# Prevalence of non-communicable diseases risk factors among all the current medical students at the School of Medicine, National University of Samoa

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## Abstract

*The paper reports the results of an observational cross-sectional design of all 47 undergraduate medical students (Bachelor of Medicine and Bachelor of Surgery: MBBS) in Samoa. The study found that more than half of medical students at the National University of Samoa are obese, and 53.2 percent of the participants drink alcohol a few times on a weekly basis. There were, however, only a few students (6.4 percent) who are current tobacco smokers. This is of concern because the projections in 2013 by the World Health Organization (2013a) that non-communicable diseases (NCDs) would become leading causes of death has become a reality in Samoa. The top seven cases of death in the country are all attributed to non-communicable diseases. NCDs are responsible for 70 percent of deaths and cardiovascular diseases (CVDs) account for 37 percent of all deaths in this small island country. Tobacco use, poor diet and reliance on processed foods, physical inactivity and excessive alcohol use are the four most common modifiable risk factors for NCDs. Although structural and economic development factors such as poverty, urbanization, a transition from traditional foods to processed foods high in fat, sugar and salt, and sedentary lifestyles with more young people taking up tobacco smoking. Health workers must become role models if they are to tackle the circumstances in which rising prevalence of NCDs is damaging public health and indirectly placing high cost on Samoa's economy.*

**Key words:** Non-communicable diseases, Risk factors, Medical students, obesity

## Introduction

In the recent years, non-communicable diseases (NCDs), such as cardiovascular diseases (CVD), diabetes, chronic obstructive airway diseases (COAD), and cancers have become an emerging health issue in Samoa with increasing high prevalence rates (Ministry of Health, 2018; Ministry of Health 2017). The World Health Organization (WHO) estimates that by 2020, NCDs would account for 80 percent of the global burden of diseases, causing seven out of ten deaths in developing countries, about half of them premature deaths under the age of 70 years old (World Health Organization 2013b). Those projections in 2013 have become true, especially for Samoa, with the top seven cases of death within its main hospital in the city all attributed to NCDs (Ministry of Health 2017). That is NCDs are responsible for 70 percent of deaths and CVDs account for 37 percent of all deaths (WHO 2011). The structural and economic development factors are to blame to a certain extent, such as, social economic status, unplanned urbanization within countries, a move from traditional foods to processed foods high in fat, sugar and salt, a decrease in physical activity

with more sedentary lifestyles and more young people taking up tobacco smoking (Alwan 2011; Beaglehole et al 2011)

The median age in Samoa is 21 years according to the most recent population census and that more than 40 percent of the total population is less than 19 years old (Samoa Bureau of Statistics 2017). The Global School Survey conducted in 2010 among 13-15 year olds found that 43.4 percent of boys and 59.1 percent of girls in Samoa were overweight, 15.7 percent of boys and 22.3 percent of girls are obese (Fiji National University 2012).

Tobacco use, poor diet and reliance on processed foods, physical inactivity and excessive alcohol use are the four most common modifiable risk factors for NCDs. (Beaglehole et al 2011). In Samoa, according to the WHO Stepwise survey of these modifiable NCD risk factors among the adult population in 2003 and 2013, they found that the prevalence of tobacco smoking are 40 percent and 26 percent, respectively in those years; obesity had increased from 54.7 percent in 2003 to 55.8 percent in 2013; type 2 diabetes from 20.9 percent in 2003 to 22.1 percent in 2013 and hypertension from 28.7 percent in 2003 to 29 percent in 2013.

Moreover, the trends of obesity and diabetes, as noted by Lin et al (2017), saw the high prevalence of obesity over time among the Samoa people, as in 1978 which found 27.7 percent and 44.4 percent of males and female, respectively, were obese. As a result the prevalence of diabetes among Samoan adults dramatically increased from 1.2 percent in 1978 to 21 percent in 2013. Interestingly, adults surveyed reported a significant increase in physical activities in the 2012 survey compared to the earlier survey in 2002, but the overweight and obesity rates have both increased. The decreasing consumption of fruits and vegetables could explain this, but no data on the type of food consumed was collected or recorded. Subsequently, the top five causes of death in Samoa are all NCD related, namely heart attacks and strokes (34 percent), cancers (15 percent), chronic lung diseases (11 percent), and diabetes related diseases (9 percent). An estimated 81.75 percent of all deaths in Samoa can be attributed to NCDs (World Bank Data 2019), and according to the National Health Accounts Report for FY2014-2015, NCDs accounted for over 36.4 percent of total health care expenditure in Samoa. (Ministry of Finance 2014; CHIPSR 2017).

This study is based on the argument by Lameko et. al (2022) that to achieve affective communication at the primary health care level, medical practitioners in Samoa need to be role models who are conscious of NCD risk factors and make lifestyle choices to avoid them. Accordingly, the research examined and explored the extent to which risk factors of NCDs and obesity (smoking tobacco, nutrition status, alcohol consumption, physical activity) exist among the medical students at the National University of Samoa.

## Methodology

The study utilized an observational Cross-sectional design of all 47 undergraduate medical students (Bachelor of Medicine and Bachelor of Surgery: MBBS) at the National University of Samoa, on campus, between the month of March and June, 2022. The study was approved by the Samoa Ministry of Health and Health Research Committee. During the actual data collection, all the students signed a consent form to participate and the steps were explained to all the participants by the principal researcher. Then

followed by face to face interviews by the researchers and measuring the heights (cm) using a Stadiometer and the weights (kg) using a weighing scale.

## Results

### *Study Demographic*

About 4 (8.3 percent) of the participants were from the MBBS Year 1, 6 (12.5 percent) from MBBS Year 2, 11 (22.9 percent) MBBS Year 3, 13 (27.1 percent) from MBBS Year 4, 6 (12.5 percent) from MBBS year 5 and 8 (16.7 percent) from the final years, MBBS year 6. Besides the normal lecture and tutorial attendance students spent on average about 24 extra hours per week to study.

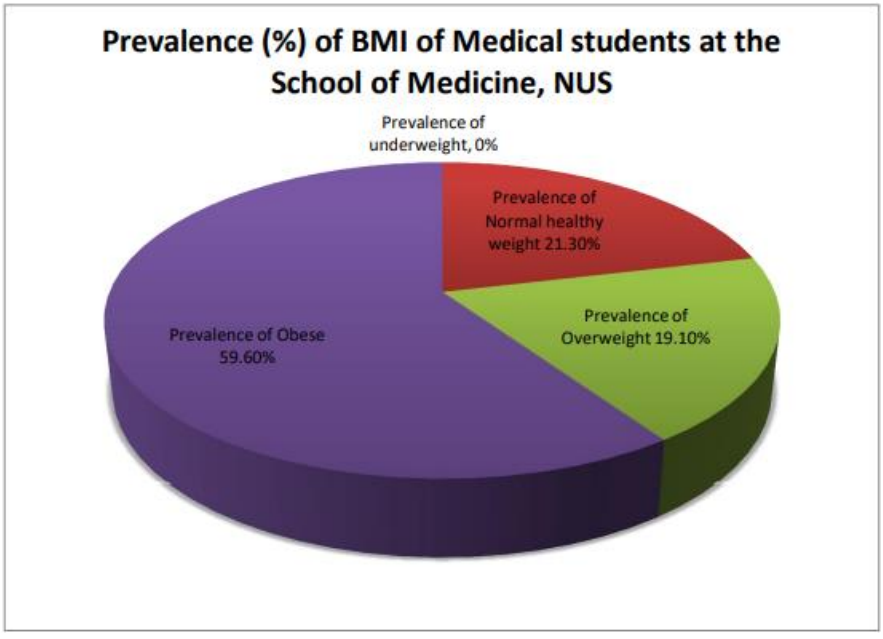
### *Behavioral Risk Factors:*

Of all the participants, only 6.4 percent (n=3) are current tobacco smokers while 93.6 percent (n=44) do not smoke tobacco. About 53.2 percent (n=25) of the participants drinks alcohol a few times on a weekly basis, against 46.8 percent (n=22) who do not consume alcohol. Almost 73 percent (n = 34) of all the students do some form of physical exercise per week compared to 27 percent (n = 13). About 95.7 percent (n = 45) eat fruit and 95 percent (n=45) eat vegetables at least twice per week. The table 1 and Figure 1 showed the body-mass index (BMI) of the students in the study.

**Table 1: Body Mass Index of Medical Students**

| BMI | Number | percent |
|---|---|---|
| BMI <18.5 kg/$m^2$ | 0 | 0 |
| BMI: 18.5 – 24.9 kg/$m^2$ | 10 | 21.3 |
| BMI: 25 – 29.9 kg/$m^2$ | 9 | 19.1 |
| BMI > 30 kg / $m^2$ | 28 | 59.6 |

**Figure 1: Body Mass Index of Medical Students**



Past Medical History Among the participants

Only about 2.1 percent (n=1) of the study population has a history of hypertension and on regular medications, and 6.4 percent (n=3) with a history of Rheumatic Heart Disease (RHD). The study also showed that 8.5 percent (n=4) of the population has a history of anaemia and bronchial asthma.

## Discussion and Conclusions

The current study found that almost 60 percent of the school are categorized as obese, and only a fraction of the whole sample population are within the healthy weight. Whilst a small number have started to smoke tobacco and a few have a history of hypertension, the result suggest that this cohort of medical students are at increased risk of developing diabetes and other end organ damage in the future, if they do not make lifestyle choices aiming to prevent further disease development. As future medical officers serving our population in the future, the findings are a wakeup call for the students and those working with patients to think about 'leading by example'. The findings are challenging, but Samoa's health professionals can work together as a team and strive towards a healthier future and a better tomorrow, by becoming 'champions' of NCD prevention.

## Recommendations

There is a need to teach medical students and practicing health professionals about the behavioural changes that are needed to avoid developing NCDs. The students need to try and quit drinking excessive alcohol and tobacco smoking, to exercise more, eat fewer calories, and eat healthy diet with more fresh local fruits and vegetables. They need to engage in daily physical activities that are appropriate for their physical abilities (e.g. walking, jogging, and yoga, going to the gym and playing sports). By learning to protect their own health they will be more likely to advocate these measures to their patients and demonstrate that they practice what they preach. Health policies and action plans, and regular monitoring of risk factors are needed, particularly through repeated surveys over the long term, to measure progress and identify positive changes, not only to this cohort of medical students, but also for all of Samoa's youth. To address NCDs and risk factors among the young people of Samoa, the plans of action must be cost-effective and innovative. Action and results-oriented research is needed to address the high and increasing burden of diet-related illness and NCDs among the youth of Samoa. This is only one element of the need for urgent attention to the NCD threat to public health; Samoa need to implement much-needed public health oriented reform and multi-sectorial initiatives and policies to reduce the prevalence and structural causes of NCD risk factors (see Lameko 2020, 2021,2022 this issue).

## Endnotes

[1] Body mass index (BMI) is a measure of body fat based on height and weight that applies to adult men and women

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