Research Article
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Prevalence and determinants of overweight and obesity among pregnant women attending the colonial war memorial hospital (CWMH) antenatal clinic, Suva, Fiji Islands, 2015

Abstract

Background/objectives: Overweight and obesity have been considered a major public health issue in both developed and developing countries, and more specifically within Pacific countries. It is well documented that obesity affects both mother and children as high risk group, so this study is aimed to understand the prevalence of overweight and obesity among pregnant women attending at the Colonial War Memorial Hospital (CWMH) Antenatal Clinic, Suva, Fiji Islands.

Subjects/methods: This is a cross-sectional study which is conducted among 2203 mothers who met the inclusion criteria to participate in this study and attended the Antenatal Clinic at CWMH between 1st May 2014 to 31st December 2015. A purposive sampling was used to select the participants. The study participants were informed about the objectives of the study using an information sheet and a consent form was completed before any data was collected. A self-administrated questionnaire was used to collect the data. Data were analyzed using descriptive analytical techniques. Statistical significance was declared when $p<0.05$.

Results: The mean age of participants was 26.63 (SD=5.5). The mean BMI was 29.47 (SD=6.62). The results of the study revealed that more than two thirds of participants (77.06%) were either overweight or obese. Approximately one-fifth (20.78%) were categorized as normal weight and only 2.14% of participants were classified as underweight. Proportionately more i-Taukei was overweight or obese (82.5%) than Indian-Fijians (55.6%). Participants' age ($r=0.24$, $p=0.001$) was positively correlated with BMI status.

Conclusions: This study has highlighted overweight and obesity as an urgent health issue among pregnant women in Fiji. It strongly recommended that further interventional studies should be conducted among pregnant women in Fiji to evaluate the success or otherwise of programs that play a vital role in reducing the prevalence rates of overweight and obesity.

Keywords: overweight, obesity, prevalence, pregnant women, fiji

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Introduction

Overweight and obesity, as excess body fat accumulation in adipose tissue, and typically estimated by calculating an individual's body mass index (BMI) score[1] has become recognized as global pandemic**.** Among different determinants of overweight and obesity, environmental factors seem to be more significant in the rapid rise of population obesity levels.[2] Overweight and obesity are evident due to the rise in population size as a result of aging, urbanization and changes in lifestyle including increases in total calorie intake and reductions in physical activity. All of these factors can contribute to an epidemic of overweight and obesity in developing regions.[3] It was estimated in 2005 that 937million were overweight and 396million were obese and it was estimated that it will keep on increasing to 2.16billion and 1.12billion respectively by 2030.[4] The World Health Organization (WHO) recognizes obesity as a global health issue with one billion adults worldwide identified as overweight and an additional 300million obese (WHO, 2000). This contributes in a major way to numerous chronic conditions such as metabolic syndrome, diabetes, and cardiovascular diseases, and some forms of cancer,[5,6] along with high disability and premature mortality.[7] Other potential consequences of overweight and obesity are sleeping problems, depression, decreased self-esteem, social exclusion, and stigmatization and teasing.[8,9] The burden of obesity related disease can increase the costs to the community in many ways such as an impact on health care services, particularly in low to middle income countries such as Fiji. For example, in 2002, it is estimated that approximately 39% of all treatment costs as well as 82% of all deaths were related to diet-related non-communicable diseases (NCDs).[10,11]

Changes in Pacific countries' nutrition status, a rapid food transition from subsistence crops to imported foods has affected the health status of Pacific People. The change in food transition is amalgamated with the changes in lifestyle such as more sedentary behaviors associated with urban lifestyles.[12,13] South Pacific countries have the highest rates of obesity around the world.[14] In New Zealand, for instance, it is estimated that around two thirds of Pacific adults and one third of Pacific children have an almost three-fold higher risk

of being obese compared to the general population (26.5% for adults; 8.3% for children).[15,16] In Fiji, epidemiological survey data suggest that the prevalence of overweight has increased in children between 1993 and 2004.[17] Approximately 75% of the population in many of Pacific countries including Nauru, Samoa, American Samoa, Cook Islands, Tonga and French Polynesia are now experiencing adult overweight/obesity.[18,19] As in many societies, in Fiji one now finds that obesity is very prevalent in the female population when compared to the male population. As pregnant women, will always be considered as a high-risk section of the population, it is critical to reduce obesity among them to arrest the development of non-communicable diseases which can affect both the women and their children in the future. With increasing overweight and obesity, there is an increased risk of gestational diabetes, pre-eclampsia, and sleep apnea in the mother. For the growing fetus, overweight and obesity increases the risk of birth defects, pre-term birth, and Stillbirth. Due to lack of previous similar study in Fiji, this study aimed to assess the prevalence of overweight and obesity among pregnant women in Fiji and to examine their association with the participants' demographic characteristic.

Materials and methods

This was a descriptive, cross-sectional study which was conducted between 1st May 2014 and 31st December 2015. All Fijian pregnant mothers attending the Antenatal Clinic for their first booking visit at the Colonial War Memorial Hospital (CWMH) Antenatal Clinic in Suva, self-identified as Fijian, and were willing to participate in the study were included in this study. Those who came for the return visit (second visit) were excluded. Fiji population includes three main ethnicities, Fijian of i-Taukei decent, Fijian Indian decent, and Fijian of other decent. A purposive sampling was used and 2203 mothers who met the inclusion criteria participated in this study. Weight and height of all participants were measured using standardized scales. Their body mass index (BMI) was calculated as weight in kilograms divided by the square of height in meters. We used the WHO scale to categorize participants Body Mass Index (BMI). The BMI categorizes were defined as less than 18.5 (underweight); 18.5 to 24.9-(normal weight); 25 to 29.9 (overweight) and 30 and over (obese).[20,21] All the data were analyzed using SPSS version 22 and descriptive statistical analysis. For continuous variables t-tests were applied and for the categorical variables a Chi-square test was used. A correlation test was applied to measure the correlation between continuous socio-demographic factors and the participants overweight and obesity status as BMI. Statistical significance was declared when $P<0.05$. Before asking the participants to answer the socio-demographic questionnaire a letter of information was provided and informed consent was given. The data for all participants were de-identified and confidentiality was maintained at all times. This study was approved the Ethics Committee of the Fiji National University and the Fiji National Ethics and Research Committee.

Results

The results of the study showed that the mean age of participants was 26.6 (SD=5.5). More than one third of participants (36.3%) were 20-24years old and 2.2% of the respondents were aged 40 and over. More than two thirds of participants (69.2%) were married with an additional 18.7% in a De facto relationship and 11.1% indicating that they were never married. The majority of participants (48.4%) reported some level of tertiary education and only two participants were never educated. The majority of participants were Fijians (i-Taukei) (71.5%) and a further 21.3% were Fijian (Indian decent). Approximately one-third of participants (32.9%) were employed and 7.8% were not employed (Table 1). Nearly half of the women reported being involved in domestic duties.

Table 1 Demographic characteristics of participants

Factor	Frequency	Percentage
Age		
15-19	127	6
20-24	768	36.4
25-29	615	29.2
30-34	387	18.4
35-39	164	7.8
40 and over	47	2.2
Marital Status		
Married	1463	69.3
Divorced	15	0.7
Widowed	2	0.1
Never Married	234	11.1
De Facto	396	18.8
Education Level		
Primary	79	3.7
Secondary	1007	47.7
Tertiary	1024	48.5
No education	2	0.1
Ethnicity		
Fijian (i-Taukei)	1512	71.6
Fijian (Indian)	451	21.4
Fijian (other decent)	148	7.2
Employment status		
Employed	695	32.9
Unemployed	160	7.6
Self-employed	35	1.7
Student	174	8.2
Domestic Duties	1049	49.6

As Table 2 illustrates, 39.5% of the participants reported that their age of first sexual intercourse was between 15 and 19years, and 13(0.64%) had sexual experience at 13years old. The majority of participants (64.9%) reported a previous pregnancy and of this subgroup 64.5% had 1 or 2 children. While 2.24% of participants didn't have any child, 88 (6.8%) had more than 5 children. The mean of weight of the population of women was 74.7kg (SD=17.5) and height was 1.61meters (SD=0.08). The mean of BMI was 29.47 (SD=6.62). While only 2.14% of participants were underweight, 20.78% were categorized as normal weight. The results of the study revealed that more than two thirds of participants (77.06%) were overweight or obese (Table 3). Nearly half of the iTaukei participants were obese (48.8%) while 25.9% of Indian-Fijian was obese. In addition, 33.7% of iTaukei were overweight while 29.70% of Indian-Fijian was overweight. This difference was statistically significant. ($p=0.001$). The result of correlation test showed that participants' age ($r=0.24$, $p=0.001$) was correlated with participants BMI status. Those who were older had more chance to be overweight and obese (Table 4).

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Table 2 Reproduction characteristics of participants

Factor	Frequency	Percentage
Age of first sexual intercourse		
Under 15	13	0.6
15-19	796	39.5
20-24	1022	50.7
25-29	173	8.6
30 and Over	13	0.6
Previous pregnancy		
Yes	1352	65
No	729	35
Number of live children		
0	29	2.24
1-2	835	64.5
3-4	324	25.1
5 and over	88	6.8

Table 3 BMI and diabetes status of the participants

Factor	Frequency	Percentage
BMI		
Underweight	42	2.14
Normal	406	20.78
Overweight	636	32.54
Obese	870	44.52
Diabetes status		
Yes	6	0.29
No	2011	98.48
Don't know	25	1.22

Table 4 Frequency of BMI in different ethnic groups

Ethnic Groups	BMI Status				
	Underweight	Normal	Overweight	Obese	Row Total
i-Taukei	10(0.7%)	234(16.7%)	471(33.7%)	682(48.8%)	1397
Fijian (Indian Descent)	32(7.5%)	158(36.9%)	127(29.7%)	111(25.9%)	428
Fijian (Other Descent)	0(0.0%)	3(6.4%)	10(21.3%)	34(72.3%)	47

Discussion

This study was conducted to investigate the prevalence of overweight and obesity among pregnant women attending at the Colonial War Memorial Hospital (CWMH) Antenatal Clinic, Suva, Fiji Islands. The results of the study showed that around 77% of participants were either overweight or obese. The results also showed that the BMI status of participants was significantly associated with their age. The increase in the prevalence of overweight and obesity during the last three decades is quite alarming worldwide but is of particular concern in low and low middle-income countries.[22] Fiji, as a Pacific country, experiences quite different prevalence's of overweight and obesity among the different ethnic groups. A report indicated that, in 2002, 29% of Fijians aged 15 to 64years were overweight and 18% were obese. The report also highlighted a significant difference in overweight and obesity prevalence in different ethnic groups, and between genders, as more Indigenous Fijian were obese compared with Indo-Fijian, and females were more obese than males.[23,24] A study in 2004 indicated a high prevalence of overweight and obesity in ethnic Fijian women (76%)[11] and a subsequent report suggested that the high prevalence may be addressed through controlling modifiable behavioral risk factors thus highlighting the importance of preventive strategies that can increase the health of Fijians.[25] Obesity is prevalent amongst pacific island youths aged 13-16years, from Fiji, Kiribati, Samoa, The Solomon Islands, Tonga and Vanuatu. The overweight/obesity statistics ranges from 12% to 58.7% with an average of 23.4%.[26] The prevalence rate of obesity in the pacific islanders still appears to increase every year, as there is no obvious way of preventing it. Unfortunately, Pacific people (especially Micronesians and Polynesians) don't appear to be concerned about this issue because it seems normal to them.[27] For a number of reasons, women have more chance to be obese compared with men as they usually stay home and look after the family while men work. They are also more likely to be inactive. On the other hand, age is also seen as a factor because hormonal changes cause a person to have less active lifestyle hence, increasing the risk of obesity.[28]

As a culture related behavior, it is well understood now that Pacific women and men prefer larger ideal body sizes.[29,30] Moreover, most Pacific Island countries view big as beautiful and in order for one to fit in, one has to be big, more specifically, one has to be obese. In other words, they view obesity as being culturally acceptable and therefore they feel that they need to have these certain characteristics in order to be accepted by the society that they live in. These views or beliefs in our Pacific Island countries one way or the other encourage the people to be big, thus, becoming obese and unhealthy.[31] Two key reasons for increasing the prevalence of overweight and obesity are increased energy intake and decreased energy expenditure. Increased energy consumption has been through the increased availability and consumption of energy dense foods[10] while decreased energy expenditure has occurred through decreasing physical activity as a result of easier accessibility to motorized transport, low request for physical activity for subsistence and household management; and well developed sedentary habits.[32,33] To prevent overweight and obesity a number of activities are suggested. Changing eating behaviors from unhealthy food towards healthy food has been recommended by WHO which encourages people to use a diet low in fat, sugar and salt, and high in fruit and vegetables.[34] It is obvious that poor diet habits such as low intake of fruit and vegetables and high consumption of energy-dense food and drinks is contributing to obesity globally.[35] It is well documented that most of Pacific Islanders such as Fijians are experiencing high intake of highly processed food, high fat, salt and

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sugary foods, while they have decreased their consumption of fruit and vegetables.[23]

Using different approaches can support communities to address the problem of overweight and obesity. For example, an ecological approach, which focuses on individual, social and built environments, and policies,[36] increases the potential of prevention activities to address serious upstream determinants of obesity-related behaviors, to affect more people and to have a long-term, sustainable influence.[37] Promoting healthy lifestyle which prevents overweight and obesity needs to be developed through primary prevention programs to reduce key risk factors before chronic disease rates reach overwhelming levels. To achieve this objective, it is essential to educate people and increase their knowledge about healthy food consumption. In a study conducted by Malcolm et al.,[38] most people had low levels of knowledge about the nutritional value of different classes of foods and the author suggested prioritizing nutrition education.[38] Additionally, the role of inactivity and sedentary lifestyle on BMI appear to be most documented among overweight and obese people,[39] so that encouraging people to be more active may reduce the risk of obesity.[40] This study is a unique study which has been conducted among pregnant women in Fiji Islands to understand the prevalence of overweight and obesity amongst them in 2015. This cross-sectional study may have some limitations. The data were collected based on a self-reporting questionnaire so it may affect the reliability of the study. But for measurements such as height and weight and simple measures such as age and marital status the reliability and validity should be high. As the sampling method was a purposive sampling we were not able to measure the characteristics of non-respondents.

Conclusion

In conclusion, obesity is a critical medical and social issue in the modern world. Obesity has no specific cause or cure but is preventable. Dietary control and physical exercise are instrumental in managing the condition. A broad strategy that encompasses a wide range of health problems, includes obesity, would produce synergies among people, communities and country they represent. Such a strategy, including modifying human behavior, improving the health system, educating the stake holders and changing the laws and regulations so that everyone is more capable of taking action and improving the well- being of Pacific Islanders and their future. Moreover, obesity can be addressed through a range of health promotion programs. Health promotion is any effort that inspires people to engage in healthy behaviors such as eating a healthy diet and maintaining a healthy weight. Medical and health practitioners might be more involved in health promotion by educating people about appropriate health behaviors and how to improve their health. Also, the community, and government health policy creators and mass media could become more involved in health promotion by developing suitable legislation and educational programs and appropriate communicative messages correspondingly to different societies.

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Conflict of interest

Author declares that there is no conflict of interest.

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