

Rates of Māori women receiving surgical treatment for urinary incontinence and pelvic organ prolapse in Southern District Health Board

Riki Anderson, Mike Stitely, Robin Willink

ABSTRACT

AIMS: Pelvic organ prolapse (POP) and urinary incontinence (UI) are common gynaecological conditions that are amenable to surgical management. The prevalence of these conditions has not been well studied in the New Zealand population, but limited evidence suggests that Māori women are likely to have a higher prevalence of POP and UI than non-Māori women. The aim of this study was to formally document the rate of access to these surgical procedures for Māori and non-Māori women in the area served by Southern District Health Board (SDHB).

METHODS: A retrospective descriptive study of women who underwent surgical management for POP and/or UI at SDHB facilities between 2015 and 2019 was performed.

RESULTS: Unadjusted results suggested that there was a difference in the accessibility of operations for Māori and non-Māori. However, standardisation for the difference in the age structures of the two populations showed that Māori and non-Māori women access gynaecological surgery for POP and UI at very similar rates.

CONCLUSIONS: We have documented that the standardised rates for Māori and non-Māori women accessing POP and UI surgery are similar in SDHB. Owing to the likely greater prevalence of these conditions in Māori women, the near equality of standardised rates of surgical intervention is likely to represent an inequity of access for Māori women.

Pelvic organ prolapse (POP) and urinary incontinence (UI) are common conditions that affect women of all ages. The severity and the nature of POP and UI range widely.¹ POP is defined as protrusion of the uterus and/or vagina beyond normal anatomical confines.² The bladder, urethra, rectum and bowel are also often involved. UI is defined by the International Continence Society as “the complaint of any involuntary leakage of urine.”¹ UI may occur as a result of a number of abnormalities of function of the lower urinary tract or as a result of other illnesses, which tend to cause leakage in different situations.¹ Although rarely life-threatening, both POP and UI can seri-

ously influence the physical, psychological and social wellbeing of affected individuals³.

Risk factors associated with the development of POP include pregnancy, previous vaginal birth (with each subsequent vaginal birth increasing the likelihood of symptomatic prolapse), increased age, menopause, connective tissue disorders, chronic cough, genetic factors, hysterectomy and repetitive heavy lifting.^{4,5,6} Risk factors associated with the development of UI are similar, and include pelvic surgery (eg, iatrogenic denervation, loss of tissue elasticity), childbirth, increased age, menopause, connective tissue disorders, increased abdominal pressure (obesity, chronic constipation, chronic cough)

and neurogenic disease.^{5,7,8} Given that, in comparison with other women in New Zealand, Māori women have higher fertility rates (Māori total female fertility rate was 2.34 in 2014, compared with 1.92 for New Zealand women overall),⁹ have higher rates of cigarette smoking¹⁰ and are more likely to be overweight/obese,¹¹ it should be expected that they experience a higher prevalence of POP and UI.

The limited data available describing the prevalence of POP and UI by ethnicity in New Zealand women support this suggestion. Only one study in New Zealand has assessed the prevalence of UI in Māori, Pacific Island and European women aged 18 years and over.¹¹ That study found the prevalence of UI to be significantly greater for Māori women (46.8%) than either Pasifika (29.2%) or European women (31.2%).

In the United States, the lifetime risk of undergoing surgery for POP is estimated to be 13% by the age of 80 years.⁶ A study undertaken in Western Australia estimated a similar lifetime probability of undergoing surgery for POP of 19%. In the general female population,¹² rates of stress urinary incontinence surgery in the United States were 246.1 per 100,000 person years.¹³

In 2019, Stitely et al reviewed a cohort of women scheduled for gynaecological surgery at Dunedin Public Hospital, Southern District Health Board (SDHB), Aotearoa New Zealand, where cystoscopy was a planned component of the procedure.¹⁵ The majority of surgeries were performed to manage POP and/or UI. The ethnicities of the women who participated were collected. Only 3% of women in the cohort identified their ethnicity as “Māori,” compared to 92.4% who identified as “European.”¹⁵ Given the apparent under-representation of Māori women in this cohort and the recognition that risk factors for POP and UI are more common in Māori, there was concern that Māori women did not have appropriate access to surgical intervention for POP and UI in SDHB.

Aims

The aim of this study is to document the surgical access rates for Māori and non-Māori women for treatment for POP and UI in the catchment area served by

SDHB in Aotearoa New Zealand between 2015 and 2019.

Methods

An application was made to the Ethics Committee at The University of Otago, Dunedin, under the Minimal Risk Research Audit Proposal and was approved (Ethics Committee reference number: HD20/018). In addition, local authorisation was sought and granted from SDHB, and research consultation was undertaken with Māori via the Ngāi Tahu Research Consultation Committee.

A retrospective descriptive study was undertaken, which included women undergoing surgical management for POP and/or UI at SDHB facilities between 2015 and 2019. Line-by-line data for women, including their stated National Health Index (NHI) ethnicities, were obtained from the Hospital Surgical Activity Database for SDHB using the Australian Classification of Health Interventions (ACHI) coding system. Stats NZ population projections for the SDHB population derived from New Zealand census data were used as the denominator to calculate ethnicity-specific rates for the procedures. On every admission for surgery, women had been asked to self-identify their ethnicity, with the option to record up to three ethnicities per woman.

Women can identify with more than one ethnic group, hence a prioritisation process related to ethnicity is used by SDHB, which was developed by Stats NZ for situations where people need to be counted only once. Ethnicity is prioritised in the following order: New Zealand Māori > Pasifika > Asian > Middle Eastern, Latin American, African (MELAA) > Other > European > Residual Categories. Because we were interested in understanding inequities for Māori, our study divided ethnicity into two sub-groups: (1) women identifying as New Zealand Māori and (2) all others (including women identifying as Pasifika, Asian, MELAA, European or another ethnic group).

This study aimed to assess the level of *access* to gynaecological POP and/or UI procedures, rather than the level of *provision* of the procedures. Therefore, in instances when there was more than one date of surgery for a given patient, only the procedure performed on the earliest date

was included (ie, when a woman underwent multiple surgeries on different dates, only her first date of surgery was counted). Raw data were obtained for Māori and non-Māori women who received service from SDHB, and raw overall rates and age-specific rates were calculated. Subsequently, direct standardisation to the combined population of Māori and non-Māori women was used to obtain adjusted (ie, standardised, overall rates). This accounts for the difference in the age distributions of the two populations.

Results

The estimated female resident population for SDHB in 2015–2019 is shown in Table 1. For example, it was estimated that, in 2019, 10.4% of the female population was Māori and 89.6% was non-Māori.

The numbers of surgical procedures were analysed by age and ethnicity. The unstandardised overall rate of receiving operations for Māori women, r , was lower than for non-Māori, r° , (Figure 1 and Figure 2). The contributions from the upper age groups were much smaller for Māori (Figure 1). The overall rates, r and r° , can be found by combining the rates for women in the individual age groups, r_j and r_j° (Figure 2), with the sizes of the age groups, n_j and n_j° (Figure 3). They are

$$r = \frac{\sum n_j r_j}{\sum n_j} = 0.17\%$$

and

$$r^\circ = \frac{\sum n_j^\circ r_j^\circ}{\sum n_j^\circ} = 0.25\%.$$

Although the rates for Māori and non-Māori in the individual age groups are similar (Figure 2), the overall rate is lower for Māori. Taken in isolation, this would suggest that there is a difference in the rates of access to operations for Māori and non-Māori. However, the age structures of the populations of Māori and non-Māori women differ considerably (Figure 3). Direct standardisation was undertaken. The combined female population was used as this is a real population, each individual contributes equally and the results are unaffected by factors outside the populations being compared. Standardising the rates to the age structure of the combined female population gives standardised rates for Māori and non-Māori (Figure 4) of

$$r_{st} = \frac{\sum (n_j + n_j^\circ) r_j}{\sum (n_j + n_j^\circ)} = 0.24\%$$

and

$$r_{st}^\circ = \frac{\sum (n_j + n_j^\circ) r_j^\circ}{\sum (n_j + n_j^\circ)} = 0.24\%$$

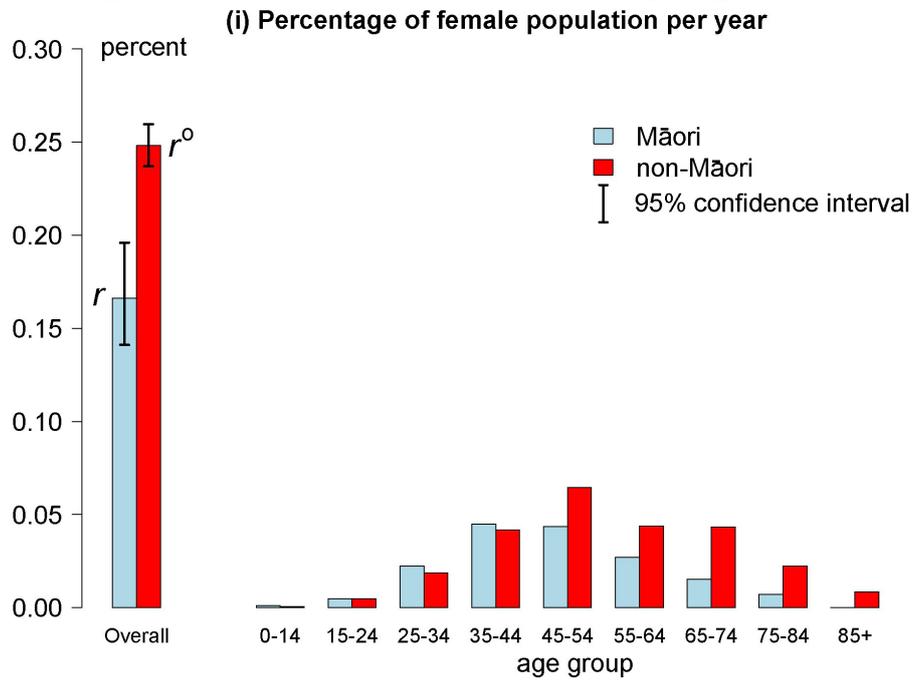
per year, which means that the standardised rate-ratio is very close to 1. The estimates are identical to two significant figures. It

Table 1: Estimated resident female population of SDHB, 2015–2019, by ethnicity.

Ethnicity	2015		2016		2017		2018		2019	
	N	%	N	%	N	%	N	%	N	%
Māori	15,810	9.9	16,530	10.1	17,110	10.3	17,490	10.3	17,850	10.4
Pacific	2,900	1.8	3,060	1.9	3,230	1.9	3,410	2.0	3,560	2.1
Asian	8,940	5.6	9,710	5.9	10,460	6.3	11,220	6.6	12,110	7.0
NZ European/ Other	132,760	82.8	134,210	82.1	135,650	81.5	137,370	81.1	138,320	80.5
Grand total	160,410		163,510		166,450		169,490		171,840	

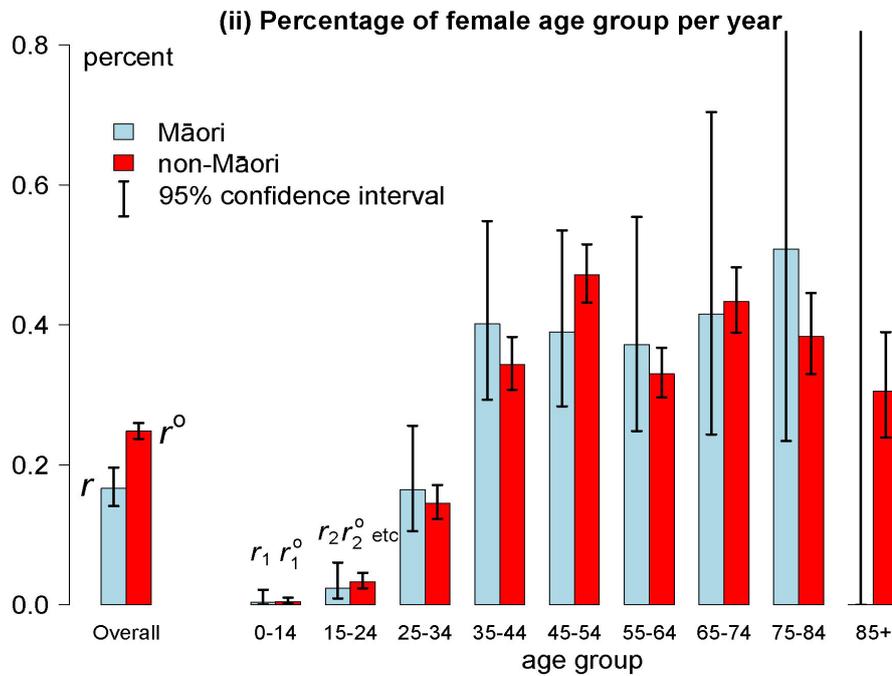
Source: Projections produced by Stats NZ according to assumptions agreed to by the Ministry of Health 2019.

Figure 1: Unstandardised rates of undergoing operations.



*To measure access, rather than provision, only the first operation for each woman is counted.

Figure 2: Unstandardised rates of undergoing operations.



*To measure access, rather than provision, only the first operation for each woman is counted.

Figure 3: Size of age groups of female populations.

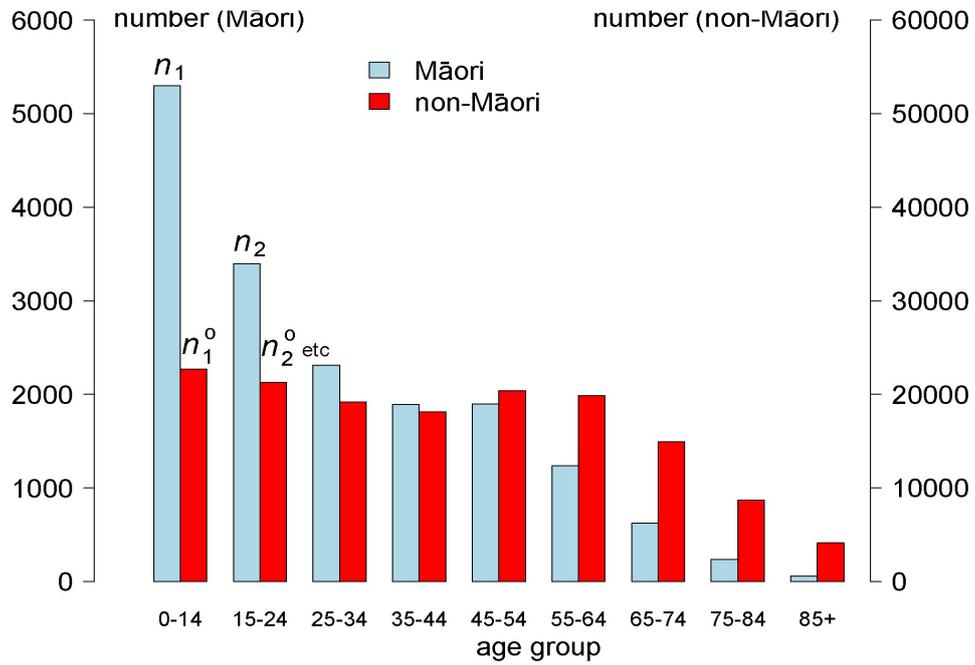
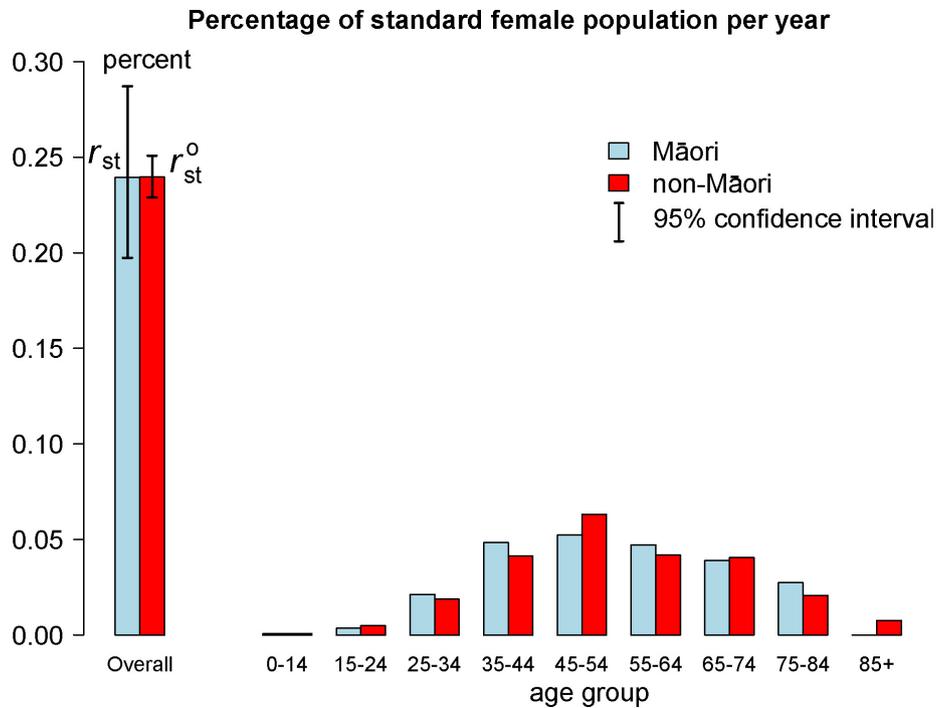


Figure 4: Standardised rates of undergoing operations.



*To measure access, rather than provision, only the first operation for each woman is counted.

is evident from this result that we cannot conclude from the data that either Māori or non-Māori access gynaecological surgery for POP/UI more than the other. Rather, it appears that, in the area covered by SDHB, Māori and non-Māori access these surgeries at similar rates.

Discussion

This study aimed to document the rates of access for Māori and non-Māori women to gynaecological procedures for POP and/or UI in the region serviced by SDHB.

Unadjusted/unstandardised analysis suggested that the proportion of Māori women undergoing these procedures is low compared to the proportion of non-Māori women undergoing these procedures. However, after standardisation of the data to allow for differences in the age structures of the Māori and non-Māori female populations, and with the combined population of women in SDHB being the reference, this difference disappears. The analysis shows that overall rates of gynaecological procedures for Māori and non-Māori women in the SDHB population both sit at approximately 1/4% of the given reference population per year.

There is some evidence that different ethnic groups have different rates of POP and UI. Overseas studies have shown different rates of prevalence in women of different ethnicities.¹⁶⁻²⁰

In a prospective observation study in 2019, Cheung et al¹⁸ assessed prolapse symptoms and assessed prolapse stage using the Pelvic Organ Prolapse Score Quantification System (POP-Q) and transperineal ultrasound. Ethnicity was a significant predictor of type of prolapse. Rates of apical compartment prolapse were found to be higher in East Asian women than in Caucasian women; however, rates of posterior compartment prolapse were less common in South East Asian women.

Cheung et al also identified ethnic differences in the anatomical position of structures such the uterus and the rectal ampulla on Valsalva manoeuvre. These findings raised the question: Do ethnic differences in anatomy contribute to differences in rates of presentation with POP/UI symptoms and surgical reconstruction?

Indeed, studies have been carried out to look for inter-ethnic variation in pelvic floor functional anatomy (eg, levator hiatal distensibility and pelvic organ descent in women with symptomatic organ prolapse).^{19,20}

Abdool et al found this to be the case in their prospective observational study of South African women referred to a tertiary urogynaecological clinic for pelvic organ prolapse assessment and management.²⁰ On the basis of taking a detailed history, performing a clinical examination and undertaking 4D transperineal ultrasound, they found South African Asians had a lower rate of avulsion of levator ani muscles. Black women were found to have a greater degree of genital hiatus distensibility and greater hiatal area than South Asian and Caucasian women, and greater pelvic organ mobility than Caucasian women on ultrasound.²⁰

In 1995 Ford et al reviewed Pelvic Floor Disability Index (PFDI-20) questionnaire scores between women of different ethnicity.²¹ Their retrospective cohort study of women undergoing pelvic reconstructive surgery found that Caucasian women appeared to be more symptomatic from prolapse and urinary symptoms compared with black women. This was despite the cohort of black women having higher parity and body mass index (BMI), which are known risk factors for both conditions.

No New Zealand data are available to confirm or refute relevant local ethnic differences in pelvic anatomy. It is known that risk factors for these conditions are more prevalent for Māori,^{9,10,11} so it seems possible that Māori women may have higher prevalence of these conditions, but this needs to be proven through prevalence studies. Therefore, the finding of equal access to surgical procedures for POP and UI may mean that Māori women are not accessing services in proportion to their need.

Māori women are recognised as being underserved for other gynaecological issues. Māori women are recognised as being less likely to access care for cervical screening, post-menopausal bleeding (requiring investigation for endometrial cancer) and vulval lichen sclerosis.²²⁻²⁵ Factors that have been identified as contributing to these differ-

ences in seeking care include: cost, physical discomfort and an inappropriate model of care involving, for example, a lack of recognition of wairua (spiritual wellbeing), hinengaro (psychological wellbeing), tinana (physical wellbeing) or whānau (extended family).^{23,25}

Access to surgery for POP and UI is dependent on women recognising that they have a health issue that is potentially treatable and subsequently seeking care through their primary care provider. There is evidence that women often normalise the symptoms of urinary incontinence.^{7,25,26} In their assessment of European women, Māori women and women of Pacific Island descent in Wellington, Lara and Nacey found that 50% of incontinent women reported wanting help for their urinary problems but that only one third had sought medical assistance.¹² The most common reason why Māori, Pacific Island and European women did not seek help was a belief that incontinence was normal for women (42%, 45% and 38% respectively).¹² The second most common reason for Māori and Pacific Island women was embarrassment (27% and 33% respectively), and the second most common reason for European women was their assessment that their incontinence was not severe enough to require help.¹²

Primary health care providers are the main referrers to secondary providers, who provide gynaecological surgical services in New Zealand. Therefore, any barriers to accessing primary health consultations will also be a barrier to accessing POP/UI surgical care.^{24,25} In the study by Lara and Nacey, 12% of the women with UI who identified as Māori gave “consultation cost too high” as the reason for not seeking medical help, compared to 7% of European women.¹²

Further research is needed to understand the prevalence of POP and/or UI by ethnicity. Given the sensitive nature of these conditions, a prevalence study would need to be well designed within a kaupapa Māori framework, to ensure accurate information is collected. Once prevalence has been established, other district health boards can be encouraged to review their access rates for POP and UI by ethnicity in order to understand whether access is appropriate. Further work might demonstrate definitively the existence of a gap between the prevalence of POP/UI and the level of access to treatment. In that case, additional work will be needed to understand the barriers to access, and steps might then be taken to overcome these barriers.

Limitations

This study is retrospective. It also assumes that patients were consistent in their identification of ethnicity when asked on the 2018 New Zealand census and when asked by the hospital. Numerator–denominator mismatch is possible given the different sources of data. However, both the census data from Stats NZ and the hospital data use self-identified ethnicity prioritised in the same way. Protocols followed at SDHB aim to ensure that all patients are asked on each interaction to confirm their ethnicity. As this is self-identified, it is possible that a person’s identified ethnicity can change. In addition, the clinical data are for women accessing provider arm services provided by SDHB, and it is possible that some of the women accessing the services provided by SDHB were not domiciled in the SDHB catchment area and so were not counted in the census projections of population. This could have caused a small mismatch between the numerator and denominator in the rate calculations.

Competing interests:

Nil.

Author information:

Riki Anderson: Obstetric and Gynaecology Registrar Hutt Hospital, Lower Hutt.
 Michael L Stitely: Associate Professor, Department of Women's and Children's Health,
 Dunedin School of Medicine. University of Otago, Dunedin.
 Robin Willink: Biostatistician, University of Otago Wellington, Wellington.

Corresponding author:

Dr Riki Anderson Obstetrician and Gynaecologist, Honorary Lecturer, Department of
 Obstetrics and Gynaecology, Wellington School of Medicine, University of Otago
 Riki.anderson@gmail.com

URL:

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