

Awareness and use of family planning methods among iTaukei women in Fiji and New Zealand

Radilaite Cammock,¹ Patricia Priest,² Sarah Lovell,³ Peter Herbison²

The benefits of improved reproductive services have not been experienced evenly in the world.¹ Although most of the improvements have occurred in developed countries, minority groups in these countries frequently experience disproportionately low uptake of family planning methods.^{2,3} Family planning is the practice of controlling the number and spacing of children through the use of modern contraceptive methods and natural or traditional methods, e.g. withdrawal (WHO 2015). Challenges to method uptake among minority groups include lack of awareness, lower socioeconomic status and cultural sensitivities.^{2,4,5}

Small Pacific Island populations are generally young, with increasing population numbers, regardless of whether they live in their nation of origin or as minority population groups in other countries, such as Tonga, Samoa or the Cook Islands. However, family planning behaviour among women from small Pacific Island nations living in more developed settings has seldom been investigated. In New Zealand, Pacific peoples are one of the fastest growing populations in the country, with the highest proportion of children of any ethnic group and a median age of 22.1 years.⁶ They are reported to have high rates of teenage pregnancy, with rates double that of the overall population,^{7,8} and evidence suggests that socioeconomic and cultural sensitivities limit their access to family planning services.^{9,10} Given these factors, optimal reproductive health and family planning are important for Pacific women. Although there is a dearth of information regarding the reproductive health of Pacific

Abstract

Objective: iTaukei women's awareness and practice of family planning methods was investigated in New Zealand and Fiji to ascertain differences in behaviour within the context of changing developmental settings.

Methods: The study was cross-sectional in nature and recruited women aged 18 years and over from three suburbs in Suva, Fiji, and five cities in New Zealand.

Results: Overall, 352 women participated in the study, 212 in Fiji and 140 in New Zealand. The study found that living in New Zealand was significantly associated with lower odds of being aware of family planning (OR 0.4, 95%CI 0.2–0.9, $p=0.029$) and using family planning methods (OR 0.5, 95%CI 0.2–0.9, $p=0.027$). Tertiary education was found to increase the odds of being aware (OR 2.8, 95%CI 1.3–6.2, $p=0.009$) and of using (OR 3.9, 95%CI 1.9–7.8, $p=0.000$) family planning.

Conclusions: Despite the greater availability of services and higher standards of living experienced in New Zealand compared with Fiji, there was no improvement in awareness and use of family planning among New Zealand participants.

Implications for public health: Reduced awareness and use of family planning in New Zealand indicates a need for better targeting of services among minority Pacific ethnic groups.

Key words: family planning, Pacific, reproductive health, contraception, Fiji

people in New Zealand, the few studies investigating Pacific family planning behaviour show low rates of contraceptive use and describe socio-cultural taboos, e.g. reproductive taboos, as important influences on reproduction. Socio-cultural influences are centred on the understanding among Pacific people that sex and reproduction are sacred and therefore reverent subject matters.^{11,12} Given this, discussing family planning with others, including family members, can be difficult to carry out. This can be even more pronounced between sexes where traditional gendered roles dictate relationship norms and taboos, e.g. the respectful relationship between brothers and sisters can compel both parties to avoid each other.¹¹ For Pacific women, family

planning method decision making can be a sole responsibility, as males feel less obligated to be involved in reproductive decision making. Reproduction and childbearing can also be perceived to be natural processes that contraception could interfere with.^{13,14} A study by Paterson and colleagues (2004)¹⁵ of pregnancy planning among mothers in an Auckland hospital found that taboos around sexual and reproductive sensitivities were persistent and contributed to a lack of communication around contraception. They found that, of the mothers who had not planned their pregnancies, most did not think about contraception and did not like using contraception.¹⁵ The authors found that strong alignment to Pacific values and customs and lack of fluency in English

1. School of Public Health and Psychosocial Studies, Auckland University of Technology, New Zealand

2. Department of Preventive and Social Medicine, University of Otago, New Zealand

3. School of Health Sciences, University of Canterbury, New Zealand

Correspondence to: Dr Radilaite Cammock, School of Public Health and Psychosocial Studies, Auckland University of Technology, New Zealand;

e-mail: radilaite.cammock@aut.ac.nz

Submitted: April 2017; Revision requested: August 2017; Accepted: November 2017

The authors have stated they have no conflict of interest.

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

Aust NZ J Public Health. 2018; 42:365-71; doi: 10.1111/1753-6405.12761

were significantly associated with not using contraception. These findings are supported by other research indicating cultural sensitivities and taboos to be major barriers to accessing contraception.¹⁶⁻¹⁸

More importantly, research into minority groups in other developed countries also find cultural and social barriers to family planning methods are important aspects of access. A study of Canadian Mennonite women (Kulig, 2008) found that participants felt that pregnancies and childbearing were private matters and so discussing such topics with others was avoided.¹⁹ A study in the US found that women with traditional beliefs encouraging larger families, or cultures that prescribed to traditional roles for women and discouraged contraceptive use, were more likely to have larger families.²⁰ Other research among minority groups highlights socioeconomics as important.²¹ Dehlendorf and colleagues (2010) found that minority women in the US and women with low socioeconomic status were less likely to use contraceptives; tended to use many different types; and were more likely to have higher failure rates compared to white women and women of higher socioeconomic status.²¹ These studies show the importance of the social, economic and cultural contexts in which reproductive health choices are made. To determine their impact on family planning behavioural patterns, more research into awareness and use is needed. This study was designed to address this area by investigating changes in family planning awareness and use in both developed and developing country contexts. Specifically, the study focused on a particular group – indigenous Fijians or iTaukei Fijians in Fiji (developing country) and New Zealand (developed country). The study aims to identify family planning patterns in different socioeconomic and cultural contexts and explores whether family planning disparities observed among minority groups in developed countries apply to iTaukei Fijians in New Zealand.

Methods

Setting

Fiji

iTaukei make up the ethnic majority in Fiji (57.3%), followed by Indian (37.6%), Rotuman (1.2%) and then other (3.9% including European, Pacific Islanders and Chinese). The female population in 2014 was estimated to be 381,146 compared with 393,931 males.²²

Fiji is divided into four medical divisions: central, western, northern and eastern. The central division has a smaller land area compared with the western and northern divisions but has the highest population (38% of Fiji's total population). The capital city, Suva, is located in the central division. Participants in this study were recruited from the greater Suva area.

New Zealand

More detailed demographic data are available for the Fijian population in New Zealand. Overall, 14,445 Fijian people live in New Zealand, with more than half the Fijian population being women between the ages of 15 and 64. Census data from 2013 showed that of the women who resided in New Zealand, 2,943 (61%) had given birth to one or more children at the time of the census. Those born in New Zealand were less likely to have given birth to four or more children (7.7%) compared with those born overseas (17.6%).²³ Consistent with patterns of Pacific migration, most of these women lived in the main cities of New Zealand: Auckland, Hamilton, Wellington, Christchurch and Dunedin. Therefore, the project recruited participants from these cities.

Study design

The research is taken from a cross sectional study of iTaukei women's knowledge, attitudes and practice (KAP) of family planning in five cities in New Zealand and in Suva, Fiji. Data were collected between 2012 and 2013.

Sample and recruitment

Sampling strategies were different between the two countries. In Fiji, multi-stage sampling techniques were employed based on household income. The first stage of sampling involved categorising suburbs into three strata based on household income (low to middle; middle to high; and low to high). These groupings were carried out in consultation with Ministry of Health sub-divisional offices in Suva. One suburb was randomly selected from each stratum to represent the three income levels: Cunningham – low to middle; Samabula – middle to high; and Valelevu – low to high. For each suburb, a grid was constructed over a map, such that each cell covered approximately 0.20 square metres. The cells were then numbered and 70 cells from each suburb were randomly selected for inclusion in the study. iTaukei women in the

house closest to the middle of the cell were approached for participation in the study. Women were approached via face-to-face communication by the researchers.

In New Zealand, the survey was carried out in the five main centres: Auckland, Hamilton, Wellington, Christchurch and Dunedin. Significant limitations with identifying iTaukei women in the communities and gathering reliable contact information made it difficult to construct a suitable sampling frame in which to recruit women. Therefore, data were collected using snowball sampling techniques. Household income was not considered in the New Zealand sampling strategy. Snowball sampling allowed us to recruit as many women as possible and was carried out through community networks. The researchers approached different groups in the community, including the Fijian nurses' association, and church and cultural groups, e.g. Polynesian festivals and social media.

The inclusion/exclusion criteria ensured that only iTaukei women aged 18 years and over living in New Zealand or Fiji were included in the study. Therefore, Fijian women who did not self-identify as being ethnically iTaukei were not included in the study, e.g. Indian women. Women were asked if they were at least 18 years old. There was no upper age limit in the study. The questionnaire was available in the Fijian language as well as English, so only women who spoke English or Fijian were included in the study. The sample size goal for the survey was 200 women in each country. This number was intended to obtain at least 163 completed questionnaires (i.e. approximately 80% response rate) in each country, which would allow the study 80% power to detect a statistically significant ($p < 0.05$) difference of 15% between countries in the proportion of women who have used family planning, if this proportion was up to 40% in Fiji and higher in New Zealand.^{24,25}

Ethics approval

Ethical approval was granted by the Fiji National Health Research Council and the Human Ethics Committee of the University of Otago. Approval for working in communities in the Suva area was also granted by the Ministry of iTaukei Affairs. Participants were provided with information sheets prior to filling in surveys. Questionnaires were self-administered to ensure privacy and confidentiality. Cultural protocols and sensitivities were observed with data collected by iTaukei researchers.

Survey questionnaire

Questions in the survey were adapted from demographic, sexual and reproductive health surveys particularly in developing countries and the Pacific. A literature search was also carried out to determine awareness and use measures and were used to inform questions in the survey. Questions addressing women's awareness of family planning methods were open-ended and primarily involved determining the family planning methods the women knew about. For example, participants were asked whether they were aware of any family planning methods and, if so, to list these methods. To ascertain how women might be using family planning methods, the questions in the survey asked whether participants had ever used a family planning method and, if so, how many and which types. The survey also asked women to report the age at which they had first used a method and whether they were using any family planning methods at the time of the survey. Additionally, questions about women's sociodemographic characteristics such as age (date of birth), relationship status (e.g. single, married), education (highest qualification achieved) and employment were also included. The questionnaire was self-administered.

Analytical methods

Analysis of the data was carried out using Stata 13 statistical software. Data from each country were analysed separately to identify awareness and use within individual countries, and were then compared between countries to see if there were any differences in the family planning awareness and use patterns. Descriptive analysis focused on sociodemographic characteristics of the two sample groups. These were age, relationship status, employment, education and income. Chi-squared statistical tests were used to investigate differences between proportions in the Fiji and New Zealand samples. Univariate and multivariate analyses between the outcome variables (awareness and usage) and the independent variables (age, relationship status, employment, education, income and country of residence) were carried out to assess any significant associations. Each independent variable was assessed against the outcome variables both individually and then with other independent variables to ascertain any significant associations.

Results

Sociodemographic characteristics

Overall, 352 women completed the survey; 212 of the 220 approached (96%) in Fiji and 140 of the 235 approached (60%) in New Zealand. The average age of women participating in the study was significantly younger in Fiji (35.5 years) compared with New Zealand (39.0 years); $p=0.007$, see Table 1. Most women in both countries were married or in a relationship (Fiji 68%, NZ 64%). Income was measured according to whether households earned below or above the national monthly average in each country. The results showed that more than half the participants in both countries had incomes lower than their national averages. The majority of women in New Zealand were in paid employment (64%), which was significantly higher than women in Fiji (30%); $p<0.01$. Primary or secondary education was the highest completed for more than half of participants living in Fiji (57%), while a higher proportion of women in New Zealand (55%) reported having polytechnic or university qualifications; $p<0.01$.

Awareness of family planning

Awareness was measured by whether or not women had heard of at least one family planning method overall. The study results show that there was no significant difference between the countries in the proportion of women who had heard about family planning ($p=0.064$), see Table 1. In terms of the type of methods women had heard about, most women in Fiji had heard of the contraceptive injectable (83%) followed by the oral contraceptive pill (combined and progestogen only – 80%) and IUD (copper and hormonal – 35%). In New Zealand, most women had heard of the contraceptive pill (84%), followed by the injectable (65%), IUD (62%) and male condom (47%), see Table 2.

Factors associated with awareness

Overall, women aged between 25 and 35 years had significantly higher odds of being aware of family planning compared with women under the age of 25 (Odds Ratio [OR] 4.2, 95% Confidence Interval [CI] 1.9–9.2, $p=0.000$), see Table 3. The results also show that women with a tertiary education had significantly higher odds of being aware of family planning methods (OR 2.3, 95%CI 1.2–4.3, $p=0.010$), with odds increasing after adjusting for country of residence, income,

Table 1: Sociodemographic characteristics, awareness and Practice among women in Fiji and New Zealand.

Sociodemographic Characteristic	Fiji	NZ	P value
Age	N=212	N=140	
Mean (SD)	35.5 (11.0)	39.0 (13.9)	
15–24	34 (16.0)	23 (16.4)	
25–34	71 (33.5)	31 (22.2)	
35–44	65 (30.7)	43 (30.7)	
45–54	30 (14.2)	22 (15.7)	
55 +	12 (5.7)	18 (12.9)	
Missing	0 (0.0)	3 (2.1)	0.007
Relationship Status	N=208	N=138	
Single	35 (16.8)	21 (15.2)	
Married/in a relationship	141 (67.8)	88 (63.8)	
Divorced/Widowed/Separated	23 (11.1)	19 (13.8)	
Other	9 (4.3)	10 (7.2)	0.547
Income (Monthly)*	N=198	N=115	
Below average	108 (54.5)	74 (64.3)	
Above average	90 (45.5)	41 (35.7)	0.090
Employment	N=197	N=124	
Paid employment	60 (30.4)	80 (64.5)	
Unemployed	120 (60.9)	32 (25.8)	
Other	17 (8.6)	12 (9.7)	0.000
Highest level of Education	N=202	N=126	
Primary/Secondary	115 (56.9)	41 (32.5)	
Tertiary	67 (33.2)	70 (55.5)	
Other	20 (9.9)	15 (11.9)	0.000
Awareness of at least one FP method	N=201	N=134	
Yes	168 (83.6)	101 (75.4)	
No	33 (16.4)	33 (24.6)	0.064
Practice			
Ever use	N=199	N=127	
Yes	116 (58.2)	65 (51.2)	
No	83 (41.7)	62 (48.8)	0.208
Age at First Use of FP method	N=109	N=62	
Mean	24.4	23.1	
15 – 19 years	9 (8.3)	11 (17.7)	
20 – 24 years	60 (55.0)	34 (54.8)	
25 – 29 years	25 (22.9)	13 (21.0)	
30+ years	15 (13.7)	4 (6.5)	0.171
Currently Using FP method	N=194	N=127	
Yes	43 (22.2)	25 (19.7)	
No	151 (77.8)	102 (80.3)	0.595

N= number of women who had answered the question. The total does not include missing numbers

* Income average in each country was calculated based on average monthly household incomes for each country. In New Zealand this was estimated to be \$5000⁹² and in Fiji the average income was \$1000 per month.⁵³

SD – Standard Deviation

FP – Family Planning

Note: p values were calculated using a Pearson chi-squared test

relationship status and employment (OR 2.8, 95%CI 1.3–6.2, $p=0.009$). For women living in New Zealand, lower odds (OR 0.6, 95%CI 0.3–1.3, $p=0.066$) of being aware of family planning methods were observed.

Multivariate analysis found that upon adjusting for age, employment, income, education and relationship status, women who lived in New Zealand had a significant reduction (60%) in their odds of being aware of family planning methods (OR 0.4, 95%CI 0.2–0.9, $p=0.029$).

Family planning use

More than half the women in both countries had previously used family planning methods (Fiji 58%, New Zealand 51%), see Table 1. The average age at which women started using family planning methods was similar; 24.4 years for women in Fiji compared with 23.1 years for women in New Zealand (Table 1). The majority of women in Fiji had used the injectable (68.8%), followed by the contraceptive pill (31.2%) and the IUD (7.3%), see Table 2. In New Zealand, the majority of women had used the contraceptive pill (60%),

followed by injectable (36.7%), IUD (33.3%) and condom (23.3%). Only one woman in Fiji reported using condoms (Table 2). Among those who were sexually active (as defined by having sexual intercourse in the month prior to the survey ($n=119$), 79% ($n=82$) were not using a planning method. Of these, 60% ($n=49$) reported not wanting to have any (more) children. When asked about previous unplanned pregnancy, 139 reported that they had experienced an unplanned pregnancy and of these, 76% ($n=102$, Fiji $n=43$ or 42%, NZ $n=59$ or 58%) were not using a method at the time of conception. Overall, 22% of women under the age of 24 reported a previous unplanned pregnancy.

Factors associated with use

The association between being married or in a relationship and ever having used family planning methods (OR 11.0, 95%CI

4.7–25.7, $p=0.000$) remained significant after adjustment for other factors in multivariate analyses. After adjusting for all the other sociodemographic variables, women who were married or in a relationship had 10 times the odds of using family planning compared with those who were single ($p=0.000$), see Table 3. Similarly, having a tertiary education appeared to be significantly associated with ever having used family planning methods (OR 2.1, 95%CI 1.3–3.4, $p=0.003$). The association remained significant after adjusting for the other sociodemographic variables. In fact, following multivariate analyses, the odds increased to 3.9 (CI 1.9–7.8, $p=0.000$). In terms of country of residence, women living in New Zealand had reduced odds of using family planning compared with women living in Fiji (OR 0.8, 95%CI 0.5–1.2, $p=0.208$), which reduced further after adjusting for age, income, employment, education and relationship status (OR 0.5, 95%CI 0.2–2.9, $p=0.027$), see Table 3.

Discussion and conclusions

The study found current contraceptive use to be lower than the national prevalence in both countries. The current family planning method use rate found in this study in New Zealand (20%) was lower than the prevalence found among the general population (72%).²⁶ In Fiji, 22% of participants were using family planning methods at the time of the study, while national contraceptive prevalence is 45%.²⁷ Therefore, the findings were similar between cohorts in the study but lower than the national rates. The popularity of the injectable among the Fiji cohort reflects results found in a KAP study in rural Fiji.²⁸ In New Zealand, the high proportion of contraceptive pill use is similar to national findings.²⁹

The current study found that women living in New Zealand had reduced odds of being aware of family planning methods compared to women living in Fiji. This is significant, given the relative availability of resources in New Zealand and raises questions about the accessibility of those services for iTaukei women. Lower awareness among this group may be due to lower levels of engagement with mainstream society compared to women in Fiji, leading to limited exposure to family planning information. Studies have found that, along with cost^{30,31} and language,^{32,33} cultural sensitivities are important barriers to accessing reproductive

Table 2: Awareness and Use of family planning methods in Fiji and New Zealand.

Method	Fiji	NZ	P value	Fiji	NZ	P Value
Awareness			Use			
Pill	N=160	N=91		N=109	N=60	
Yes	128 (80)	77 (84.6)		34 (31.2)	36 (60.0)	
No	32 (20)	14 (15.4)	0.364	75 (68.8)	24 (40.0)	0.000
Injectable	N=160	N=91		N=109	N=60	
Yes	133 (83.1)	59 (64.8)		75 (68.8)	22 (36.7)	
No	27 (16.9)	32 (35.2)	0.001	34 (31.2)	38 (63.3)	0.000
Condom	N=159	N=91		N=109	N=60	
Yes	38 (23.9)	43 (47.3)		1 (0.9)	14 (23.3)	
No	121 (76.1)	48 (52.7)	0.000	108 (99.1)	46 (76.7)	0.000
Implant	N=159	N=91		N=109	N=60	
Yes	39 (24.5)	17 (18.7)		5 (4.6)	4 (6.7)	
No	120 (75.5)	74 (81.3)	0.286	104 (95.4)	56 (93.3)	0.565
IUD	N=159	N=91		N=109	N=60	
Yes	56 (35.2)	56 (61.5)		8 (7.3)	20 (33.3)	
No	103 (64.8)	35 (38.5)	0.000	101 (92.7)	40 (66.7)	0.000
Natural/Calendar	N=159	N=91		N=109	N=60	
Yes	3 (1.9)	12 (13.2)		1 (0.9)	2 (3.3)	
No	156 (98.1)	79 (86.8)	0.000	108 (99.1)	58 (96.7)	0.255
Withdrawal	N=159	N=91		N=109	N=60	
Yes	0	6 (6.6)		0	2 (3.3)	
No	159 (100)	85 (93.4)	0.001	109 (100.0)	58 (96.7)	0.055
Tubal Ligation	N=159	N=91		N=109	N=60	
Yes	11 (6.9)	16 (17.6)		0	4 (6.7)	
No	148 (93.1)	75 (82.4)	0.009	109 (100)	56 (93.3)	0.006
Diaphragm	N=159	N=91		N=109	N=60	
Yes	4 (2.5)	11 (12.1)		1 (0.9)	0	
No	155 (97.5)	80 (87.9)	0.002	108 (99.1)	60 (100.0)	0.457
Other**	—	—		N=109	N=60	
Yes	—	—		5 (4.6)	2 (3.3)	
No	—	—	—	104 (95.4)	58 (96.7)	0.695

N= number of women who had answered the question. The total does not include missing numbers.

* refers to methods listed. Women who listed the method when answering the question were grouped under the 'yes' group. The 'no' group refers to those who did not list the particular method.

Note: p values were calculated using a Pearson chi-squared test.

** e.g. traditional medicine, fertility awareness methods

services.^{32,34} Thus, although living in urban areas increases women's likelihood of being exposed to family planning messages,³⁵⁻³⁷ iTaukei women's ability to make sense of the information being shared may be challenged by language barriers and cultural sensitivities, e.g. traditional gendered roles and reverence around sex and reproduction subject matters, limiting their ability to interact productively with family planning services and information in New Zealand.

The data on the types of contraceptive methods women had heard about are important to note as it indicates that women in New Zealand are more aware of short-lasting contraceptives compared with women in Fiji, e.g. condoms. This finding is consistent with other groups in the Pacific who favour long-term methods like the injectable due to ease of use,³⁸ i.e. it may be more convenient for women to have an injection every three months than to take a pill every day or to organise contraception every time they have sexual intercourse. This finding may also reflect the availability of family planning methods and the types of family planning service delivery in each country. Health providers, usually general practitioners in New Zealand, may be in a better position to consult with women on various types of methods; whereas, in Fiji, the nurses who are often the first point of contact may not have the resources to provide consultations on a wide range of methods.

The lower odds among younger women associated with having heard of family planning are similar to those found in other research in New Zealand, especially in consideration of teenage pregnancy rates (Fiji 45 births per 1,000 women,³⁹ Pacific populations in New Zealand 48 per 1,000).⁷ The proportion of New Zealand participants having experienced a previous unplanned pregnancy in this study (42%) is similar to rates found in other studies in New Zealand.⁴⁰ The Dunedin multidisciplinary health and development study found that almost half (48%) the women who had been pregnant before the age of 25 reported pregnancies that were unwanted. Unwanted pregnancies were found to more likely result from non-use of contraceptives.⁴⁰ Although the current study was not focused on adolescent family planning method use, we did find that 22% of women between the ages of 18 and 24 experienced an unplanned pregnancy. Given the low odds of awareness among those aged 18–25, the need to introduce family planning

Table 3: Unadjusted and Adjusted Odds ratio of sociodemographic factors, awareness and use of family planning methods.

Sociodemographic Factor	Odds Ratio (95% CI), P value	Adjusted* Odds Ratio (95% CI), P value	Odds Ratio (95% CI), P value	Adjusted* Odds Ratio (95% CI), P value
Awareness			Use	
Age				
15–24 years	Ref	Ref	Ref	Ref
25–34 years	4.2 (1.9 – 9.2) p=0.000	2.9 (1.0 – 8.4) p=0.045	6.2 (2.8 – 13.7) p=0.000	2.0 (0.7 – 5.6) p=0.205
35–44 years	3.8 (1.8 – 8.3) p=0.001	2.7 (0.8 – 8.1) p=0.087	8.2 (3.7 – 18.3) p=0.000	2.1 (0.7 – 6.1) p=0.163
45–54 years	2.9 (1.2 – 7.2) p=0.018	2.1 (0.6 – 7.8) p=0.262	6.5 (2.6 – 15.9) p=0.000	1.4 (0.4 – 4.6) p=0.584
55 and over	1.7 (0.6 – 4.6) p=0.330	1.4 (0.3 – 6.6) p=0.644	4.8 (1.7 – 13.5) p=0.003	2.5 (0.6 – 10.4) p=0.212
Relationship Status				
Single	Ref	Ref	Ref	Ref
Married/in a Relationship	3.0 (1.5 – 5.9) p=0.001	1.5 (0.5 – 4.3) p=0.455	11.0 (4.7 – 25.7) p=0.000	10.0 (3.4 – 28.8) p=0.000
Divorced/Widowed/ Separated	3.2 (1.2 – 9.2) p=0.025	3.2 (0.7 – 15.1) p=0.142	14.1 (5.0 – 40.3) p=0.000	13.1 (3.6 – 47.5) p=0.000
Other	1.2 (0.4 – 3.6) p=0.807	0.5 (0.1 – 2.5) p=0.439	6.3 (1.8 – 22.2) p=0.004	9.0 (1.8 – 44.3) p=0.007
Highest level of education				
Primary/Secondary	Ref	Ref	Ref	Ref
Tertiary	2.3 (1.2 – 4.3) p=0.010	2.8 (1.3 – 6.2) p=0.009	2.1 (1.3 – 3.4) p=0.003	3.9 (1.9 – 7.8) p=0.000
Vocational/Other	2.0 (0.7 – 5.4) p=0.192	1.5 (0.5 – 4.6) p=0.473	1.0 (0.5 – 2.2) p=0.931	0.8 (0.3 – 1.9) p=0.555
Employment				
Employed	Ref	Ref	Ref	Ref
Unemployed	0.5 (0.3 – 0.9) p=0.025	0.5 (0.2 – 1.1) p=0.093	0.6 (0.4 – 0.97) p=0.037	0.7 (0.4 – 1.4) p=0.370
Other	0.4 (0.2 – 1.1) p=0.070	0.6 (0.2 – 2.0) p=0.377	0.3 (0.1 – 0.7) p=0.009	0.7 (0.2 – 2.2) p=0.504
Income				
Below national average	Ref	Ref	Ref	Ref
Above national average	1.2 (0.7 – 2.1) p=0.595	0.8 (0.4 – 1.6) p=0.562	1.3 (0.8 – 2.1) p=0.241	0.9 (0.5 – 1.6) p=0.694
Country of residence				
Fiji	Ref	Ref	Ref	Ref
New Zealand	0.6 (0.3 – 1.3) p=0.066	0.4 (0.2 – 0.9) p=0.029	0.8 (0.5 – 1.2) p=0.208	0.5 (0.2 – 0.9) p=0.027

* adjusted for the other variables included in the table.

CI – Confidence Interval.

education early on during the adolescent years may help avoid unwanted pregnancies in the future. Research by the World Health Organization found that providing sexual education to adolescents increased the adoption of safe sexual practices among sexually active youth and delayed or reduced the overall sexual activity of youth.⁴¹ Perhaps one strategy that could be employed to increase awareness could involve ensuring that reproductive health courses at school and other public forums devote more time to discussing and providing information around family planning and, in particular, the cultural sensitivities that such decisions may involve.

Most of the research involving place of residence and family planning use focused on differences within specific countries, e.g. urban and rural differences,^{42,43} so comparing the current results with other studies is challenging. Nonetheless, the low use of family planning among iTaukei women in New Zealand is similar to the experience of ethnic minorities in developed countries.^{2,3,44-45} The study by Paterson et al. (2004) of pregnant Pacific women in New Zealand found low uptake of family planning among women with unintended pregnancies.¹⁵ Given that more knowledge improves contraceptive use,⁴⁶ the patterns found in this study of reduced awareness and

use among New Zealand participants is not surprising. Therefore, further investigation into the barriers associated with non-use of family planning methods among Fijian women in New Zealand is warranted. The higher odds of awareness and use associated with tertiary education in this study is supported by other studies in the literature.^{42,47,48} The results in this study found that the reduced odds of awareness and use in New Zealand were more extreme after adjusting for the other sociodemographic variables. This may be because some of the reduction in awareness and use was being masked by the higher proportion of women with tertiary education. Given this, the study found that living in New Zealand, regardless of education, has an effect on women's odds of hearing about and using family planning.

The findings of this study should be considered in light of its limitations. Given that the study employed a cross-sectional design it was not possible to determine causation or the direction of the associations between the outcome variables and the independent variables. Furthermore, given the difference in sampling strategies employed in Fiji and New Zealand, our ability to make inferences about the whole iTaukei population is limited. Specifically, given the lower response rate in New Zealand and the limitations of the snowball sampling strategy, the New Zealand sample was not likely to be a representative sample and was skewed towards older Fijian women. Limitations in the survey questionnaire should also be noted, as the low condom use found in this study may be due to limitations in questionnaire design, i.e. women may have interpreted 'male' condom use as non-use. Despite these limitations and the added difficulties of surveying minority populations, especially among Pacific populations,⁴⁹⁻⁵¹ we were able to collect enough data to answer the research questions. Perhaps further investigations could address awareness and practice among adolescents and especially among those with teenage pregnancies.

Implications for public health

The study set out to assess the awareness and usage of family planning among a group of Pacific women – iTaukei, in both Fiji and New Zealand. Both countries provided differing developmental contexts in which family planning behaviour was assessed. Although the study found current contraceptive use to

be lower than the national prevalence in both countries, method use was similar between the New Zealand and Fiji cohorts. We found that even though iTaukei women in New Zealand live in a 'developed' country, they are not benefiting from the relatively higher level of resources available to them compared to their Fiji counterparts. In fact, the study shows that they are worse off in terms of family planning awareness and practice. This raises questions regarding the accessibility of family planning services among minority Pacific groups in New Zealand and other developed countries. The finding that the younger iTaukei women are lacking awareness and the implication that this has for teenage pregnancy is important to consider. Further investigations into adolescent family planning behaviour is warranted, especially among those with teenage pregnancies. Education appeared to be an important factor in raising awareness and use among women and indicates the need for a wider multi-sector approach in addressing family planning needs.⁵¹ Such approaches may improve the engagement of minority Pacific groups like the iTaukei with family planning services.

References

- United Nations. *Trends in Contraceptive Use Worldwide*. New York (NY): UN Department of Economic and Social Affairs Population Division; 2015.
- Dehlendorf C, Rodriguez MI, Levy K, Borrero S, Steinauer J. Disparities in family planning. *Am J Obstet Gynecol*. 2010;202(3):214-20.
- Frost J, Darroch J. Factors associated with contraceptive choice and inconsistent method use United States 2004. *Perspect Sex Reprod Health*. 2008;40:94-104.
- Mantell C, Craig E, Stewart A, Ekeroma A, Mitchell E. Ethnicity and birth outcome: New Zealand trends 1980–2001: Part 2. Pregnancy outcomes for Maori women. *Aust NZ J Obstet Gynaecol*. 2004;44(6):537-40.
- Kennedy E, Gray N, Azzopardi P, Creati M. Adolescent fertility and family planning in East Asia and the Pacific: A review of DHS reports. *Reprod Health*. 2011;8:11.
- Statistics New Zealand. *2013 Census Quick-Stats about Culture and Identity* [Internet]. Wellington (NZ): Government of New Zealand; 2013 [cited 2017 Feb 9]. Available from: <http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-culture-identity/pacific-peoples.aspx>
- Boddington B, Khawaja M, Didham R. Teenage Fertility in New Zealand. In: *Key Statistics*. Wellington (NZ): Statistics New Zealand Demographics Division; 2003. p. 9-13.
- University of Waikato National Institute of Demographic and Economic Analysis. *Current Trends for Teenage Births in New Zealand: Update on the Regional and National Trends in Teen Births, and Current Trends for Teen Births in NZ*. Wellington (NZ): New Zealand Government Social Policy Evaluation and Research Unit; 2015.
- Paterson H, Ashton J, Harrison-Woolrych M. A nationwide cohort study of the use of the levonorgestrel intrauterine device in New Zealand adolescents. *Contraception*. 2009;79(6):433-8.
- Gao W, Paterson J, Carter S, Percival T. Risk factors for preterm and small-for gestational-age babies: A cohort from the Pacific Islands Families Study. *J Pediatr Child Health*. 2006;42(12):785-92.
- Percival T, Robati-Mani R, Powell E, Kingi P, Peteru M, Hope L-T. *Pacific Pathways to the Prevention of Sexual Violence: Overview Report*. Wellington (NZ): New Zealand Ministry of Pacific Island Affairs; 2010. p. 6.
- Tuwere I. *Vanua: Towards a Fijian Theology of Place*. Suva (FJI): University of the South Pacific Institute of Pacific Studies; 2002.
- Weldegerima B, Denekew A. Women's knowledge, preferences, and practices of modern contraceptive methods in Woreta, Ethiopia. *Res Social Adm Pharm*. 2008;4(3):302-7.
- United Nations Population Fund. *Before Its Too Late: Pacific Experiences Addressing Adolescent Reproductive Health*. Suva (FJI): UNFPA; 2005.
- Paterson J, Cowley ET, Percival T, Williams M. Pregnancy planning by mothers of Pacific infants recently delivered at Middlemore Hospital. *N Z Med J*. 2004;117(1188):U744.
- Anae M. *The Roles and Responsibilities of Some Samoan Men in Reproduction*. Auckland (NZ): University of Auckland Pacific Health Research Centre; 2000.
- Asiasiga L. *Abortion and Pacific Islands Women. A Pilot Study for the New Zealand Family Planning Association Planning Association*. Wellington (NZ): New Zealand Planning Association; 1994.
- Glasgow J. Pacific nurses face hurdle. *J Gen Prac*. 1990;12.
- Kulig JC, Wall M, Hill S, Babcock R. Childbearing beliefs among Low-German-speaking Mennonite women. *Int Nurs Rev*. 2008;55(4):420-6.
- Mosher WD, Williams LB, Johnson DP. Religion and fertility in the United States: New patterns. *Demography*. 1992;29(2):199-214.
- Dehlendorf C, Rodriguez MI, Levy K, Borrero S, Steinauer J. Disparities in family planning. *Am J Obstet Gynecol*. 2010;202(3):214-20.
- Fiji Islands Bureau of Statistics. *Population Demographics* [Internet]. Suva (FJI): Government of Fiji; 2009 [cited 2016 Jul]. Available from: <http://www.statsfiji.gov.fj/>
- Statistics New Zealand. *2013 Census Ethnic Group Profiles: Fijian* [Internet]. Wellington (NZ): Government of New Zealand; 2013 [cited 2017 Feb]. Available from: http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/ethnic-profiles.aspx?request_value=24714&parent_id=24706&tablename=#24714
- Roberts G, Irava W, Tuketei T. The Fiji Islands Health System Review. In: Tulloch J, editor. *The Health Systems in Transition (HiT) Profiles*. Volume 1, No.1. Manila (PHL): WHO Regional Office for the Western; 2011.
- Fiji Ministry of Health. *Tracking Progress in Maternal Child Survival, Case Study Report for Fiji*. Suva (FJI): United Nations Children's Fund; 2013.
- Alkema L, Kantorova V, Menozzi C, Biddlecom A. National, regional, and global rates and trends in contraceptive prevalence and unmet need for family planning between 1990 and 2015: A systematic and comprehensive analysis. *Lancet*. 2013;381(9878):1642-52.
- Ministry of Health Fiji. *Reproductive Health Policy*. Suva (FJI): Government of Fiji; 2014.
- Naidu S, Heller G, Koroi S, Deakin L, Gyaneshwar R. Knowledge, attitude, practice and barriers regarding safe sex and contraceptive use in rural women in Fiji. *Pac J Reprod Health*. 2017;1(5):223-31.
- Chesang J, Richardson A, Potter J, Sneyd MJ, Coope P. Prevalence of contraceptive use in New Zealand women. *N Z Med J*. 2016;129:71–80.
- Bongaarts J. Trends in unwanted childbearing in the developing world. *Stud Fam Plann*. 1997;28(3), 267-77.
- Mishtal J. Neoliberal reforms and privatisation of reproductive health services in post-socialist Poland. *Reprod Health Matters*. 2010;18(36):56-66.
- Ludeke M, Puni R, Cook L, Pasene M, Abel G, Sopoaga F. Access to general practice for Pacific peoples: A place for cultural competency. *J Prim Health Care*. 2012;4(2):123-30.
- Yeo S. Language barriers and Access to Care. *Annu Rev Nurs Res*. 2004;224:59-73.
- Barr D, Wanat S. Listening to patients: Cultural and linguistic barriers to health care access. *Clin Res Methods*. 2005;37(3):199.

35. Bongaarts J. Can family planning programs affect high desired family size in sub-Saharan Africa? *Int Perspect Sex Reprod Health*. 2011;37(4):209-16.
36. Imo CK, Isiugo-Abanihe U, Onabanjo OD. Knowledge and use of contraceptives among urban and rural women of abia state, nigeria. *Ife Psychologia*. 2013;1(1):304-23.
37. Ozumba B, Obl S, Ijioma, N. Knowledge, attitude and practice of modern contraception among single women in a rural and urban community in Southeast Nigeria. *J Obstet Gynaecol*. 2005;25(3):292-5.
38. House W. *Prospects for Demographic Behaviour Change in Vanuatu: The Results of a KAP Survey*. Suva (FJI): Office for the South Pacific, Suva Fiji UNFPA Country Support Team; 1998.
39. United Nations Population Fund. *I Am Not a Lost Cause! Young Women's Empowerment and Teenage Pregnancy in the Pacific*. Suva (FJI): United Nations Population Fund Pacific Sub-Regional Office; 2013.
40. Dickson N, Wilson M, Herbison P, et al. Unwanted pregnancies involving young women and men in a New Zealand birth cohort. *NZ Med J*. 2002;115(1151):155-9.
41. World Health Organization. *Sexuality Education Does not Lead to Increased Sexual Activity*. Geneva (CHE): WHO; 1993. p. 185-93.
42. Kamal S, Islam A. Contraceptive use: Socioeconomic correlates and method choices in rural Bangladesh. *Asia Pac J Public Health*. 2010;22(4):436-50.
43. Tuladhar J. Determinants of contraceptive use in Nepal. *J Biosoc Sci*. 1985;17(02):185-93.
44. Finer L, Henshaw S. Disparities in rates of unintended pregnancy in the United States, 1994 and 2001. *Perspect Sex Reprod Health*. 2006;38:90-6.
45. Mosher W, Martinez G, Chandra A, Abma J, Willson S. Use of contraception and use of family planning services in the United States: 1982-2002. *Adv Data*. 2004;350:1-36.
46. Hardee JG, Azhar M. Change and differentials in women's knowledge of, attitude towards and practice of family planning in Pakistan during the 1960s. *Pak Dev Rev*. 1975;14(3):34-69.
47. McNamara R. The world's population problem possible interventions to reduce fertility. *Public Health Rep*. 1978;1974-93(2):124-35.
48. Tawiah E. Factors affecting contraceptive use in Ghana. *J Biosoc Sci*. 1997;29(2):141-9.
49. Tiatia J. *Pacific Cultural Competencies: A literature review*. Wellington (NZ): New Zealand Ministry of Health; 2008.
50. United Nations Population Fund. *Adolescent Sexual and Reproductive Health Situation Analysis for Vanuatu*. Suva (FJI): UNFPA Office for the Pacific; 2006.
51. Mwaikambo L, Speizer IS, Schurmann A, Morgan G, Fikree F. What works in family planning interventions: A systematic review of the evidence. *Stud Fam Plann*. 2011;42(2):67-82.
52. ENZ. *Salary and Wages in New Zealand, 2014* [Internet]. Auckland (NZ): ENZ.org; 2014 [cited 2017 Feb 3]. Available from: <http://www.enz.org/new-zealand-salaries.html>
53. Numbeo. *Cost of Living: Fiji, 2014* [Internet]. Belgrade (SER): Numbeo DOO; 2014 [cited 2017 Feb 3]. Available from: http://www.numbeo.com/cost-of-living/country_result.jsp?country=Fiji