

Original Research

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Survey of healthcare professionals in Samoa to evaluate their knowledge, attitude, and practice on managing obesity

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ABSTRACT

Introduction: The level of obesity among the Samoan adult population has doubled since 1978 for both men and women and is a serious public health issue.

Aim: To determine the knowledge, attitude and practice (KAP) with regard to obesity among Samoan health professionals.

Methods: Interview front-line health workers in ten rural and one urban health facility using a developed questionnaire and observation of clinical practice. The sample comprised 130 (68%) registered nurses, 45 (24%) enrolled nurses and 15 (8%) doctors.

Findings: Most participants were well informed about the relation between obesity and non-communicable disease and were aware of the prevalence of obesity and related health risks. Contradictory advice was often given to patients about the maintenance of a healthy body weight

Discussion: There is a need to educate health workers on evidence-based weight management pathways and to develop patient care plans so overweight and obese persons attending health service facilities are informed effectively on how to lose weight.

Keywords: obesity, healthcare professions, knowledge, attitudes, practices, Samoa

BACKGROUND

Obesity refers to an abnormal or excessive fat accumulation in adipose tissue that may impair health.¹ According to the World Health Organization (WHO), obesity can be quantitatively measured using an anthropometric measurement called the body mass index (BMI), a simple index calculated by person's weight in kilograms divided by the square of the person's height in meters (kg/m²).² Generally, an adult who has a BMI greater than or equal to 30 kg/m² is considered obese. Risk factors for obesity include sedentary lifestyles and exceeding the caloric needs of the body.¹ Obesity is a serious public health concern as it is a risk factor for numerous health conditions such as, but not limited to, diabetes, stroke, cancer, and heart attack.³ Type 2 diabetes is 10 times as common in people with a body mass index (BMI) of 30 or more.⁴ Levels of obesity among the Samoan adult population have doubled since 1978 for both men and women.⁵ About 56 % of the total adult population in Samoa fall into

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categories of obesity ranking from overweight to morbidly obese.¹

Samoa is a small independent nation located in the South Pacific, with a population of approximately 200,000 people, almost all residing on its two major islands.⁶ The health

sector faces staffing shortages, particularly in specialty fields. The ratio of physicians to 1000 persons in the population was estimated at 0.344 in 2016 and the ratio of nurses and midwives to 1000 persons in the population was estimated at 0.344 in 2016.⁷ The prevalence of diabetes is high, affecting approximately 31.0% of adult women and 26.9% of adult men.⁸

The epidemiological link between obesity related chronic health conditions such as type-2 diabetes mellitus, heart diseases, strokes, respiratory, kidney diseases, and obstructive sleep apnoea and obesity is significant.⁹ For instance, type 2 diabetes develops following peripheral insulin resistance associated to obesity, and diabetes is strongly associated with death from cardiovascular-diseases (CVDs) and cancer. Moreover, a combination of obesity and diabetes are risk factors of cancer development.¹⁰

For the most part public health strategies have been aimed at changing individual behavior.¹⁵ However, many studies and WHO advisory papers have shown the advice to eat less calories and exercise more, is of limited effectiveness because of structural factors related to food systems and the availability, price and appeal of different foods that influence behavior.⁹ Samoa is no exception and obesity rates continue to rise over the past four decades with the current rate of 56% among adults.¹⁷ Rising rates of obesity will be mirrored by rising social and health costs of increasing prevalence of diabetes, heart disease and stroke and cancer.¹⁷

As pointed out by Lameko and Schoeffel, in Samoa most of our role models, such as senior officials, church ministers, high ranking chiefs and members of parliament visibly tend to obesity.¹⁵ But what of our health professionals, those who have the most frequent interaction with members of the public in the delivery of health services and health messages? To what extent do they understand why obesity is health risk? What are their beliefs about the social contexts and causes of obesity? Do they counsel their patients on the risks of obesity? This study was designed to find out.

METHODS

Questionnaire development

A knowledge-attitude-practice (KAP) survey was used to answer the above questions, being a well-established method for assessing the effectiveness of health education activities aiming at encouraging behavior change.¹⁸ Knowledge can be a major factor in moving towards a healthier lifestyle¹⁹ but KAP studies

may reveal considerable gaps between what is known and said, and what is done, which can be useful information for evaluating and designing public health programmes.²⁰ Generally, an improvement in knowledge among a specific population should lead to a modification of attitudes and behavior, hence, according to several studies, reducing the burden of disease and promoting a healthy lifestyle.²¹

The KAP questionnaire was developed by the authors, with reference to the work by Reethesh et al,²² with all questions except the length of service using a Likert Scale or set options for ease of completion. After the initial design, the survey was translated into Samoan by the lead author, who is a bilingual Samoan/English speaker. The draft survey was reviewed by four nurses and one medical doctor at the National University of Samoa using the “think aloud methodology”²³ with specific focus on the clarity, applicability and translation of questions. The recommended revisions were submitted to the lead author for final amendment of the survey instrument. The finalized bilingual survey included five demographic questions, 11 knowledge questions, 13 attitude questions and four practice questions in Samoan and English. A bilingual information and consent sheet was generated as well. Participant’s names were not recorded. The research was granted ethics approval from the National University of Samoa Research and Ethics Committee and the Ministry of Health Research and Ethics Committee. Letters of request were sent to all health facilities in Upolu and Savaii, followed by phone calls to seek permission to come to the facility to invite enrolled nurses, nurses and doctors to complete the survey. A convenience sampling method was used. One health facility which was being used for isolation of incoming airline passengers refused the request.

The survey, and consent sheets were entered into Jotsform on five tablets, an application which would allow for data to be collected without access to the internet. Upon connection to the Internet, the completed surveys were uploaded into the account. Printed forms were made available to participants who did not wish to use the tablet; those completed on hard copy forms were entered manually into Jotsform at the end of each data collection day and manually rechecked on the Jotsform for accuracy.

Data collection

This was performed in June 2021 by four faculty members of the School of Nursing and three nursing students. The data collection team practiced using the tablets and entering data prior to data collection. At each health facility, the

team was assigned a room or space to sit to administer the survey. Interested health workers were provided the information sheet and any questions about the survey were answered. The option was provided to complete the survey on the tablet or on the printed survey, with each option the participant completed the consent form prior to starting the survey. Upon completion of the survey which took between 15 and 25 minutes, the participants were provided WST \$10 honorarium. The Jotform data was downloaded in an excel spreadsheet and pdf format for records. The excel spread sheet was uploaded to SPSS (Statistical Package for the Social Sciences, ed. May 2021) for analysis.

Responses were scored accordingly. Under the knowledge questions, one question was removed from analysis, which asked the participant's opinion of their BMI. As the BMI was not measured for participants, this response would not be verified. The other eleven questions were assigned a score of 1 for the correct answer, and a score of 0 for not sure or the incorrect answer. The scores were then totaled; the highest possible score was 11. For responses for opinion questions, 2 was the score for the most positive attitude, 1 for moderately positive attitude, 0 for neither agree nor disagree, and for negative attitudes. The scores were then totaled.

The sample comprised 130 (68%) registered nurses, 45 (24%) enrolled nurses and 15 (8%) doctors. Of the 191 survey forms completed, 99 were completed on the tablet, 92 were completed on the hard copy. One survey was not included in analysis as it was completed by a category of staff not in the target group. Descriptive analysis was done for the individual questions provided in the survey, as well the aggregate scores. Pearson's correlation was done to evaluate the significance of the relationship between specific variables.

RESULTS

Characteristics of the Sample

The median age of the 190 health care workers interviewed was 35 years, with the majority (61.6 %) between the age groups of 20 to 30 years. 7.9 % were medical doctors; 68.4 % were registered nurses, and 23.7 % were enrolled nurses. Seventy one percent were females and 29 % were male, and 55 % and 45 % were working in a health facility on Upolu and Savaii Island, respectively (**Table 1**).

Obesity and Related Knowledge

Table 2 shows the responses (N (%)) to the knowledge section of the KAP survey. Ninety four percent of respondents correctly identified BMI

as a measure of obesity. Over 90% of respondents correctly identified the contributing behavioral risk factors for obesity, overeating (93%), regular consumption of food and drinks that were high in sugar, fat and flour (96%) and insufficient physical activity (96%). Over 90% of respondents correctly identified obesity as a risk factor for the development of high blood pressure (93%) and diabetes (91%). However, a larger proportion of the participants disagreed on whether obesity is inherited or not.

Table 1: Characteristics of the Sample

Element	Frequency	Percent
Gender		
Male	55	28.9
Female	135	71.1
Age Group		
20 – 30 years	117	61.6
31 – 40 years	32	16.8
41 – 50 years	16	8.4
– 60 years	21	11.1
> 60 years	3	1.6
Occupation		
Medical Doctor	15	7.9
Registered Nurse	130	68.4
Enrolled Nurse	45	23.7
Geographical Location of the Health facility		
Savaii Island	5	
Upolu Island - Rural	5	
Upolu Island - Urban	1	
Valid Responses per Health Facility		
Savaii Island	86	45
Upolu Island - Rural	65	34
Upolu Island - Urban	40	21

Whilst the majority agreed that an obese child is more likely to become an obese adult (62%), a

significant proportion, 15% and 23% were either not sure or disagree, respectively. It is also interesting to note that a significant proportion (37%) of the participants disagreed with the perception that it is normal to gain weight, as one gets older.

become an obese adult			
There are more obese people in Samoa now than in the past	182 (95.8)	8 (4.2)	-

Table 2: Participant's Knowledge

Knowledge Questions	Responses (N (%))		
	Agree	Not sure	Disagree
Items			
BMI is a measure of obesity	180 (94.7)	6 (3.2)	2(1.1)
It is normal to gain weight as one gets older	70 (36.8)	27 (14.2)	93 (48.9)
Men are equally as likely as women to become obese	123 (64.7)	27 (14.2)	55 (28.9)
A person who is obese has higher risk of high blood pressure	176 (92.6)	10 (5.3)	4 (2.1)
A person who is obese has a higher risk of developing diabetes	173 (91.1)	8 (4.2)	9 (4.7)
Obesity is caused by overeating	176 (92.6)	2 (1.1)	12 (6.3)
Obesity can be caused by regular consuming food and drinks that are high in sugar, fat, flour	183 (96.3)	3 (1.6)	4 (2.1)
Obesity can be caused by people not getting enough physical activities	182 (95.8)	2 (1.1)	6 (3.2)
Among Samoa people, obesity may be inherited	77 (40.5)	41 (21.6)	72 (37.9)
An obese child is more likely to	118 (62.1)	28 (14.7)	44 (23.2)

Eighty three percent (157) of participants had a knowledge score of 8 or more indicating that there was a high level of knowledge about obesity. The average knowledge score was 8.5.

Attitudes to obesity

The results show that the majority of the participants somewhat disagree (13%) and strongly disagree (64%), with an accumulative percent of 77% disagreeing with the proposition that being fat is considered a sign of good health in Samoa. The question connecting obesity and spiritual life revealed that about 72% of participants disagreed with the assumption that as long as people have spiritual health, no one should be worried too much about the size of their bodies. About 77% of participants also somewhat- and strongly-disagree that obesity cannot be reversed. The majority strongly agreed and somewhat agreed that a patient is solely responsible for their weight gain, and that a patient who does not lose weight on a health worker's instructions is lazy. Furthermore, most participants agreed that: (i) health workers should try to have healthy BMI to set examples to the community, (ii) health workers need more training on how to advise patients on the relationship between obesity and its impact on health, and (iii) people in the community need more information about the relationship between obesity and its impact on health. Interestingly, the same proportion of participants strongly agreed or strongly disagreed about whether it is polite to mention a person's weight in Samoa. On the question of whether Samoan people have easy access to healthy food, about 80% of participants agreed that it is easy nowadays to buy healthy food in Samoa. However, the majority of the participants agreed that it could be hard for a person to choose what they eat in a shared household in the Samoan extended family-life style. The majority agreed that the traditional healers should advise their patients on the risk of obesity to good health. Moreover, the majority of participants believed that having a normal weight (BMI) was considered a sign of good health in Samoa.

Table 3 show the responses to the attitude statements in the KAP survey. Although attitude

statements have no inherently correct response, the responses to the statements provide insight on internal biases and beliefs that may affect patient care. The cultural environment within which the KAP survey was administered influenced the responses to attitude statements. 77% of respondents either somewhat disagreed or strongly disagreed that being fat is a sign of good health in Samoa, 16% of respondents either strongly agreed or somewhat agreed that obesity cannot be reversed, 90% of respondents either strongly agreed or somewhat agreed that a patient is solely responsible for their weight gain, 80% of respondents strongly agreed or somewhat agreed that a patient who does not lose weight on a health worker's instruction is lazy, 66% either strongly agreed or somewhat agreed that it was easy to buy healthy food, 65% either strongly agreed or somewhat agreed that it is hard for a person to choose what they eat in a shared household.

Claims concerning Practice

Table 4 is a Pearson's correlation two-tailed test was run between pairs of length of service, knowledge score, attitude scores and practice scores. The relationships between the length of service and the knowledge score, the length of service and practice score, the knowledge score and attitude score were statistically significant.

Table summarizes the frequency of health practices with patients; discussing the importance of maintaining good health, explaining obesity as a risk factor for other illnesses, providing handouts about maintaining healthy weight and having enough time to advise patients about the relationship of obesity to their overall health. The most commonly delivered practice was to explain that obesity is a risk factors for other illness (79% always and 20% sometimes), followed by discussion with patients the importance of maintaining good health (67% always and 31% sometimes). The least delivered practice was the distribution of informational material about maintaining a healthy weight (41% always and 15% never). Only about half of all respondents indicated they always had enough time to advise their patients about obesity and health.

DISCUSSION

Knowledge

The results indicated that most health workers understand that BMI is a means of assessing overweight and obesity and know that a person

who is obese has a higher risk of developing both Type2 diabetes and high blood pressure than a person with normal BMI. The participant's knowledge about the causes of obesity showed that the majority understood that overeating or regular consumption of food and drinks that are high in sugar, fat and flour in addition to sedentary lifestyles, contribute to the development of obesity.

Most participants also agreed that there were more overweight and obese people in Samoa nowadays than in the past. However, most participants believed that an obese child is more likely to become an obese adult and half of the participants also agreed that it is normal to gain weight as one gets older. Less than half of respondents agreed that obesity could be inherited, the lack of knowledge about the role of genetics in obesity was also noted in the study by Zelenyte et al.²⁴ This view has to be challenged in health information promotion and awareness programs because it is not necessarily true in the sense that it is 'natural'. These health workers understood the upstream causes of obesity and prevention steps; and consider physical inactivity to be one of the main causes of obesity. This belief is reflected in the common notion among Samoan people and widespread promotion of the idea that Zumba dancing, sports and exercise at a gym were means to overcome obesity, whereas research cited in *The Guardian Newspaper* suggests that while exercise is a good way to maintain a healthy weight, it has limited value for weight loss compared to dietary change. More than half of the workers were overweight and of those 42% were obese.²⁵ This finding contradicts the optimistic hypothesis that knowledge usually influences behavior.

Attitudes of participants

Attitudes of health workers have the potential to impact the level of care provided and the quality of the interaction between the health provider and patient. In this survey, 90% of respondents either strongly agreed or somewhat agreed that a patient is solely responsible for their weight gain, and 80% strongly agreed or somewhat agreed that a patient who does not lose weight on a health worker's instruction is lazy. The responses to these statements contradict the findings of Hardin "that health practitioners in Samoa avoid blaming patients and recognize culture as the barrier to health care."²⁶ Both statements imply the patient is individually responsible and not influenced by environmental, cultural and financial factors. There was however a recognition in the majority

Table 3: Responses to attitude statements

Statements	Strongly agree (N (%))	Somewhat Agree (N (%))	Neither agree or disagree (N (%))	Somewhat disagree (N (%))	Strongly disagree (N (%))
Being fat is considered a sign of good health in Samoa	14 (7.4)	15 (7.9)	14 (7.4)	25 (13.2)	122 (64.2)
Obesity cannot be reversed	20 (10.5)	10 (5.3)	13 (6.8)	38 (20)	109 (57.4)
A patient is solely responsible for their weight gain	155 (81.6)	18 (9.5)	4 (2.1)	5 (2.6)	8 (4.2)
A patient who does not lose weight on a health worker instruction is lazy	124 (65.3)	28 (14.7)	11 (5.8)	14 (7.4)	13 (6.8)
It is easy to buy healthy food	101 (53.2)	25 (13.2)	14 (7.4)	22 (11.6)	28 (14.7)
As long as people have spiritual health, we should not worry too much about the size of our bodies	21 (11.1)	14 (7.4)	17 (8.9)	42 (22.1)	94 (49.5)
It is hard for a person to choose what they eat in a shared household	81 (42.6)	43 (22.6)	14 (7.4)	2 (11.6)	28 (14.7)
Health workers should try to have healthy BMI to set examples to the community	145 (76.3)	21 (11.1)	3 (1.6)	8 (4.2)	11 (5.8)
It is not polite to mention a person's weight in Samoa	46 (24.2)	28 (14.7)	21 (11.1)	47 (24.7)	46 (24.2)
Health workers need more training on how to advise patients on the relationship between obesity and its impact on health	160 (84.2)	16 (8.4)	6 (3.2)	3 (1.6)	3 (1.6)
People in the community need more information about the relationship between obesity and its impacts on health	159 (83.7)	21 (11.1)	8(2.6)	2(1.1)	2 (1.1)
Traditional healers should advise their patients on the risk of obesity to good health	121 (63.7)	37 (19.5)	10 (5.3)	11 (5.8)	10 (5.3)
Being a "normal" weight is considered a sign of good health in Samoa	101 (53.2)	46 (24.2)	23 (12.1)	13(6.8)	6 (3.2)

Table 4: Pearson's Correlation Results

	Correlations	Length of Service	Knowledge Score	Attitude Score	Practice Score
Length of Service	Pearson Correlation	1	.172*	-0.014	.146*
	Sig. (2-tailed)		0.018	0.850	0.047
	N	187	187	187	187
Knowledge Score	Pearson Correlation	.172*	1	.166*	0.070
	Sig. (2-tailed)	0.018		0.022	0.339
	N	187	190	190	190
Attitude Score	Pearson Correlation	-0.014	.166*	1	-0.098
	Sig. (2-tailed)	0.850	0.022		0.179
	N	187	190	190	190
Practice Score	Pearson Correlation	.146*	0.070	-0.098	1
	Sig. (2-tailed)	0.047	0.339	0.179	
	N	187	190	190	190
*. Correlation is significant at the 0.05 level (2-tailed).					

Table 5: Response to Practice Statements

Practice Statements	Always (N (%))	Sometimes (N (%))	Never (N (%))
I discuss with my patients the importance of maintaining a good health	128 (67.4)	59 (31.1)	2 (1.1)
I explain to patients that obesity is a risk factor for other illnesses	150 (78.9)	38 (20)	1 (0.5)
I give patients handout and other materials about the importance of maintaining a healthy weight	77 (40.5)	82 (43.2)	29 (15.3)
I have enough time to advise my patients about obesity and health	96 (50.5)	89 (46.8)	4 (2.1)

of health workers (65%) that it was difficult for a person to choose what they eat in a shared household, which is common in Samoan culture as many live in extended family units. Wakefield and Feo wrote when "nurses and general practitioners perceive obesity to be purely a preventable condition, this perception results in a belief that the patients' unsuccessful weight loss is related to poor motivation and compliance with recommendations."²⁷

There appear to be limited situational awareness among a majority (66%) of the health workers as it related to the ease of buying healthy food. In a 2018 nationally representative report, an estimated 27% of Samoa's population was experiencing moderate to severe food insecurity and 19% of the population lived below the poverty line.²⁸ The financial challenges and food insecurity issues were again represented in a rapid online survey conducted in 2020 by the United National in Samoa, where 46% of the 286 households who completed the survey shared that they were eating cheaper and less nutritious food and 57% were eating less food overall and two thirds had a reduction in income.²⁹

It is believed that a positive attitude helped to improve the level of knowledge and produce appropriate behavior. That was good attitude was the foundation of good behavior. In this study the majority of participants rejected the idea that being fat or obese is a sign of good

health. The result challenges the myth that Samoans think that “fatness” is a sign of prosperity and higher status within the Samoan community.

Moreover, the majority of participants also disagreed with the statement that no one should worry about their health status for as long as their spiritual life is all right. This fact rejects the myth that being fat and spiritual is a sign of good health and of higher status in Samoa. Dr Augustine Kramer noted that early Samoa has a stratified social system and that men of higher ranks in the village and district setting often were of a larger and “nobler” build (bodies) than the common people, which attributed to the better care and nutrition they received with privileged access to the most highly prized food.³⁰ This is in contrast to the contemporary Western idealization of slim bodies and their association with high social status. Perhaps this is the reason behind the indifference in their attitudes towards the question of whether it is polite to mention a person’s weight in Samoa. It could also indicate perhaps the health workers were not comfortable or feel embarrassed to talk about their own body weight, given that more than half of them were overweight. It has been observed that church ministers and their wives were generally overweight and obese, and therefore were the modern “sacred chiefs” of Samoa; their adiposity shows that they were well fed by the church members.³¹ Nevertheless, it is an encouraging sign and an opportunity for future policies to note that the majority of participants rejected the statement that obesity cannot be reversed. This suggests that there is an opportunity for health professionals to encourage patients to try and eat fresh local food, reduce or eliminate sugar from their diet and do some physical activities on a daily basis.

The majority believed that health workers should have normal BMI and set good examples for the members of the community, which they serve. The respondents regarded getting more health information about obesity prevention to the health workers and community members as a high priority. Interestingly, the participants mostly think that it was easy to buy ‘healthy food’ in Samoa, yet most of them were overweight and obese. This suggests that more research is needed on what health workers consider ‘healthy food’ to be. It reflects their positive attitude towards the food system in Samoa, and the ease of buying healthy local food, yet it is evident that most Samoan buy a lot of refined carbohydrate food in the form of bread and rice at prices that were usually lower than locally grown staple complex carbohydrate foods such as taro and breadfruit.³¹ At most times of the year vegetables

such as Chinese and white cabbage, beans, tomatoes and other vegetables were expensive in relation to the cash income of most Samoans and if consumed at all, were consumed in small quantities in soups.³² Furthermore most Samoans consume heavily sweetened drinks. It is likely that health workers were confused about the meaning of ‘healthy food’. Indeed, most participant agreed that “it is hard for a person to choose what they eat in a shared household”. Most Samoan families live together as extended families, where everyone share the same food; making it difficult to opt out, and eat something different. Hence if everyone is having a plate of fried chicken with white rice and drinking from the same pot of sugar sweetened beverage individuals may find it very difficult to avoid gaining weight or to lose weight once gained. Nonetheless the majority claimed that the patient is solely responsible for their weight gain and that overweight is a sign of being lazy. In fact, as Lameko argued the price of food and the structural, environmental and social factors in Samoa were more influential than personal choices.⁹

Practices claimed by participants

The knowledge the participant had about the relationship between body weight and health risk was not strongly translated into practice, although allowance must be made for the fact that health workers know this is something that they should be advising their patients about, whether they do it or not. Many participants agreed that they discuss with the issue with patients, but many also referred to lack of time and perhaps a lack of health education materials or understanding about when to give them to patients, and lack of time to counsel patients. It is significant in this regard that half expressed the attitude that “it is not polite to mention a person’s weight in Samoa”. Setting time aside during the busy clinical work to counsel patients about obesity and prevention is a challenge, perhaps requiring the need for health promotion officers to perform those tasks, while allowing the health workers to attend to clinical practice.

CONCLUSIONS

This KAP study provides a better understanding of health care workers attitude towards obesity and obesity related illnesses and risk factors and offers valuable information about the attitude levels and practical habits for prevention among the patients they encounter on a daily basis. It contradicted our hypothesis that knowledge, and a correct attitude based on knowledge, is likely to

influence behavior. At a practical level these results could be used to develop new policies and plan life-style counselling not only for health workers but also the patients they see. Research that focuses on health workers on the frontline may play a significant role in health promotion and setting examples and become health “champions” in the community. The present study reveals that most health workers in the study have sufficient knowledge about obesity and causes; and positive attitude towards the steps for prevention, but more than half of them are not role models for a healthy body weight. There is a need for the health workers to set a good example for the communities that they serve and to reduce the percentage of those with BMIs in the overweight and obese categories.

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