


ORIGINAL ARTICLE

Impact of pelvic floor dysfunction in Aboriginal and Torres Strait Islander women attending an urban Aboriginal medical service

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Abstract

Background: Pelvic floor dysfunction causes high-level disease burden, with Aboriginal and Torres Strait Islander women less likely to have access to best management for these issues due to multiple sociocultural barriers. There is limited data on the impact of pelvic floor dysfunction in this specific population.

Aims: To explore the impact of pelvic floor dysfunction on Aboriginal and Torres Strait Islander women attending an urban Aboriginal medical service, considering barriers and facilitators for care, and the services that are desired to address these conditions.

Methods: This is a mixed methods project utilising the validated Pelvic Floor Impact Questionnaire 7 in combination with qualitative data from semi-structured interviews. Quantitative data were analysed using SPSS Version 24 and analysis included the use of means, SD and Fisher's exact test for comparison. Interview transcriptions were coded into initial themes using thematic analysis and a theoretical approach was used to capture common patterned responses.

Results: The majority of women reported urinary incontinence. Higher scores on the urinary impact questions were significantly associated with comorbid risk factors of chronic cough and obesity. Salient themes from interviews included help-seeking behaviours, embarrassment and normalisation of the condition. Women desired access to a pelvic floor physiotherapist, and preferred a female doctor and a consistent care provider.

Conclusion: Pelvic floor disorders cause high disease burden for Aboriginal women across a broad age range with associated comorbid risk factors frequently occurring. This study suggests service improvement and care delivery strategies that may improve long-term outcomes for Aboriginal women with pelvic floor conditions.

KEYWORDS

oceanic ancestry group, pelvic floor disorders, women, primary health care, qualitative research

'Aboriginal' is used to encompass both Aboriginal and Torres Strait Islander people acknowledging the significant diversity within and among these groups.

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INTRODUCTION

Pelvic floor disorders are common and often disabling for women and include urinary and bowel dysfunction such as incontinence, vaginal prolapse, recurrent urinary tract infections and sexual dysfunction.^{1,2} There is limited research on Aboriginal* women's pelvic floor dysfunction (PFD), with incontinence a key area to be addressed within Aboriginal health. Evidence gaps exist about the prevalence, burden of disease and effects of associated risk factors³ in this population; however, a higher prevalence of urinary incontinence in younger Aboriginal women aged 19–22⁵ and people aged 45 and above⁶ has previously been reported. It is recognised there is a wide research and funding gap in regard to effective interventions for pelvic floor conditions for Aboriginal women, in addition to a lack of recognition of the impact of these conditions in current management guidelines.⁴

The known risk factors for female PFD in general include chronic cough, hypertension, diabetes, urogenital or abdominal surgeries, obesity, pregnancy and smoking.¹ Aboriginal people experience these risk factors and co-morbidities at increased rates and disproportionately to non-Aboriginal people.⁵

Among Aboriginal patients, under-reporting and under-treatment of incontinence is likely to occur, and in addition women are under-referred by primary care providers to specialist services.⁶ In the rural setting contributing factors may include financial difficulties, limited culturally appropriate services and at times limited English.⁶ In this setting outreach services are the most common form of specialist service and these can have issues with barriers to access, including covering large distances and lack of transport,⁷ sustainability and resourcing.⁸ A review showed that many Aboriginal health services do not provide incontinence services, with a proportion believing that continence issues are not a problem in their community.⁹

Other barriers to care identified for Aboriginal women include a preference to speak to female clinicians⁹ due to PFD being a topic of 'shame' and perceived as a private matter. Culturally specific resources have described the sacredness and private nature of genitals for Aboriginal women in central and northern remote communities and the cultural conflicts that may occur in the setting of women's urogenital and gynaecological health care.¹⁰ Further, older Aboriginal women may be fearful of being removed from their Country for treatment or placed in nursing home care due to the admission of incontinence.⁷

The aims of this mixed methods study were to explore the burden of PFD for Aboriginal women, the frequency of co-morbid risk factors and barriers to care. The intention was to consider the need for existing service expansion which at the time included onsite a specialist gynaecologist clinic and access to urodynamics.

MATERIALS AND METHOD

Community consultation and core principles

The project was designed with core ethical principles of spirit and integrity, responsibility, respect, cultural continuity, equity and reciprocity, as outlined in the National Health and Medical Research Council guidelines.¹¹ Community consultation was undertaken with the chief executive officer, practice manager and Aboriginal health worker of the participating Aboriginal medical service. The consultation informed the project design, expected benefit for the organisation, formulation of interview questions and agreement regarding data ownership and usage.

The investigators conducted general practitioner (GP) information sessions prior to recruitment, outlining best practice primary care management of PFD informed by current guidelines^{12,13} and site-specific referral pathway options, which included an onsite specialist gynaecology clinic. It was expected that the practice GPs would undertake appropriate examination and management of women identifying PFD, and in addition the co-investigator who runs the specialist gynaecologist clinic would continue care in the case of referral.

At the interview stage the chief investigator, an Aboriginal female doctor, undertook the interviews. This allowed cultural continuity by use of a same gender and concordant race interviewer to ameliorate issues of embarrassment and discussion of a sensitive topic.

At the conclusion of the project the data underwent a preliminary analysis and this was presented back to the service with key findings and recommendations formulated.

Participant recruitment and methodology

This mixed methods study recruited women who attended an urban Aboriginal medical service in New South Wales. This service provides primary care but also women-specific clinics such as an antenatal clinic and specialist gynaecology clinic. The inclusion criteria were identification as Aboriginal and/or Torres Strait Islander aged between 18–80 and attendance at the service. Clinical staff were asked to screen all women at their appointment for any type of PFD by utilising three screening questions:

1. Do you feel a lump or a bulge?
2. Do you ever accidentally leak urine, even a few drops?
3. Do you ever have to rush to go to the toilet?

The screening questions for recruitment were based on questions recommended for use by GPs in Australia for the screening of urinary incontinence and pelvic organ prolapse (POP).^{13,14} Participants who answered 'yes' to any of the screening questions were informed about the study and invited to participate. Information on the overall number of women who presented to the service during the study period was not collected as it was not

part of the current research aim. Written consent was obtained and women were contacted by telephone to arrange an interview. Interviews were conducted by the chief investigator in person or over the phone according to the participant's preference.

Data collection included demographic variables of age, body mass index (BMI), parity, and comorbid medical conditions and the type of appointment the woman presented for and was recorded as either 'Women's health/specialist gynaecology clinic', 'General medical' or 'Other'. A validated Pelvic Floor Impact Questionnaire (PFIQ7) was administered.¹⁵⁻¹⁷ Birth interventions were coded as 'ever had a birth intervention' which included assisted delivery or caesarean section, but these were also separately considered. The open-ended extended interview questions (see Table 1) were purpose designed and based on previous studies using interviews to explore incontinence and pelvic floor issues.^{7,18,19}

In order to quantify PFD impact on quality of life and burden of disease, a standardised and validated PFIQ^{15,16,20} was administered. A shortened version of this tool, the PFIQ7 has been validated across a broad range of sociocultural and language settings,^{21,22,23,24} and will be the first known time it has been specifically applied to Aboriginal people. The PFIQ7 is a composite of three scales measuring symptom distress in women with PFD consisting of questions related to bladder incontinence, faecal incontinence and POP. It uses a set of questions for each of these conditions and combines each score to obtain a total score out of 300, with higher scores indicating higher levels of dysfunction.¹⁷

Data analysis

Analysis of data used an integrated mixed methods approach outlined by Woolley,²⁵ allowing collection of evidence from both quantitative and qualitative data, thus giving a complementary perspective, that when integrated in analysis, gives a more in-depth understanding of the impacts and experiences of PFD in the population studied. Quantitative data were derived from the PFIQ7 scores along with demographic and risk factor frequency information, and was entered into SPSS Version 24 and analysed.

Analysis included the use of means, SD, analysis of variance (ANOVA) and Fisher's exact test for comparison. Independent

samples *t*-tests with equal variance were conducted on the PFIQ7 urinary scores in regard to risk factors to determine how the risk factors affected the scores in this population. For the analysis of the category 'Help-seeking behaviour' Fisher's exact test was used. ANOVA testing was performed for comparing the PFIQ7 urinary score means according to past birth intervention. *P*-values of less than 0.05 were deemed significant with a 95% confidence interval.

Due to the small number of women in the POP and faecal incontinence categories, only the sub-score on the urinary impact score was included in the data analysis. The urinary impact score is calculated out of 100 where scores closer to 100 indicate a high level of impact.^{15,17} Scores over 50 were deemed to indicate significant impact of PFD on the participants' quality of life.

The semi-structured interviews were transcribed by the interviewer at the time of the interview. Participants were assigned a value P1-P27. Salient themes from interviews were continually confirmed in further interviews until no new themes emerged. Transcriptions were coded into initial themes using thematic analysis and a theoretical approach was used to capture common patterned responses.²⁵ The main themes included help-seeking behaviours, embarrassment, normalisation of symptoms and strategies to address the issue, and were coded into frequency data and cross-analysed with quantitative data to detect whether burden of disease scores correlated with management desires or health-seeking behaviours. Qualitative and quantitative data are reported simultaneously to enhance the integrative approach.²⁵

Ethics

This study was approved by the Aboriginal Health and Medical Research Council Human Research Ethics Committee, project number 1371/18.

RESULTS

A total of 27 women enrolled and proceeded to the interview. Demographic data is presented in Table 2, with an equal number

TABLE 1 Interview questions

Risk factor and demographic questions	Semi-structured questions
Number of pregnancies	Have you sought help for this symptom? • If no, what has stopped you?
Types of deliveries	• If yes, were you happy with the outcome?
Past abdominal or genitourinary surgeries	Who would you talk to about this symptom?
Smoking status	What services would you like to help with this symptom?
Diabetes status	
Hypertension	
Chronic cough	

TABLE 2 Participant baseline demographics and reasons for presentation

Demographic variable	Value (SD, range)
Age, mean, years	50.3 (SD 15.4, 18-77)
Body mass index, mean	32 (SD 8.8, 21.7-55.1)
Parity, mean	3.26 (SD 2.12, 0-9)
Reason for presenting appointment:	9
• General medical	9
• Women's health	
• 'Other' [†]	

[†]Other – includes completion of forms, social support visits, witnessing of documentation or visits not pertaining specifically to a medical or women's health presentation.

of women presenting for each of the general practice visit types. The types of PFD detected on the enrolment screening questions are shown in Figure 1 which also shows most women only experienced urinary incontinence.

The PFIQ7 questionnaire asked additional questions about POP and faecal incontinence with three participants reporting POP and ten participants reporting faecal incontinence (Fig. 2).

The frequency and percentage of the individual pelvic floor risk factors in participants are presented in Table 3.

Each risk factor was compared against the PFIQ7 urinary scores for those with or without the risk factor. The difference between the means of the PFIQ urinary score for each risk factor is presented with *P*-scores in Table 3 and show how the risk factors affected the scores. There was a significant difference in the mean PFIQ urinary scores for those with chronic cough and obesity.

ANOVA testing for differences in the PFIQ7 urinary score means according to past birth intervention showed no significant difference between women who had a vaginal delivery ($n = 16$, mean score 42.3), forceps delivery ($n = 8$, mean score 39.8), or caesarean section delivery ($n = 3$, mean score 1.6), $P = 0.120$.

Help seeking

Women were asked if they had previously sought help for PFD and reasons surrounding help seeking were explored. A majority of women, 63% ($n = 17$) had sought help, with women significantly more likely to have a higher PFIQ7 urinary score (mean difference 38.44, $P < 0.001$, 95% CI 59.92–16.95) than those who did not seek help. Embarrassment and shame appeared to contribute to some help seeking, but overall, in this study they did not affect the likelihood of seeking medical help (Fisher's exact test, $P = 0.666$).

[incontinence is] embarrassing, at 28 I don't expect to have these issues

[it makes me] feel ashamed of myself

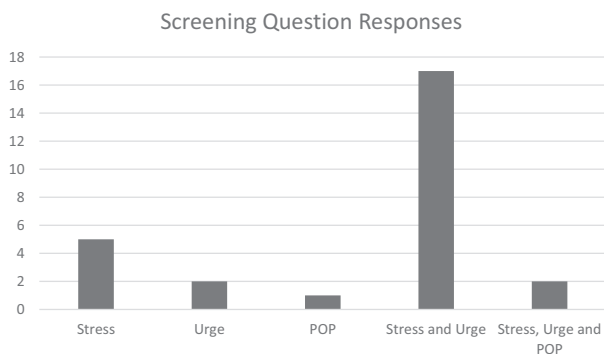


FIGURE 1 Type of pelvic floor dysfunction detected on initial participant recruitment screening questions. POP, pelvic organ prolapse.

For other women, fear of not knowing the treatment options or that no options were available therefore affected help-seeking behaviour.

I don't know whether there is surgery involved, I don't want another surgery

[There is] not much they can do because of my age [77 years old]

Embarrassment

The impact of the dysfunction was evident in a number of women who reported feeling embarrassed by their condition (29.6%, $n = 8$), resulting in self-consciousness and the issue being a sensitive one both in and out of the healthcare setting.

...the unpredictability and pressure I feel, it's constant and you always have to be alert that you could wet yourself [...] sometimes you're at one end of the house and toilet at the other end and you have to rush and don't make it, [you're] saturated all the time

Those who felt embarrassed were significantly more likely to have a higher PFIQ7 urinary score than those who did not feel embarrassed (mean difference 27.11, $P = 0.041$, 95% CI 53.02–1.19).

Normalisation of condition

A number of women showed signs they had normalised the condition as a normal issue for women or as part of ageing (22.2%, $n = 6$).

[it is] not bothering me, seems common for women my age or older

doesn't happen enough to be concerned

Strategies to address the issue

Education desired

Women were less likely to list education as a desired option in their management, with only 25% ($n = 7$) indicating this was desired. Of the women who thought education would be beneficial there was insight regarding its value and when this information might be best delivered.

having education, information about the symptoms, what can help, make it worse or prevent it and how to do the exercises

not enough information after pregnancy toward that, women have their babies and go away and don't talk about it again

Pelvic floor dysfunction type

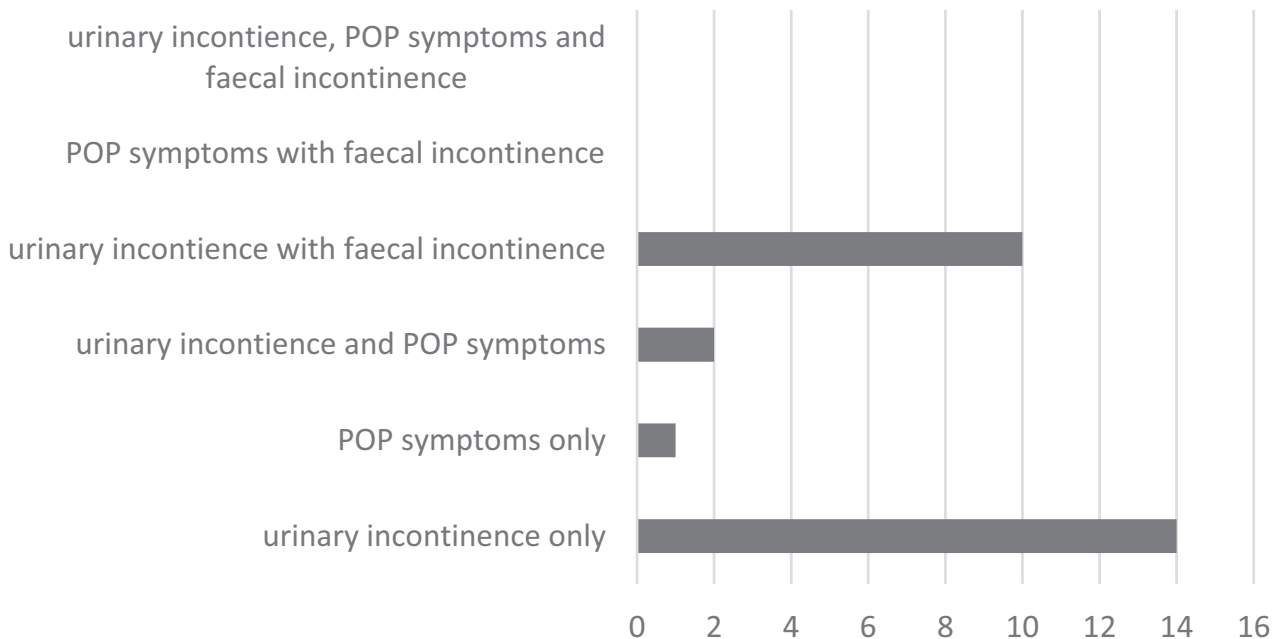


FIGURE 2 Pelvic floor dysfunction type overall with screening question responses and Pelvic Floor Impact Questionnaire 7 responses combined. POP, pelvic organ prolapse.

Specific physiotherapy clinic desired

Most women desired a specific pelvic floor clinic and access to a pelvic floor physiotherapist (59.3%, $n = 16$).

you see a lot of these young koori girls down there and would be good to let them know about the kegels [pelvic floor exercises] and give them info

Help with financial burden

A small number of women reported needing assistance with the cost and expense of managing their condition, including with the purchase of continence pads and underwear (22.2%, $n = 6$).

given patches and didn't work so wear pee proof pants everyday

Doctor characteristics

Women reported on the characteristics of the clinic and the doctor for management of their condition with women greatly preferring female doctors for their management (77.8%, $n = 21$).

if it's something to do with my lady stuff I see a girl GP [...] prefer women for women's business

Some desired continuity of care, with the ability to consult the same doctor for visits about their PFD (14.8%, $n = 4$).

prefer to see the same doctor for this issue, not changing doctors so can build up confidence to discuss a sensitive issue

what's been good is my regular appointments so I can be in the headspace of getting intrusive examinations

want to go to the same GP rather than seeing multiple people for consistency, knowing the history already, if I could make an appointment [it would be good]

DISCUSSION

This project aimed to identify the burden of PFD, frequency of comorbid risk factors and barriers to care in Aboriginal women who attended an urban Aboriginal medical service. The participants' PFIQ7 scores demonstrate a high burden of disease. It is clear that strengthened primary care initiatives will benefit Aboriginal women with urinary incontinence, consistent with the aims of The National Continence Action Plan.¹

The comorbid risk factors examined, including the significant associations of chronic cough and obesity, are consistent with common risk factors identified in general for women with PFD.¹ Effectively and holistically addressing these risk factors associated with chronic disease may reduce disease burden within this population.

TABLE 3 Frequency of pelvic floor risk factors

Risk factor	Frequency percentage (N = 27)	Mean difference in PFIQ7 urinary score†	P-value (95% CI)
Past abdominal surgery	63% (n = 17)	2.13	0.87 (-24.54, 28.80)
Current smoker	29.6% (n = 8)	-24.29	0.07 (-50.67, 2.10)
Diabetes	25.9% (n = 7)	-15.65	0.27 (-44.34, 13.04)
Hypertension	37% (n = 10)	1.25	0.92 (-25.4, 27.94)
Chronic cough	33.3% (n = 9)	-30.53	0.02* (-54.8, -6.26)
Obesity, BMI > 29.9	51.8% (n = 14)	24.5	0.04* (0.76, 48.23)
More than 1 pregnancy	74.1% (n = 20)	0.16	0.99 (-29.24, 29.57)

BMI, body mass index; PFIQ, Pelvic Floor Impact Questionnaire.

* $P < 0.05$ significance.

†The mean difference between the PFIQ urinary score for those with or without the risk factor; positive mean difference shows that PFIQ urinary scores were higher for those with the risk factor, indicating higher burden of symptoms, negative mean difference shows that PFIQ urinary scores were lower for those without the risk factor, indicating lower burden of symptoms.

The themes of help seeking, embarrassment and normalisation expanded on the PFIQ7 quality of life data. The social, financial and hygiene burden of incontinence issues has previously been reported²⁶ and our findings are concordant with previous studies showing women are often reluctant to seek help due to embarrassment and fear of judgement.¹⁸

Themes regarding desired management options included having a female doctor, increased education regarding their condition, and having access to a pelvic floor physiotherapist or pelvic floor clinic supports the implementation of integrated culturally safe specialist services. It has previously been found that culturally sensitive urinary continence training is essential in identifying and removing barriers for Aboriginal women⁹ and several culturally safe resources are available to health professionals.^{10,27} Speciality services should be predictable, well-coordinated and ideally within an accessible primary care setting to deliver sustainable and cost-effective clinical care.⁸ Our results support the ongoing provision of onsite specialist service with a high level of desire for a pelvic floor physiotherapy clinic, female GP availability and contact with a consistent care provider.

Translation of these findings were incorporated into recommendations prompting further establishment of a female pelvic floor physiotherapist and pelvic floor clinic expanding the existing service. Furthermore, consultations on referral pathways from the medical service GPs to the pelvic floor clinic, and review of site-specific patient pamphlets and information were undertaken at the project's conclusion. This pelvic floor clinic continues to operate with good participation and positive benefit reported by clients, further allowing service staff an onsite avenue for referral that reduces barriers to non-pharmacological and non-surgical management of PFD. In-service education for staff on PFD has also taken place.

STRENGTHS AND LIMITATIONS

The strengths of this study include presentation of information regarding PFD burden and comorbid associations among an urban population of Aboriginal women in addition to exploration of barriers and desired management strategies, which is currently

underreported in the literature. A small sample size limits extrapolations regarding prevalence of PFD and associations with known risk factors that can more broadly generalise to Aboriginal women. Determining the prevalence of PFD within the study population was beyond the aim of this mixed methods project but is worth further research within the general Aboriginal population. In addition, the entire PFIQ7 instrument was administered; however, given the low number of women with POP or faecal incontinence, a specific urinary incontinence tool, such as the urinary incontinence subscale used in the PFIQ7, may have been preferable. Regardless, the study reminds all GPs and gynaecologists to screen women for PFD with simple screening questions and provide comprehensive management and follow-up as required.

CONCLUSION

Overall, the burden of PFD symptoms for the Aboriginal women interviewed in this study is high, occurring across a broad age range with a high frequency of associated comorbid risk factors. This study suggests possible service and care delivery strategies that may improve long-term outcomes for Aboriginal women with PFD. A women's pelvic floor physiotherapy clinic was established at the given Aboriginal medical service as a result of the study's findings.

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REFERENCES

1. Australia. Department of H, Ageing. *The National continence program action plan 2011–2014.* [Department of Health and Ageing]. Canberra: Dept. of Health and Ageing, 2011.

2. Haylen BT, de Ridder D, Freeman RM *et al.* An international Urogynecological association (IUGA)/international continence society (ICS) joint report on the terminology for female pelvic floor dysfunction. *Int Urogynecol J* 2010; **21**(1): 5–26. <https://doi.org/10.1007/s00192-009-0976-9> [published Online First: 2009/11/26].
3. Welfare AloHa. *Australia's Welfare 2013*. Canberra: AIHW, 2013.
4. Clarke M, Whitson N, Williams C *et al.* A silent burden—Prolapse, incontinence, and infertility in Australian aboriginal and Torres Strait islander women: A systematic search and narrative review. *Int J Gynecol Obstet* 2021; **155**(2): 268–274. <https://doi.org/10.1002/ijgo.13920>.
5. Statistics ABo. National Health Survey(NHS) 2001: Aboriginal and Torres Strait Islander Australians. Australia, 2001.
6. Bonner A, Boyle J. Are women's needs being met by specialist health services managing urinary incontinence in the remote top end NT? *Aust N Zeal J Obstetr Gynaecol* 2017; **57**(3): 351–357. <https://doi.org/10.1111/ajo.12601>.
7. Millard R, Chiarelli, P., Bower, W., Szonyi G., & Talley, N. The Epidemiology of Urinary Incontinence within the Community. In: (DoHA) DoHaA, ed. Canberra 2001.
8. Gruen RL, Weeramanthri TS, Bailie RS. Outreach and improved access to specialist services for indigenous people in remote Australia: The requirements for sustainability. *J Epidemiol Community Health* 2002; **56**(7): 517 <https://doi.org/10.1136/jech.56.7.517>.
9. Sutherland A, Billimoria, J. Aboriginal and Torres Strait islander continence training in rural and remote Australia. 11th National Rural Health Conference Continence Foundation of Australia, 2011.
10. Manuals RPHC. *Minymaku Kutju Tjukurpa: 'Women Only Story'; Women's Business Manual*, 6th edn. Alice Springs, NT: Centre for Remote Health, 2017.
11. Australia Co. Ethical conduct in research with Aboriginal and Torres Strait Islander peoples and communities: Guidelines for researchers and stakeholders. Canberra National Health and Medical Research Council, 2018.
12. Excellence NifHaC. *NICE Guideline – Urinary Incontinence and Pelvic Organ Prolapse in Women: Management*: NICE, 2019.
13. Practitioners TRACoG. *Guidelines for Preventive Activities in General Practice*, 9th Edition edn. East Melbourne, Vic: RACGP, 2016.
14. Baessler K, Baessler K, O'Neill SM *et al.* Australian pelvic floor questionnaire: A validated interviewer-administered pelvic floor questionnaire for routine clinic and research. *Int Urogynecol J* 2009; **20**(2): 149–158. <https://doi.org/10.1007/s00192-008-0742-4>.
15. Barber MD, Kuchibhatla MN, Pieper CF *et al.* Psychometric evaluation of 2 comprehensive condition-specific quality of life instruments for women with pelvic floor disorders. *Am J Obstet Gynecol* 2001; **185**(6): 1388–1395. <https://doi.org/10.1067/mob.2001.118659>.
16. Barber MD, Walters MD, Bump RC. Short forms of two condition-specific quality-of-life questionnaires for women with pelvic floor disorders (PFDI-20 and PFIQ-7). *Am J Obstet Gynecol* 2005; **193**(1): 103–113. <https://doi.org/10.1016/j.ajog.2004.12.025>.
17. Barber MD, Chen Z, Lukacz E *et al.* Further validation of the short form versions of the pelvic floor distress inventory (PFDI) and pelvic floor impact questionnaire (PFIQ). *Neurourol Urodyn* 2011; **30**(4): 541–546. <https://doi.org/10.1002/nau.20934>.
18. Hägglund D, Walker-Engström M-L, Larsson G *et al.* Reasons why women with long-term urinary incontinence do not seek professional help: A cross-sectional population-based cohort study. *Int Urogynecol J* 2003; **14**(5): 296–304. <https://doi.org/10.1007/s00192-003-1077-9>.
19. Berger MB, Patel DA, Miller JM *et al.* Racial differences in self-reported healthcare seeking and treatment for urinary incontinence in community-dwelling women from the EPI study. *Neurourol Urodyn* 2011; **30**(8): 1442–1447. <https://doi.org/10.1002/nau.21145>.
20. Barber MD, Chen Z, Lukacz E *et al.* Further validation of the short form versions of the pelvic floor distress inventory (PFDI) and pelvic floor impact questionnaire (PFIQ): Further validation of PFDI and PFIQ short forms. *Neurourol Urodyn* 2011; **30**(4): 541–546. <https://doi.org/10.1002/nau.20934>.
21. Arouca MA, Duarte TB, Lott DA *et al.* Validation and cultural translation for Brazilian Portuguese version of the pelvic floor impact questionnaire (PFIQ-7) and pelvic floor distress inventory (PFDI-20). *Int Urogynecol J* 2016; **27**(7): 1097–1106. <https://doi.org/10.1007/s00192-015-2938-8> [published Online First: 2016/01/20].
22. Chan SS, Pang SM, Lai BP *et al.* Quality of life and symptom measurement in Chinese women with pelvic floor disorders: Validation study of pelvic floor distress inventory and pelvic floor impact questionnaire. *Hong Kong Med J* 2017; **23**(Suppl 2(3)): 38–41. [published Online First: 2018/06/26].
23. de Araujo MP, Cristina Takano C, Girão MJBC *et al.* Pelvic floor disorders among indigenous women living in Xingu Indian Park, Brazil. *Int Urogynecol J* 2009; **20**(9): 1079 <https://doi.org/10.1007/s00192-009-0906-x>.
24. Henn EW, Richter BW, Marokane MMP. Validation of the PFDI-20 and PFIQ-7 quality of life questionnaires in two African languages. *Int Urogynecol J* 2017; **28**(12): 1883–1890. <https://doi.org/10.1007/s00192-017-3318-3>.
25. Woolley CM. Meeting the mixed methods challenge of integration in a sociological study of structure and agency. *J Mixed Methods Res* 2009; **3**(1): 7–25. <https://doi.org/10.1177/1558689808325774>.
26. Deloitte Access Economics. *The Economic Impact of Incontinence in Australia 2011*. Continence Foundation of Australia, 2011.
27. Australia CFo. [Resources for Aboriginal and Torres Strait Islander People]. Available from: <https://www.continence.org.au/pages/aboriginal-torres-strait-islander.html> accessed 17th of November 2020.