predictors influencing this intention, the strongest coefficients were associated with external factors, such as being a nurse ($\beta = 0.32$) rather than a clinical officer, and having a workload of attending fewer than 50 patients per day ($\beta = 0.56$). 407/492 (83%) students completed both the intervention and outcome assessment. Self-reported confidence was higher in students taught by GTAs compared with those taught on manikins (median score GTA 6.3; vs. conventional 5.8; $p = 0.03$). Competence was also higher in those taught by GTAs when assessed by an examiner (median global score GTA 7.1 vs. conventional 6.0; $p < 0.001$) and by a GTA ($p < 0.001$).
Roselund et al., 2017. ⁸	Norway	Nationwide cross-sectional study	women aged 18 years and older in Norway in the years 2014–16 (2,038,747).	Annually 22.2 out of every 1000 women in Norway had a routine pelvic examination, with variation across regions from 6.6 to 43.9 per 1000. Gynecologists with fixed salaries performed colposcopy in 1.6% and ultrasound in 74.5% of appointments. Corresponding numbers for fee-for-service gynecologists were 49.2% and 96.2%, respectively
Tonelli et al., 2016. ⁹	Canada	The SNAP-IT (Smooth National Adaptation and Presentation of Guidelines to Improve Thrombosis Treatment) method was employed to assess the alignment of the ACP (American College of Physicians) guideline with the standards set by the Canadian Task Force on Preventive Health Care (CTFPHC)..	-	The Canadian Task Force on Preventive Health Care (CTFPHC) strongly advises against using screening pelvic examinations to detect noncervical cancer, pelvic inflammatory disease, or other gynecological conditions in asymptomatic women. This recommendation is supported by moderate-quality evidence.
Evans et al., 2019. ¹⁰	Canada	The quality of evidence was rated using the criteria described in the Grading of Recommendations Assessment, Development and Evaluation (GRADE) methodology framework (This publication provides evidence and expert recommendations for pelvic examination in adult women (18 years and older) both	This publication clarifies indications for pelvic examination in the context of recently published national task force statements on the utility of pelvic examination. We aim to ensure that women who have clinical indications for examination receive proper clinical investigation with minimal delays to diagnosis of treatable disease.

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RESULT

Our search produced 18 results. After looking at the titles and summaries, we found 10 papers that fit our criteria. At first, we excluded several articles because they were written in review style. But after reading the full papers carefully, we included five papers in our final analysis. These papers included a cross sectional study, randomized control trial, and several guidelines.

In Mwaliko et al study, among the health facilities listed by the district office, 3 were non-operational, leaving a total of 29 functioning facilities on record. However, in the sampling frame, only one hospital was included due to the exclusion of a teaching hospital. Therefore, the number of health facilities considered for the data collection was 28. During data collection, one health center was not operational, and a private clinic was closed. Among the recorded facilities, there were 18 public establishments and 8 private ones, consisting of 13 dispensaries, 4 health centers, and 1 mission hospital. Additionally, two facilities were non-functional.⁶

Regarding the results from the structural equation model predicting the intention to perform gynecological examinations. The model accounted for 47% of the variation (r^2) in the intention to conduct gynecological examinations. While the measurement model indicated generally high factor loadings, some specific items displayed lower loadings compared to the acceptable threshold of 0.3. For instance:⁶

- Item 2 in DMSN (-0.25)
- Item 4 in DMPBC (0.47)
- Items 2 and 4 in indirect measures of subjective norms (0.48 and 0.30, respectively)
- Items 2 and 6 in indirect measures of perceived behavioral control (0.39 and 0.30, respectively)

The explanatory variables in the structural equation model revealed significant insights. Specifically, direct measures of attitude (DMA) were notably higher in nurses ($\beta = 0.47$) compared to clinical officers, and higher in female health professionals ($\beta = 0.32$) than males. Moreover, positive attitudes towards examining women were negatively associated with scores from dispensaries ($\beta = -0.34$), elucidating 12% of the variation in these attitudes. The prediction scores for DMSN were higher among female health providers ($\beta = 0.28$) compared to males, and were negatively influenced by scores from dispensaries ($\beta = -0.24$), explaining 15% of the variation in subjective norms.⁶

Perceived behavioral control prediction scores were notably lower in dispensaries ($\beta = -0.42$) compared to health centers and private practices, as well as when fewer patients were treated per day ($\beta = -0.34$). This construct was higher among female health providers ($\beta = 0.27$) and those with longer qualifications (36–60 months and > 60 months), explaining 30% of the variation.⁶

The intention to examine women was influenced by seven variables:⁶

- Higher intention among facilities with < 50 patients treated per day ($\beta = 0.56$) and among nurses ($\beta = 0.32$) compared to clinical officers
- Positively related to DMSN ($\beta = 0.26$) and DMPBC scores ($\beta = 0.23$)
- Negatively impacted by scores from dispensaries ($\beta = -0.30$) and when both clinical officers and nurses formed the cadre ($\beta = -0.26$)
- A more negative attitude resulted in a lower intention to examine women ($\beta = -0.30$).
- Through univariate analysis, no substantial differences were observed in the proportions of experienced versus inexperienced healthcare providers, gender distribution, profession, services offered, or workload between groups categorized as having high versus low intention.

Additionally, clinical officers and nurses demonstrated equal likelihoods of examining women. Moreover, no statistical evidence indicated differences in the proportion of male participants between public and private facilities (29.8% vs. 11.1%, $p = 0.425$).⁶

The TARGET trial (Teaching Associates Randomised to evaluate the effectiveness of GTA taught pelvic Examination versus Traditional teaching using manikins) constituted a single-blinded, parallel-group Randomized Controlled Trial (RCT) aimed at evaluating the efficiency of GTAs (Teaching Associates) instructing pelvic examinations compared to conventional manikin-based teaching (Clinicaltrials.gov NCT01944592).⁷

During the clinical placement at the University of Birmingham (UoB), five-year medical students were invited to partake in the study a week before commencing their clinical rotation. Introducing the TARGET trial occurred during the inaugural lecture of their placement by a member of the Birmingham Women's Hospital (BWH) undergraduate teaching faculty (AJ, TJC, JKG). Following consent, students were enrolled without any exclusion criteria, and third-party randomization was conducted by the Birmingham Clinical Trials Unit (BCTU) at the end of the first day of clinical placement. The allocation of students was maintained at a 1:1 ratio through a telephone randomization service, employing stratified randomization blocks based on student gender to ensure group balance. These blocks were centrally managed at the BCTU, employing varied block sizes to prevent deducing the allocation.⁷

The trial recruited and randomized 492 medical students from August 2013 to December 2014, with 407 (83%) attending the final assessment. Baseline characteristics were comparable between the groups. A high attendance rate was observed, with 98% of students in both the GTA and conventional teaching groups participating in the respective teachings. Primary outcome responses were obtained from 85% (407/481) of students who received the teaching.⁷

Confidence in pelvic examination significantly improved from baseline for students in both the GTA (median increase from baseline 3.8; $p < 0.001$) and conventional teaching groups (median increase from baseline 3.2; $p < 0.001$). Nonetheless, students taught by GTAs exhibited higher confidence levels in pelvic examination (median score; GTA 6.3 [IQR 2.1] vs. conventional 5.8 [IQR 2.1]; $p = 0.03$). Regarding competence in pelvic examination, self-reported competence at the teaching block's end showed no significant difference between the groups (median score; GTA 6.5 [IQR 2.0] vs. conventional 6.4 [IQR 2.0]; $p = 0.3$). However, third-party assessment revealed consistently better performance by students taught by GTAs across most measures. Examiners and GTAs observed higher global competence scores during the Objective Structured Clinical Examination (OSCE) for students taught by GTAs (median score; GTA 7.1 [IQR 3.0] vs. conventional 6.0 [IQR 3.0]; $p < 0.001$). Notably, GTA-taught students outperformed conventionally-taught students in six elements of pelvic examination.⁷

Additionally, GTAs' assessments during the OSCE displayed statistically significantly superior performance by GTA-taught students ($p < 0.001$). Subgroup analysis based on student sex revealed no significant differences in perceived confidence or competence assessed by examiners between male and female students.⁷

A nationwide cross-sectional study focusing on routine pelvic examinations within specialized healthcare in Norway was conducted using data from the Norwegian Patient Registry (NPR). This registry compiles health reports from all appointments within publicly funded specialized healthcare, including both public hospitals and private gynecologists working in collaboration with healthcare enterprises. The study period spanned the years 2014 to 2016, encompassing an estimated adult female population of 2,038,747 in Norway.⁸

During this period, the national rate stood at 22.2 pelvic examinations per 1000 women. A majority of women (88.9%) who underwent pelvic examinations had only one such exam. On average, the number of appointments per patient was 1.04 annually and 1.14 over the three-year period. The study focused on women aged 25–69 years, constituting 87.6% (39,589) of appointments. Annually, 2.6% (38,065) of women aged 25–69 years received routine pelvic examinations, while the percentages were 0.97% (2231) for younger women and 0.96% (3143) for those aged 70 years or older.⁸

Variation in pelvic examinations per 1000 women was observed across hospital referral regions, ranging from 6.6 to 43.9. Fee-for-service gynecologists conducted approximately two-thirds (29,324) of pelvic examinations, with the mean age of examined women slightly higher compared to those attended by fixed-salary gynecologists (47.8 vs. 46.7 years). The utilization of colposcopy and ultrasound significantly varied between provider types ($p < .001$ for both). For instance, colposcopy was used in 1.6% (249) of appointments at fixed-salary gynecologists, while it was employed in 49.2% (14,427) of appointments by fee-for-service gynecologists.⁸

Moreover, approximately 87.3% (29,324) of appointments in private practice indicated a procedural code for "complete examination performed by a specialist." Further analysis revealed that annually, there were 2013 appointments for cervical screening within publicly funded specialized healthcare, constituting 4.3% of the combined appointments for cervical screening and routine pelvic examinations. The use of ultrasound was nearly equivalent in appointments for cervical screening and routine pelvic examinations (91.3 vs. 88.6%).⁸

Fixed salary gynecologists used colposcopy more frequently in appointments for cervical screening (9.8%) compared to routine pelvic examinations (1.2%). Fee-for-service gynecologists also employed colposcopy more in cervical screening appointments (69.8%) than in routine pelvic examinations (49.2%). Additionally, fee-for-service gynecologists conducted the majority (93.3%) of cervical screening examinations.⁸

During the study period, 16.5% (7472) of appointments recorded one or more secondary diagnoses, amounting to 856 different secondary diagnoses across various chapters in ICD-10. However, the differences in the use of colposcopy and ultrasound between appointments with and without secondary diagnoses were minimal compared to the disparities between fixed-salary and fee-for-service gynecologists.⁸

Notably, excluding appointments with secondary diagnoses only caused minor alterations in the regional variation analysis, reflecting slight sequence replacements for a few regions while maintaining the overall national extent of variation unchanged.⁸

The entirety of the CTFPHC, following unanimous agreement among all workgroup members, reached a consensus to adopt the ACP (American College of Physicians) recommendation without alteration. This alignment was supported by the ACP evidence grading, found to be in harmony with the grading process typically employed by the CTFPHC for its guidelines.⁹

Consequently, the CTFPHC has integrated the ACP's suggestion against conducting a screening pelvic examination in asymptomatic, nonpregnant adult women. This recommendation is robust, backed by moderate-quality evidence. Outlined in Box 3, the evidence summary from the ACP guideline statement is based on high-quality evidence derived from three prospective cohort studies. These studies demonstrated low diagnostic accuracy of pelvic screening examinations, particularly in detecting ovarian cancer (with a positive predictive value below 4%) among asymptomatic women. The absence of cancer detection during the Prostate Lung Colorectal and Ovarian Cancer Trial resulted in the discontinuation of pelvic screening within the trial.⁹

Notably, there was a lack of studies examining the diagnostic properties of pelvic screening for other cancer types, pelvic inflammatory disease, or other benign conditions in asymptomatic women. Equally scarce were studies evaluating the mortality or morbidity benefits associated with pelvic screening for reducing the risks of ovarian cancer, other cancers, pelvic inflammatory disease, or other benign gynecologic conditions.⁹

Evidence concerning the potential harms of pelvic examinations, based on surveys and cohort studies, indicated that a significant portion of women experienced fear, embarrassment, anxiety, or discomfort during these examinations. Moreover, pain or discomfort during the examination correlated with reduced return rates for subsequent visits. However, specific information about harms related to false reassurance, overdiagnosis, overtreatment, or diagnostic procedure-related issues was lacking. Notably, unnecessary surgeries (both open and laparoscopic) were experienced by 1.5% of women who underwent screening due to follow-up procedures stemming from pelvic screenings.⁹

Despite an update to the ACP database search yielding 52 unique citations, including the ACP guideline and its accompanying systematic review, no additional studies contributed new insights regarding the effectiveness of screening with pelvic examination on the desired outcomes or its diagnostic properties.⁹

This committee opinion aims to benefit both symptomatic and asymptomatic women seeking care from gynecologists and primary care practitioners. It serves as a guide for practitioners to identify when pelvic examinations are necessary, aiming to reduce unnecessary examinations that could potentially cause harm, while also ensuring timely examinations for diagnosing treatable gynecologic conditions. The SOGC Committee Opinion will undergo an automatic review five years after its publication to assess whether any or all parts of the opinion need updating. However, if there is significant new research published in the interim, the review may occur earlier. Summary Statements:¹⁰

1. National and international guidelines shouldn't be interpreted as suggesting that pelvic examinations are irrelevant in physical assessments or that they should be omitted in symptomatic women.
2. Pelvic examinations may involve various components such as visual inspection, speculum examination, bimanual examination, single-digit examination, or rectovaginal examination, depending on the indication for the examination.
3. No study has adequately evaluated any component of the pelvic examination as a screening method for gynecologic malignancies, except for speculum examination for cervical cancer cytology screening. Universal recommendations regarding pelvic examinations for other indications are based on expert opinion and low-quality evidence.
4. Cervical cytology screening in asymptomatic women at average risk for cervical cancer reduces both incidence and mortality by detecting treatable lesions.
5. In asymptomatic women at average risk for malignancy, incorporating a visual and bimanual examination while obtaining cervical cytology samples might offer additional value to screening. This inclusion allows for addressing unvoiced gynecologic concerns, patient education, practitioner skill maintenance, and potential positive effects on ovarian and vulvar malignancies, though these effects require further investigation. The potential benefits should be weighed against possible harms like patient discomfort and false results leading to inappropriate reassurance or unnecessary interventions.

DISCUSSION

The TPB formed the theoretical framework for this investigation. We applied Ajzen's fundamental concepts - attitudes, subjective norms, perceived behavioral control, and intention to explore the motivating factors linked with primary care providers' intentions to conduct gynecological examinations when women present with recurrent abnormal vaginal bleeding (multiple consultations for the same issue).⁶

The standardized regression weights derived from the TPB constructs revealed that subjective norms' direct measures were the most accurate predictors of intention, followed by direct measures of perceived behavioral control. Enhancing these aspects, coupled with altering negative attitudes toward conducting gynecological examinations, might enhance the intention to perform these exams. However, these are hypotheses, and establishing a causal relationship from this path analysis is impractical; further studies are essential to explore the impact of these variables on actual behavior. While the TPB constructs and other model variables accounted for 47% of the variance in intention, 53% remained unexplained. Comparable studies utilizing this theory in clinical settings have reported explained variances ranging from 19% to 81% (frequency-weighted mean). In this particular study, the TPB constructs weren't the most effective predictors of health providers' intentions for vaginal examinations. Instead, the intention to conduct these examinations was associated with external factors, both indirect (such as female sex, facility type, cadre) and direct (workload, mixed cadre, nurse status).⁶

Although behavioral intention ideally translates into conducting gynecological examinations, this study did not evaluate actual behavior. Similar to the study by Godin et al., factors beyond the TPB constructs may sway health providers' decisions. Habit, or the consistency in performing a behavior, was identified in this study as the habit of not conducting gynecological examinations despite symptoms or clinical indications.¹¹

Indirect assessments of subjective norms likely appraised inadequate or inappropriate beliefs, as they failed to predict intention and had no direct or indirect effects ($R^2 = 0\%$). Several factors in the path model exhibited low loadings. These included colleagues' opinions regarding recommended actions, actual practices, and social pressure to conduct gynecological examinations. This might suggest that healthcare providers make decisions independently of practice guidelines. Scores indicating confidence and other factors influencing examination performance might have been low due to resource scarcity or inadequate facilities/environment for conducting gynecological examinations, as well as the provider's age/sex relative to the patient.⁶

Recurrent bleeding might signal reproductive tract pathology, including cervical cancer. Before diagnosing abnormal uterine bleeding using the PALM-COEIN classification, cervical lesions should be ruled out. Conducting examinations on patients below 25 years (the recommended age for screening initiation) aids in diagnosis. Detecting stage 3B cervical cancer illustrates the consequences of delayed diagnoses that could have been avoided through earlier examinations.⁶ In rural areas, women typically visit dispensaries and health centers managed by nurses and clinical officers. Researcher predicted that factors such as sex, years of experience, profession, workload, and facility type would influence healthcare professionals' intentions to examine women, factors external to the TPB. As per the findings, being a nurse and handling 20-50 patients daily (in alignment with the Ministry of Health Kenya norms) led to more frequent gynecological examinations.

Rural areas face a healthcare workforce shortage, leading to heavy workloads. Increasing staff numbers could alleviate this, allowing more time for thorough examinations and history-taking. Even with an HPV vaccination program in place, active women still need examination and early detection. Healthcare providers need encouragement to overcome negative attitudes, and they require motivation, competence, and confidence to conduct necessary gynecological examinations. Working in a dispensary was associated with negative attitudes toward examinations. Such attitudes diminished motivation, capability, and confidence, possibly due to lack of supplies and equipment. Improving these facilities could encourage examination efforts. Addressing indirect attitudes linked to negative outcomes during vaginal examinations requires education among healthcare professionals. Fear of infection spread or causing bleeding should not deter vaginal examinations. Past behavior was not a variable studied in these contexts but could reveal common habits among practitioners.⁶

The randomized controlled trial (RCT) revealed that teaching female pelvic examinations to medical students by Graduate Teaching Assistants (GTAs) outperformed traditional physician-led teaching significantly in terms of acquired competence and self-assessed confidence. Students trained by GTAs found their method more beneficial and believed that GTA training had a greater influence on their subsequent exposure to gynecological pelvic examinations during their O&G placement. Those instructed by GTAs performed significantly more examinations on conscious women in the clinical setting and expressed higher satisfaction with these opportunities. Additionally, students taught by GTAs were assessed to be more competent by trained examiners and the GTAs themselves compared to those under conventional teaching. This enhanced competence spanned not just the overall assessment but individual elements of the pelvic examination, except for inspection and identification of the cervix where no differences were observed between the groups.⁷

The trial's strengths include a stringent randomization process that minimized confounding factors, a sizable sample size, and blinded examiners to students' teaching methods. The study achieved a high participation rate, enhancing the generalizability of results. Although a 20% loss to follow-up was noted, efforts were made to optimize follow-up by informing students that the evaluation wouldn't affect their final degree marks. However, the pressure of an assessed clinical examination and time constraints during the final year deterred a minority of students from attending. The trial used a bespoke OSCE (Objective Structured Clinical Examination) tool for competency assessment, lacking a validated tool specifically for female pelvic examinations. Despite its familiarity among medical students and examiners, its face

validity was the primary assurance. Additionally, the sustainability of imparted knowledge and skills in the longer term remains uncertain as students were evaluated five weeks after initial training.⁷

Existing studies evaluating GTAs' effectiveness in teaching pelvic examinations are limited, primarily with small sample sizes. The data suggest GTA-led teaching enhances student competence and modestly improves communication skills without notable differences in confidence compared to other teaching methods. Few previous RCTs indicated the effectiveness of GTA-led teaching, but their small scale makes it difficult to discern whether the benefits stem from extended teaching time or the teaching method itself.⁷

The trial findings affirm that the current GTA program effectively enhances educational outcomes, particularly in increasing confidence and competence compared to conventional teaching. Educators can confidently integrate GTAs into existing or alternate teaching methods to enhance competence in female pelvic examinations, thereby improving the current suboptimal situation. Considering the broader scope of intimate examination experiences beyond gynecological assessment, medical schools should contemplate employing GTA equivalents for other assessments like uro-genital, breast, rectal, and prostate examinations if the trial's findings can be replicated in other disciplines.⁷

Further research is warranted to explore the optimal timing, frequency, and duration of GTA sessions. Developing validated assessment tools to evaluate competence will aid such studies. Investigating the potential benefits of GTA teaching for postgraduate trainees early in their O&G career and identifying students responding better to GTA teaching, alongside qualitative research on attitudes and anxieties related to intimate examinations, should be the focus of future studies.⁷

In Norway, routine pelvic examinations are pervasive. On an annual basis, 22.2 per 1000 adult women undergo pelvic examinations, a practice discouraged by recommendations. The prevalence varies significantly across hospital referral regions, spanning from 6.6 to 43.9 per 1000 women. Gynecologists on fixed salaries conducted colposcopies in 1.6% and ultrasounds in 74.5% of appointments, while fee-for-service gynecologists carried out colposcopies in 49.2% and ultrasounds in 96.2% of appointments. The utilization of colposcopy and ultrasound in routine pelvic examinations appears driven by fee-for-service remuneration for gynecologists.⁸

This study marks the first documentation of the extensive use of unnecessary routine pelvic examinations in Norway, predominantly among women aged 25–69 years. The Norwegian Cervical Cancer Screening Programme recommends cytology testing every three years for women within this age range. The correlation between the age distribution in our study and cervix screening age indicates that a substantial proportion of women receiving routine pelvic examinations may have undergone extended examinations as part of cervix screening. Each woman, on average, had 1.14 appointments during the three-year study period, reinforcing this interpretation.⁸

The actual extent of routine pelvic examinations in specialized healthcare might surpass our study's findings, as the healthcare delivered in cervical screening appointments parallels what is demonstrated in routine pelvic examinations. Pelvic examinations, ultrasounds, and colposcopies are not indicated for asymptomatic women as part of The Norwegian Cervical Cancer Screening Programme, except when cytology test results raise concerns. Our study suggests an overuse of specialized healthcare services if women were indeed referred for routine testing within this programme, as cervical screening should primarily occur in primary care settings. This reflects a recent shift observed in inserting intrauterine contraception from primary to specialized healthcare. The high numbers of colposcopies, ultrasounds, and "complete examinations" during cervical screening appointments compound this overuse.⁸

The debate surrounding routine pelvic examinations remains unsettled, despite strong recommendations against such screenings by the American College of Physicians, the Canadian Task Force on Preventive Health Care, and the American Academy of Family Physicians. The academic ambiguity might echo in our findings of extensive regional variation. As all appointments necessitated a referral, regional differences in referral patterns might explain the observed variation. However, our study cannot elucidate whether the variation stems from regional differences in supply (i.e., gynecologist availability), professional beliefs, or the proportion of examinations by primary care physicians and gynecologists.⁸

Theoretically, patient preferences could explain differences between provider types and regional variations. However, there is little evidence supporting the impact of patient preferences on regional variation. Our findings strongly indicate that fee-for-service payments for gynecologists amplify the use of colposcopy and drive "complete examinations" and ultrasound in asymptomatic women's pelvic examinations.⁸

Pelvic examinations for gynecologic malignancies, except cervical cancer, lack sufficient study for clear recommendations beyond expert opinions. While cervical cytology screening is proven to reduce both incidence and mortality of cervical cancer in average-risk, asymptomatic women, there's inadequate evidence for screening other gynecologic malignancies. Vulvar cancer screening lacks published investigations, yet postmenopausal women's surveys highlight knowledge deficits in vulvovaginal health. Screening examinations, including visual inspections, may aid in early detection of benign, premalignant, or malignant conditions.¹⁰

In asymptomatic, low-risk women, no studies support using pelvic examinations to screen for endometrial cancer due to its typical symptomatic presentation with abnormal bleeding. Regarding ovarian cancer, multiple trials evaluating pelvic examinations, CA-125, and ultrasounds haven't specifically studied the effect on ovarian cancer diagnosis or mortality. Limited evidence supports the survival benefit of incidentally discovered ovarian cancer during physical exams, suggesting potential value in asymptomatic women's pelvic examinations for earlier diagnosis.¹⁰

Recommendations acknowledge the insufficiency of evidence for noncervical gynecologic malignancy screening but suggest considering pelvic examinations for potential benefits in identifying ovarian and vulvar malignancies. These recommendations align with cervical cytology sampling intervals and encourage continued examination post-cervical cancer screening cessation. For special populations like high-risk individuals or those with gynecologic malignancy history, more frequent pelvic examinations are recommended based on individual circumstances, guided by expert opinion and provincial guidelines. Women with in utero diethylstilbestrol exposure also warrant more regular assessments.¹⁰

CONCLUSION

The study employed the Theory of Planned Behavior (TPB) to investigate primary care providers' intentions regarding gynecological examinations for women with recurrent abnormal vaginal bleeding. While the TPB constructs could predict intentions to some extent, they did not fully explain providers' behaviors. The analysis revealed that external factors, like workload and facility type, influenced examination frequencies, highlighting the complexity beyond TPB's predictive power. Despite the lack of conclusive evidence, performing gynecological examinations, particularly for vulvar and ovarian malignancies, showed potential benefits in early detection. However, studies on endometrial and ovarian cancer screenings lacked robust evidence to recommend routine examinations in low-risk, asymptomatic women.

The findings advocate for individualized approaches, considering high-risk populations or those with specific medical histories. Recommendations lean toward aligning pelvic examinations with cervical cytology sampling intervals, maintaining examinations even after cervical cancer screening cessation in certain cases. Moreover, the study revealed the overuse of routine pelvic examinations in Norway, predominantly among women aged 25–69 years. This overuse, often performed in specialized healthcare despite primary care recommendations, raises concerns about healthcare utilization and the influence of fee-for-service payments on examination frequency. Ultimately, the study highlights the need for more comprehensive research to better guide recommendations for gynecological examinations, especially for noncervical malignancies, while emphasizing the importance of understanding diverse factors influencing healthcare provider behavior in such clinical practices.

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