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Title:
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Date:
2021-04-09

Citation:
Bittleston, H., Coombe, J., Temple-Smith, M., Bateson, D., Hunady, J., Sanci, L., Hocking, J. S. & Goller, J. L. (2021). Diagnosis of pelvic inflammatory disease and barriers to conducting pelvic examinations in Australian general practice: findings from an online survey. Sexual Health, 18 (2), pp.180-186. https://doi.org/10.1071/SH20176.

Persistent Link:
https://hdl.handle.net/11343/337117

Diagnosis of pelvic inflammatory disease and barriers to conducting pelvic examinations in Australian general practice – findings from an online survey

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Manuscript details:

Main text 3040 words, abstract text 249 words, 2 tables, 1 figure

Online short summary:

Pelvic inflammatory disease (PID) remains an important reproductive health issue for women, and timely diagnosis and management is imperative to reduce the risk of complications. We explored the diagnostic practices of Australian general practitioners (GPs), finding that many GPs do not routinely perform pelvic examinations for patients with symptoms suggestive of PID due to multiple barriers. Pelvic examinations are an important diagnostic tool for PID; finding the best way to incorporate them into a consultation when needed will be beneficial.

Abstract

Background

Pelvic inflammatory disease (PID) is under-diagnosed globally, particularly in primary care, and if untreated may cause reproductive complications. This paper investigates PID diagnosis by Australian general practitioners (GPs) and barriers to their conducting a pelvic examination.

Methods

An online survey investigating Australian GPs' chlamydia management, including PID diagnosis, was conducted in 2019. From 323 respondents, 85.8% (n=277) answered multiple-choice questions about PID and 74.6% (n=241) answered a free-text question about barriers to conducting pelvic examination. Using multivariable logistic regression, we identified factors associated with conducting pelvic examinations. Barriers to performing pelvic examinations were explored using thematic analysis.

Results

Most GPs indicated that they routinely ask female patients with a sexually transmissible infection about PID symptoms, including pelvic pain (86.2%), abnormal vaginal discharge (95.3%), abnormal vaginal bleeding (89.5%), and dyspareunia (79.6%). Over half reported routinely conducting speculum (69.0%) and bimanual pelvic (55.3%) examinations for women reporting pelvic pain. Female GPs were more likely to perform speculum (adjusted odds ratio (AOR) 4.6; 95%CI: 2.6–8.2) and bimanual pelvic examinations (AOR 3.7; 95%CI: 2.1–6.5). GPs with additional sexual health training were more likely to routinely perform speculum (AOR 2.2; 95%CI: 1.1–4.2) and bimanual pelvic examinations (AOR 2.1; 95%CI: 1.2–3.7).

Barriers to pelvic examinations were patient unwillingness and/or refusal, GP gender, patient health-related factors, time pressures, and GP reluctance.

Conclusion

While GPs typically ask about PID symptoms when managing patients with chlamydia, they are not consistently able or willing to perform pelvic examinations to support a diagnosis, potentially reducing capacity to diagnose PID.

Introduction

Pelvic inflammatory disease (PID) is a serious reproductive health issue, particularly for younger women, that comprises a range of inflammatory disorders of the female upper genital tract. Timely diagnosis and management is imperative to reduce the risk of complications, including chronic pelvic pain, infertility, and ectopic pregnancy.(1, 2) Chlamydia and other sexually transmissible infections (STIs) are often implicated, with an estimated 16% of chlamydia infections in women causing clinical PID.(3) Less commonly, PID may result from uterine instrumentation, for example after the insertion of an intrauterine device (IUD).(2) However, for this study our aim was to review GP practices in the context of PID caused by an STI.

PID requires a clinical diagnosis as there is no objective, non-invasive test. While laparoscopy is often considered the 'gold standard' for PID diagnosis, this is an invasive procedure that is not readily available in many settings, and is therefore reserved for complicated infections where the patient is not responding to treatment.(2, 4) The World Health Organisation recommends that health care providers take a syndromic approach to the management of lower abdominal pain, even in countries with advanced laboratory facilities, as the organisation of further tests delays treatment.(5) It is essential that treatment is initiated as soon as possible, as the risk of fertility complications increases substantially when treatment is delayed.(1) However, diagnosis is challenging as clinical presentations of PID vary widely.(6) Symptoms can include new onset pelvic pain, deep dyspareunia (pain with intercourse), and abnormal vaginal discharge or bleeding.(7) When a woman presents with new onset pelvic pain and alternative causes have been excluded, Australian guidelines recommend STI tests, as well as a speculum examination (for visualisation of the cervix and endocervical swabs), and a bimanual pelvic examination (to detect cervical motion, uterine or adnexal tenderness – one or more of which is the minimum diagnostic criteria for PID).(2, 6, 7) While pelvic examinations

are important when diagnosing PID, guidelines recognise they are not always achievable in primary health care settings, and a provisional diagnosis for PID based on symptoms is acceptable in the absence of a pelvic examination.(7)

Clincians are encouraged to maintain a high index of suspicion and low threshold for treatment for PID.(6-8) However, international research suggests PID is under-diagnosed in primary care and often patients do not receive optimal treatment.(8-11) While likely to be less common, inexperienced clinicians may also be at risk of over-diagnosing PID which can result in other conditions being missed, or otherwise healthy women receiving unecessary treatment.(12, 13) There are several settings in Australia where PID may be diagnosed and managed. While severe PID maybe managed on an inpatient basis,(14) mild to moderate PID is largely managed in primary care settings including specilaist sexual health and family planning clinics, as well as general practice clinics which are the first point of access to the health care system for most Australians. A national population-based sexual health survey of over 20,000 Australians aged 16-69 found that of those diagnosed with chlamydia or gonorrhoea, 80% and 38% respectively reported they were diagnosed and managed in general practice. Of those diagnosed with PID, 32% reported they received treatment in general practice, highlighting the vital role that general practitioners (GPs) play in sexual health care in Australia.(15)

There is limited research investigating GP practices around diagnosing PID, and Australian research into barriers to conducting pelvic examinations has largely focused on factors associated with cervical screening and medical students performing pelvic examinations.(16, 17) This paper aims to fill these gaps by examining the PID diagnosis practices of GPs working in Australia.

Methods

We undertook a mixed methods study to examine the PID diagnostic practices of GPs working in Australia using data from an online cross-sectional survey about chlamydia management. The survey was administered from June-October 2019, and advertised via social media, paid email invitations (via Australian Medical Publishing Company) and through GP-focused research, clinical, and professional networks. We did not conduct any sample size calculations, relying on a convenience-based sample via our recruitment channels, but aimed to recruit 300 GPs which would generate 95% confidence intervals ±5% around a proportion of 50%.

The survey included several quantitative and one qualitative (free text) questions relating to PID diagnosis. (Fig. 1) GPs were asked on a five item Likert scale about the frequency with which they ask female patients with an STI diagnosis about symptoms suggestive of PID, and the frequency they would conduct a pelvic examination on women reporting pelvic pain or dyspareunia. Based on these Likert scale items we created three binary outcome variables, where we considered GPs who responded *always* or *most of the time* to 'routinely', and GPs who responded *sometimes, rarely,* or *never* to 'not routinely': i) ask women diagnosed with an STI about PID symptoms; ii) perform a speculum examination for women reporting pelvic pain and/or dyspareunia; iii) perform a bimanual pelvic examination for women reporting pelvic pain and/or dyspareunia. The free text question asked GPs to describe any barriers to conducting a pelvic examination.

Analysis

We explored factors associated with pelvic examination outcomes using univariable and multivariable logistic regression models. Results are presented as odds ratios (OR) with 95% confidence intervals (95%CI). We included GP age-group (categorised as <40, 40–54, >=55 years to reflect approximate career stages), gender, additional training in sexual and reproductive health, having an Australian medical degree, and practicing in a metropolitan area

in univariable models. Variables associated with the outcome in univariable models were retained in multivariable models. One exception was our age-group variable that was not associated with our pelvic examination outcomes in univariable analysis. However, as GP age has been found to be associated with diagnosing STIs, a decision was made to include age.(18) Analyses were conducted using Stata 16.0.

Thematic analysis(19) was used to examine free-text responses about barriers to conducting pelvic examinations to provide insight into reasons GPs might not conduct pelvic examinations to support a PID diagnosis. NVIVO 12 was utilised to facilitate the analysis. We took a largely semantic approach to analysis, looking for the overt meaning of the data, and generated six key themes. Example quotes are provided. Ethics approval for this project was granted by the University of Melbourne Human Research Ethics Committee (ID 1853183).

Results

A total of 323 GPs responded to the survey, with 277 (85.8%) answering at least one quantitative question relating to PID. Respondents were predominantly female (70.4%) with an average age of 42.5 years (range: 26–72). Most (67.9%) were from metropolitan areas, and every state and territory in Australia was represented, with around three-quarters (77.0%) of GP respondents from Australia's most populous states (Victoria, New South Wales and Queensland). Most (72.3%) had obtained their primary medical degree in Australia, and on average had worked in Australian general practice for 10.6 years (range: 0–47). Nearly one third (31.1%) had further sexual and reproductive health training or education.

Quantitative results

GPs estimated diagnosing a median of 2 (IQR: 1–2) PID cases over the past year. When treating a female patient for an STI, most reported routinely asking patients about pelvic pain (86.2%; 95%CI: 82.1–90.3), deep dyspareunia (79.6%; 95%CI: 74.8–84.4), abnormal vaginal discharge (95.3%; 95%CI: 92.7–97.8) and abnormal vaginal bleeding (89.5%; 95%CI: 85.9–93.1).

When caring for a female patient reporting pelvic pain or dyspareunia, a higher proportion of GPs reported they would routinely perform a speculum examination (69.0%; 95%CI: 63.1–74.4) than a bimanual pelvic examination (55.3%; 95%CI: 49.2–61.3). Multivariable analysis found GPs were more likely to report routinely conducting pelvic examinations if they were female (speculum: AOR 4.63, 95%CI 2.62–8.19; bimanual: AOR 3.70, 95%CI 2.10–6.52), or

had additional sexual and reproductive health training (speculum: AOR 2.18, 95%CI 1.13–4.19; bimanual: AOR 2.10, 95%CI 1.18–3.72).(Table 1)

Qualitative results

Of the 277 GPs who responded to questions about PID, 87% (n=241) responded to the question about barriers experienced in performing pelvic examinations in general practice. Key themes are described below, with example quotations for themes presented in Table 2.

Perception that the patient does not want a pelvic examination

Many GPs said that sometimes patients do not want to have a speculum and/or bimanual pelvic examination. Language used to discuss this varied, with some reporting a patient might 'refuse' or 'decline' an examination, while others said that they would not conduct an examination if a patient appeared unwilling or reluctant. Several discussed the importance of clearly communicating the rationale behind a pelvic examination, enabling patients to provide informed consent. This was recognised to be particularly important outside the context of cervical screening, as some reported that patients may have different expectations and understandings regarding the purpose and value of pelvic examinations.

Several GPs offered insight as to why patients may not wish to have a pelvic examination, typically due to distress or discomfort at the prospect of an examination. Discomfort was seen to be associated with factors such as menstruation, patient age, sexuality, cultural background, and level of sexual experience. Some also emphasised that patients with negative past experiences of pelvic examinations and/or experience of sexual abuse/trauma may find examinations distressing.

Patient health-related factors preventing or stopping a pelvic examination

GPs reported that health-related factors may be a barrier to conducting pelvic examinations. The potential for pain could be a barrier to commencing an examination, or pain during the examination could prevent a GP from completing the examination. A few GPs also said that other factors might

189 make a pelvic examination physically challenging, for example if the patient has a physical
190 disability or is very overweight. Patient pregnancy was also a barrier for some.

191 *Being a male GP*

192 Being a male GP was also raised as a barrier to pelvic examinations, and several GPs suggested
193 that this was largely due to female patients being uncomfortable with a male doctor examining
194 them. Several male GPs also said that they were conscious about potential medico-legal issues
195 that might arise from conducting a pelvic examination. To counteract this, some said that they
196 might offer or request the presence of a chaperone (observer) when performing examinations,
197 although this was not always feasible during a short consultation. Others stated that being a male
198 was a barrier, but did not explain whether this was due to patient reluctance, their own concerns,
199 or a combination of the two.

200 *GP reluctance*

201 Some GPs expressed reluctance to perform pelvic examinations. Several were hesitant due to a
202 lack of experience or confidence, particularly with bimanual pelvic examinations. In addition, some
203 said they felt pelvic examinations, especially bimanual, may not add value to their diagnosis or
204 management. Some, but not all, said that this was due to a low level of confidence in interpreting
205 information from a bimanual pelvic examination. For several GPs, reluctance to perform bimanual
206 pelvic examinations due to low confidence and/or experience was compounded by the potential
207 negative impacts on themselves and their patients, including patient discomfort and concerns
208 about medico-legal issues. While this was sometimes a concern with speculum examinations, it
209 was apparent that bimanual pelvic examinations were perceived as more challenging, invasive,
210 and uncomfortable for patient and doctor alike.

211 *Lack of time*

Time pressures within a standard consultation were reported by many as a barrier to performing pelvic examinations. Some GPs provided further insight, indicating that patients often raise the issue of pelvic pain towards the end of unrelated consultations, limiting their capacity to examine the patient.

While GPs were not directly asked how they overcome barriers, some did elaborate. For example, when patients decline an examination, some respondents said they would explore reluctance through sensitive discussion. A few male GPs said they refer patients to female colleagues, including trained nurses, for pelvic examinations. Several GPs also said if they were unable to conduct an examination in the initial consultation, they would rebook patients, and/or offer presumptive treatment.

Discussion

This study considered GP practices around diagnosing PID. Encouragingly, we found many GPs (≥80%) reported routinely enquiring about PID symptoms when treating female patients with an STI. However, GPs diagnosed few cases of PID over the previous 12 months (a median of 2 cases). Furthermore, we found that when women present with symptoms suggestive of PID, a third of GPs reported they do not routinely perform a speculum examination and almost half do not routinely conduct a bimanual pelvic examination. Consistent with other research, we found male GPs were less likely to routinely conduct pelvic examinations.(20-22) GPs with no additional sexual and reproductive health training were also less likely to routinely conduct pelvic examinations. Our free text analysis allowed us to explore these findings further, finding GPs experience additional barriers to conducting examinations, including patient reluctance, patient health-related factors, and time constraints.

Several barriers reported by GPs in this study are consistent with other research. For example, female patients often express a preference for a female GP to examine them;(16, 23-25) and the GPs in our study also reported this. Many GPs, regardless of gender, also said pelvic examinations caused some patients embarrassment and anxiety, and noted that some populations (including young people and sexual abuse survivors) are understandably more resistant to pelvic examinations than others. A systematic review of Australian women's self-perceived barriers to cervical cancer screening also found that fear and embarrassment were an important impediment to participation.(16) Furthermore, a questionnaire-based study conducted in Family Planning and sexual health clinics in Scotland, found that younger women (25 years and under) and women who had never been pregnant were more likely to feel negatively towards a pelvic examination.(23) Some comments in our study also indicated that patient expectations and understandings around pelvic examinations play an important role in obtaining consent.

There has been little research into expectations when it comes to performing pelvic examinations outside of cervical cancer screening, although it has been found that only 66% of female patients expect to have a pelvic examination when presenting with lower abdominal pain, while 98% of clinicians would wish to provide one.(23)

Bimanual pelvic examinations were found to pose additional challenges. Several GPs lacked confidence and/or experience with these examinations, and we found they were not routinely performed as often as speculum examinations. Challenges in interpreting pelvic examinations toward a PID diagnosis have been reported elsewhere. In the UK, inexperienced clinicians working in a sexual health clinic were found to identify pelvic tenderness and diagnose PID in women with no lower abdominal pain on pelvic examination, suggesting that a normal level of discomfort was mistaken for pathological tenderness.(12) Differences in the characteristics of PID cases diagnosed between experienced and inexperienced clinicians in the UK study highlighted the need for training to include a focus on conducting and interpreting bimanual pelvic examinations. The lack of confidence and/or experience with bimanual pelvic examinations reported by some GPs in our study highlights that undergraduate and GP training in Australia should also have more focus on pelvic examinations. This may be achieved by working with various professional colleges such as the Royal Australian College of General Practitioners and the Australasian Chapter of Sexual Health Medicine to lobby for universities to increase or improve their training of pelvic examinations. Increasing the number of pelvic examinations that students perform during training can have a positive impact – an Australian and New Zealand based study found that the number of examinations performed by students was positively correlated with self-reported confidence.(17) In addition, programs that involve professional patients (trained laywomen) teaching pelvic examinations to Australian university students have also been shown to have a long-term positive impact on self-reported technical skills and confidence.(26)

This study has highlighted several areas for further research. While several GPs said that they might recall or refer patients they are unable to examine, and/or offer presumptive treatment for PID based on symptoms, this was not directly asked in this study and we cannot determine how commonplace these practices are. Further research into the support needs of GPs diagnosing PID is warranted, and it should be ensured that GPs are aware that timely diagnosis and treatment of patients with PID is essential to reduce the risk of long term complications.(1) In addition, research into methods to improve the sensitivity and specificity of PID diagnosis, including identification of biomarkers of upper genital tract inflammation is an ongoing research priority.(27)

This study had several strengths and limitations. Our online survey allowed collection of a substantial amount of data that were applicable to a mixed-methods approach. This allowed for a rich analysis, considering not only *who* was routinely conducting pelvic examinations, but also *why* some GPs may not. The online survey format and distribution also allowed us to reach nearly 300 GPs, the largest number of GPs working in Australia surveyed on their PID diagnostic practices to date. However, the online survey format also had limitations. We were unable to clarify ambiguous statements or use probing questions to explore statements further, and we relied on GP recall and estimation, which may be subject to recall bias. The main limitation of this study is that due to our convenience-based sampling strategy our findings regarding GPs pelvic examination practices are unlikely to be generalisable to all Australian GPs or indeed GPs in other countries. Almost three-quarters of our GP respondents were female (which is higher than the 46% of all Australian GPs)(28) and a high proportion also had additional sexual and reproductive health training. However, our GP respondents were from a wide range of ages and practice locations that represented all Australian States/Territories and metropolitan and non-metropolitan areas. Around three-quarters worked in Australia's three most populous States (Victoria, New South Wales, and Queensland) that comprise 78% of the total population.(29) It should also be considered that if highly trained GPs face barriers to conducting pelvic examinations, it is likely

298 that the rest of the GP population do, too. Our findings thus provide new insights into the practices
299 of Australian GPs regarding PID diagnosis and management, a largely unexplored area of
300 research.

301

Conclusion

This study has highlighted that while GPs may routinely ask female patients with an STI questions about PID symptoms they experience multiple barriers to routinely performing pelvic examinations for female patients experiencing pelvic pain. Pelvic examinations are an important diagnostic tool for PID, and can reduce both under and over-diagnosis. Finding the best way to incorporate them into a consultation when needed will be beneficial.

Conflicts of interest

JH is supported by a National Health and Medical Research Council Fellowship (1136117). The other authors report no competing interests.

Acknowledgements

This research forms part of the Management of Chlamydia Cases in Australia (MoCCA) project, funded by a NHMRC Partnership Grant (APP1150014). We wish to thank all GPs who participated in the survey for their valuable contribution. We also wish to thank the MoCCA partner organisations: Victorian Government, Department of Health and Human Services, NSW Ministry of Health, Queensland Health, North Western Melbourne Primary Health Network, Central and Eastern Sydney Primary Health Network, Family Planning Victoria, Family Planning NSW, True Relationships & Reproductive Health, Victorian Cytology Service Pathology and Sydney Sexual Health Centre.

List of figures and tables:

References

1. Hillis SD, Riduan J, Marchbanks PA, Wasserheit JN, Cates W, Westrom L. Delayed Care of Pelvic Inflammatory Disease as a Risk Factor for Impaired Fertility. American Journal of Obstetrics and Gynecology. 1993(5):1503.
2. Bateson D, Edmiston N. Pelvic Inflammatory Disease: Management of new-onset low abdominal pain in young women. Medicine Today. 2016;17(7):14-22.
3. Price MJ, Ades AE, De Angelis D, Welton NJ, Macleod J, Soldan K, et al. Risk of Pelvic Inflammatory Disease Following Chlamydia trachomatis Infection: Analysis of Prospective Studies With a Multistate Model. American Journal of Epidemiology. 2013;178(3):484-92.
4. Brunham RC, Gottlieb SL, Paavonen J. Pelvic Inflammatory Disease. New England Journal of Medicine. 2015;372(21):2039-48.
5. WHO. Sexually Transmitted and Other Reproductive Tract Infections: A guide to essential practice Geneva, Switzerland 2005 [cited 2020 7th December]. Available from: https://apps.who.int/iris/bitstream/handle/10665/43116/9241592656.pdf?sequence=1s.
6. Centres for Disease Control and Prevention. Sexually Transmitted Diseases Treatment Guidelines, 2015. Atlanta, GA: U.S. Department of Health and Human Services CDC; 2015.
7. Australian Sexual Health Alliance. Australian STI Management Guidelines for use in Primary Care [Guidelines]. ASHM; 2018 [updated 11 July 201813 Aug 2020]. Last updated: March 2018:[Available from: http://www.sti.guidelines.org.au/syndromes/pid-pelvic-inflammatory-disease.
8. Silver BJ, Knox J, Smith KS, S Ward J, Boyle J, J Guy R, et al. Frequent occurrence of undiagnosed pelvic inflammatory disease in remote communities of central Australia. MJA. 2012;197(11-12):647-51.
9. Doxanakis A, Hayes RD, Chen MY, Gurrin LC, Hocking J, Bradshaw CS, et al. Missing pelvic inflammatory disease? Substantial differences in the rate at which doctors diagnose PID. Sexually Transmitted Infections. 2008;84(7):518-23.
10. Simms I, Vickers MR, Stephenson J, Rogers P, Nicoll A. National assessment of PID diagnosis, treatment and management in general practice: England and Wales. International Journal of STD & AIDS. 2000;11(7):440-4.
11. Nicholson A, Rait G, Murray-Thomas T, Hughes G, Mercer CH, Cassell J, et al. Management of first-episode pelvic inflammatory disease in primary care: results from a large UK primary care database. British Journal of General Practice. 2010;60(579):395-406.
12. Morris GC, Stewart CMW, Schoeman SA, Wilson JD. A cross-sectional study showing differences in the clinical diagnosis of pelvic inflammatory disease according to the experience of clinicians: implications for training and audit. Sex Trans Infect. 2014;90(6):445-51.
13. Goller JL, Fairley CK, De Livera AM, Chen MY, Bradshaw CS, Chow EPF, et al. Trends in diagnosis of pelvic inflammatory disease in an Australian sexual health clinic, 2002–16: before and after clinical audit feedback. Sexual Health. 2019.
14. Reekie J, Donovan B, Guy R, Hocking JS, Kaldor JM, Mak DB, et al. Risk of Pelvic Inflammatory Disease in Relation to Chlamydia and Gonorrhea Testing, Repeat Testing, and Positivity: A Population-Based Cohort Study. Clinical infectious diseases : an official publication of the Infectious Diseases Society of America. 2018;66(3):437-43.
15. Grulich AE, de Visser RO, Badcock PB, Smith AMA, Richters J, Rissel C, et al. Knowledge about and experience of sexually transmissible infections in a representative sample of adults: the Second Australian Study of Health and Relationships. Sexual Health. 2014;11(5):481-94.
16. Nagendiram A, Bougher H, Banks J, Hall L, Heal C. Australian women's self-perceived barriers to participation in cervical cancer screening: A systematic review. Health Promot J Austr. 2019;00:1-11.

17. Bhoopatkar H, Wearn A, Vnuk A. Medical students' experience of performing female pelvic examinations: Opportunities and barriers. Australian and New Zealand Journal of Obstetrics and Gynaecology. 2017;57(5):514-9.
18. Yeung A, Temple-Smith M, Spark S, Guy R, Fairley CK, Law M, et al. Improving chlamydia knowledge should lead to increased chlamydia testing among Australian general practitioners: a cross-sectional study of chlamydia testing uptake in general practice. BMC Infectious Diseases. 2014;14(1):584-95.
19. Braun V, Clarke V. Using thematic analysis in psychology. Qualitative Research in Psychology. 2006;3(2):77-101.
20. Hjörleifsson S, Bjorvatn B, Meland E, Rørtveit G, Hannestad Y, Bondevik GT. The when and how of the gynaecological examination: a survey among Norwegian general practitioners. Scandinavian Journal Of Primary Health Care. 2019;37(2):264-70.
21. Saleh N, Abu-Gariba M, Yehoshua I, Peleg R. Barriers to implementation of a pelvic examination among family doctors in primary care clinics. Postgraduate Medicine. 2018;130(3):341-7.
22. Stewart RA, Thistlewaite J, Evans R. Pelvic examination of asymptomatic women - attitudes and clinical practice. Australian family physician. 2008;37(6):493-6.
23. Fiddes P, Scott A, Fletcher J, Glasier A. Attitudes towards pelvic examination and chaperones: a questionnaire survey of patients and providers. Contraception. 2003(67):313-7.
24. Schmittdiel J, Selby JV, Grumbach K, Quesenberry CP. Women's Provider Preferences for Basic Gynecology Care in a Large Health Maintenance Organization. Journal of Women's Health & Gender-Based Medicine. 1999;8(6):825-33.
25. Webb R, Opdahl M. Breast and pelvic examinations: easing women's discomfort. Canadian family physician. 1996;42:54-8.
26. Reid K, Fairbank C, Minzenmay K. Improving student learning of pelvic examinations through the clinical teaching associate tutorial. Focus on Health Professional Education: A Multi-disciplinary Journal. 2016;17(3):45-57.
27. Balamuth F, Zhang Z, Rappaport E, Hayes K, Mollen C, Sullivan K. RNA Biosignatures in Adolescent Patients in a Pediatric Emergency Department With Pelvic Inflammatory Disease. Pediatric Emergency Care. 2015;31(7):465-72.
28. Deloitte Access Economics. General Practitioner workforce report 2019. ACT: DTTL; 2019 November 2019.
29. Regional Population Growth, Australia [Internet]. ABS. 2020 [cited 8th December 2020]. Available from: https://www.abs.gov.au/statistics/people/population/regional-population/2018-19#data-download.

Table 1 Characteristics associated with general practitioners routinely ('always' or 'most of the time') performing speculum and bimanual examinations when a female patient presents with lower abdominal pain or dyspareunia

		Speculum Examination n=274							Bimanual Examination n=273						
GP Characteristics		n (%)	OR*	95%CI	p	AOR†	95%CI	p	n (%)	OR*	95%CI	p	AOR†	95%CI	p
Gender	Male	81 (29.6)	1.00						81 (29.7)	1.00			1.00		
	Female	193 (70.4)	4.78	2.73, 8.37	**<0.001**	4.63	2.62, 8.19	**<0.001**	192 (70.3)	3.65	2.11, 6.31	**<0.001**	3.70	2.10, 6.52	**<0.001**
Age group (in years)	<40	131 (48.2)	1.00						130 (48.0)	1.00					
	40–54	93 (34.2)	1.19	0.67, 2.13	0.546	1.05	0.56, 1.95	0.887	93 (34.3)	1.49	0.87, 2.56	0.144	1.38	0.78, 2.44	0.264
	55+	48 (17.7)	1.08	0.53, 2.19	0.842	0.98	0.45, 2.14	0.963	48 (17.7)	1.88	0.95, 3.73	0.070	1.85	0.89, 3.84	0.101
Additional sexual and reproductive training/education	No	189 (69.0)	1.00						188 (68.9)	1.00					
	Yes	85 (31.0)	2.25	1.22, 4.13	**0.009**	2.18	1.13, 4.19	**0.020**	85 (31.1)	2.37	1.38, 4.07	**0.002**	2.10	1.18, 3.72	**0.011**
Medical degree obtained in Australia	No	74 (27.6)	1.00						73 (27.3)	1.00					
	Yes	194 (72.4)	1.42	0.80, 2.49	0.229				194 (72.7)	1.45	0.85, 2.49	0.176			
Practices in a metropolitan area	No	87 (32.1)	1.00						87 (32.2)	1.00					
	Yes	184 (67.9)	1.17	0.68, 2.02	0.567				183 (67.8)	1.07	0.64, 1.79	0.791			

*OR=Odds Ratio, AOR=Adjusted odds ratio; †Sex, age group and extra sexual and reproductive training/education included in the final model

147

148 *Table 1 Barriers to conducting pelvic examinations in general practice*

Theme description	GP characteristics	Example Quotes
Perception that the patient does not want a pelvic examination	Male, 29 yrs	*"Some cases there is a difficulty in understanding on the patient's behalf as to why a speculum +/- bimanual examination might be helpful outside the context of cervical screening or pregnancy despite my explanation of how it is useful for myself as a diagnostic tool as part of my physical examination"*
	Female, 29 yrs*	*"The patient needs to consent and feel the examination is acceptable and warranted. Informed consent is essential"*
	Female, 56 yrs	*"In older women none – but I have a high number of adolescent patients and transgender patients for whom it [a pelvic exam] is much more daunting and I try to limit to only when really necessary"*
	Female, 30 yrs	*"I work in community health with disadvantaged women – some have had very bad experiences of previous examination [or] history of sexual assault"*
	Female, 34 yrs	*"Cultural constraints – many of my patients are of Indian or Asian origin and have never had a pelvic examination, they are also very hesitant to have this performed even when clinically indicated"*
Patient health-related factors preventing or stopping a pelvic examination	Female, 42 yrs*	*"If a patient is unable to tolerate due to pain. Then I would do as much of the examination as is tolerable and then provide management as I could and continue to see the patient and try again at another time"*
	Female, 30 yrs	*"Physical disability preventing woman getting onto examination bed... Pregnancy – would do cautiously, generally refer to obstetric service if concerning on history"*
	Female, 58 yrs*	*"If the woman was severely unwell or had a history of dyspareunia/vaginismus or did not willingly give consent"*

Being a male GP	Male, 32 yrs	*"Being male GP, patient especially young may not be comfortable in having a pelvic examination."*
	Male, 31 yrs	*"Young male GP. Often work in AMS [Aboriginal Medical Service] setting so culturally not appropriate."*
	Male, 32 yrs	*"Most of these women prefer to be examined by female doctors so will usually rebook to them. The ones that don't mind, I don't feel comfortable doing it without a chaperone for medicolegal reasons. Not worth getting sued for just $15."*
GP reluctance to perform a pelvic examination	Female, 38 yrs	*"I am a registrar and have minimal experience with bimanual examinations. We were taught about them 1 day at Uni [university] and pretty much never since. We are often told now they don't add much value so not to do them."*
	Male, 36 yrs	*"Gender and experience - I am not experienced with bimanual examination and therefore feel it will add minimal information that won't be discovered on ultrasound. I am male and young which makes bimanual examination uncomfortable and a medicolegal risk as well. There are similar barriers with speculum examination but I am more comfortable with this"*
	Female, 46 yrs	*"I do not know how to do a bimanual examination well enough to justify doing such a potentially uncomfortable & intrusive examination"*
Lack of time	Female, 30 yrs	*"Time (often this is coming up incidentally in an appointment made for something else and rarely because women have booked an appointment to discuss pelvic symptoms)"*
	Male, 36 yrs	*"Time for examination and arranging a chaperone"*
	Female, 30 yrs*	*"Length of appointment"*

*GP has further sexual and reproductive health training or education

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