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Health literacy of Pacific mothers in New Zealand is associated with sociodemographic factors and non-communicable disease risk factors: surveys, focus groups and interviews.

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ABSTRACT

Introduction: Pacific people living in New Zealand, suffer from inequitably high rates of non-communicable diseases and their associated risk factors. This disease burden may be compounded by low health literacy levels. The objectives of this research were: (1) measure relationships between health literacy, socio-demographic factors and non-communicable disease risk factors in a large sample of Pacific mothers living in New Zealand and (2) gain in-depth understanding of social and cultural factors contributing to these relationships.
Methods: Logistic regression was employed to investigate health literacy and: acculturation, socioeconomic status, physical activity, education, smoking status, health status, and alcohol consumption. Semi-structured focus groups were conducted with Pacific mothers and interviews with Pacific health professionals adopting the culturally appropriate *talanoa,* and *kakala* methods, within the *Fonofale* framework.
Findings: Associations between low health literacy and age, ethnicity, acculturation, employment, education, smoking status, and alcohol status were shown. Novel findings from the focus groups were: the use and comprehension of health information and what constitutes preferred information and health service delivery modes.
Conclusions: Findings suggest current health related information is not being used to its fullest extent by Pacific mothers. This may be due to underlying socio-demographic factors. This is the first study to examine the factors related to health literacy among Pacific mothers in NZ. Findings should be used to inform future interventions and delivery of public health nutrition messages.

KEY WORDS*:* Health literacy; Pacific; Mothers; socio-economic status

INTRODUCTION

Pacific people living in New Zealand (NZ), suffer from inequitably high rates of non-communicable diseases (NCDs) and their associated risk factors.[1] An estimated 66% of Pacific adults are obese compared with 32% in the total NZ population; Pacific people consume higher amounts of foods high in saturated fat, sugar and salt and drink more sugar-sweetened beverages compared to non-Pacific people [1]. Pacific adults are 30% more likely than non-Pacific adults to be insufficiently physically active for health than their non-Pacific counterparts.[1]

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Individuals with low health literacy are less likely to manage ill health including type 2 diabetes, [3,4] seek professional medical assistance,[2] or interpret nutrition related information.[5] Low levels of literacy is common among Pacific people worldwide, including in the Pacific Islands, Australia, the United States of America [6] and NZ.[1]

The specific objectives of this study were to: (1) measure the relationships between health literacy and socio-demographic factors and NCD risk factors in a large sample of Pacific mothers living in NZ, and (2) gain an understanding of social and cultural factors contributing to these relationships through culturally appropriate qualitative research methodologies.

To the authors best knowledge, to date there is no evidence to show that health literacy is related to NCD risk factors among Pacific people in NZ. Further, no studies showing associations between health literacy and health outcomes with Pacific people in NZ has been published. This research aims to close the current knowledge gap with a specific focus on Pacific mothers.

METHODS

This research used *1.* quantitate survey data from mothers whose children were participants in the 14-year phase of the Pacific Island Families study and *2.* focus groups with Pacific mothers and interviews with Pacific health professionals. Ethical approval to conduct this research was provided by the Central Health and Disability Ethics Committee on 28th July 2014 (14/108) and the Auckland University of Technology Ethics Committee on the 14th of October 2014 (12/291). Data was collected between 01 April 2014 and 10 August in 2014 inclusive.

Quantitative Study

Data from the maternal interviews of the 14-year phase of the Pacific Island Families study was used for this study. The Pacific Island Families study is a robust, longitudinal, birth cohort study of 1398 infants born in 2000 at Middlemore hospital in Auckland, NZ.[7] Study protocols detailed elsewhere.[7,8] Eligible participants were mothers who affiliated themselves with Pacific Island heritage. Mothers of non-Pacific ethnicity and male participants were excluded. All eligible, non-excluded mothers, with valid contact details were invited and agreed to participate. The questionnaire was administered in person, and objective physical assessments (height and weight) were taken by trained researchers. Measurement constructs and their items can be seen in **Table 1**.

Analysis

Bi-variable logistic regression was used to investigate the relationship between health literacy (low or high) and the following factors: acculturation, socioeconomic status, physical activity, education, smoking status, health status, and alcohol consumption. Data were entered into, cleaned, and analysed using SPSS Statistics 22.0 and confidence intervals were set at 95%.

Qualitative Study

Two focus groups with Pacific mothers and two individual interviews with Pacific health professionals were conducted in December 2014. Interviews with health professionals took place at a convenient and comfortable setting of their choosing at (a local café and workplace).

Participants

Focus groups. Mothers of Pacific Island descent that completed the Pacific Island Families Study 14-year maternal survey (see above and **Table 1**.) were randomly selected from two different health literacy categories; those with low health literacy (SILS score of 0 – 2; n = 20) or high health literacy (SILS score of 3 – 5; n = 20). In total, 40 Pacific mothers were randomly selected and invited to participate in focus groups. Information sheets and consent forms were mailed to the home address of each potential participant.

Interviews. Pacific health professionals with experience working with Pacific people in a professional setting for at least five years were identified through personal contacts of the lead researcher and invited via email and telephone to take part in this study. Prior to attending the interview, health professionals were given an information sheet and consent form.

Procedure

This research adopted the *talanoa*, and *kakala* methods, which are both qualitative Pacific research approaches which utilise semi-structured processes to elicit information.[16,17] *Talanoa* is an effective and culturally appropriate Pacific research method which uses conversation as a way to create a healthy environment for both the researcher and the participant.[17] *Kakala* is based on the traditional process of fragrant garland making, it is based on the principals of reciprocity, sharing, respect and collectivism.[18]

Table 1. Quantitative measurement constructs and included items.

Measurement Construct	Item/s and scoring
Socio-demographic information	Demographic information including sex, age, ethnicity, employment status, and qualification level (self report).
Health literacy	The single-item literacy screener (SILS) "How often do you need to have someone help you when you read instructions, pamphlets, or other written material from your doctor or pharmacy?" [9]. Participants were asked to rate their perceptions using a scale from never-1 to always-5. Scores of 1-2 were classified as high health literacy, and scores of 3-15 classified as low health literacy.
Acculturation	The Pacific Island acculturation measure (PIACCULT) and the NZ acculturation measure (NZACCULT) was used to assess acculturation [10].
Socioeconomic deprivation	The NZ Index of Deprivation for individuals was used to classify deprivation status into five categories ranging from a high (i.e. no deprivation characteristics) to low (i.e., five or more deprivation characteristics) socioeconomic status [11].
Physical activity	The NZ Physical Activity Short Form was used [12]. Respondents were classified into one of four categories based on the number of days they reported achieving at least 30 minutes of moderate activity or at least 15 minutes of vigorous activity: 0 – 2 days per week (low active), 3–5 days per week, and 6 – 7 days per week (high active).
Health status:	A single item from the General Health Questionnaire-12 was used to measure health status "Would you say your health is…?" Responses were coded as 1 = good, or 0 = fair or poor [13].
Smoking status	The single item "Over the past week, how many cigarettes on average did you smoke a day?" Scores were then coded as either 0 = No (non-smoker) or 1 or more = Yes (current smoker).
Alcohol consumption:	A single item from AUDIT- C "how often did you have a drink containing alcohol in the past 12 months?" Responses were classified as: 0 = No drinks in last 12 months and 1 - 5 = Yes (had alcoholic drink(s) in the last 12 months) [14].
Body Mass Index (BMI)	The standard formula was used to calculate BMI: weight in kilograms/height in meters squared. Height was measured to the nearest 0.1 cm using a stadiometer and weight was measured to the nearest 0.1 kg using digital scales. Ethnic-specific thresholds were applied to classify BMI of participants [15]

These conversations aligned with the Pacific epistemological views best described as the *Fonofale* framework.[19] The first author conducted all focus groups and interviews, they were recorded on an audiotape recorder. Focus groups and interviews took between 30-60 minutes and each participant received a NZ$30 shopping voucher upon completion.

Interview guide. Drawing from the findings from the quantitative study and an earlier literature review [20] a semi-structured interview guide containing a list of key points of enquiry was generated. This allowed for some form of flexibility for participants to discuss self-identified issues which may have influenced their experiences [21]. The *Fonofale* framework was also used to identify specific topics that directly or indirectly influenced an individual's health literacy status.

Analyses

Data was transcribed verbatim, and imported into NVivo 11 (QSR International, Burlington, MA) for thematic analysis. Thematic content analysis was used to pinpoint and examine common themes within the data.[22]

FINDINGS

Quantitative study

Of the 549 maternal participants who took part in the maternal survey sample, 11 were male and 35 participants were of non-Pacific ethnicity. Following their exclusion this left a final sample of 503 Pacific mothers. Full demographic information for participants included in analyses is provided in **Table 2**. More than half of the Pacific mothers reported having high health literacy (65.1%, n=328) and 61.3%, n=309 reported they had good health status. Health behaviour patterns were relatively good with 70.4% n= 355 reported they did not have a cigarette in the past seven days, 60.7% n= 306 did not consume alcohol in the past 12 months. However, 47.6% n=240 of Pacific mothers met the recommendations for physical activity two days or less.

Table 3 provides the results of bi-variable analysis for associations between health and health and demographic variables in Pacific mothers. Statistically significant relationships ($p < 0.05$) were found between health literacy and age, ethnicity, acculturation, employment, education, smoking status and alcohol status. Pacific mothers aged 40-49 years, and over 50 years were significantly less likely to have high health literacy in comparison with younger mothers. Compared with mothers identifying as being of Samoan ethnicity, mothers of Tongan ethnicity were 60% less likely to have high health literacy but no significant differences were found between the reference group and participants who were of other Pacific ethnic groups. Compared with Pacific mothers classified as having an assimilationist acculturation style, those with a separationalist or marginal style were significantly less likely to have high health literacy. Pacific mothers classified in the 'other' employment status category (e.g. self-employed, full-time mother (unpaid), student, retired and other) were significantly less likely to have high health literacy, compared with those who reported being employed. Smokers were four times more likely to have high health literacy compared with non-smokers. Similarly, this trend was observed for those who did not consume alcohol in the previous twelve months versus those who did.

Qualitative study

Table 4 shows the demographic characteristics of focus group and health professional participants. Health professionals interviewed were females of Pacific ethnicities who had at least five years' experience working with Pacific peoples (including Pacific mothers) in health professional settings. Four key themes were identified; behaviours, empowerment, relationships and policy change.

Theme 1: Behaviours

Reading and using health pamphlets or brochures. When asked the question "Do you currently use public health related information such as brochures or pamphlets?", the initial response from each mother was "*no*". One reason given was information relayed was either too brief or did not encourage them to read information fully. Many participants reported an existing understanding of their (or their child's) condition and no need for further information: *"I don't need those pamphlets because I already know what my symptoms are" (P6)*. Most agreed that they would be more inclined to use public health information if the information in the pamphlets or brochures was relevant or important to them and their families.

Table 2. Descriptive information for demographic variables of participants included in the quantitative study (n = 503)

Variable	Total *n*	%	(mean)	(SD)
Age	**503**		**(42.64)**	**(6.77)**
< 39		38.5	194	
40 –49		45.2	228	
> 50		16.1	81	
Ethnicity	**503**	50.4	254	
Samoan		25.2	127	
Tongan		18.1	91	
Cook Island		6.2	31	
Other Pacific				
BMI status	**410**		**(37.10)**	**(7.45)**
Normal		3.0	15	
Overweight		9.1	46	
Obese I		29.0	146	
Obese II		15.3	77	
Obese II		25.0	126	
Health literacy (frequency with which support is needed to read health literature)	**497**			
Never (high health literacy)		65.1	328	
Rarely		14.7	74	
Sometimes		15.9	80	
Often		1.2	6	
Always (low health literacy)		1.8	9	
Health Status	**497**			
Good		61.3	309	
Fair		33.7	170	
Poor		3.6	18	
Acculturation	**494**			
Assimilationist		36.5	184	
Separationalist		33.7	170	
Integrator		11.5	58	
Marginal		16.3	82	
Income ($NZ)	**330**			
Up to NZ $40,000		24.0	121	
NZ $40,001 to $80,000		24.6	124	
NZ $80,001 to $100,001		16.9	85	
Employment	**499**			
Employed		53.4	269	
Unemployed		5.4	27	
Other		40.3	203	
Education	**494**			
Secondary		47.4	239	
Tertiary		32.7	165	
No qualifications		17.9	90	
Smoking status (previous 7 days)	**497**			
No		70.4	355	
Yes		28.2	142	
Alcohol (any) in the last 12 months	**497**			
No		60.7	306	
Yes		37.9	191	
Physical Activity	**495**			
Less than 2 days		47.6	240	
3 to 5 days		38.7	195	
6 to 7 days		11.9	60	
Socioeconomic Status	**498**			
High (No Deprivation Characteristics)		11.3	57	
One		14.7	74	
Two		20.4	103	
Three or Four;		32.3	163	
Low (Five to Eight Deprivation Characteristics)		20.0	101	

Key: n = number; SD = Standard Deviation

Use of Pacific language and images. Both health professionals felt resources needed to suit the language attainment of Pacific peoples with the use of Pacific written language or pictures, so that Pacific people could better understand the information. The availability of this information using only a European context was highlighted as a main reason Pacific mothers did not use the information more often.

Use of technology for health information. Health professionals reported Pacific people were becoming more inclined to using technology such as mobile phones, to access the internet as a credible source of health-related information. Health professionals wanted to understand how to tailor information about health-related issues in a format that was easily accessible and easy to use internet sites for Pacific peoples in particular Pacific mothers to use because of the increasing demand.

Selecting healthy food. Selecting food items for their families was based on perceived food palatability, food expiry date, or whether foods were inexpensive (regardless of their nutritional value) among all mothers. Participants reported knowing which food items were healthy and agreed they wanted to lead a healthy lifestyle for themselves and their respective families. Yet, almost all mothers agreed that their financial circumstances and food palatability determined the types of foods purchased: "*We want to make sure our children are eating the right foods…but it's whatever we can afford*" (P4). Participants' financial circumstances determined the food items brought into the home: *"I'm not going by what's healthy what we should be eating… we're tight….so we just make week to week with what we can… so I don't go by what's recommended" (P2)*.

Reading nutrition information labels. Mothers said they did not look at food nutrition panels or the details within these panels. Fat, salt and sugar were identified as three main micronutrients to be aware of for health concerns, but overall participants did not understand what the numbers meant within these labels. Thus, participants felt more inclined to prioritise purchasing food items based on palatability and cost: *"I look at price… I don't even bother with it [the nutrition information label] …. whatever tastes good…. whatever's cheaper…. just skim right through it [the label]" (P4).*

Table 3. Odds ratios of having high (versus low) health literacy by demographic and health variables

Variable	*Total n*	*n*	%	OR	(95% CI)	p-value
Age (years)	496					0.001
≤ 39		193	38.9	Reference		
40 – 49		225	45.7	0.33	(0.19, 0.59)	0.001
≥ 50		78	15.7	0.23	(0.12, 0.46)	0.001
BMI	408					0.456
Normal		15	3.7	Reference		
Overweight		46	11.3	1.26	(0.22, 7.29)	0.795
Obese I		146	35.8	0.59	(0.13, 2.78)	0.509
Obese 2		75	18.4	0.49	(0.10, 2.36)	0.372
Obese 2I		126	30.9	0.69	(0.14, 3.26)	0.639
Ethnicity	496					0.001
Samoan		250	50.4	Reference		
Tongan		126	25.4	0.41	(0.25, 0.67)	0.001
Cook Island		89	17.9	1.26	(0.63, 2.52)	0.516
Other Pacific		31	6.3	5.88	(0.78, 44.38)	0.086
Health Status	495					0.789
Good		308	62.2	Reference		
Fair		169	34.1	1.17	(0.72, 1.90)	0.529
Poor		18	3.63	1.26	(0.35, 4.49)	0.721
Acculturation	487					0.001
Assimilationist		181	37.2	Reference		
Separationalist		166	34.1	0.16	(0.09, 0.32)	0.001
Integrator		58	11.9	0.82	(0.28, 2.41)	0.718
Marginal		82	16.8	0.20	(0.09, 0.42)	0.001
Income	329					0.095
Up to NZ$40,000		120	36.5	Reference		
NZ$40,001 to $80,000		124	37.7	0.82	(0.38, 1.79)	0.618
NZ$80,001 or more		85	25.8	3.32	(0.92, 12.04)	0.068
Employment	497					0.002

Employed		267	53.7	Reference		
Unemployed/seeking work		27	5.4	1.33	(0.381, 4.63)	0.656
Other		203	40.8	0.46	(0.29, 0.73)	0.001
Education	429					0.001
Secondary		237	55.2	Reference		
Tertiary		165	38.5	9.19	(3.86, 21.83)	0.001
No formal qualifications		90	21.0	0.77	(0.450,1.308)	0.330
Smoked cigarette(s) in previous week	495					0.001
No		353	71.3	Reference		
Yes		142	28.7	4.19	(2.10, 8.33)	0.001
Alcohol (any) in the last 12 months	495					0.001
No		304	61.4	Reference		
Yes		191	38.6	4.60	(2.52, 8.37)	0.001
Physical activity*	494					0.209
Less than 2 days		240	48.6	Reference		
3 to 5 days		195	39.5	1.26	(0.78, 2.04)	0.336
6 to 7 days		59	11.9	2.05	(0.88, 4.79)	0.096
Socioeconomic status**	496					0.085
High (No deprivation characteristics)		57	11.5	Reference		
One		74	14.9	1.56	(0.53, 4.60)	0.42
Two		102	20.6	0.71	(0.29, 1.75)	0.46
Three to Four		163	32.9	0.58	(0.25, 1.33)	0.19
Low (Five to Eight deprivation characteristics)		100	20.2	0.49	(0.20, 1.17)	0.11

Key: n = number; OR = Odds Ratio; BMI = Body Mass Index
*Number of days in the previous week that the individual reported meeting physical activity recommendations (at least 30 minutes of moderate activity or at least 15 minutes of vigorous activity per day)
**Classified using the NZiDep, calculated as the sum of positive responses to eight items used to assess socioeconomic deprivation.

Table 4. Characteristics of qualitative study participants

Focus Group Participants	**Age**	**Ethnicity**	**Health literacy**	**Acculturation**
P1	59	Samoan	Low	Marginal (Low NZ score, low Pacific score)
P2	43	Cook Island	Low	Assimilationist (High NZ score, low Pacific score)
P3	36	Cook Island	Low	Assimilationist (High NZ score, low Pacific score)
P4	38	Samoan	High	Marginal (Low NZ score, low Pacific score)
P5	37	Samoan	High	Assimilationist (High NZ score, low Pacific score)
P6	42	Tongan	High	Assimilationist (High NZ score, low Pacific score)
Health Professional Participants		**Gender**		**Workplace**
HP1		Female		Pasifika Integrated Health Care Ltd
HP2		Female		Ministry of Health NZ

Theme 2: Relationships

Social support. Seeking help from family members was commonly cited as a method of gathering support with health issues. These included, help to read or interpret pamphlets or brochures written in English, or advice on traditional remedies. The first author's second language was English therefore she required assistance with reading and understanding health related information. Half of the participants stated they would either ask someone they knew within their family to help treat low-grade conditions such as cuts, grazes or eye infections, but not others, such as asthma.

Theme 3: Empowerment

Mother's influence upon her respective family members. Almost all mothers reported their health, their child's health, and their families' health was a priority. As mothers, they would implement their role by encouraging their children to make healthier choices to lead healthier lifestyles. Even though the term empowerment was not mentioned, the theme arose from the influential nature of their roles when discussing their experiences with health-related ideas.

Cultural identity. Both health professionals acknowledged that being a Pacific person as a health professional was an asset to helping Pacific people with their health-related purposes. As a qualified health professional, HP2 felt as though being of Pacific ethnicity and grasping the value of her heritage was an essential component to supporting other Pacific people.

Theme 4: Policy Change

Recommendations for health and nutrition related information. Overall, most mothers wanted to make recommendations to the Ministry of Health regarding health-related information. Suggestions included creating clinics within small community groups to better understand health related issues as well as nutrition related information. In agreement of this statement, P3 and P4 added, using a coding system with the use of colours or a traffic light system could help people understand which food items to select: "*Yes…there needs to be other ways to help our people practically rather these pamphlets and things because I never use them".* With regards to using pamphlets and brochures, when the researcher probed whether the language should be translated into their native language, they agreed this would be helpful, although there was more emphasis on suggesting practical changes such as a community clinic. Based on HP2's experience, she suggested creating health care clinics that catered to traditional Pacific related illnesses that provided Pacific herbal remedies, Pacific masseurs, or spiritual healers.

DISCUSSION

The aim of this research was to explore issues around health literacy in Pacific mothers residing in NZ, findings revealed associations between low health literacy and age, ethnicity, acculturation, employment, education, smoking status, and alcohol status. The qualitative discussions revealed different philosophical views, strengths, weaknesses, attitudes and behaviours towards health-related situations, summarised within four key themes: behaviours, relationships, empowerment, and policy change. Most were expressed and explained in the context of Pacific health and wellbeing, aligning with the *Fonofale* framework. A number of novel findings emerged, pertaining to the use of health information, comprehension of information, preferred information and health service delivery modes.

Overall, a mismatch was observed between health literacy and use of health information. In line with findings from Wolf et al. [23], no significant relationships were found between health literacy and BMI, self-reported health status, or physical activity. Positive relationships were found between health literacy and smoking status and alcohol consumption in the quantitative analyses. While counterintuitive, these findings align with those of Arnold *et al*. [24] who investigated the health risk behaviours among low-income pregnant woman and found older females with adequate health literacy were more likely to have higher rates of smoking compared to those of low health literacy. Those who had low health literacy were more likely to report never having smoked. These observations are also similar to a study conducted with Australian mothers, where despite having adequate health literacy and a good understanding about healthy nutrition behaviours, these mothers continued to consume unhealthy processed foods.[25]

Corresponding with earlier research [26], findings revealed a need to prioritise face-to-face meaningful *talanoa* for provision of health information with Pacific people. Meaningful *talanoa* must be expressed in a way that incorporates the values and belief of the individual to develop a sense of trust. This then allows the individual to have the confidence to express their opinions confidently through deep and meaningful *talanoa* [27]. Vaioleti [17] explains establishing relationships with *talanoa* must integrate aspects of the *Kakala* such as the beliefs and cultural values imbedded within quality conversations with Pacific people. There is a need

for increased Pacific capacity in the health workforce, and for appropriate time allocation for adequate *talanoa.*[28]

Internet use for health-related reasons has been associated with young age, female gender, and higher education status.[29,30] Often there is an assumption that internet access and usage is low among communities of lower socioeconomic status and ethnic minority groups.[29] This research does not support that assumption, participants in the current study reported insisting on using their mobile device to access the internet because of its convenience and availability of easy to use websites to access health information. Health professionals understood this behaviour was becoming increasingly popular among their Pacific clients, in particular young Pacific mothers, and encouraged this behaviour. All participants identified a need to create and design health based websites that incorporate Pacific specific information to cater to all Pacific groups.

Understanding, acknowledging, and respecting an individual's values when sharing health information consistently arose as a key priority. Elder family members were important sources of health information, and this information often aligned with mainstream health messages [31]. In keeping with previous research [32] ethnicity and acculturation were associated with health literacy. These findings highlight the importance of the *Fonofale* framework in understanding Pacific health issues.

Aside from education, no associations were found between socio-economic status or income with health literacy in this study, this is at odds with previous research,[23,33,34] however, socio-economic factors came across clearly in the qualitative discussions when talking about nutrition. Despite their health literacy levels, purchasing food items for their respective homes was based on perceived food palatability, food expiry date, and price. Comprehension of nutrition labelling was reported as problematic either because participants didn't understand it or it was not a priority for them. These results have clear implications for delivery of public health nutrition messages in NZ. Indeed, participants proposed their own solutions to create culturally appropriate community clinics to increase comprehension of public health messages warranting further research and investigation. Environmental interventions to improve availability and accessibility of healthy foods may be a worthwhile strategy to improve quality of nutritional intake for Pacific people. Examples include policies that restrict the number of fast food outlets available in most deprived areas.[35] and tax incentives that reduce the cost of healthy foods.[36]

Strengths and Limitations

A key strength of this research are the unique insights gained from a Pacific perspective utilising Pacific specific culturally appropriate research methodologies. These included the use of focus groups and interviews which enabled generating new insights beyond the quantitative research findings, and helped to contextualise and understand the quantitative results. Established and validated measures and protocols were employed, using current best practice. It is acknowledged that some measures could be improved by testing and validating for a Pacific population, where this has not already occurred.

The findings are limited to the population group of Pacific mothers living in NZ. Differing concepts of health literacy and measures of health literacy exist, and it is possible that the tool used in this study to measure health literacy did not adequately capture health literacy for this population. Given the low rates of health literacy among Pacific people globally, future research to develop, validate and ensure cultural appropriateness of a health literacy screening tool specifically for use among Pacific people is needed.

Upon completion of the focus group meetings and interviews the first author critically reflected upon her research practice and noted that the participants' desire to openly express their ideas and concerns seemed limited at times. The conclusion was drawn this was due to the researchers relatively young age. In future focus groups and interviews with Pacific mothers, and health professionals researchers should consider having an older and more experienced researcher preferably also of Pacific descent conduct the qualitative research to minimise potential participant discomfort and facilitate more open discussion.

CONCLUSION

This is the first study to examine the factors related to health literacy for Pacific people living in NZ. Findings suggest current health related information is not being used to its fullest extent by Pacific mothers. In part, this may be due to underlying socio-demographic, cultural, and religious factors. Proposed solutions include community health initiatives, Pacific-specific services, harnessing mobile and internet technologies, clear and accurate food labelling,

and reducing the cost of healthy foods.

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Conflict of Interest

The authors declare no conflict of interest.

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