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Unmet need of GP services in Pacific people and other New Zealanders

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Abstract

Aim To compare the unmet need of GP services for Pacific peoples (mostly of Samoan, Tongan, Niuean, or Cook Islands origin) and Other New Zealanders (predominantly European New Zealanders, Māori, and Asian New Zealanders).

Methods The New Zealand Health Survey 2006/2007 sampled 12,488 people, aged 15+ years, living in private dwellings in New Zealand. Of these 1033 were Pacific peoples and 11,455 were Other New Zealanders. Self-reported unmet GP need in the previous 12 months was modelled using logistic regression with sociodemographic, health status and risk variables as covariates.

Results Age, sex, educational level, New Zealand individual Deprivation Index, self-rated health, spinal disorders and daily smoking were associated with unmet GP need. Ethnicity has two interactions in the model, one with asthma and the other with body mass index (BMI). The difference in unmet need between Pacific peoples and Other New Zealanders was explained in part by Pacific peoples being more likely to be in categories with more deprivation characteristics but countered by Other New Zealanders having a higher probability of having higher educational qualifications where there was also higher unmet need. Those with unmet GP need in the higher educational levels were more likely to say "they couldn't spare the time".

Conclusion Unmet GP need is associated with ethnicity, health need and financial and time constraints.

General practitioners (GPs) are an important gateway into the New Zealand health system. While providing care themselves, they also provide a pathway to more specialised services. When people are unable to access GP services, their health can be compromised.

Numerous studies in New Zealand have found that the health status of Pacific peoples (mostly of Samoan, Tongan, Niuean, or Cook Islands origin) to be worse than that of other New Zealanders.[1–4] Part of the reason for this disparity could be due to delays or avoidance in seeking GP services when they are needed.

Published information derived from 2006/07 New Zealand Health Survey has already identified that there is clear divergence in unmet need for GP services between ethnicities. The Ministry of Health's (2008) *A Portrait of Health* identified that reported unmet need for GPs among New Zealand adults, before and after adjustment for age, is significantly greater for Pacific peoples than European/Other.[5] Amongst children, however, a further Ministry of Health report regarding the health of Māori and Pacific children found that after adjusting for age, there was no significant

difference between the prevalence of unmet need for Pacific children and non-Pacific children.[6]

Non-Ministry research surrounding the usage of GPs by Pacific peoples in New Zealand has largely focussed on rates of GP visitation (use) rather than the presence of unmet need.

Crampton and colleagues (2007) conducted a nationally representative survey of GPs and patient visits. Observational results showed that after adjusting for socioeconomic deprivation scores (NZDep2001), age, gender, and organisation type, average annual exposure to primary health care was higher among those selecting the 'European' ethnic group than the 'Māori', 'Pacific', or 'Asian' ethnic groups.[7]

Similarly, an analysis of data routinely collected from GP practices in the Wellington region found that after adjusting for socioeconomic deprivation scores, age and gender, Māori, Pacific Island and Asian populations had lower (although Māori only slightly) doctor consultation rates than Europeans.[8] Such data, however, only include those who used GP services over the study period and not the general population. It may be that some people are not using GP care at all.

National literature has previously linked some of the ethnic disparity in use of services to high cost. In the Health Utilisation Research article (2006), GP visitation figures were compared between groups with higher subsidy (children under six years of age) and those with lower subsidy (children six and over). Utilisation rates for children under 6 years of age were slightly higher for Pacific Islanders than Europeans, both before and after adjusting for deprivation, while for children over six rates of attendance were considerably lower for Pacific Islanders than Europeans, before and after deprivation adjustment. Similar results were shown for Māori and Asian populations.[8] Cost therefore appears to limit access for Pacific peoples.

This paper looks at the level of unmet GP need in Pacific peoples and Other New Zealanders, the variables associated with this unmet need, and whether there are any differences between Pacific peoples and Other New Zealanders. It also looks at the reasons why people do not go to a GP when they need to and what they do instead.

Methods

Confidentialised, unit record data from the 2006/2007 National Health Survey were supplied by the Ministry of Health.[5] This data set contains 12,488 respondents, aged 15 years and over, who were living in a private dwelling in New Zealand. The survey over-sampled Māori, Pacific and Asian peoples through a complex method of sampling; however, the survey has been weighted to produce a representative sample.

Estimates produced by these weights form unbiased estimates of the corresponding population values. The dataset also includes a set of 100 replicate weights which were created using the delete-group method.[5] Each of these weights creates an estimate. The variance of these 100 estimates around the unbiased estimate gives the sampling variance of the unbiased estimate. For the purpose of this paper, SUDAAN software was used to do these calculations. [9]

Respondents were asked a range of questions about doctor-diagnosed health conditions, health service use, risk factors and sociodemographics factors. Except for height and weight which were measured, the responses given were self-reported.

Respondents were asked which ethnic group/s that they belonged too. For the purposes of this study, anyone who reported any Pacific ethnicities were recorded as a Pacific Person and everyone else was recorded as an Other New Zealander.

Respondents were also asked whether they had needed to go to a GP in the last year but did not go. This was coded as 1 for those who said they had unmet need and 0 for those who did not and analysed using logistic regression. A selection of sociodemographic, health status and risk factors were selected as explanatory variables for the model.

The model was constructed in four steps. At the first step, a base model was constructed with age, sex and ethnicity and their interactions. The form of the model was found by using backwards selection. At the second step, all the explanatory variables were considered individually with the base model from step 1 in four ways:

1. By themselves,
2. As an interaction with age,
3. As an interaction with sex, and
4. As an interaction with both sex and age.

These results are displayed in a table to show which variables are important by themselves even if they are not part of the final model. At the third step, all the variables that were significant at the second step were put into the final model and backwards selection was used to reduce the model to its final form.

Results from the final model are reported as odds ratio and adjusted probabilities for each variable. Adjusted probabilities use the model to form probabilities based on the value of the coefficients in the model and the distributions of the explanatory variables. Variables that had interactions with age or sex were displayed graphically.

Finally, in the fourth step, a final series of models were run to look at what variables affect the difference in unmet GP need between Pacific peoples and Other New Zealanders. For each variable that had main effect only, the final model was run but with that variable removed and the change in the ethnic difference was recorded. If the ethnic difference changed by more than 10% then the variable removed was said to be a confounder for the ethnic difference and was therefore said to explain or accentuate some of the difference seen between Pacific peoples and Other New Zealanders.

Results

The variables considered in the model and their distribution by ethnicity appear in Table 1. The two groups, Pacific peoples and Other New Zealanders, appear to be most dissimilar for the variables age, household size, New Zealand Individual's Deprivation Index (NZiDep), Urban/Rural living, AUDIT score for alcohol consumption and body mass index (BMI).

At the first step, the base model formed was a main effects model with age, sex and ethnicity.

The results from the second step, the selected variables fitted individually with the base model, appear in Table 2. This shows which variables were significant by themselves, in interactions with age and with sex. Some of the variables that are important at this stage may not survive the model building process but can offer insight into unmet need.

Table 3 gives the results from the third step which gives the final form of the model. The variable which shows the greatest range in adjusted probabilities is NZiDep, with the most deprived having the greatest probability of unmet GP need. This is followed by age and then self-rated health; older people and those who are the most unwell have the greatest probability of unmet need.

In the model, higher education is also associated with a higher probability of unmet need.

Table 1. The variables considered in the model and their distribution with Pacific people and Other New Zealanders

	Ethnicity			Ethnicity	
	Pacific People	Other New Zealanders		Pacific People	Other New Zealanders
Base (n)	1033	11455	**Self-rated health**		
	%	%	excellent	17	19
Sex			very good	35	42
Male	48	48	good	34	29
Female	52	52	fair or poor	14	10
Age Group			**Told you have high blood pressure**		
15-24	29	17	Yes	19	22
25-39	33	26	No	81	78
40-54	24	28	**Told you have high cholersterol**		
55+	14	29	Yes	13	18
Educational Qualifications			No	86	82
No	29	18	**Told you have a cardiovascular disease**		
School	41	28	Yes	4	7
Technical/Professional	18	29	No	96	93
University	12	25	**Told you have diabetes**		
Employment			Yes	10	5
Working	60	64	No	90	95
Seeking work	7	5	**Told you have asthma**		
Not seeking work	33	31	Yes	18	18
Benefit			No	82	82
Benefit recieved	45	40	**Told you have arthritis**		
No benefit received	55	60	Yes	8	15
Own income			No	92	84
loss to $10,000	27	19	**Told you have spinal discorders**		
$10k to $25k	23	26	Yes	11	25
$25k to $40k	23	18	No	89	75
$40k+	18	32	**Daily Smoker**		
Refused/Don't Know	8	5	Yes	25	18
Household income			No	75	82
loss to $25k	14	14	**Audit score for last year alcohol consumption**		
$25k to $50k	22	20	None	41	15
$50k to $80k	20	21	Some	36	68
$80k+	19	31	Hazardous	23	17
Refused/Don't Know	26	14	**RDI Fruit**		
Household size (number of people)			less than the RDI	41	40
1	4	11	RDI or more	59	60
2	12	33	**RDI Vegetables**		
3	16	20	less than the RDI	55	35
4	21	20	RDI or more	45	65
5+	47	16	**Exercise (no of days per week)**		
New Zealand Individual's Deprivation Index			0, 1 day	24	19
No deprivation characteristics	40	68	2, 3, 4 days	26	28
1 characteristic	24	17	5, 6 days	24	21
2 characteristics	12	7	7 days	25	32
3 or 4 characteristics	16	5	**Body Mass Index (kg/m^2)**		
5+ characteristics	7	3	Under weight, normal	8	33
Urban/Rural living			Overweight	19	34
Other	6	28	Obese	55	23
Main Urban Area	94	72	Missing	18	11
Medical Insurance					
Yes	19	39			
No	81	61			

Table 2. Significance results for variables fitted individually and in different combinations of age and sex with the base model

Base Model +	Model 1 variable	Model 2 var + var * age	Model 3 var + var * ethnicity	Model 4 var + var * age + var * ethnicity	
Combination tested	variable	var * age	var * ethnicity	var * age	var * ethnicity
Independent Variables					
Socio-demographic Variables					
Education Level	*				
Employment	**	*		*	
Benefit	***				
Own Income	#				
Household income	***				
Household size	*	X		X	X
New Zealand Individual deprivation index	***		#		#
Uban/Rural					
Medical Insurance					
Health Status Variables					
Self-rated health	***				
Blood Pressure					
Cholesterol		X		X	X
Cardiovascular	**	X		X	X
Diabetes	**	X		X	X
Asthma	***		**		*
Spinal disorders	***				
Arthritis	***	X		X	X
Risk Variables					
Daily Smoking	***				
Audit score for alcohol consumption	***				
RDI Fruit	#				
RDI Vegetables		#			
Exercise					#
Body Mass Index	*	#	**	#	*

Notes

1: Significance codes: *** = p<0.001; ** = 0.001< p< 0.01; * = 0.01 < p<0.05; # = 0.05 < p < 0.1; blank = 0.1 < p < 1

2: Variables combination marked with X were not examined as the numbers were too small

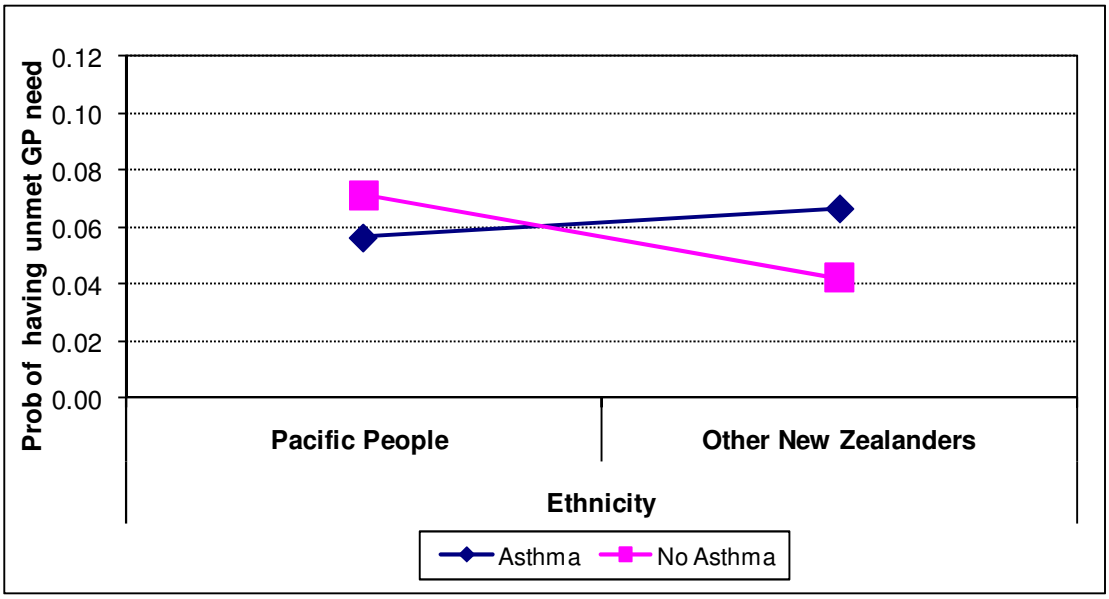
Table 3. Results from the final model of unmet GP need

	Odds Ratio	95% Confidence Interval	Adjusted Probability	95% Confidence Interval	P-value for variables[1]
Base Variables					
Intercept	0.19	(0.11, 0.33)	0.05	(0.04, 0.05)	-
Ethnicity					-
Pacific People	0.64	(0.30, 1.33)	0.07	(0.05, 0.09)	
Other New Zealanders	1.00		0.05	(0.04, 0.05)	
Sex					0.0029
Male	0.75	(0.62, 0.90)	0.04	(0.03, 0.05)	
Female	1.00		0.05	(0.05, 0.06)	
Age Groups					0.0000
15-24	3.35	(2.26, 4.96)	0.08	(0.06, 0.10)	
25-34	2.53	(1.84, 3.47)	0.06	(0.05, 0.07)	
35-54	1.88	(1.41, 2.50)	0.05	(0.04, 0.05)	
55+	1.00		0.03	(0.02, 0.03)	
Socio-demographic Variables					
Educational Qualifications					0.0008
None	0.65	(0.50, 0.85)	0.04	(0.03, 0.04)	
School	0.65	(0.49, 0.86)	0.04	(0.03, 0.05)	
Technical/Professional	0.99	(0.78, 1.25)	0.06	(0.05, 0.06)	
University	1.00		0.06	(0.05, 0.07)	
New Zealand Individual's Deprivation Index					0.0000
No deprivation characteristics	0.23	(0.16, 0.32)	0.04	(0.03, 0.04)	
1 characteristic	0.34	(0.24, 0.48)	0.06	(0.04, 0.07)	
2 characteristics	0.44	(0.32, 0.61)	0.07	(0.05, 0.09)	
3 or 4 characteristics	0.58	(0.41, 0.81)	0.09	(0.07, 0.11)	
5+ characteristics	1.00		0.15	(0.11, 0.19)	
Health Status					
Self rated health					0.0000
excellent	0.35	(0.23, 0.53)	0.03	(0.02, 0.04)	
very good	0.53	(0.39, 0.71)	0.04	(0.04, 0.05)	
good	0.67	(0.50, 0.89)	0.06	(0.05, 0.06)	
fair or poor	1.00		0.08	(0.06, 0.10)	
Asthma					-
Yes	1.62	(1.28, 2.04)	0.07	(0.05, 0.08)	
No	1.00		0.04	(0.04, 0.05)	
Asthma * Ethnicity					0.0285
Spinal Disorders					0.0056
Yes	1.41	(1.11, 1.79)	0.06	(0.05, 0.07)	
No	1.00		0.04	(0.04, 0.05)	
Risk Variables					
Daily Smoker					0.0011
Yes	1.41	(1.15, 1.72)	0.06	(0.05, 0.07)	
No	1.00		0.04	(0.04, 0.05)	
Body Mass Index					-
Under weight, normal	0.90	(0.68, 1.20)	0.04	(0.04, 0.05)	
Overweight	0.96	(0.72, 1.28)	0.05	(0.04, 0.06)	
Obese	1.00		0.05	(0.04, 0.06)	
Missing	0.98	(0.66, 1.45)	0.05	(0.03, 0.06)	
Body Mass Index * Ethnicity					0.0071

Notes:

1: Variables are not given p-values if a higher level interaction exists.

Figure 1. The interaction between ethnicity and asthma in the model for unmet GP need



The variables asthma and BMI have interactions with ethnicity. For Other New Zealanders, having asthma leads to a greater probability of unmet need, while having asthma leads to a lower probability of unmet need for Pacific peoples. For Other New Zealanders, BMI appears to cause no difference to unmet need, whereas for Pacific peoples, being overweight has a greater probability of unmet need than being underweight or normal weight.

The adjusted probability for Pacific peoples having unmet GP need is 0.07 and for Other New Zealanders it is 0.05 with a p-value for the difference of 0.0487.

Variables were removed from the final model one at a time to see which variables had the greatest effect on this ethnic difference. Removing NZiDep had the greatest effect on the ethnic difference as Pacific peoples are more concentrated in the higher levels of NZiDep where there is greater unmet need. Removing educational qualifications had the next biggest effect but in the opposite direction. Other New Zealanders have a greater concentration of people at the higher levels of education qualifications, where there is greater unmet need, and this makes the difference between ethnicities smaller than would otherwise be unexpected.

Respondents were asked the reason why they did not go to the GP when they needed to. For Pacific peoples with unmet need, the most common reason was “that the GP cost too much” (33%; 95%CI 22–44) and for Other New Zealanders, the most common reason was “Couldn't get an appointment soon enough/at a suitable time” (29%; 95%CI 24–33). However, there were no significant differences between the two different ethnic groups for any of the 17 reasons given.

Those with higher educational levels had a higher probability of unmet need than those with lower levels. Those with no qualifications were more likely to say “that the

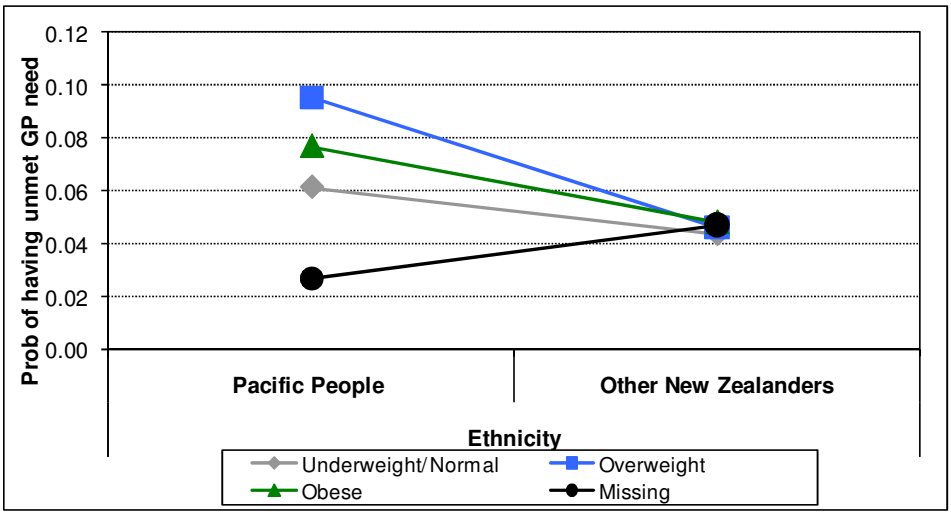
GP cost too much" (11%; 95%CI 6–16) compared to those with university qualifications (2%; 95%CI 0–5). Those with university qualifications were more likely to say "Couldn't spare the time" (21%; 95%CI 14–28) compared to those with no qualifications (7%; 95%CI 3–11). These were the only two reasons out of 17 given where there were significant differences between these qualification levels.

Those with higher levels of deprivation had a higher probability of unmet need than those with lower levels. Twenty nine percent (95%CI 24–33) of those with none or one deprivation characteristic who did not go to a GP gave as a reason that they "Couldn't get an appointment soon enough/at a suitable time" compared to 25% (95%CI 21–33, p=0.5767) for those with two or more deprivation characteristics.

The next most common reason for those with none or one deprivation characteristic for not going to a GP was that they "Didn't want to make a fuss" (20%, 95%CI 20–30) compared to 16% (95%CI 12–20) for those with two or more deprivation characteristics. For those with two or more deprivation characteristics, the most common reason for not going to a GP when there was a need was that it "Costs too much" (44%, 95%CI 38–51) compared with 16% (95%CI 12–21) of those with none or one deprivation characteristic.

Respondents were asked what they did instead of going to the GP when they needed to. The most common answer was "Nothing" for both Pacific peoples (36%; 95%CI 26–47) and Other New Zealanders (47%; 95%CI 42–51). The second most common reason was "Went to see the GP at a later date" for Pacific peoples (20%; 95%CI 9–32) and Other New Zealanders (12%; 95%CI 9–15). There was only one significant difference between Pacific peoples and Other New Zealanders in the reasons given which was "Took it easy/rested and relaxed more/got more sleep" which 8% of Pacific peoples identified (95%CI 1–16) compared to 3% of Other New Zealanders (95%CI 1–4).

Figure 2. The interaction between ethnicity and BMI in the model for unmet GP need



Discussion

There were three main themes associated with unmet GP need in the last year – there was higher unmet need in people who were unwell, people who had higher levels of individual deprivation, and people with higher educational qualifications. The latter two reflect different reasons for not being able to get to a GP—people with more deprivation characteristics are more likely to give financial reasons then those with fewer deprivation characteristics, while people with higher education levels are more likely to say they had time constraints.

These two variables also explained some of the differences between Pacific peoples and Other New Zealanders: Pacific peoples are more likely to have more deprivation characteristics which are associated with more unmet GP need. This concurs with pre-existing identified relationships between ethnicity, deprivation scores and avoidable mortality,[10, 11] and the over-representation of Pacific peoples in regions of high deprivation.[12]

On the other hand, Other New Zealanders are more likely to be in the higher educational categories where there is higher unmet need also. There is much pre-existing research into the positive relationship between higher education and better health status.[13] That higher education levels could negatively impact on GP utilisation appears to be largely unstudied.

Previous international studies have shown that time constraints impact on use of GP services for certain populations: urban women have been shown to have greater unmet need due to time constraints than rural women in Australia.[14] Such time constraints leading to unmet need have also been shown to not vary between disparate groups despite educational disparity. A study of unmet need for health care in immigrant communities in Canada found that the proportion of immigrants selecting 'Too busy' as a reason for unmet need was not statistically significantly different to non-immigrants, despite there being a (slightly) lower mean educational achievement ranking for non-immigrants than immigrants.[15]

There are two variables where Pacific peoples and Other New Zealanders have different patterns of unmet GP need. First, Pacific peoples have more unmet need if they are overweight compared to normal/underweight people, while BMI does not appear to affect Other New Zealanders' unmet GP need. Second, Pacific peoples have more unmet need when they do not have asthma but the converse is true for Other New Zealanders.

Prevalence of high BMI among Pacific peoples has been an identified issue for some time [1,2,6,12], largely due to the presence of weight-related illness such as diabetes. Pacific peoples with diabetes have been shown to have a higher number of GP consultations than Europeans with the illness and have been shown to possess more of the adverse risk factors for diabetes complications than Europeans: such as being a smoker, having an HbA1c greater than 8%, and having microalbuminuria.[4]

Diagnosed asthma in New Zealand has been associated with greater utilisation of GP services without factoring in ethnicity.[16] The ethnic variation is somewhat counterintuitive as, in the past, it appears Pacific peoples have had greater unmet asthma need.[17]

Confusingly, asthma rates among Māori and Pacific Islanders in New Zealand have been deemed considerably greater than for Other New Zealanders,[17] while Ministry of Health data, however, have shown that medicated asthma rates are considerably lower for Pacific peoples than European/Other.[5] Furthermore, the lack of longitudinal data from previous Health Surveys makes tracking changing rates of prevalence difficult.

Conclusion

This statistical study shows, using nationally representative data, variations in unmet GP need rates, for several reasons and affected by several variables, between Pacific peoples and Other New Zealanders. Health need has been shown to both positively and negatively affect the unmet GP need of Pacific peoples. Financial constraints predictably contribute to unmet need, while less predictably higher education and the associated time constraints (more prevalent in Other New Zealanders) also contribute to unmet GP need.

Competing interests: None.

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