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Systematic Review

Prevalence and determinant factors of overweight and obesity among Pacific people: A systematic review study

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Globally obesity and overweight are the fifth leading cause of death with an astonishing 2.8 million adult deaths each year. Pacific countries recorded to have the highest prevalence of overweight and obesity. This syntactic review is aimed to assess the prevalence of overweight and obesity and also the contributing factors in the Pacific countries. Eight databases which were used more frequently in previous studies in the field of overweight and obesity was chosen. Relevant key terms were used to search in selected databases using AND and OR. All types of studies were published from January 1st 2000 to January 1st 2017 and in the English language were included in the search. The information related to the studies, population, methods, and results were extracted from the final steps of search and were included in the data extraction sheet. A descriptive analysis was used and the results were reported as percentage in the form of tables. Thirty one studies were analysed. Around two thirds of studies were conducted after 2010 and more than half of the studies were conducted as community based. Obesity prevalence was ranged from 6.1% to 73.9%. On the base of gender, female obesity was ranged from 13.8% to 73.9% and male obesity range was from 18.7% to 55.1%. Sixteen studies (51.6%) reported on dietary factors associated with overweight and obesity which followed by physical activity (12.9%) and television viewing (9.68%). The high prevalence of overweight and obesity reported in this study shows the need for an urgent preventive action taken by health care and policy decision makers. Lifestyle related factors need to be considered and interventions focusing on Pacific culture and beliefs need to be taken account in changing healthy lifestyle.

Keywords: Prevalence, overweight, obesity, determinant factors, Pacific

INTRODUCTION

Obesity is defined by the World Health Organization (WHO) as an excess of body fat that may impair or hinder

health (WHO, 2015). Over the years it has become a more and more of a threat and continues to take root around the world with its prevalence doubling since the year 1980 (WHO, 2015). Globally obesity and overweight are the fifth leading cause of death with an astonishing 2.8 million adult deaths each year (Kearns et al., 2014). Once considered a disease of the high income and

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developed nation's obesity is rapidly beginning to plague low to middle income countries (WHO, 2015).

As of 2014 it was found that over 1.9 billion adults over the age of 18 were overweight with an estimated 600 million considered obese (Selma et al., 2016). If these statistics were to be further broken down it is revealed that the 600 million obese patients encompasses 38% of adult men and 40% of adult women (WHO, 2015). In addition to this it was estimated in the year 2014 that thirteen percent (13%) of the adult population over the age of 18 were obese which is indeed an alarming statistic (WHO, 2015). That same year it was also found that 41 million children under the age of 5 were either overweight or obese (Leeuwen et al., 2017). With this alarming trend of growth it is estimated that by 2025, one fifth of the world's population will be obese (Sunyer et al., 2016).

This increase in the incidence of obesity has had its effects felt all around the globe but none have felt the brunt of its impact as much as the Pacific islanders. In relation to percentage obesity of the total population the top ten countries in the world are all Pacific Island nations with the top five being, American Samoa (74.6%), Nauru (71.1%), Cook Islands (63.4%), Tokelau (63.4%) and Tonga (57.6%) (Selck, 2016). These Pacific Island countries are small when compared to more modernized countries such as America and Australia however their percentages of obese individuals compared to larger countries is astounding. This high percentage of obesity brings into question the previous views of Pacific islanders which were healthy and physically fit individuals.

Furthermore this high incidence of obesity in the Pacific is grounds for concern due to the many health effects associated with the condition. According to the U.S Centre for Disease Control (CDC), these effects include High Blood pressure, Type 2 Diabetes, Coronary Heart Disease, Osteoarthritis, sleep apnoea and impaired physical functioning (Xu and Xue, 2016). The European Association for the Study of Obesity (EASO) also estimates that obesity is responsible for 44% of the diabetes burden and 23% of ischaemic heart disease (Sen et al., 2016). In addition to physical health impacts obesity has been linked to mental illness in the form of depression and a lowered sense of self-esteem.

With this in mind there is a need for more studies to be carried out in the Pacific to determine the factors contributing to such a high incidence of obesity and make known the necessary steps to control it. Hence this systematic review is aimed at understanding the high prevalence of obesity in the Pacific and the factors which contribute to it.

METHODS

This systematic review is aimed to understand the prevalence of overweight and obesity and the contributing factors amongst the Pacific islanders using the methods provided in the Cochrane guideline. PubMed, Medline, Web of Science and PsychInfo, CINAHL, Scopus, EMBASE and Google Scholar were the databases used to find the articles included in this study. These were based on the frequency of use in previously published literature. In addition to this the following keywords were used: overweight, obesity, prevalence (determinants OR contributors), and Pacific were used in the selected databases to obtain the relevant studies. Different study designs such as qualitative, quantitative and mixed designs which were published from January 1st 2000 to January 1st 2017. Articles published in the English language were included in the search while studies that were not fitting into the inclusion criteria were omitted.

After accounting for duplication studies were removed based on the following process which was conducted by two independent coders. Firstly Titles were assessed and articles deemed irrelevant were removed. Secondly the abstract of the article was analysed to determine relevance and the number was further reduced. Lastly the full text was read through and the articles deemed relevant were included in the study (25 studies). In addition to this an assessment of the bibliographies of the selected studies was conducted in an attempt to search for further relevant literature which were 6 studies (Figure 1).

Using the articles deemed relevant a data extraction sheet was formulated in order to review relevant information (Table 4). This information included the compilation, methodology, results, study information and relevant data extracted from the articles. Lastly a descriptive analysis was made based on the extraction sheet analysing the data using tables and percentages.

RESULTS

The results of the study showed that majority of studies were conducted after 2010 (19 studies) and majority of the study were conducted in South Pacific countries (77.4%). Adolescent and adolescents and adults were the majority age groups which had the highest prevalent age group conducting the studies. Most of the studies were quantitative study design (48.38%) and only 2 studies were qualitative. More than half of the studies were conducted as community based and 14 studies

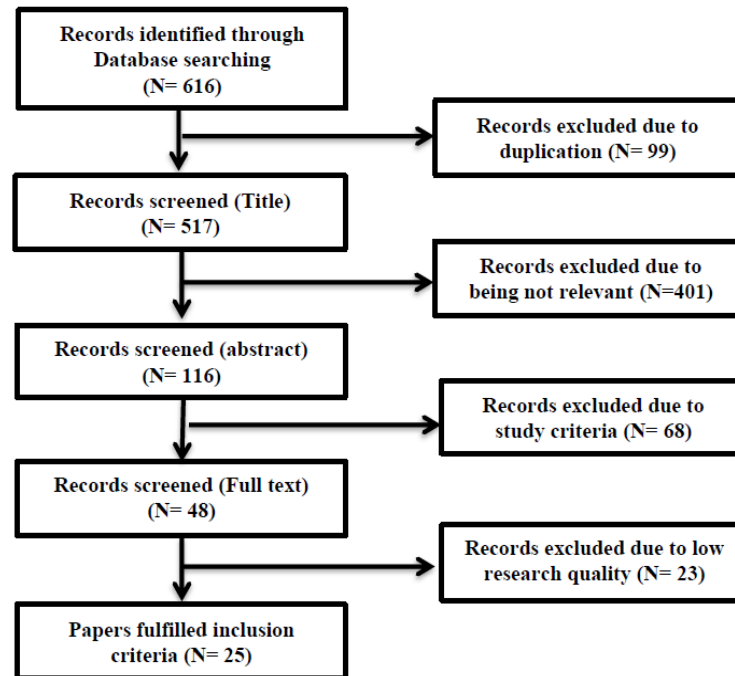


Figure 1. Article selection process

Table 1. General characteristic of the studies

Factor	Frequency	Percentage
Year of the studies		
2000-2004	5	16.13
2005-2009	7	22.58
≥ 2010	19	61.29
Region of conducting the study		
South Pacific	25	80.65
American Pacific	5	16.13
Asia Pacific	1	3.23
Age groups		
Children less 10 years only	8	25.81
Adolescents (10 – 19 years)	11	35.48
Adolescents and adults	11	35.48
Older people	1	3.23
Study design		
Quantitative study	15	48.38
Qualitative study	2	6.45
Mixed method study	14	45.16
Place of conducting the studies		
School based	14	45.16
Community based	17	54.84

were conducted as school based studies (Table 1).

The results of the study showed that majority of the studies were conducted in South Pacific region which New Zealand had the most frequent studies (51.61%)

which followed by Fiji (19.35%), Tonga (12.9%), Vanuatu and Samoa (9.68% each), and Australia and Solomon Island (6.45% each). American Pacific countries conducted 5 studies all in Hawaii. Asia Pacific conducted

Table 2. Frequency of overweight and obesity related dietary factors

Factors	Frequency	Percentage
Meal/breakfast skipping	4	12.9
Sweet beverage consumption	5	16.13
Purchased school lunch	1	3.23
Consume less fruit	1	3.23
Carbonate drinking	1	3.23
Processed food	3	9.68
No family meals	1	3.23
Rice consumption	1	3.23
Fast food consumption	1	3.23
Meat consumption	2	6.45

Table 3. Frequency of factors contributing to overweight and obesity

Contributing factors	Frequency	Percentage
Dietary related factors	16	51.61
Physical activities	4	12.9
TV viewing	3	9.68
Acculturation	2	6.45
Bullied	1	3.23
Lack of Social communication	1	3.23
Socio-economic status	3	9.68
Imported foods	1	3.23
Parties	1	3.23
Suicidal ideation	1	3.23
Societal value	1	3.23
Mother obesity status	1	3.23
Health related quality of life	1	3.23
Education level	1	3.23

only one study in Hong Kong. Countries such as Niue, Cook Island, American Samoa, Northern Mariana Island and the US having the lowest number of studies (1 study each). The pool number of participants found within the studies was 345242.

Prevalence of overweight and obesity overall ranges

From the 31 obesity related studies, twelve studies (39%) reported the prevalence of overweight and sixteen studies (52%) reported the prevalence of obesity. Four studies (13%) reported the prevalence in a way that combines obesity and overweight (either overweight or obese). Moreover, the prevalence of overweight reported was ranged from 14.7% lowest to 97% highest and obesity prevalence was ranged from 6.1% to 73.9%. Overweight or obese prevalence was ranged 36% to 68%.

Prevalence of overweight and obesity by gender

Furthermore, a total of seven studies (23%) have reported overweight and obesity prevalence based on

gender. For the overweight category, female prevalence was ranged from 15.6% to 96% and female obesity was ranged from 13.8% to 73.9%. However male overweight prevalence was ranged from 9.1% to 94.1% and obesity range was from 18.7% to 55.1%. And in the overweight or obese category, female was 53.8% and male 36%. From these results, female gender has the highest prevalence in all the three prevalence categories (overweight, obese, overweight or obese) compare to male gender.

Prevalence overweight and obesity by ethnicity

From the 31 studies, 2 studies (7%) reported on the prevalence (overweight, obesity) by ethnicity (Maori, European, and Pacific Islanders). Prevalence by ethnicity is ranged from 47.2% to 94.1% overweight and obesity was ranged from 14.4% to 71.7%. The first study reported that Pacific islanders including participants from (Samoa, Niue, Tonga and Cook Islands) has the highest prevalence for both overweight and obesity compared to other ethnic group with its highest overweight prevalence of 71.7% and obesity 55.1%.

The other study reported the prevalence of obesity and overweight by ethnicity based on Polynesian and non Polynesian ethnic groups (specific countries involved not reported). The Polynesian ethnic group reported to have the highest obesity prevalence of 24.4% and non Polynesian 21.4%.

Ten dietary factors have been identified in this research. Consuming sweet beverages is the most frequently reported dietary factor and its role in overweight and obesity was documented five times in five studies. Sweet Beverages is followed by meals or breakfast skipping which appeared 4 times in the studies. Consuming of western foods/processed foods was the third most reported dietary factor with a frequency of three; then followed by high intake of meat with a frequency of two. All the remaining dietary factors (purchased school lunch, low intake of fruit and vegetables, carbonate drinks, family meals, rice and fast foods high consumption) reported once in the studies. Most importantly, all of these dietary factors identified are positively associated with increase weight and obesity (Table 2).

From the 31 studies, sixteen studies (51.6%) reported on dietary factors associated with overweight and obesity. Physical activity was the second most common factors that was reported four times (12.9%) in the studies followed by television viewing with a reported score of three times (9.68%). Acculturation is the other factor that was mentioned twice. The remaining factors however were reported only once in frequency. All these factors are positively associated with increasing body weight which contributed to overweight and obesity (Table 3).

DISCUSSION

The first major finding of this study is that there is indeed evidence of a high prevalence of obesity among Pacific islanders. This was found to range from as low as 6.1%-73.9% of the participants in the studies analysed which shows that among certain groups a high prevalence is present. These statistics are further broken down into gender based results by seven of the collected studies and show a female obesity range of 18.7%-73.9% and a male range of 18.7%- 55.1%. This showed that obesity was more prevalent among women and a similar trend was shown in overweight statistics as well. In a similar study carried out by Youfa Wang and Beydoun it was found that obesity among adults was rapidly increasing and rose from 13% to 32% from the 1960s to 2004 within the United States (Wang and Beydoun, 2007).

Moreover this high prevalence was attributed to certain risk factors and the first major risk factor is diet. Diet is an important part of the lives of Pacific islanders as it can sometimes be rooted into various cultures. However in recent years islanders are moving further away from their

traditional diets and adapting easier and cheaper alternatives such as canned and preserved goods all the while neglecting the nutritional value (Waqanivalu, 2010). In addition to this, it was found that a high consumption of sweet beverages was common among participants. In a study conducted by George Bray, Sammara Nielson and Barry Popkin it was found that there is indeed an association between high fructose corn syrup which is found in sweetened beverages and obesity (Bray et al., 2004). Due to their rapid availability and relatively low prices sweetened beverages are easy to obtain which may account for the high consumption of said products.

The next diet related factor discovered through the duration of this study was that of meal skipping with the majority being breakfast. Breakfast skipping has been positively associated with an increased risk of obesity when compared to individuals who don't skip meals (Levitsky and Pacanowski, 2013). Meal skipping is common among people who are constantly on the go in terms of work or school and often neglect the impact of meal skipping on their own health. A major effect of this is over consumption of snacks or food in between meals to make up for the meal missed. Other dietary factors of concern in this study are low consumption of fruits, high fast food intake, high meat consumption and high consumption of preserved goods (He et al., 2004). Dietary issues may be related to low socioeconomic status due to the rising cost of healthy nutritional foods while lower quality instant foods and preserved goods are readily available at low prices. In addition to this the availability of fast food is constantly on the rise in Pacific island countries which is indeed a cause for concern. Hence more awareness needs to be made in regards to proper diet.

Additionally another significant factor common among the analysed studies is that of physical activity. Physical activity is key in terms of weight control therefore a lack of it can lead to weight gain and in the long run obesity (Khoja et al., 2016). Due to modernization lifestyles in the Pacific have become more sedentary and convenient leaving little room for physical activity. Studies by both George Bray and Nicholas Wareham have both documented evidence of physical inactivity being a risk factor of obesity with Wareham going as far as to recommend 45-60 minutes of physical activity daily (Bray et al., 2004, Wareham et al., 2005)

Modifiable risk factors aside the study also found evidence of obesity rates varying based on ethnicity. Seven of the studies reviewed showed that Polynesians had a higher rate of obesity when compared to non-Polynesians. Along with ethnicity cultural values and practices also influence an individual's health. Culture can have great influence in determining a person's diet which if not kept in check can lead to adverse health effects with one such effect being obesity (Caprio et al., 2008). In the Pacific cultural feasting is a norm and occurs regularly, during these feasts over indulgence is a

Table 4. Data extraction sheet

	Article	Participants	Methods	Results
1	(DeJoy et al., 2013) Year:2012 Country:United States Type of Study:Descriptive study	Number: 67 Age: Adult Gender: Male, Female	Sampling: Purposive Data collection tools: interviews, Place: Community	Prevalence 68% adult overweight or obese 30% obese
2	(M. P. McCabe et al., 2011) Year:2011 Country:South Pacific Type of Study:Descriptive	Number: 748 Age: 12–18 years Gender: Male, 374 Female 374	Sampling: Purposive Data collection tools: Questionnaires, interviews Place: schools	Health determinants societal values related to body size
3	(Metcalf et al., 2000) Year: 2000 Country: New Zealand Type of Study: Descriptive	Number: 5554 workers, Gender: Male, Female Age: 40 yr and over,	Sampling: Purposive Data collection tools: Questionnaire and Interview Place: Worksites	Prevalence Overweight Europeans, M 64.7%, F 47.2%; Maori, M 93.2%, F 80.6% Pacific Islanders, M 94.1%, F92.9% Obesity Europeans, M14.4%, F14.6% Maori, M55%, F41.9% Pacific islanders; -Education level -Social economic status
4	(Oliver et al., 2009) Year: 2009 Country:New Zealand Type of Study:Cohort study	Number: 254 Age: 6 years old Gender: Male, Female	Sampling: Purposive Data collection tools: Questionnaire Place: Community	Prevalence Overweight 60% boys, 53% girls, 97% mothers.
5	(Brewis et al., 1998) Year:1998 Country:NZ Type of Study:Cross sectional study	Number: 226 Age: 25±55 yrs. Gender: Male 101 and Female 125	Sampling: Purposive Data collection tools: Questionnaires Place: Community	Prevalence Overweight 85% obese 55%
6	(Oliver et al., 2011) Year:2010 Country:NZ Type of Study: Descriptive study	Number: 102 Age: 6 years Gender: Male, 45 Female 57	Sampling: Purposive Data collection tools: Interview & questionnaires Place: Community	Prevalence 27% overweight 32% obese, watching TV, mother with a high waist circumference

Table 4 continue

7	(O’Dea, 2008) Country:Australia Type of Study:Descriptive study	Number: 7889 Age: 6-18years Gender: Male, female	Sampling: Purposive Data collection tools: Questionnaires Place: Schools	Prevalence: Age group 6–11 years; M: Obese-18.8%, Overweight-21.9% F: Obese-15.6%, Overweight-15.6% Age group 12-18years M: Obese-23.6% Overweight-25.5% F: Obese-23.4% Overweight-32.8%
8	(Ochner et al., 2008) Year:2007 Country: Hawaii Type of Study:Descriptive study	Number: N = 24,731 Age aged ≥18 years Gender: Male, Female	Sampling: cluster design based on random-digit dialing Data collection tools: Self-report-telephone survey Place: Public	Prevalence Polynesian 24.4% obese Non Polynesian 21.4 obese
9	(Xie et al., 2014) Year:2014 Country:Hong Kong Type of Study:Descriptive study	Number: 3003 Age: 18 years and older Gender: Male 1618, Female 1385	Sampling: Purposive Data collection tools Questionnaires, Interview Place: Community	Risk factors Longer TV viewing time
10	(Swami et al., 2007) Year:2007 Country:Independent Samoa Type of Study:Descriptive study	Number: 76 Age: Adolescents Gender: Male, Female	Sampling: Purposive Data collection tools: Interview Place: Community	Health Determinants socio-economic status
11	(Petersen et al., 2014) Year: 2014 Country.: Fiji Type of Study: Descriptive	Number: 8947 Gender: Male 4200, Female 4747 Ag: 12–18 years	Sampling. Purposive Data collection tools Questionnaire, interview Place: Schools	Health Determinants Health related quality of life
12	(Rajput et al., 2015) Country:New Zealand Year:2009-2012	Number: 168,744 Age: 4 years Gender: Male, Female Study type: Descriptive	Sampling: Purposive Data collection tools :- questionnaire Place: Schools	PREVELANCE -16.9% girls 19.6% boys over weight; 13.8% of girls and18.7% of boys obese
13	(Gordon et al., 2003) Year:2003 Type of Study: Cross sectional study. Country: NZ	Number: 21 boy 20 girls Age: 3-7 years Gender: Male 21, Female 20	Sampling: Purposive Place: Community	Prevalence obese 49%
14	(Tyrrell et al., 2001) Year:2001 Country:NZ Type of Study: Descriptive study	Number: 2273 Age: 5±10y Gender: Male,1130 Female 1143	Sampling: Purposive Data collection tools: questionnaires Place: School	PREVALENCE 14.3% obese

Table 4 continue

15	(Utter et al., 2015) Year:2015 Type of Study:Descriptive Country:NZ	Number: more than 17,000 students Age: 13-17 years Gender: Male, Female	Sampling: two-stage sampling procedure where first schools, then students within schools, were randomly selected for participation Data collection tools: Questionnaire Place: School	PREVALENCE -40% obese, or severely obese.
16	(Wate et al., 2013) Year: 2013 Country: Fiji Type of Study: Descriptive study	Number: 6,871 Gender: Male 3395 Female 3476 Age: 12-17 yrs	Sampling: Purposive sampling Data Collection tools: Questionnaires Place: School	Prevalence -24% overweight or obese, -Indigenous Fijian 34% Dietary pattern -Infrequent breakfast and lunch consumers, SSB, low intake fruit and vegetables
17	(Thompson-McCormick et al., 2010) Year: 2014 Country: Fiji Type of Study: Descriptive	Number: 523 Gender: Female Age: 15–20 years	Sampling: Purposive sampling Data collection tool: Questionnaires Place: Schools	Prevalence -40.7% overweight, 14.7% obese Dietary pattern - breakfast skipping - skipping breakfast
18	(Teevale et al., 2012) Year: 2012 Country: NZ Type of Study: Descriptive	Number: 4284 Gender: Male 2116 Female 2168 Age: 12 and 17 years	Sampling: Purposive sampling Data collection tools: Questionnaires and interview Place: School	Prevalence -31% obese , 36% overweight Dietary pattern -purchased lunches;
19	(Grant et al., 2004) Year:2004 Country:NZ Type of Study:Descriptive study	Number of participants: 60 Age: 2-5 years Gender: Male, Female	Sampling: Purposive sampling Data collection tools: Interview & questionnaires Place: School	Prevalence obese 64%-75%, overweight 45%-60% Dietary pattern -Sugar intake excess WHO standard
20	(Utter et al., 2006) Year:2006 Country:NZ Type of study:Descriptive study	Number of participants: 2989 students Age: 5-14 years Gender : Male 1504 Female 1485	Sampling: Purposive sampling Data collection tools: Questionnaires, interviews, Place: School	Dietary pattern 40% Pacific, 23% Māori students skipped breakfast -High takeaway consumption - low fruit, vegetable intake. Physical activity -children do more active game

Table 4 continue

21	(Teevale et al., 2010) Year: 2010 Country: New Zealand Type of Study: Mixed methods study	Number: 1586 Gender: Male, 789 female 807 Age: 12-17 years	Sampling: Purposive sampling Data collection tool: Questionnaires, interviews Place: High schools	Prevalence Obesity-49.4 boys, 50.6% girls, Overweight-49.5 boys, 50.5% girls Dietary pattern Breakfast and lunch skipping Physical activity obese children less active
22	(Pengpid and Peltzer, 2015) Year:2015 Country:South Pacific Type of Study:Descriptive study	Number: 10,238 Age: 13–16 years Gender : Male 4566 Female 5672	Sampling : Purposive Data collection tools: Questionnaires &interview Place: School	Prevalence overweight 24.3% obesity 6.1% Dietary pattern consumed carbonated soft drink, fast foods, Low fruit and vegetable, physically inactive
23	(Dancause et al., 2013) Year: 2013 Country: Vanuatu Type of Study: Descriptive	Number: 534 Gender: Male, 282 Female 252 Age: 18 years and above	Sampling: Purposive sampling Data collection: -Questionnaire & interview Place: Community	Prevalence -obesity 73.9% female 22.5% male Dietary pattern -Heavier reliance on animal protein, -Western processed foods (tinned fish and instant noodles)
24	(Utter et al., 2013) Year:2013 Type of Study:Descriptive Country:NZ	Number: 8734 Age: 13-17 Gender: Male 4691 Female 4043	Sampling: Purposive sampling Data collection tools: Questionnaires Place: High schools	Dietary pattern -frequent family meals high fruits and vegetables intake.
25	(Smith et al., 2007) Year:2006 Country:Tonga Type of study:Descriptive study	Number : 443 Age: 11–16 years Gender: Male, 199 Female 244	Sampling: Purposive sampling Data collection tools: questionnaire Place: School	Prevalence Overweight or obese 36.0% of boys, 53.8% girls Dietary pattern eat Tinned mutton or beef , not eat taro physical activity - active, watched television
26	(Novotny et al., 2009) Year:2009 Country:US Type of study:Cross sectional study	Number: 4,530 hotel workers from 30 hotels Age: 18+ years Gender: Male, 1947 Female 2583	Sampling : Purposive sampling Data collection tools: Measurements and questionnaires Place: Community	Prevalence -57% overweight -Greater acculturation result in greater BMI Dietary pattern sweet drinks and meat

Table 4 continue

27	(Estimé et al., 2014) Year:2014 Country:South Pacific islands	Number: Not reported Age: 18 yrs and above Gender: Male, female	Sampling: -Purposive sampling Data collection tools: Questionnaires Place: Community	-Expenditure on imported foods Kiribati, Tonga, Solomon Islands and Vanuatu Dietary pattern: High imported foods high unhealthy foods
28	(Sluyter et al., 2013) Year:2013 Country:NZ Type of Study:Descriptive study	Number: N=5714 Age: 12-22 years Gender: Male, 2885 Female 2829	Sampling: Purposive Data collection tools: Questionnaires, Place: Community	Risk factors TV viewing related to fatness Dietary -soft drink consumption related fatness
29	(Braun et al., 2014) Country:American Pacific Type of study:Descriptive study	Number: Not reported Age: 2–8 years Gender: Male, Female	Sampling: Purposive sampling Data collection tools: Community meetings, literature review Place: Community	Prevalence 40% overweight or obese Dietary pattern -engaged children in growing and eating local healthy foods change attitudes and behaviors
30	(Novotny et al., 2012) Country:Hawaii Year:2012 Type of Study:Descriptive	Number: 1612 Age: 18+ yrs Gender: Male, 774 Female 838	Sampling: Purposive Data collection tools: :questionnaires Place: Community	Dietary pattern -Acculturation related high intake SSB BMI outcome -no significant change in BMI across intervention
31	(Braginsky et al., 2016) Country: Hawaii Year:2014 Type of Study:Descriptive study	Number: 6 women Age: 39 to 56 years Gender: Female	Sampling: Purposive study Data collection tools: Questionnaires, interviews Place: Community	Dietary High intake rice, fast food, parties related overweight, obesity

common occurrence which can have dangerous impacts on a person's weight. Hence it is important to consider ethnic and cultural factors when investigating obesity.

Due to the fact that obesity is preventable more emphasis needs to be put on preventative measures such as diet and physical activity as mentioned above in order to combat its rapid growth. In a study by Nicola L Hawley and Stephen McGarvey it was revealed that some island countries are already taking action to decrease the burden of obesity such as Fiji,

Samoa and Tonga (Hawley and McGarvey, 2015). This was done on the policy level by banning foods deemed unhealthy from entering the country with Fiji banning mutton flaps and Samoa banning Turkey Tails. However more work needs to be done on the ground level involving the people themselves through awareness, intervention studies and health education in order to empower the people to take their health back into their own hands.

The study set out to investigate the current literature available on the prevalence and risk

factors of obesity in the pacific. A total of 31 studies were included in this systematic review with only 24 studies being conducted in the south pacific. 17 out of the 31 studies were community based with 14 being school based. In addition to this only 19 of the studies were conducted after the year 2010 leaving room for more data to be collected. Therefore it was concluded that more research needs to be carried out in the pacific regarding obesity, its prevalence and the factors associated with it.

This study was deemed the first systematic review of literature pertaining to this topic. Analysis included studies conducted between 2000 to 2017 which would provide a wider view of the burden of overweight and obesity and strengthen the study. The limitations of this study however were the omission of articles not written in the English language which may have limited the scope of the study and the omission of grey literature.

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