Republic of Palau

NCD Risk Factors
STEPS REPORT

World Health Organization
Western Pacific Region

Republic of Palau

NCD Risk Factors
STEPS REPORT

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FOREWORD FROM MINISTRY OF HEALTH

BY GREGORIO NGIRMANG, MINISTER OF HEALTH, REPUBLIC OF PALAU

Like many developing nations in Pacific, Palau has recently undergone a transition from traditional diet and cultural practices to a more modern and western lifestyle which has led to an alarming rise in chronic diseases such as obesity, diabetes, hypertension, cancer and heart diseases. People living in Palau are increasingly dying prematurely and are suffering from the disabilities related to NCDs.

This is the first STEPS survey conducted in Palau, with results portraying an alarming snapshot of the health of our nation. The figures confirm the trend that we have been seeing with our rising medical costs and echoes the sentiments of many of our health professionals who say that they are overwhelmed with the high number of patients suffering from NCDs, and that if nothing is done soon, the ability of the government to provide affordable, quality and sustainable healthcare will be jeopardized.

Furthermore, the completion of this report could not be more timely as MOH and partners were revising National NCD Prevention and Control Plan of Action for the nation, in line with the WHO Global Action Plan for NCDs and Surveillance Framework. The STEPS data informed effective, realistic and practical strategies to reducing the threat of NCDs in our nation. More importantly, the Report will provide a catalyst for the community, policy makers, relevant Ministries in education, finance, environment, cultural affairs, justice, infrastructure, trade and agriculture, bi-lateral partners, regional and international forums to work together to slow down or halt the rise of NCDs and ensure that the health of future generations of Palau are protected.

The greatest obstacle for the Ministry in addressing the threat of NCDs was having the accurate information necessary to make informed and evidenced based decisions for the Ministry to move the health agenda forward both internally within the Ministry and externally with our community partners and policy makers. As "Knowing the Problem is Half the Battle", this report in collaboration with the WHO will give us the "Roadmap" we need to develop health promotion and health protection strategies and polices aimed at reversing the high rate of NCDs in the nation.

I would like to take this opportunity to thank the WHO and CDC for funding and technical assistance for this important project, and the continued support to health for the people of Palau. You have been a true friend and valuable partner for health.

I would also like to express our appreciation to the many dedicated staff of the Ministry and community partners who worked hard on conducting the survey, compiling the data and drafting this Report. If was not easy to conduct a comprehensive national survey of the magnitude, and I know all of you have worked many hard and long hours to make this, the first ever health report a reality. Rest assured that the information reflected in this report will not only improve our ability to provide better healthcare to our citizens, it will help save lives from the threat of NCDs.

The Palau's NCD STEPS Report is a tremendous accomplishment in our efforts to combat the NCD crisis affecting the lives of all of us. It is a testament of the Ministry's commitment to address the NCD threat and will serve as an invaluable tool in the development of surveillance and the evaluation of effective health policies and programs designed specifically for Palau and our continuing efforts in reducing NCDS and monitoring NCDs risk factors.

Let us use the findings and recommendations in this Report as a vital first step, as Ministry, a community and a nation to work together to preventing and controlling NCDs and improving the health of the Palauan people.

Thank you.

FOREWORD FROM WHO

Dr. Liu Yunguo
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WHO is pleased to collaborate with the Ministry of Health in undertaking and reporting on this STEPS survey for the Republic of Palau.

The second Global status report on noncommunicable diseases (2014) from WHO, released in January 2015, has again highlighted the considerable human, social and economic consequences of NCDs worldwide. The Pacific Islands are no exception to this global phenomenon, where NCDs are the leading causes of premature mortality. To combat the NCD crisis, in 2013, the World Health Assembly adopted a comprehensive global monitoring framework with nine targets and 25 indicators. Six of these nine targets are assessed primarily through population-based risk factor surveys, including WHO's STEPwise approach to Surveillance of NCD Risk Factors (STEPS).

This report summarizes the findings of Palau's first STEPS survey, between 2011 and 2013. Some of the key findings of this survey are:

- 16.6% of the population are current smokers, with men more likely to smoke than women;
- Betel nut chewing was reported daily by 60.5% of adults, with most including tobacco in their chews
- 37.2% had drunk alcohol in the last 30 days, with younger adults most likely to have consumed alcohol, and men more likely to have higher intake levels on days that they drank;
- 91.9% did not consume the recommended 5 minimum daily servings of fruits and vegetables;
- 46.2% were obese and an additional 30.8% overweight;
- 49% had raised blood pressure;
- 20.4% had raised fasting blood glucose or were on medication for diabetes;
- 25.8% had raised total cholesterol.

These results clearly show that NCDs are substantial problems in Palau, and emphasise the need for increased focus on both prevention and management. The growing burden of NCDs will put further strain on health services. Regular surveillance of NCDs is critical to monitor the trends and to guide the interventions. Continued monitoring and actions for local issues such as betel chewing will be critical. The Palau Ministry of Health have already begun to use these data to inform decision-making, which is reflected in positive actions implemented to address the NCD crisis. For example, Palau increased tobacco excise taxes to make tobacco less affordable and thereby decrease consumption.

WHO will continue supporting the Palau Government to take urgent actions to prevent and control NCDs by strengthening health systems and working with health and non-health sectors as well as all relevant partners.

EXECUTIVE SUMMARY

The Republic of Palau NCD STEPS survey provides a baseline assessment of the risk factors for noncommunicable diseases among adults in Palau. It builds on previous studies which have assessed community health (2003) and adult behaviour (BRFSS). Other local surveys include the Palau Youth Tobacco Survey, Youth risk behaviour survey (YRBSS) and the School Health Screening Survey.

The objectives of this survey were to collect nationally representative data on the situation of NCDs in Palau among persons 25 to 64 years of age. The survey included assessment of key behaviours (diet, physical activity, tobacco, alcohol, betel nut use) and metabolic risk factors (overweight, blood pressure, blood glucose, blood cholesterol and triglycerides).

The data collection began in September 2011 and was completed in June 2013. It was led by the Ministry of Health, and included staff from a number of departments, led by a coordinating team.

A total of 2,212 individuals participated in the survey, giving an overall response rate of 79%. The sample was a cluster-based sample that included participants from all 16 states in Palau. 52.6% of participants were women and 47.4% were men. The majority of the participants (74.6%) were Palauan, married (64.4%) and education levels were high overall.

Step 1: Behavioural risk factors

TOBACCO: Overall the prevalence of current smokers was 16.6% (95%CI 14.3-18.8), with prevalence significantly higher in men (24.0 95%CI 20.6-27.4) than in women (8.4% 95%CI 6.6-10.3). Among current smokers, most smoked daily (80.6% 95%CI 77.2-83.9) and 31% of the population reported being past smokers (95%CI 25.3-36.8). The average age of initiation of smoking was 20.5 years (95%CI 19.3-21.7) with younger participants more likely to have started smoking at a younger age. Most tobacco use was of manufactured cigarettes, with average number smoked per day of 12.7 (95%CI 11.0-14.3). Exposure to environmental tobacco smoke was commonly reported. One-third of adults (33.5%) (95%CI 26.7-40.4) were exposed to environmental tobacco smoke at home and 27.1% (95%CI 21.9-32.3) were exposed to environmental tobacco smoke in the workplace.

Betel nut chewing was common, with 60.5% (95%CI 56.6-64.4) reporting daily use and 2.5% (95%CI 1.8-3.3) reporting non daily use. Overall, the majority of betel nut chewers in Palau (86.1% 95%CI 83.9-88.3) added tobacco to their betel nut chew. Significantly more women (90.4% 95%CI 87.9-93.0) than men (81.7% 95%CI 78.7-84.8) added tobacco to their betel nut chew. Younger age groups in both men and women had the highest rates of chewing betel nut with tobacco.

Overall, the survey revealed that 37.2% (95%CI 33.0-41.4) were current alcohol users, defined as consumption of alcohol in the past 30 days, with the younger age group (25-34) showing higher percentage as current drinkers at 45.6%. There was a significant difference between men and women in the number of standard alcoholic drinks they consumed per drinking occasion, with men on average consuming 7.3 alcoholic drinks (95%CI 6.5-8.0) compared to women at 4.6 (95%CI 4.0-5.1) on one occasion. Levels of risk can be further defined by identifying how often consumers binge drink, described as 4 units or more for women and 5 units or more for men, per day. The prevalence was considerably higher in men (43.5% 95% CI 38.3-48.7%) compared to women (16.6% 95% CI 13.8-19.3).

Overall 91.9% (95%CI 90.6-93.2) of the respondents did not meet the recommended minimum of five (5) servings of fruits and vegetables in a typical day. Additionally, 30.3% of men (95%CI 25.9-34.8) and 23.3% (95%CI 19.5-27.2) of women reported eating no fruits and/or vegetables on a typical day. Of note is that in each older age group, the proportion of men who ate no fruit and/or vegetables or 1-2 servings, increases while in the women the proportion decreases.

Due to challenges with the physical activity data, the findings have not been fully included in this report. Overall, 45.6% of the population reported that they undertook no work-related physical activity (95%CI 39.0-52.2). Additionally 54.2% (95%CI 48.8-59.6) reported that they had undertaken no transport-related physical activity. Overall 51.9% (95%CI 47.3-56.5) reported that they had no recreation-related physical activity, with significantly more women reporting this than men.

Step 2: Physical risk factors

Overall only 1% of the population was found to be underweight (95%CI 0.5-1.4), and 22.1% (95%CI 18.9-25.2) were normal weight. Overall 30.8% (95%CI 28.5-33.1) were overweight and 46.2% (95%CI 42.9-49.4) were obese. There were no significant differences in prevalence by age or gender.

Overall the prevalence of those with raised blood pressure or taking medication for hypertension was 49.0% (95%CI 45.9-52.0). Overall 43.8% of adults (95%CI 40.5-47.0) were found to have raised blood pressure during the survey (SBP≥140 and/or DBP ≥90mm Hg), with prevalence significantly lower in women (36.4% 95%CI 32.9-39.8) than men (50.1% 95%CI 45.8-54.4).

Step 3- Biochemical risk factors

Overall 20.4% of adults aged 25-64 years of age had raised blood glucose or were on medication for diabetes (95%CI 17.6-23.2), with no significant difference by gender. Rates did however increase significantly with age, with 32.7% of 55 to 64 year olds affected (95%CI 27.2-38.2).

Overall 25.8% of people age 25-64 had total cholesterol levels above the recommended level of 5.0mmol/l or 190mg/dl or were taking medication for raised cholesterol. While more women than men had raised cholesterol, the difference was not significant. Prevalence increased with age.

Overall 44.7% (95%CI 40.2-49.2) of adults had mean fasting triglycerides above 150 mg/dL (1.7 mmol/L). Raised triglycerides values, defined as fasting levels ≥ 2.0 mmol/L or ≥ 180 mg/dl was found in 35.1% of adults 25-64 years of age.

Combined risk

Overall only 1.0% (95%CI 0.5-1.4) of participants were defined as low risk (no risk factors), while 40.8% (95%CI 38.2-43.3) were defined as at moderate risk (1-2 risk factors), and 58.3% (95%CI 55.6-61.0) were categorized as high risk (3-5 risk factors). Those aged 45-64 years were significantly more likely to be defined as high risk than those aged 25-44 years.

Conclusion

This survey has provided strong evidence of the extent of the NCD crisis in Palau. More than half of the population was defined as "at risk" for NCDs, with high prevalence of raised blood glucose, cholesterol, triglycerides and blood pressure. While men were more likely to be smokers and drinkers, women were more likely to chew betel nut (and with tobacco). Overweight and obesity were a problem in both genders.

This survey highlights the need for extensive action to prevent and control NCDs, and some of the priority recommendations are outlined below:

Legislation

- Enforcement of existing tobacco laws
- Regulations to be developed on tobacco labeling and packaging
- Policies to protect public health from tobacco industry interference
- Ongoing increases in tobacco and alcohol taxes
- Enforcement of existing laws and regulation on alcohol sale and consumption
- Bans on alcohol advertising
- Legislation to control alcohol use in public places

Settings

- Support tobacco free settings
- Ensure schools are promoting tobacco free messages
- School policies that promote healthy eating and active living
- Access to healthier meal options/food products in various settings (restaurants, grocery stores)
- More access or opportunities for physical activities in the community

Health services

- Ensure provision of effective support groups and dependence treatment services for those wishing to quit alcohol or tobacco
- Support weight loss support programs
- Provision of recommended NCD screening for those at risk
- Ensure tobacco use status is clearly indicated in medical charts to trigger brief intervention
- Counselling and multi-drug therapy for people with a high risk of developing heart attacks and strokes including those with established CVD (PEN)

Education and awareness-raising

- Social marketing campaigns on dangers of all forms of tobacco use, including betel nut and excessive use of alcohol
- Public awareness through mass media on diet and physical activity.

List of Abbreviations

BMI	Body Mass Index
BP	Blood Pressure
BRFSS	Behavioral Risk Factor Surveillance System
CHA	Community Health Assessment
CI	Confidence Interval
DBP	Diastolic Blood Pressure
ISH	International Society of Hypertension
HIS	Health Information System
MET	Metabolic equivalent
mg/dL	Milligrams per decilitre (unit of blood chemistry values)
mmHg	Millimetres of mercury (unit of blood pressure measurement)
mmol/L	Millimoles per litre (unit for blood chemistry values)
NCD	Noncommunicable diseases
NIDM	Non Insulin Diabetes Mellitus
PICTs	Pacific Island Countries and Territories
SBP	Systolic Blood Pressure
SHSS	School Health Screening Survey
US	United States of America
WHO	World Health Organization
YRBS	Youth Risk Behaviour Survey

INTRODUCTION

Background Information

The Republic of Palau lies in the north Pacific with an estimated population of 17,501 (Palau Mini Census, 2012). Approximately 73.5% of the population of Palau is of Palauan ethnicity. The next largest group consists of Filipinos making up about 16.0% of the population, most of whom are foreign workers.

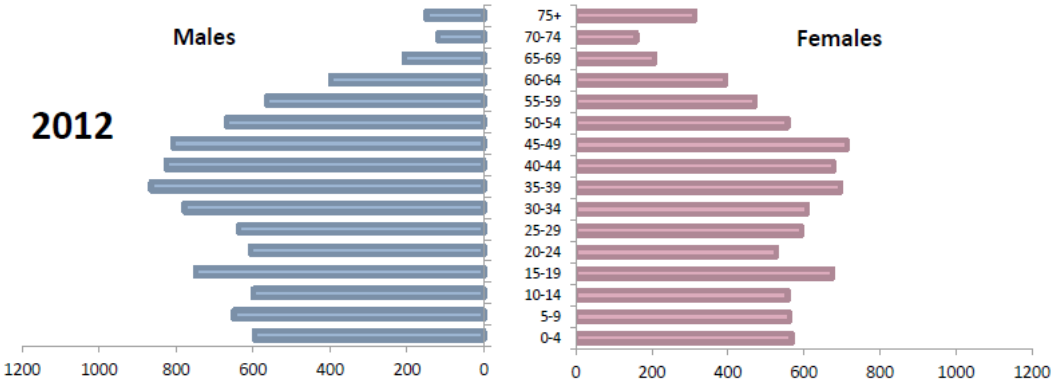
In Palau, 53% of the population is male due to an influx of male foreign workers. Additionally, these foreign workers add substantially to middle-aged groups (Figure 1). Overall, Palau has a relatively small young adult population (20-29) due to emigration for education, military, and employment opportunities (Figure1).

Among those adults 25 years of age and older who are currently not attending school, 88% have achieved at least a high school diploma or GED. This is comparable to the U.S. rate which also stands at 88% as of 2012 (U.S. Census Bureau). Almost 15% of the population of Palau holds a Bachelor's degree or higher, which is less than half that of the U.S. rate which was 31% as of 2012 (U.S. Census Bureau).

The median household income in Palau was $15,107 according to the 2005 Census. Income levels in households more commonly (23.1%) fell into the $15,000-$24,999 income bracket in 2005, with the second largest income bracket being $5,000-$9,999 (18.4%). According to U.S. standards, 52.6% of households and 59.2% of individuals in Palau fall below the poverty level. It is important to note that determinants of poverty are different between Palau, the US and other countries. Using 2006 household income and expenditure data and a locally defined poverty line, the poverty prevalence rate has been estimated at 18.4 % of households and 24.0% of residents (Abbott, 2008).

Palau is classified as a middle income country by World Bank standards (http://data.worldbank.org/about/country-and-lending-groups). While the per capita income places it at a middle-income level of development, it is important to consider specific components and relevant issues to get the full picture of Palau's economy. Perhaps the most distinguishing factor is that the public sector represents an overwhelmingly large portion (about one-third) of the overall economy. This is due to the fact that the public sector is heavily subsidized by external assistance, most notably U.S. Compact funds, U.S. Federal Grants, bilateral assistance, and UN Agency grants.

Figure 1. Palau Population Pyramid, 2012



Source: Census of Population and Housing, Office of Planning and Statistics, Ministry of Finance, Republic of Palau, 2013.

Noncommunicable disease and risk factors

Noncommunicable diseases are no longer just a problem for affluent societies, the old, or the rich; rather, they've become diseases for the poor as well as the young. The leading causes of death and disability in this small island nation in the last ten to fifteen years have been noncommunicable diseases and these continue to rise at an alarming rate. When age-adjusted cause-specific mortality for common NCDs among 30-69 year olds is evaluated over the past decade, the upward trend for all NCDs is quite striking (See Figure 2 below).

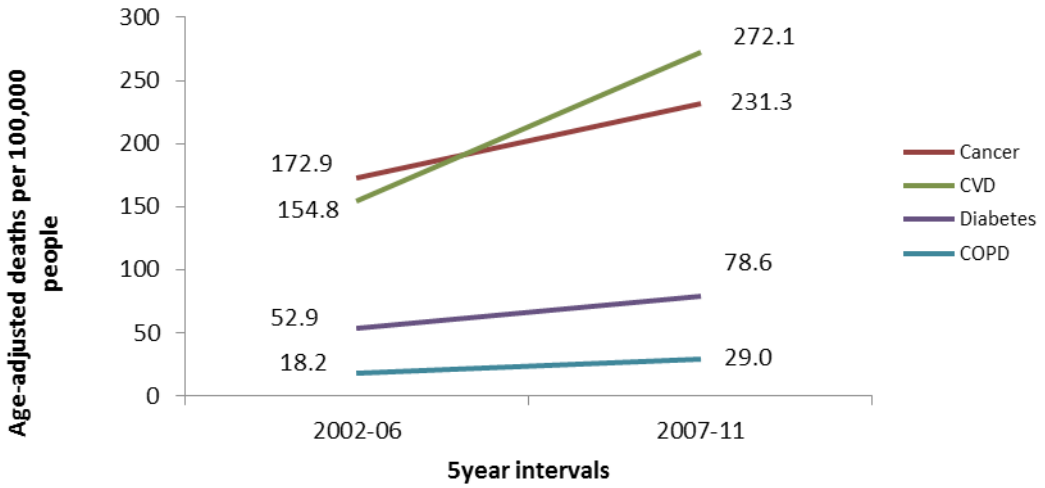


Figure 2. Age-Adjusted Cause-Specific Mortality in Palau

Source: Palau Health Information System (HIS)

Although we do not have reliable data on the prevalence of NCDs in Palau, it is evident that they pose a major public health threat. Furthermore, data from various population based surveys reveal high rates of obesity, tobacco and alcohol use, unhealthy diet and physical inactivity in both adults and youth. According to the 2012 Behavioral Risk Factor Surveillance System (BRFSS), 67.8% of the population in Palau self-reported that they were overweight (BMI 25-<30) or obese (BMI≥30). In the same survey, 10.4% of adults reported being current smokers while 42% reported chewing tobacco. 43.5% of adults reported current drinking and 26.8% reported binge drinking in the past 30 days. According to the 2011 Youth Behavioral Risk Survey (YRBS), 24.6% of high school students self-reported themselves as overweight or obese. The same survey showed that among high school students, cigarette smoking appeared to be increasing, (2011 47%), whereas tobacco chewing appears to be decreasing at 32.5%. The survey also showed that 43.4% of high school youth in Palau drink alcohol, and 32.7% reported binge drinking (5 or more drinks on one occasion for males, 4 or more for females) in the past 30 days. The School Health Screening Survey revealed that about a third of Palau's students were overweight or obese.

Previous population based surveys

As illustrated above, a number of population-based surveys for youth and adult risk factors have been conducted in Palau including the Community Health Assessment (CHA), Behavioral Risk Factor Surveillance System (BRFSS), the School Health Screening Survey (SHSS), Youth Risk Behavior Survey (YRBS), and the Palau Youth Tobacco Survey (PYTS).

The Community Health Assessment was a one-time face to face survey conducted in 2003 to most residents in Palau ages 15 and above, with a sample size of approximately 15,000. The CHA surveyed betel nut, tobacco and alcohol use, diet and physical activity, and measured weight, height, blood pressure, and random blood glucose.

The Behavioral Risk Factor Surveillance System is a telephone-based health survey established by the US Centers for Disease Control and Prevention. It was piloted in Palau in 2010 and administered again in 2012. BRFSS includes questions on hypertension, cholesterol, heart disease, stroke, asthma, cancer, respiratory illnesses, arthritis, tobacco and alcohol use, fruits and vegetable intake, physical activity, and optional questions on diabetes, sugary drink intake, and salt intake.

The School Health Screening Survey commenced in 2004 as part of a school health screening and intervention program, administered annually to odd grades in all schools in Palau. The SHSS is conducted through face to face interactions between health workers and students, upon parental consent, and includes questions on alcohol, tobacco, and other drug use, dietary and physical activity behaviors, BMI, blood pressure, as well as other questions on reproductive and psychosocial issues.

The Youth Risk Behavior Survey is an on-going, bi-annual self-reported survey conducted in Palau since the early 2000s by the Ministry of Education, administered to all public high schools in the country. YRBS was also established by the US Centers for Disease Control and Prevention and includes health questions on tobacco, alcohol and other drug use, diet, physical activity, obesity and asthma, as well as other health questions on injury and sexual behavior.

Conducted first in 2001, the Palau Youth Tobacco Survey (PYTS), based on the United States National Youth Tobacco Survey (NYTS), surveys students in Grades 6 to 12 and collects data on prevalence of tobacco use (cigarettes, smokeless tobacco, cigars, and pipes), exposure to environmental tobacco smoke (ETS), minors' access and enforcement, knowledge and attitudes, media and advertising, school curriculum, and tobacco use cessation. This self-report questionnaire/survey is very similar, but not identical, to the GYTS questionnaire. Palau's Tobacco Control Program conducted the PYTS in 2001, 2005, 2009 and 2013.

NCD risk factor surveillance for school aged children has been monitored for the last ten years using the YRBS, PYTS and SHSS; however, there has only been one survey conducted in 2003 (CHA) for residents ages 15 and over which has not been repeated. BRFSS, piloted in 2010 and conducted again in 2012, has been adopted as a national adult surveillance tool but is limited to those with access to land lines and excludes physical and biochemical measurements.

WHO STEPS SURVEY

The WHO STEPwise approach to surveillance (STEPS) is the WHO's recommended tool for the surveillance of noncommunicable diseases and their risk factors. It includes STEP 1 questionnaire on behavioral risk factors, STEP 2 physical measurements and STEP 3 biochemical measurements. The STEPS provides an opportunity for Palau to strengthen its surveillance system in light of the NCD crisis. STEPS provides a simple and standardized method which allows for consistency over time and comparability within and across jurisdictions. In the survey, Palau opted to include core risk factors; tobacco use, harmful use of alcohol, unhealthy diet (low fruit and vegetable consumption, physical inactivity, overweight and obesity, raised blood pressure, raised blood glucose, and abnormal blood lipids/raised total cholesterol along with betel nut use. These common and preventable risk factors underlie most if not all NCDs, which have become the leading causes of mortality and morbidity in Palau. It is critical for Palau to ensure consistent and quality NCD surveillance of adults over time, be able to monitor trends and compare to other countries within the region, determine health priorities, ensure informed decision making and planning, halt or slow and ultimately reverse the progress of the NCD crisis, and evaluate progress and effectiveness of interventions.

This report serves as the main report for Palau STEPS Survey 2011-2013.

II. METHODOLOGY

The Palau STEPS survey involved months of planning by a committee initially established by the Ministry of Health in mid-2010. The STEPS committee was comprised of a coordinator from the Noncommunicable Disease Unit of the Ministry of Health, and various staff from the Ministry including the Director of Hospital and Clinical Services, Director of Public Health Services, the Office of Nursing, Office of Epidemiology, Behavioral Health Division, Office of Health Policy, Research and Development, Environmental Health Division, Community Advocacy Program, Public Health Medical Records, and the Noncommunicable Disease Unit. The Committee met over a period of a few months after the initial training by WHO in October 2010 to plan and implement the survey. In September 2011, a one-day training or demonstration of data collection was provided to the surveyors. Palau decided that because most of the surveyors were nurses with past experience in the 2003 Community Health Assessment and staff who had already received the training from WHO, this time was sufficient to practice their skills in interviewing and taking physical and bio-chemical measurements. The surveyors comprised of various MOH staff including nurses, data entry personnel, program coordinators and staff, administrative assistants, and other staff who were interested and able. The survey was conducted from September 2011 to June 2013.

Survey Design

The 2011 Palau STEPS survey was designed as a population-based cross-sectional survey of 25 to 64 year olds.

The 2011 Palau STEPS survey followed a sequential three-step process as follows (Figure 3).

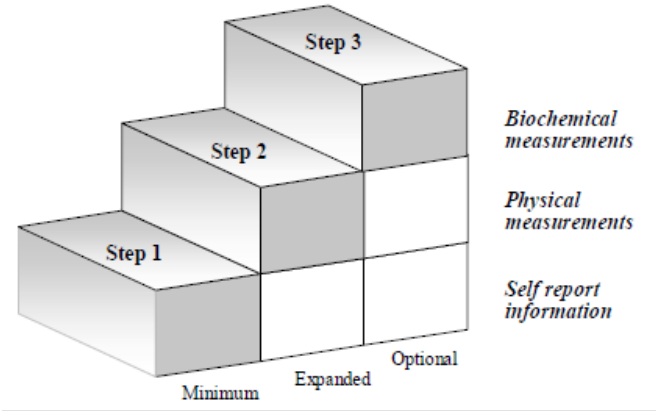
STEP 1: Expanded questions on demographic, and behavioral risk factors including tobacco use (both smoking and chewing), past smoking, betel nut chewing, alcohol consumption, fruit and vegetable consumption, physical inactivity, oil and fat consumption, meals outside the home, sedentary behavior, blood pressure history, and diabetes history.

A supplemental questionnaire comprised of 22 questions specific to the Republic of Palau was added to the survey. There were questions on access to services, mental health, socio-cultural issues, cancer and other screening, and reproductive health.

STEP 2: Physiological measures included blood pressure, height, weight, waist circumference, and hip circumference.

STEP 3: Biochemical measures included fasting blood glucose, total cholesterol, and triglycerides.

Figure 3. Sequential three step process



Study Population and Sampling

The target population for the 2011 STEPS Survey for the Republic of Palau included the adult population ages 25-64. Pregnant women were excluded from hip and waist measurements. Wheelchair-bound individuals were excluded from weight and height measurements. Mentally ill patients were excluded from the entire survey.

Sample size calculation and response rates

The required sample size was calculated as 2,807 individuals on a margin of error of 0.05, an anticipated response rate of 80% power to detect statistically significant differences between eight age/sex groups. Accordingly, from the 2,807 selected households 2,212 individuals aged 25-64 years participated in STEPs giving an overall response rate of 79% (response rates for parts of STEP2 and 3 were lower).

Structure of the sampling frame

The survey used a cluster-based sampling design where the primary sampling unit was enumeration area (EA) and the secondary sampling unit was households. The 16 states in Palau were included in the sampling frame. Seventy five (75) EAs were selected using probability proportional to size (PPS). There were 2,807 households that were randomly selected from the total number of 3,976 households.

Total population

(Based on 2009 Household survey) (Age group 25-64 yrs)

↓

Enumeration Areas (75 EAs)

↓

Household (2,807 Households)

↓

First stage: randomly selected of EAs
Second stage: randomly selected of households

Total sample size = 2807

Participants in four age/groups

Within household selection of participants that is shown in Table 1: was undertaken using the Kish methods, which randomly selects individuals within households.

Table 1. State sample distribution

STATE	TOTAL HOUSEHOLDS	HOUSEHOLDS SELECTED
KOROR	2477	1753
ANGAUR	47	34
PELELIU	140	108
HATOHOBI	2	1
SONSOROL	12	8
AIMELIIK	78	52
NGATPANG	48	34
NGAREMLENGUI	83	58
NGARDMAU	57	34
NGARAARD	117	86
NGARCHELONG	109	76
KAYANGEL	22	15
NGIWAL	75	26
MELEKEOK	147	107
NGCHESAR	72	57
AIRAI	490	358
Total	3976	2807

Data Collection Process

The survey was conducted between September 2011 and June 2013. In all study areas, the same procedures for selecting eligible participants were followed. Selected participants using the Kish methods were informed of the purpose and importance of the survey as well as all the steps required before they were given standardized consent forms. Individual household summary forms and household tracking forms were used to keep records of participation rates. Hospital numbers were used as participant ID numbers.

All interviews and data collection were conducted in the participants' private homes by two surveyors, one to interview and take physical and bio-chemical measurements while the other wrote down the answers on the instrument. However, in the last six months of the data collection, some participants were asked to convene at community centers for these interviews. Survey personnel called participants for appointments, usually early in the morning, and gave them fasting instructions. If participants could not fast for that set appointment, another one was made for the final collection of the blood samples.

STEP 1 – Behavioral Risk Factors

Survey personnel conducted face to face interviews with participants to collect demographic information and behavioral risk factors using the expanded questionnaire. In addition to the core demographic information, information on education level, ethnicity, marital status, work status, number of people in a household and household income was collected. Additional health risks for tobacco, alcohol, diet and physical activity were also collected including daily tobacco use, smokeless tobacco and betel nut, smoking in homes, 7-day alcohol consumption, oil and fat consumption, sedentary behavior, history of blood pressure and diabetes, triglycerides and total cholesterol. Betel nut questions were added to the questionnaire to reflect cultural practices.

The questionnaire was translated into Palauan, so interviewers had the choice of using either Palauan or English, depending on the ethnicity or preference of the participant.

STEPS 2 and 3

All survey personnel, including interviewer and recorder, were trained to take physical and biochemical measurements. STEP 2 measurements were taken immediately after the conclusion of STEP 1 and the supplemental Palau MOH questionnaire. STEP 3 measurements were taken the next day or during another scheduled visit at the participant's home or designated area.

All participants were given feedback for STEP 2 and 3, and, when necessary referral to public health clinics, outpatient department, or the emergency room, depending on the results of their physical and biochemical measurements and in line with local guidelines.

STEP 2 – Physical Measurements

Physiological measurements including blood pressure, height, weight, waist circumference, and hip circumference were collected right after the interview (STEP 1 and supplemental MOH questionnaire).

Blood pressure (BP) was measured with the Omron BP monitor. BP was measured three times and recorded. An average of the second and third readings was used as the final BP value during the analysis.

Weight was measured using digital and manual scales. Height was measured using a standing height measurement, and hip and waist measured with measurement tape. Weight, height, hip, and waist were measured only once. Neither waist nor hip circumferences were measured in female participants who said they were pregnant. Wheelchair-bound participants were also excluded from the height and weight measurements.

STEP 3 – Biochemical Measurements

Biochemical measures including fasting blood glucose, total cholesterol, and triglycerides were obtained after STEP 1 and 2 either the next day or during another scheduled visit, at the convenience of the participant. Again, all survey personnel, including interviewers and recorders, were trained to conduct these measurements using the Accu-Check Performa for glucose and Accutrend Plus for cholesterol and triglycerides. All equipment and supplies were stored at the NCD Unit as the main station with daily maintenance and replenishment. Survey personnel also brought back waste to the NCD Unit for proper disposal. All blood samples (drop of blood) were collected using the lancets and strips and read using these handheld meters.

Data Management and Analysis

Data Entry and Cleaning

The submitted questionnaires were checked and assessed by the assigned STEPS data managers to ensure quality of data. Incomplete questionnaires were returned to survey personnel for completion. Data entry was conducted by hired personnel and stationed at the Office of Health Policy, Research, and Development located at Palau Community College. All of the data for STEPS 1-3 were entered using the EpiData software and verified by double entry.

Data was first checked for duplicates by participant identification number and birth dates. All double entries were removed. If a participant was surveyed twice, then the most recent survey was taken. All variables were examined for outlying values and paper surveys referenced or reviewed to resolve any issues.

Data Weighting and Analysis

Post-stratification weights were calculated using the population projections based on Palau 2005 census of the population aged 25-64 in 10 year age groups following the standard age group reporting for WHO STEPS surveys. This weighting adjusted for age/sex stratum according to the proportion of the population aged 25-64. All weighted programs use the variables PSU, Stratum, and either WStep1, WStep2 or WStep3. Frequencies for categorical variables were calculated using weighted complex samples and for continuous variables the sample means were computed. The 95% confidence intervals were reported by 10-year age groups and gender for both weighted frequencies and means.

With the support from the WHO Office in Geneva, the WHO Office in Suva performed the final data cleaning, data weighting and analysis. Data analyses were performed using EpiInfo 2002 – Version 3.5.3.

RESULTS

3.1 Description of Sample

The targeted sample size was 2,807. Data were obtained from 2,212 individuals, giving an overall response rate of 79%.

Table 2 shows the breakdown of the participants by age and gender. 52.6% were women and 47.4% were men, with most (31.5%) from the 45-54 year age group.

Table 2. Profile of STEPS participant

Age Group (years)	Men		Women		Both Sexes	
	n	%	n	%	n	%
25-34	193	48.5	205	51.5	398	18
35-44	297	48.1	321	51.9	618	27.9
45-54	318	45.6	379	54.4	697	31.5
55-64	240	48.1	259	51.9	499	22.6
25-64	**1048**	**47.4**	**1164**	**52.6**	**2212**	**100**

Table 3 shows the education level of the participants was generally high, with nearly half (44.5%) having completed University or College or higher, and less than 1% having no formal schooling.

Table 3. Highest level of education

Age Group (years)	Highest level of education						
	Both Sexes						
	n	% No formal schooling	% Less than primary school	% Primary school completed	% Secondary school completed	% College/ University completed	% Post graduate degree completed
25-34	392	0.5	4.1	9.9	36.5	45.4	3.6
35-44	616	0.3	3.1	10.6	42.5	39.1	4.4
45-54	690	0.3	2.8	13.3	40.4	40.0	3.2
55-64	495	0.4	3.4	14.7	37.6	39.0	4.8
25-64	**2193**	**0.4**	**3.2**	**12.3**	**39.7**	**40.5**	**4.0**

Table 4 shows that the majority of the participants were Palauan (74.6%) 18.6% Ethnic Filipino and 6.8% of other ethnicity. The majority were also currently married (64.4%). Around one third of the participants were government employees (34.3%) with similar proportion non-government employee (35.9%).

Table 4. Employment status

Age Group (years)	Employment status				
	Both Sexes				
	n	% Government employee	% Non-government employee	% Self-employed	% Unpaid
25-34	398	25.4	54.5	5.3	14.8
35-44	617	39.2	42.5	5.3	13.0
45-54	695	41.9	32.5	10.8	14.8
55-64	498	24.9	17.7	11.8	45.6
25-64	**2208**	**34.3**	**35.9**	**8.5**	**21.2**

The mean reported household income was USD8365.15.

3.2 Behavioral risk factors

Tobacco Use and Betel Nut Chewing

Prevalence of tobacco use and betel nut chewing were assessed according to smoking status and betel nut chewing with or without tobacco These are defined as follows:

- Current smokers – those who currently smoke any tobacco products such as cigarettes, cigars, or pipes
- Daily smokers – those who are smoking any tobacco product every day
- Current betel nut chewers – those who currently chew betel nut
- Daily betel nut chewers – those who chew betel nut every day
- Current betel nut chewers with tobacco – those who currently chew betel nut with tobacco
- Daily betel nut chewers with tobacco – those who chew betel nut with tobacco every day
- Past smokers – those who have smoked tobacco products in the past but have stopped smoking.

This survey found (Table 5) that the overall proportion of current smokers among adults in Palau 25-64 years old is 16.6% (95% CI 4.3-18.8). Male smoking prevalence of 24.0% (95% CI 20.6-27.4) is significantly higher than female smoking prevalence of 8.4% (95% CI 6.6-10.3). There were no significant differences between the age sub-groups, although rates appeared to be highest in the youngest group.

Table 5. Prevalence of current smokers

Age Group (years)	Men			Women			Both Sexes		
	n	% Current smoker	95% CI	n	% Current smoker	95% CI	n	% Current smoker	95% CI
25-34	192	32.9	23.8-42.0	204	8.5	4.3-12.8	396	21.3	16.1-26.5
35-44	296	19.8	15.1-24.5	321	7.4	4.0-10.8	617	13.8	10.5-17.1
45-54	318	22.0	16.6-27.3	379	9.3	5.8-12.9	697	15.9	12.6-19.2
55-64	239	21.0	17.3-24.7	259	8.7	5.5-11.8	498	15.3	12.8-17.8
25-64	**1045**	**24.0**	**20.6-27.4**	**1163**	**8.4**	**6.6-10.3**	**2208**	**16.6**	**14.3-18.8**

Tables 6-9 summarizes the current smoking status among all adults in Palau 25-64 years old, 13.3% (95% CI 11.5-15.2) smoked tobacco daily and 3.2% (95% CI 2.5-4.0) smoked tobacco non-daily. Although not currently users, 31.0% (95% CI 25.3- 36.8) of adults reported that they have smoked tobacco in the past, whereas 52.4% (95% CI 45.8-59.0) have never smoked. Current daily smoking is significantly higher among men at 20.2% (95% CI 17.4-23.1) than among women at 5.8% (95% CI 4.2-7.4). Accordingly, never smoking rates are significantly higher among women at 62.0% (95% CI 55.5-69.5) than among men at 43.6% (95% CI 36.5- 50.7). When examining smoking status by age, it is evident that smoking is highest among younger adults (25-34). Among current smokers, most smoke daily 80.6% (95% CI 77.2-83.9). More male smokers are daily smokers 84.3% (95% CI 79.9- 88.7) when compared to female smokers 68.9% (95% CI 58.7- 79.1), though this difference is not significant. Among all smokers, daily smoking prevalence is highest in older adults (55-64), though these age differences are also not significant.

Table 6. Current smoking status amongst men in the study population by age group

Smoking status									
Age Group (years)	Men								
	n	Current smoker						% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI	Past Smokers	95% CI		
25-34	192	26.8	18.4-35.3	6.1	2.3-9.9	28.4	19.8-37.0	38.7	28.8-48.7
35-44	296	16.5	12.3-20.7	3.3	1.4-5.2	30.3	23.5-37.2	49.9	41.9-57.8
45-54	318	19.1	14.1-24.1	2.9	0.9-4.8	36.5	27.3-45.7	41.5	33.9-49.1
55-64	239	18.5	14.3-22.7	2.5	0.5-4.5	35.6	26.0-45.2	43.4	33.4-53.5
25-64	**1045**	**20.2**	**17.4-23.1**	**3.8**	**2.5-5.0**	**32.4**	**26.3-38.5**	**43.6**	**36.5-50.7**

Table 7. Current smoking status amongst women in the study population by age

Smoking status									
Age Group (years)	Women								
	n	Current smoker						% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI	Past Smokers	95% CI		
25-34	204	5.8	2.1-9.4	2.8	0.9-4.7	33.6	25.4-41.8	57.9	49.6-66.1
35-44	321	4.9	2.4-7.5	2.5	0.4-4.6	28.1	19.7-36.5	64.5	55.0-74.1
45-54	379	6.4	3.5-9.2	3.0	0.7-5.3	28.6	21.7-35.6	62.0	54.4-69.7
55-64	259	6.6	3.6-9.6	2.0	0.2-3.9	27.3	20.8-33.8	64.0	56.6-71.4
25-64	**1163**	**5.8**	**4.2-7.4**	**2.6**	**1.7-3.6**	**29.5**	**23.6-35.5**	**62.0**	**55.5-68.5**

Table 8. Current smoking status among both sexes in the study population by age group

Smoking status									
Age Group (years)	Both Sexes								
	n	Current smoker						% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI	Past Smokers	95% CI		
25-34	396	16.8	12.1-21.4	4.5	2.2-6.8	30.9	24.1-37.6	47.8	39.3-56.4
35-44	617	10.9	8.2-13.6	2.9	1.2-4.6	29.2	23.0-35.5	57.0	49.1-64.9
45-54	697	12.9	10.1-15.8	2.9	1.3-4.5	32.7	25.4-40.0	51.4	45.0-57.8
55-64	498	13.0	10.0-16.0	2.3	1.1-3.5	31.7	24.6-38.9	53.0	45.3-60.7
25-64	**2208**	**13.3**	**11.5-15.2**	**3.2**	**2.5-4.0**	**31.0**	**25.3-36.8**	**52.4**	**45.8-59.0**

Table 9. Current daily smokers among smokers in the study population by age

Current daily smokers among smokers									
Age Group (years)	Men			Women			Both Sexes		
	n	% Daily smokers	95% CI	n	% Daily smokers	95% CI	n	% Daily smokers	95% CI
25-34	62	81.5	70.6-92.3	21	67.4	47.6-87.3	83	78.8	69.1-88.4
35-44	68	83.4	74.8-92.0	27	66.3	44.3-88.4	95	79.0	69.0-88.9
45-54	73	87.0	78.6-95.3	35	68.0	47.4-88.6	108	81.6	72.7-90.4
55-64	53	88.1	78.4-97.9	27	76.5	56.6-96.4	80	85.1	76.3-93.8
25-64	**256**	**84.3**	**79.9-88.7**	**110**	**68.9**	**58.7-79.1**	**366**	**80.6**	**77.2-83.9**

Table 10 shows that among all daily smokers, the average age of initiation was 20.5 years old (95% CI 19.3-21.7). Average age of initiation was lower among men 19.7 years (95% CI 18.6-20.8) than among women 23.3 years (95%CI 20.4-26.3), though this difference is not significant. Additionally, initiation is earliest among younger individuals (25-34) at an average age of 18.6.

Table 10. Mean age that daily smokers started smoking

Age Group (years)	Men				Women				Both Sexes		
	n	Mean age	95% CI		n	Mean age	95% CI		n	Mean Age	95% CI
25-34	50	18.3	17.2-19.4		14	20.2	16.7-23.8		64	18.6	17.4-19.8
35-44	56	21.1	19.2-23.1		18	19.6	17.2-21.9		74	20.8	19.3-22.3
45-54	61	20.5	18.0-23.1		23	29.2	23.1-35.3		84	22.7	19.4-26.0
55-64	42	19.1	16.0-22.2		21	23.5	18.6-28.3		63	20.2	17.7-22.7
25-64	**209**	**19.7**	**18.6-20.8**		**76**	**23.3**	**20.4-26.3**		**285**	**20.5**	**19.3-21.7**

The average daily smoker in Palau had smoked for 21.3 years (95% CI 19.1-23.5) as shown in Table 11. As expected, older individuals have higher years of smoking duration. There were no significant differences between the genders.

Table 11. Mean duration of smoking in current daily smokers

Mean duration of smoking										
Age Group (years)	Men				Women				Both Sexes		
	n	Mean duration	95% CI		n	Mean duration	95% CI		n	Mean duration	95% CI
25-34	50	11.3	10.4-12.2		14	9.1	5.7-12.4		64	10.9	9.8-12.0
35-44	56	18.1	16.1-20.2		18	20.2	17.6-22.7		74	18.6	17.0-20.2
45-54	61	28.5	25.5-31.6		23	20.6	14.2-27.1		84	26.6	23.0-30.2
55-64	42	38.7	35.2-42.1		21	35.8	30.5-41.2		63	37.9	35.3-40.6
25-64	**209**	**21.5**	**18.6-24.3**		**76**	**20.5**	**16.5-24.6**		**285**	**21.3**	**19.1-23.5**

Table 12 shows the majority of adults who smoked daily, smoked manufactured cigarettes 86.8% (95% CI 81.9-91.7). This high prevalence of manufactured cigarette use was similar across men and women and the various age groups examined.

Table 12. Use of manufactured cigarettes by daily smokers

Manufactured cigarette smokers among daily smokers									
Age Group (years)	Men			Women			Both Sexes		
	n	% Manufactured cigarette smoker	95% CI	N	% Manufacture cigarette smoker	95% CI	n	% Manufacture cigarette smoker	95% CI
25-34	51	89.9	81.2-98.6	14	89.7	76.0-100.0	65	89.8	82.3-97.4
35-44	56	83.0	73.5-92.4	19	97.5	92.6-100.0	75	86.1	78.3-93.9
45-54	65	86.5	77.3-95.7	23	84.3	69.2-99.4	88	86.0	77.9-94.0
55-64	47	81.7	67.2-96.1	21	87.2	73.8-100.0	68	83.0	71.0-95.0
25-64	**219**	**86.0**	**80.7-91.4**	**77**	**89.6**	**82.7-96.5**	**296**	**86.8**	**81.9-91.7**

Among all daily smokers who smoked manufactured cigarettes, 12.7 (95% CI 11.0-14.3) cigarettes were smoked per day on average (Table 13). Men smoked significantly more cigarettes per day 13.6 (95% CI 11.8-15.5) on average than women 9.2 (95% CI 7.2-11.2). When examining age groups among both sexes combined, mean number of cigarettes smoked per day increased as age groups increased, although this trend was not significant.

Table 13. Mean numbers of manufactured cigarettes smoked by daily smokers

Manufactured cigarette smokers among daily smokers									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean #of manufactured cig.	95% CI	n	Mean #of manufactured cig.	95% CI	n	Mean #of manufactured cig.	95% CI
25-34	44	11.2	9.0-13.5	11	6.3	4.7-7.8	55	10.4	8.4-12.5
35-44	47	13.7	11.6-15.7	18	12.4	5.0-19.8	65	13.3	11.0-15.7
45-54	57	16.1	13.1-19.1	19	6.6	3.3-9.9	76	13.9	10.8-16.9
55-64	39	15.2	10.2-20.2	17	12	5.8-18.3	56	14.4	11.0-17.8
25-64	**187**	**13.6**	**11.8-15.5**	**65**	**9.2**	**7.2-11.2**	**252**	**12.7**	**11.0-14.3**

Tables 14 and 15 summarize the findings on former daily smokers; among all adults 25-64 years old in Palau, 11.9% (95% CI 9.2-14.6) are former daily smokers. Consistent with current smoking prevalence, men have a higher prevalence of former daily smoking 14.8% (95% CI 11.1-18.4) than women 9.0% (95% CI 6.5-11.6), though this difference is statistically non-significant. As would be expected, the number of years that have elapsed since smoking cessation was greater in the older age groups.

Table 14. Prevalence of former daily smokers

Ex-daily smokers among all respondents										
Age Group (years)	Men				Women				Both Sexes		
	n	% ex daily smokers	95% CI		n	% ex daily smokers	95% CI		n	% ex daily smokers	95% CI
25-34	181	14.1	7.3-20.9		202	5.8	2.0-9.7		383	10.1	6.1-14.0
35-44	276	7.3	4.4-10.2		313	5.4	1.3-9.4		589	6.4	3.5-9.2
45-54	296	15.4	10.5-20.4		372	11.5	7.3-15.7		668	13.5	9.8-17.1
55-64	222	26.8	18.3-35.3		255	16.4	11.3-21.4		477	21.8	17.1-26.6
25-64	**975**	**14.8**	**11.1-18.4**		**1142**	**9.0**	**6.5-11.6**		**2117**	**11.9**	**9.2-14.6**

Table 15. Mean years since cessation

Mean years since cessation										
Age Group (years)	**Men**				**Women**				**Both Sexes**		
	n	Mean years	95% CI		N	Mean years	95% CI		n	Mean years	95% CI
25-34	18	7.4	4.9-9.9		9	5.3	2.7-8.0		27	6.8	4.8-8.8
35-44	22	10.5	6.5-14.5		14	13.1	10.6-15.7		36	11.5	8.8-14.1
45-54	38	13.6	10.1-17.1		36	16.7	12.2-21.3		74	14.9	12.0-17.8
55-64	58	15.4	12.0-18.8		36	21.5	16.5-26.6		94	17.6	14.3-20.9
25-64	**136**	**12.3**	**10.1-14.4**		**95**	**15.9**	**12.9-18.9**		**231**	**13.6**	**11.5-15.7**

Betel nut chewing prevalence

Overall, 60.5% (95% CI 556.6-64.4) of adults 25-64 years old in Palau currently chew betel nut, as shown in Table 16. Daily betel nut chewing is higher among women 64.4% (95% CI 61.0-67.7) than men 56.9% (95% CI 51.8-62.0), though this difference is not statistically significant. In both men and women combined, daily betel nut chewing was highest among younger individuals (25-34), similar to the trends observed with tobacco smoking

Table 16. Current user of chewing daily among men in the study population by age

Frequency of those who currently chew daily							
Age Group (years)	Men						
	N	Current user				% Non-chewer	95% CI
		% Currently chew daily	95% CI	% Currently chew non-daily	95% CI		
25-34	192	57.2	49.4-65.0	2.7	0.0-5.7	40.1	31.8-48.3
35-44	296	60.5	50.8-70.1	1.8	0.4-3.3	37.7	27.6-47.7
45-54	315	55.8	48.0-63.5	5.9	2.9-9.0	38.3	30.6-46.0
55-64	240	52.5	44.8-60.2	3.7	1.5-6.0	43.8	36.4-51.2
25-64	**1043**	**56.9**	**51.8-62.0**	**3.5**	**2.3-4.7**	**39.6**	**34.5-44.6**

Table 17. Current user of chewing daily among women in the study population by age

Frequency of those who currently chew daily							
Age Group (years)	Women						
	N	Current user				% Non-chewer	95% CI
		% Currently chew daily	95% CI	% Currently chew non-daily	95% CI		
25-34	205	70.8	62.9-78.8	0.4	0.0-1.2	28.8	20.6-36.9
35-44	321	61.9	55.5-68.3	2.1	0.0-4.9	36.0	28.8-43.1
45-54	379	63.8	58.2-69.4	2.0	0.6-3.4	34.2	29.0-39.3
55-64	258	59.7	52.6-66.8	1.4	0.0-2.8	38.9	31.7-46.1
25-64	**1163**	**64.4**	**61.0-67.7**	**1.5**	**0.5-2.5**	**34.1**	**30.7-37.6**

Table 18. Current user of chewing daily among both sexes in the study population by age

Frequency of those who currently chew daily							
Age Group (years)	Both Sexes						
	N	Current user				% Non-chewer	95% CI
		% Currently chew daily	95% CI	% Currently chew non-daily	95% CI		
25-34	397	63.7	57.1-70.3	1.6	0.0-3.2	34.7	28.0-41.3
35-44	617	61.2	54.7-67.6	2.0	0.5-3.5	36.9	29.9-43.9
45-54	694	59.7	54.9-64.4	4.0	2.2-5.8	36.3	31.7-40.9
55-64	498	55.8	50.6-61.1	2.6	1.4-3.9	41.5	36.6-46.4
25-64	**2206**	**60.5**	**56.6-64.4**	**2.5**	**1.8-3.3**	**37.0**	**33.1-40.8**

Adding tobacco to betel nut

The majority of betel nut chewers in Palau 86.1% (95% CI 83.9-88.3) add tobacco to their betel nut chew (either part of a cigarette or traditional chewing tobacco) (Table 19). Significantly more women 90.4% (95% CI 87/9-93.0) than men 81.7% (95% CI 78.7- 84.8) add tobacco to their betel nut chew. Younger age groups in both men and women have the highest rates of adding tobacco to chew, with 96.2% (95% CI 93.9-98.6) of all 25-34 years old adding tobacco to their chew.

Table 19. Adding cigarettes and tobacco while chewing betel nut

Adding cigarettes and tobacco while chewing betel nut										
Age Group (years)	Men				Women				Both Sexes		
	n	% adding cigarettes and tobacco	95% CI		n	% adding cigarettes and tobacco	95% CI		n	% adding cigarettes and tobacco	95% CI
25-34	95	94.0	90.4-97.6		127	98.3	96.2-100.0		222	96.2	93.9-98.6
35-44	166	89.7	84.4-95.1		198	92.2	87.2-97.2		364	90.9	86.8-95.1
45-54	177	72.8	63.2-82.5		237	85.5	81.6-89.4		414	79.2	73.9-84.4
55-64	129	62.8	52.0-73.6		153	81.5	73.7-89.2		282	71.8	65.7-78.0
15-64	**567**	**81.7**	**78.7-84.8**		**715**	**90.4**	**87.9-93.0**		**1282**	**86.1**	**83.9-88.3**

Environmental tobacco smoke (ETS) exposure in the home

Table 20 indicates that 33.5% (95% CI 26.7-40.4) of adults 25-64 years old in Palau were exposed to ETS in the home in the past 7 days. Rates of exposure were similar among men and women. Rates of exposure decreased with age, although the differences were not significant.

Table 20. Exposed to Environment Tobacco smoke in home on 1 or more of the past 7 days

Exposed to ETS in home on 1 or more of the past 7 days										
Age Group (years)	Men				Women				Both Sexes		
	N	% Exposed	95% CI		n	% Exposed	95% CI		n	% Exposed	95% CI
25-34	107	46.4	32.2-60.5		76	42.4	29.5-55.2		183	44.9	33.8-56.0
35-44	146	31.7	21.8-41.6		111	28.4	16.9-39.9		257	30.4	22.5-38.3
45-54	168	27.8	17.4-38.3		139	29.2	19.4-38.9		307	28.3	19.3-37.4
55-64	136	29.1	18.8-39.4		94	25.9	16.8-35.0		230	28.0	19.8-36.1
25-64	**557**	**34.4**	**26.8-42.0**		**420**	**32.1**	**24.4-39.8**		**977**	**33.5**	**26.7-40.4**

ETS Exposure in the workplace

Table 21 shows that 27.1% (95% CI 21.9-32.3) of adults 25-64 years old in Palau were exposed to ETS in the workplace in the past 7 days. Men had a significantly higher prevalence of workplace ETS exposure 35.7% (95% CI 29.4-42.0) than women 12.8% (95% CI 7.7-17.8). This may be partly related to the different work profiles of men and women. Rates of exposure generally decreased with age, although this was not significant.

Table 21. Exposed to Environment Tobacco smoke in workplace on 1 or more of the past 7 days

Exposed to ETS in the workplace on 1 or more of the past 7 days									
Age Group (years)	Men			Women			Both Sexes		
	N	% Exposed	95% CI	n	% Exposed	95% CI	n	% Exposed	95% CI
25-34	105	41.4	27.9-54.9	73	14.7	6.9-22.6	178	31.7	21.0-42.3
35-44	145	33.9	23.7-44.1	109	17.1	8.5-25.6	254	27.3	19.2-35.4
45-54	169	35.9	27.1-44.6	138	9.6	3.5-15.7	307	25.9	19.1-32.7
55-64	127	28.9	18.5-39.4	88	7.4	1.1-13.8	215	21.1	14.4-27.9
25-64	**546**	**35.7**	**29.4-42.0**	**408**	**12.8**	**7.7-17.8**	**954**	**27.1**	**21.9-32.3**

Alcohol Consumption

Prevalence of alcohol consumption was assessed by status of usage, frequency of usage, and amount of standard drinks consumed. Below were the definitions used:

Current drinkers – those who have consumed a drink that contains alcohol in the past 30 days

Non-current drinkers – those who have consumed an alcoholic drink in the past 12 months, but not in the past 30 days

Abstainer – Has not consumed alcohol in the past twelve months

Lifetime abstainer – Has never consumed alcohol

The survey found that 37.2% (95% CI 33.0-41.4) were current alcohol users (Table 22), defined as consumption of alcohol in the past 30 days, with the younger age group showing higher percentage as current drinkers at 45.6% (95% CI 38.3-52.9).

Table 22. Percentage of alcohol consumption among both sexes during the past 12 months by age group

Alcohol consumption status									
Age Group (years)	Both Sexes								
	n	% Current drinker (past 30 days)	95% CI	% Drank in past 12 months, not current	95% CI	% Past 12 months abstainer	95% CI	% Lifetime abstainer	95% CI
25-34	395	45.6	38.3-52.9	17.5	13.6-21.5	13.0	9.2-16.7	23.8	18.9-28.8
35-44	617	38.1	32.4-43.7	16.5	12.9-20.1	18.3	13.5-23.1	27.1	18.2-36.0
45-54	692	33.9	28.7-39.0	14.0	11.8-16.1	21.4	17.2-25.6	30.8	23.3-38.3
55-64	497	28.4	23.1-33.7	13.5	10.4-16.6	21.9	16.2-27.7	36.2	27.1-45.3
25-64	**2201**	**37.2**	**33.0-41.4**	**15.6**	**13.9-17.2**	**18.4**	**15.1-21.6**	**28.8**	**22.3-35.3**

Tables 23 shows that among the current drinkers, men have higher frequency of daily alcohol consumption at 7.2% (95% CI 5.2-9.2) in the past 12 months as compared to women at 2.8% (95% CI 1.3-4.2). As summarized in Table 23 and 24 males reported more frequent alcohol consumption than women. The overall percentage of current alcohol drinkers with daily consumption in the past 12 months is 5.6% (95% CI 4.0-7.1) (Table 25).

Table 23. Frequency of alcohol consumption among men during the last 12 months by age group

Frequency of alcohol consumption in the past 12 months											
Age Group (years)	Men										
	n	% Daily	95% CI	% 5-6 days p. week	95% CI	% 1-4 days p. week	95% CI	% 1-3 days p. month	95% CI	% < once a month	95% CI
25-34	137	4.8	0.9-8.7	11.8	4.4-19.2	26.6	15.0-38.3	31.5	20.7-42.2	25.3	15.9-34.7
35-44	201	7.8	3.4-12.2	6.1	2.8-9.5	28.1	19.7-36.6	21.9	15.2-28.5	36.1	27.8-44.4
45-54	181	9.9	4.2-15.6	7.5	3.2-11.9	24.2	17.6-30.8	29.0	21.3-36.7	29.4	21.4-37.3
55-64	137	7.0	1.8-12.3	3.5	0.2-6.8	28.1	19.3-36.9	31.4	23.8-38.9	30.0	23.2-36.9
25-64	**656**	**7.2**	**5.2-9.2**	**7.8**	**4.9-10.7**	**26.8**	**21.5-32.1**	**28.0**	**24.2-31.7**	**30.3**	**25.3-35.3**

Table 24 Frequency of alcohol consumption among women during the past 12 months by age group

Frequency of alcohol consumption in the past 12 months											
Age Group (years)	Women										
	n	% Daily	95% CI	% 5-6 days p. week	95% CI	% 1-4 days p. week	95% CI	% 1-3 days p. month	95% CI	% < once a month	95% CI
25-34	103	2.8	0.0-5.8	1.6	0.0-3.5	16.1	7.2-25.0	30.3	19.4-41.1	49.2	38.7-59.7
35-44	138	0.6	0.0-1.8	3.3	0.2-6.3	6.5	1.0-12.1	26.4	16.1-36.8	63.2	52.5-73.8
45-54	156	5.0	2.0-8.0	6.4	2.0-10.7	8.6	3.9-13.3	27.8	21.2-34.4	52.2	42.9-61.5
55-64	72	3.4	0.0-7.6	0.7	0.0-2.1	4.8	0.6-9.1	20.3	9.7-30.9	70.8	59.7-81.8
25-64	**469**	**2.8**	**1.3-4.2**	**3.3**	**1.5-5.1**	**9.9**	**5.8-14.1**	**27.4**	**21.0-33.7**	**56.7**	**49.4-63.9**

Table 25 Frequency of alcohol consumption among both sexes during the past 12 months by age group

Frequency of alcohol consumption in the past 12 months											
Age Group (years)	Both Sexes										
	n	% Daily	95% CI	% 5-6 days p. week	95% CI	% 1-4 days p. week	95% CI	% 1-3 days p. month	95% CI	% < once a month	95% CI
25-34	240	4.1	1.2-6.9	8.0	2.9-13.1	22.7	15.8-29.6	31.0	22.2-39.8	34.2	27.3-41.2
35-44	339	5.1	2.1-8.1	5.1	2.3-7.8	20.1	14.3-25.8	23.6	17.6-29.5	46.2	38.7-53.7
45-54	337	7.9	3.7-12.1	7.1	3.3-10.8	17.9	13.8-22.0	28.5	23.6-33.5	38.6	32.2-45.0
55-64	209	6.0	1.9-10.1	2.7	0.3-5.1	21.6	14.7-28.5	28.3	21.3-35.2	41.4	33.8-49.0
25-64	**1125**	**5.6**	**4.0-7.1**	**6.1**	**3.9-8.3**	**20.6**	**16.9-24.3**	**27.7**	**24.2-31.3**	**40.0**	**35.6-44.3**

There was a significant difference between men and women in the number of standard alcoholic drinks they consumed per drinking occasion. Table 26 shows that men on average consume 7.3 (95% CI 6.5-8.0) alcoholic drinks compared to women at 4.6 (95% CI 4.0-5.1) on one occasion. While there is a trend for decreasing mean maximum drinks on an occasion with age, this is not significant.

Table 26. Mean number of standard drinks per drinking occasion among current (past 30 days) drinkers

Mean number of standard drinks per drinking occasion among current (past 30 days) drinkers										
Age Group (years)	**Men**				**Women**				**Both Sexes**		
	N	Mean	95% CI		N	Mean	95% CI		N	Mean	95% CI
25-34	100	7.6	6.1-9.0		61	5.5	**4.1-6.9**		161	6.9	5.8-7.9
35-44	153	7.1	6.1-8.1		73	4.1	**3.0-5.1**		226	6.2	5.5-6.9
45-54	139	7.5	6.4-8.6		86	4.6	**3.5-5.6**		225	6.6	5.7-7.4
55-64	101	6.7	5.4-7.9		35	2.9	**2.1-3.7**		136	5.9	4.9-6.9
25-64	**493**	**7.3**	**6.5-8.0**		**255**	**4.6**	**4.0-5.1**		**748**	**6.5**	**5.9-7.0**

Table 27. Mean maximum number of drinks consumed on one occasion in the past 30 days

Mean maximum number of drinks consumed on one occasion in the past 30 days										
Age Group (years)	Men				Women				Both Sexes	
	n	Mean maximum number	95% CI		n	Mean maximum number	95% CI		n	Mean maximum number	95% CI
25-34	101	12.7	10.7-14.7		61	8.3	6.4-10.3		162	11.3	9.7-12.9
35-44	150	12.1	10.5-13.7		72	6.2	4.2-8.1		222	10.3	8.8-11.8
45-54	144	11.6	10.4-12.9		86	6.1	5.2-7.1		230	9.9	9.0-10.9
55-64	101	9.8	7.9-11.8		34	3.8	2.4-5.1		135	8.6	7.1-10.1
25-64	**496**	**11.8**	**10.8-12.9**		**253**	**6.7**	**5.6-7.8**		**749**	**10.3**	**9.4-11.2**

Tables 28 – 30 summarize the quantity of alcohol consumed in a day on average. The categories are:

Category III is defined as drinking ≥60g of pure alcohol on average per day for men and ≥40 g for women.

Category II is defined as drinking 40-59.9g of pure alcohol on average per day for men and 20-39.9g for women.

Category I is defined as drinking <40g of pure alcohol on average per day for men and <20g for women.

While 90.5% of consumers (95% CI 88.1-92.9) fall into category I behavior, 4.5% (95% CI 2.9-6.1) were category II and 5.0% (95% CI 3.0-6.9%) were category III consumers (Table 30).

Table 28. Category I, II and III drinking among current (past 30 days) drinkers among men by age

Category I, II and III drinking among current (past 30 days) drinkers							
Age Group (years)	**Men**						
	n	% Category III	95% CI	% Category II	95% CI	% Category I	95% CI
25-34	96	6.3	0.0-14.1	1.7	0.0-5.1	92.0	83.7-100.0
35-44	150	4.7	1.7-7.7	5.4	0.0-11.0	89.9	84.0-95.8
45-54	135	5.1	1.3-9.0	6.5	2.1-10.8	88.4	82.8-94.0
55-64	98	4.0	0.0-8.2	4.9	0.2-9.6	91.1	86.1-96.1
25-64	**479**	**5.2**	**2.4-8.0**	**4.4**	**2.4-6.4**	**90.4**	**87.4-93.4**

Table 29. Category I, II and III drinking among current (past 30 days) drinkers among women

Category I, II and III drinking among current (past 30 days) drinkers							
Age Group (years)	Women						
	n	% Category III	95% CI	% Category II	95% CI	% Category I	95% CI
25-34	61	8.5	2.4-14.7	3.3	0.0-6.9	88.2	82.8-93.6
35-44	69	1.2	0.0-3.5	5.8	0.0-12.4	93.0	86.3-99.8
45-54	85	3.2	0.0-7.0	5.8	0.0-11.6	91.0	84.9-97.1
55-64	34	2.9	0.0-7.2	2.9	0.0-9.1	94.1	84.5-100.0
25-64	**249**	**4.5**	**2.4-6.5**	**4.6**	**2.2-7.0**	**90.9**	**87.2-94.6**

Table 30. Category I, II and III drinking among current (past 30 days) drinkers among both sexes

Category I, II and III drinking among current (past 30 days) drinkers							
Age Group (years)	Both Sexes						
	n	% Category III	95% CI	% Category II	95% CI	% Category I	95% CI
25-34	157	7.1	1.9-12.2	2.2	0.0-4.6	90.7	84.6-96.8
35-44	219	3.7	1.2-6.2	5.5	1.4-9.6	90.8	86.4-95.2
45-54	220	4.5	2.1-6.9	6.3	3.0-9.6	89.2	85.2-93.3
55-64	132	3.8	0.5-7.1	4.5	0.5-8.5	91.7	87.3-96.1
25-64	**728**	**5.0**	**3.0-6.9**	**4.5**	**2.9-6.1**	**90.5**	**88.1-92.9**

The levels of risk that can be further defined by identifying how often consumers binge drink, described as 4 units or more in women and 5 or more in men, per day. The prevalence of binge drinking is considerably higher in men 43.5% (95% CI 38.2-48.7%) compared to women 16.6% (95% CI 13.8-19.3), as shown in Table 31.

Table 31. Four/five or more drinks on a single occasion at least once during the past 30 days

Age Group (years)	Men				Women		
	n	% ≥ 5 drinks	95% CI		n	% ≥ 4drinks	95% CI
25-34	191	52.9	44.1-61.7		204	25.7	19.0-32.5
35-44	297	44.4	36.6-52.3		319	15.3	11.4-19.2
45-54	313	38.9	32.89-45.0		378	16.1	11.6-20.5
55-64	239	34.9	27.4-42.5		258	5.7	1.5-9.8
25-64	**1040**	**43.5**	**38.3-48.7**		**1159**	**16.6**	**13.8-19.3**

Dietary habits

Dietary habits were assessed by asking the respondents how often and how much they ate fruits and vegetables, what types of cooking oil they commonly used in their households, how many meals eaten were not prepared at home, and how much salt their household.

Fruit and vegetable consumption

Tables 32 and 33 shows the mean number of days a week both men and women consumed fruit was 2.7 days (95% CI 2.5-2.9) and vegetables was 4.5 days (95% CI 4.3-4.7). The mean number of days a week that women consumed fruit was higher 3.0 days (95% CI 2.8-3.2) than for men 2.4 days (95% CI 2.3-2.6), a significant difference. Days in a week when women consumed fruit increased with age; this was significant. There was a similar trend in men but it was not significant. There were no significant differences by age for vegetable or fruit consumption among men.

Table 32. Mean number of days in a week that fruit are consumed by gender and age group

Mean number of days fruits consumed in a typical week									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of days	95% CI	n	Mean number of days	95% CI	n	Mean number of days	95% CI
25-34	190	2.4	2.1-2.8	200	2.7	2.3-3.0	390	2.5	2.3-2.8
35-44	292	2.4	2.0-2.8	321	2.8	2.5-3.1	613	2.6	2.4-2.8
45-54	311	2.4	2.1-2.7	376	3.2	2.9-3.5	687	2.8	2.5-3.0
55-64	240	2.5	2.2-2.9	257	3.4	3.1-3.7	497	2.9	2.7-3.2
25-64	**1033**	**2.4**	**2.3-2.6**	**1154**	**3.0**	**2.8-3.2**	**2187**	**2.7**	**2.5-2.9**

Table 33. Mean number of days in a week that vegetables are consumed by gender and age group

Mean number of days vegetables consumed in a typical week										
Age Group (years)	Men			Women			Both Sexes			
	n	Mean number of days	95% CI	n	Mean number of days	95% CI	n	Mean number of days	95% CI	
25-34	192	4.6	4.1-5.0	203	4.7	4.3-5.0	395	4.6	4.3-4.9	
35-44	296	4.3	4.0-4.6	321	4.7	4.3-5.1	617	4.5	4.2-4.8	
45-54	313	4.0	3.6-4.4	377	4.8	4.5-5.1	690	4.4	4.1-4.7	
55-64	238	3.9	3.6-4.3	258	4.9	4.6-5.1	496	4.4	4.1-4.6	
25-64	**1039**	**4.2**	**4.0-4.5**	**1159**	**4.7**	**4.5-5.0**	**2198**	**4.5**	**4.3-4.7**	

Tables 34 – 36 summarizes the mean number of servings of fruits on an average day for both men and women was 0.8 servings (95% CI 0.7- 0.9) and for vegetables 1.3 servings (95% CI 1.2-1.4). There was no noticeable difference across age groups or over time. Women in all age groups eat more servings of fruit than men 0.9 (95% CI 0.8-1.0) to 0.7 (95% CI 0.7-0.8), but this was not statistically significant. Women eat more servings of vegetables than men, 1.4 (95% CI 1.3-1.5) to 1.2 (95% CI 1.1-1.3), but this was also not statistically significant. However, when combined fruit and vegetable consumption is compared, women ate significantly more than men; 2.3 servings (95% CI 2.1-2.4) to 1.9 servings (95% CI 1.7- 2.2).

Table 34. Mean number of servings of fruit consumed on a day when fruits were eaten

Mean number of servings of fruits on average per day										
Age Group (years)	Men			Women			Both Sexes			
	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI	
25-34	188	0.7	0.6-0.8	200	0.8	0.6-1.0	388	0.7	0.7-0.8	
35-44	283	0.7	0.6-0.8	318	0.8	0.7-1.0	601	0.8	0.7-0.9	
45-54	309	0.7	0.6-0.9	369	1.0	0.8-1.1	678	0.8	0.7-1.0	
55-64	239	0.7	0.6-0.9	256	1.0	0.9-1.2	495	0.9	0.8-1.0	
25-64	**1019**	**0.7**	**0.7-0.8**	**1143**	**0.9**	**0.8-1.0**	**2162**	**0.8**	**0.7-0.9**	

Table 35. Mean number of servings of vegetables consumed on a day when vegetables were eaten

Mean number of servings of vegetables on average per day										
Age Group (years)	Men			Women			Both Sexes			
	N	Mean number of servings	95% CI	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI	
25-34	187	1.2	1.1-1.4	202	1.4	1.2-1.6	389	1.3	1.2-1.5	
35-44	291	1.2	1.1-1.4	318	1.4	1.2-1.6	609	1.3	1.2-1.5	
45-54	311	1.6	0.9-1.4	372	1.3	1.2-1.5	683	1.2	1.1-1.4	
55-64	236	1.1	0.9-1.4	255	1.4	1.2-1.6	491	1.3	1.1-1.4	
25-64	**1025**	**1.2**	**1.1-1.3**	**1147**	**1.4**	**1.3-1.5**	**2172**	**1.3**	**1.2-1.4**	

Table 36. Mean number of combined servings of fruit and vegetables consumed per day of the week

Mean number of servings of fruit and/or vegetables on average per day										
Age Group (years)	Men				Women				Both Sexes	
	N	Mean number of servings	95% CI		n	Mean number of servings	95% CI		n	Mean number of servings	95% CI
25-34	191	1.9	1.7-2.2		204	2.2	1.9-2.4		395	2.0	1.9-2.2
35-44	293	1.9	1.6-2.1		320	2.2	2.0-2.5		613	2.1	1.9-2.3
45-54	316	1.9	1.6-2.1		375	2.3	2.0-2.5		691	2.1	1.9-2.2
55-64	239	1.9	1.5-2.2		259	2.4	2.2-2.7		498	2.2	1.9-2.4
25-64	**1039**	**1.9**	**1.7-2.0**		**1158**	**2.3**	**2.1-2.4**		**2197**	**2.1**	**1.9-2.2**

Overall, 92% of the respondents do not meet the recommended 5 servings of fruits and vegetables in a typical day (Table 37-39). Only 6.5% (95% CI 5.1-8.0) of men and 9.8% (95% CI 7.7-12.0) of women reported eating the recommended number of servings of fruits and/or vegetables (5+) on a typical day. On the other end of the spectrum, 30.3% (95% CI 25.9-34.8) of men and 23.3% (95 % CI 19.5-27.2) of women reported eating no fruits and/or vegetables on a typical day.

Of note is that in each older age group, the proportion of men who eat no fruit and/or vegetables or only 1-2 servings increases while in the women the proportion decreases.

Table 37. Current number of servings of fruit and or/ vegetables on average per day among men by age group

Number of servings of fruit and/or vegetables on average per day									
Age Group (years)	Men								
	n	% no fruit and/or vegetables	95% CI	% 1-2 servings	95% CI	% 3-4 servings	95% CI	% ≥5 servings	95% CI
25-34	191	24.5	18.2-30.8	53.2	46.6-59.8	17.1	11.4-22.8	5.2	1.7-8.7
35-44	293	30.4	23.2-37.6	48.7	40.8-56.7	13.8	8.1-19.5	7.1	4.5-9.6
45-54	316	34.5	27.3-41.7	46.8	40.2-53.5	11.9	8.7-15.2	6.8	4.1-9.4
55-64	239	32.7	24.3-41.1	44.7	38.7-50.8	15.5	9.2-21.8	7.1	4.2-10.0
25-64	**1039**	**30.3**	**25.9-34.8**	**48.7**	**44.9-52.5**	**14.5**	**11.3-17.7**	**6.5**	**5.1-8.0**

Table 38. Current number of servings of fruit and / or vegetables on average per day among men by age group

Number of servings of fruit and/or vegetables on average per day									
Age Group (years)	Women								
	n	% no fruit and/or vegetables	95% CI	% 1-2 servings	95% CI	% 3-4 servings	95% CI	% ≥5 servings	95% CI
25-34	204	26.6	20.2-32.9	47.0	39.7-54.2	15.6	9.2-22.1	10.9	6.1-15.6
35-44	320	21.9	14.9-28.9	55.1	47.9-62.3	14.6	10.8-18.4	8.4	5.7-11.0
45-54	375	23.4	18.7-28.1	52.0	45.7-58.4	14.6	10.7-18.6	9.9	6.3-13.5
55-64	259	21.0	14.5-27.4	50.7	43.3-58.1	17.6	11.8-23.3	10.8	7.0-14.5
25-64	**1158**	**23.3**	**19.5-27.2**	**51.4**	**47.3-55.6**	**15.4**	**12.7-18.1**	**9.8**	**7.7-12.0**

Table 39. Current number of servings of fruit and vegetables on average per day among both sexes by age group

Number of servings of fruit and/or vegetables on average per day									
Age Group (years)	Both Sexes								
	n	% no fruit and/or vegetables	95% CI	% 1-2 servings	95% CI	% 3-4 servings	95% CI	% ≥5 servings	95% CI
25-34	395	25.5	20.8-30.1	50.2	45.3-55.1	16.4	12.3-20.6	7.9	5.0-10.9
35-44	613	26.2	20.6-31.9	51.9	45.7-58.0	14.2	10.6-17.8	7.7	5.8-9.6
45-54	691	29.2	24.5-33.9	49.3	44.3-54.4	13.2	11.1-15.4	8.3	6.0-10.6
55-64	498	27.2	21.3-33.1	47.5	42.9-52.1	16.5	12.4-20.5	8.8	6.7-10.9
25-64	**2197**	**27.0**	**23.6-30.3**	**50.0**	**46.9-53.1**	**14.9**	**12.7-17.1**	**8.1**	**6.8-9.4**

Table 40. Percentage who consumed less than five combined servings of fruit and vegetables per day

Less than five servings of fruit and/or vegetables on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	% < five servings per day	95% CI	n	% < five servings per day	95% CI	n	% < five servings per day	95% CI
25-34	191	94.8	91.3-98.3	204	89.2	84.4-93.9	395	92.1	89.1-95.0
35-44	293	92.9	90.4-95.5	320	91.6	89.0-94.3	613	92.3	90.4-94.2
45-54	316	93.3	90.6-95.9	375	90.1	86.5-93.8	691	91.7	89.4-94.0
55-64	239	92.9	90.0-95.8	259	89.2	85.5-93.0	498	91.2	89.1-93.3
25-64	**1039**	**93.5**	**92.0-94.9**	**1158**	**90.2**	**88.0-92.3**	**2197**	**91.9**	**90.6-93.2**

Table 41 shows that the main type of oil or fat used for meal preparation was vegetable oil 93.2% (95% CI 91.9-94.6).

Table 41. Type of oil or fat that is often used for meal preparation in household

Type of oil or fat most often used for meal preparation in household								
n (house-holds)	% Vegetable oil	95% CI	% Butter	95% CI	% Margarine	95% CI	Other	95% CI
17	93.2	91.9-94.6	0.7	0.3-1.0	0.5	0.0-1.0	5.0	3.6-6.3

Meals eaten outside of the home

Table 42 shows that for both sexes, an average of 2.2 meals per week was eaten outside the home. The mean for men was slightly higher 2.4 (95% CI 2.0-2.8) than for women 2.0 (95% CI 1.7-2.2), but this was not statistically significant. Both men and women in the 25-34 age groups ate out statistically more often than the 55-64 age group.

Table 42. Mean number of meals eaten outside a home

Mean number of meals eaten outside a home									
Age Group (years)	Men			Women			Both Sexes		
	n	mean	95% CI	n	mean	95% CI	n	mean	95% CI
25-34	188	3.3	2.4-4.2	195	2.6	2.3-2.9	383	3.0	2.4-3.5
35-44	291	2.4	1.9-2.9	314	2.1	1.7-2.4	605	2.2	1.9-2.6
45-54	310	2.3	1.8-2.8	371	1.8	1.4-2.1	681	2.1	1.7-2.4
55-64	237	1.3	1.0-1.7	250	1.3	1.0-1.6	487	1.3	1.0-1.5
25-64	**1026**	**2.4**	**2.0-2.8**	**1130**	**2.0**	**1.7-2.2**	**2156**	**2.2**	**1.9-2.5**

Physical Activity

The physical activity component of the questionnaire included 16 questions on work, leisure and transport-related physical activity, along with a question on sedentary behavior. Combined, the questions allow for an assessment of MET (metabolic equivalent minutes)per day. This measure is related to the energy cost of different activities, and allows for the energy expenditure required by different types of activities to be combined into a single measure for comparison against recommended activity levels. Issues were identified during the data analysis that suggested many of the responses to the physical activity questions were probably incorrect. In the judgment of the STEPS team, the results were implausible; it was therefore decided that the majority of analyses should not be included in this report. It was agreed that data on whether an individual was or was not active in certain domains was plausible, but the number of minutes and intensity levels were not. The assessments below are therefore only of whether participants indicated they were active in the three domains.

Table 43 indicates that around half (45.6% 95%CI 39.0-52.2) of the population had no work-related physical activity, with a non-significant difference between men and women. Table 44 shows that slightly more (54.2% 95%CI 48.8-59.6) had no transport-related physical activity with again no significant difference between genders. Table 45 shows that women were significantly more likely than men to report no recreation-related physical activity, with 62% of women (95%CI 56.4-67.6) and 42.1% of men (95%CI 37.4-46.7).

Table 43. Prevalence of no work-related physical activity

No work-related physical activity										
Age Group (years)	Men				Women				Both Sexes		
	n	% no activity at work	95% CI		n	% no activity at work	95% CI		n	% no activity at work	95% CI
25-34	165	29.9	19.8-40.1		188	54.3	46.4-62.2		353	42.2	35.5-48.8
35-44	243	39.5	29.9-49.0		290	51.5	43.0-60.1		533	45.6	37.0-54.3
45-54	283	40.0	32.0-47.9		351	51.3	43.3-59.2		634	45.5	39.0-52.0
55-64	217	51.5	40.0-63.1		239	49.5	37.2-61.9		456	50.6	40.3-60.9
25-64	**908**	**39.5**	**32.1-46.9**		**1068**	**51.9**	**44.9-58.8**		**1976**	**45.6**	**39.0-52.2**

Table 44. Prevalence of no transport-related physical activity

No transport-related physical activity									
Age Group (years)	Men			Women			Both Sexes		
	n	% no activity for transport	95% CI	n	% no activity for transport	95% CI	n	% no activity for transport	95% CI
25-34	165	46.5	34.3-58.6	188	56.9	47.6-66.1	353	51.7	44.2-59.2
35-44	243	55.1	44.7-65.6	290	58.0	50.0-65.9	533	56.6	49.6-63.5
45-54	283	51.3	42.4-60.1	351	57.1	48.8-65.5	634	54.1	47.8-60.4
55-64	217	51.2	43.1-59.3	239	57.4	48.2-66.6	456	54.1	46.5-61.6
25-64	**908**	**51.1**	**43.5-58.7**	**1068**	**57.4**	**51.6-63.2**	**1976**	**54.2**	**48.8-59.6**

Table 45. Prevalence of no recreation-related physical activity

No recreation-related physical activity									
Age Group (years)	Men			Women			Both Sexes		
	n	% no activity at recreation	95% CI	n	% no activity at recreation	95% CI	n	% no activity at recreation	95% CI
25-34	165	37.5	29.1-46.0	188	63.7	54.4-73.0	353	50.7	43.2-58.2
35-44	243	40.8	34.0-47.6	290	58.3	49.4-67.2	533	49.7	43.9-55.6
45-54	283	43.3	34.6-52.1	351	63.9	54.3-73.5	634	53.4	47.1-59.7
55-64	217	48.1	41.2-55.0	239	62.9	53.9-71.9	456	55.0	48.7-61.3
25-64	**908**	**42.1**	**37.4-46.7**	**1068**	**62.0**	**56.4-67.6**	**1976**	**51.9**	**47.3-56.5**

Physical measurements

Weight, Height, BMI, Waist, Hip

The height and weight measurements were used to calculate body mass index and waist and hip measurements were used to calculate waist-hip ratio. Body mass index (BMI) was calculated for each participant as the weight in kilograms over the height in meters^2. Risk categories were calculated for BMI as follows:

BMI Classification	
< 18.5	Underweight
18.5 to 24.9	Healthy Weight
25 to 29.9	Overweight
30 to 39.9	Obese
≥ 40	Very Obese

Table 46 shows the mean height in men was over 10cm higher than in women 167.0cm (95% CI 166.2-167.9) and 156.6cm (95% CI 156.2-157.0), respectively. Similarly, Table 47 shows the mean weight in men 83.6kg (95% CI 82.4-85.9) was just under than 10kg heavier than women 74.2kg (95% CI 72.6-75.7). The mean BMI was 30.2 kg/m^2 (95% CI 29.6-30.6) with similar results for men and women (Table 48).

Table 46 Mean height by gender and age group

Mean height (cm)							
Age Group (years)	Men				Women		
	n	Mean	95% CI		n	Mean	95% CI
25-34	189	167.8	166.6-169.0		205	156.4	155.2-157.7
35-44	294	166.3	164.5-168.0		319	156.9	156.0-157.9
45-54	316	167.2	166.3-168.1		376	156.5	155.8-157.2
55-64	239	166.9	166.1-167.6		255	156.6	155.8-157.4
25-64	**1038**	**167.0**	**166.2-167.8**		**1155**	**156.6**	**156.2-157.0**

Table 47 Mean weight by gender and age group

Mean weight (kg)							
Age Group (years)	Men				Women		
	n	Mean	95% CI		n	Mean	95% CI
25-34	192	84.0	80.0-87.9		186	72.5	68.6-76.4
35-44	290	84.1	81.5-86.7		310	73.9	70.8-77.0
45-54	317	84.8	82.5-87.1		379	75.5	73.6-77.4
55-64	240	83.6	80.8-86.4		256	74.7	72.8-76.7
25-64	**1039**	**84.1**	**82.4-85.9**		**1131**	**74.2**	**72.6-75.7**

Table 48 Mean body mass index (kg/m^2) by gender and age group

Mean BMI (kg/m2)										
Age Group (years)	Men				Women				Both Sexes		
	n	Mean	95% CI		n	Mean	95% CI		n	Mean	95% CI
25-34	189	29.7	28.4-31.0		185	29.5	28.1-30.9		374	29.6	28.7-30.5
35-44	286	30.1	29.2-31.1		308	29.9	28.9-31.0		594	30.0	29.2-30.8
45-54	315	30.3	29.4-31.1		376	30.8	30.1-31.6		691	30.5	29.9-31.1
55-64	239	30.0	29.0-31.0		253	30.4	29.7-31.2		492	30.2	29.5-30.9
25-64	**1029**	**30.0**	**29.4-30.7**		**1122**	**30.2**	**29.6-30.7**		**2151**	**30.1**	**29.6-30.6**

As shown in tables 49 - 51, overall only 1% of the population was found to be underweight (95% CI 0.5-1.4), and 22.1% (95% CI 18.9-25.2) were normal weight. Overall 30.8% (95% CI 28.5-33.1) were overweight and 46.2% (95% CI 42.9-49.4) were obese. There were no significant differences in prevalence of overweight and obesity by age or gender.

Mean waist circumference (Table 52) was 98.6cm (95% CI 97.2-100.0) in men and 96.2cm (95% CI 94.6-97.8) in women. Mean hip circumference (Table 53) was 102.9cm (95% CI 101.8-104.0) in men and 105.4cm (95% CI 103.9-106.9) in women. Mean waist-hip ratio in men was 1.0 and 0.9 in women.

Table 49 BMI classification among men by age group

BMI classifications									
Age Group (years)	Men								
	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% BMI 25.0-29.9	95% CI	% Obese ≥30.0	95% CI
25-34	189	0.2	0.0-0.7	29.7	22.3-37.2	28.9	19.1-38.7	41.1	31.4-50.9
35-44	286	0.8	0.0-1.9	20.6	14.7-26.6	30.8	24.2-37.5	47.7	40.9-54.6
45-54	315	0.3	0.0-0.9	20.1	14.7-25.5	34.2	27.7-40.8	45.4	38.4-52.3
55-64	239	1.1	0.0-2.3	14.8	8.3-21.4	37.3	30.7-43.8	46.9	38.4-55.4
25-64	**1029**	**0.6**	**0.1-1.0**	**21.8**	**18.7-24.9**	**32.4**	**29.1-35.7**	**45.2**	**40.5-49.9**

Table 50 BMI classification among women by age group

BMI classifications									
Age Group (years)	Women								
	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% BMI 25.0-29.9	95% CI	% Obese ≥30.0	95% CI
25-34	185	2.9	0.4-5.5	29.7	21.1-38.3	23.8	17.2-30.5	43.5	35.4-51.7
35-44	308	0.7	0.0-1.5	26.8	19.1-34.6	27.7	22.6-32.8	44.8	39.6-50.0
45-54	376	0.8	0.0-1.8	17.0	11.7-22.2	30.4	26.4-34.4	51.8	45.6-58.0
55-64	253	1.4	0.0-2.7	13.2	10.3-16.1	36.3	28.8-43.8	49.1	40.9-57.4
25-64	**1122**	**1.4**	**0.6-2.1**	**22.3**	**18.3-26.4**	**29.0**	**26.1-32.0**	**47.2**	**43.8-50.7**

Table 51 BMI classification among both sexes by age group

BMI classifications									
Age Group (years)	Both Sexes								
	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% BMI 25.0-29.9	95% CI	% Obese ≥30.0	95% CI
25-34	374	1.4	0.2-2.7	29.7	23.4-36.1	26.6	19.1-34.1	42.2	35.9-48.5
35-44	594	0.7	0.1-1.4	23.6	18.3-29.0	29.3	25.4-33.2	46.3	41.7-50.9
45-54	691	0.5	0.0-1.1	18.6	15.0-22.1	32.4	28.4-36.4	48.5	43.6-53.4
55-64	492	1.2	0.2-2.2	14.1	10.6-17.6	36.8	32.3-41.3	47.9	42.4-53.4
25-64	**2151**	**1.0**	**0.5-1.4**	**22.1**	**18.9-25.2**	**30.8**	**28.5-33.1**	**46.2**	**42.9-49.4**

Table 52 Mean waist circumference (cm) by gender and age group

Waist circumference (cm)							
Age Group (years)	Men				Women		
	n	Mean	95% CI		n	Mean	95% CI
25-34	190	96.1	93.8-98.4		187	94.0	90.4-97.6
35-44	293	98.1	96.3-99.9		310	95.1	92.3-97.9
45-54	316	99.8	97.7-101.8		377	97.1	95.1-99.0
55-64	239	101.3	98.3-104.3		259	99.6	97.7-101.6
25-64	**1038**	**98.6**	**97.2-100.0**		**1133**	**96.2**	**94.6-97.8**

Table 53 Mean hip circumference (cm) by gender and age group

Hip circumference (cm)							
Age Group (years)	Men				Women		
	n	Mean	95% CI		n	Mean	95% CI
25-34	192	102.7	100.7-104.6		187	104.1	101.1-107.2
35-44	296	102.7	101.4-104.1		311	104.7	102.3-107.1
45-54	317	103.3	101.4-105.1		376	106.4	104.5-108.4
55-64	240	103.0	100.1-105.9		259	106.6	104.6-108.6
25-64	**1045**	**102.9**	**101.8-104.0**		**1133**	**105.4**	**103.9-106.9**

Blood Pressure

To assess the health status of the surveyed population, the participants were asked questions relating to recent blood pressure measurements, and medication for hypertension. STEP 1 data regarding hypertension, included information on when participants had last had their blood pressure measured by a health professional, whether they had ever been told by a health worker that they had high blood pressure, and whether they were currently receiving any treatment for high blood pressure. STEP 2 data regarding hypertension included the mean systolic and diastolic measurements as noted in the section on Methodology.

Tables 54-56 present data on the uptake of screening for high blood pressure for men and women. For men, only 13.7% (95% CI 9.9-17.5) had never had their blood pressure measured, and this was more common in younger men. For women, only 9.9% had never had their blood pressure measured (95% CI 6.9-12.9).

Table 54. Percentage who had blood pressure measured and diagnosis among men by age group

Blood pressure measurement and diagnosis									
Age Group (years)	Men								
	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
25-34	191	19.2	10.9-27.6	69.2	61.4-77.1	3.4	0.5-6.4	8.1	3.3-12.8
35-44	296	15.4	9.4-21.3	69.6	63.0-76.2	3.0	1.5-4.4	12.1	7.9-16.4
45-54	316	9.5	4.7-14.3	61.0	53.2-68.7	4.6	2.1-7.1	24.9	19.0-30.8
55-64	235	9.1	2.5-15.7	54.9	46.9-62.8	4.3	1.9-6.8	31.7	23.4-40.0
25-64	**1038**	**13.7**	**9.9-17.5**	**64.6**	**60.4-68.8**	**3.8**	**2.4-5.1**	**17.9**	**15.1-20.7**

Table 55. Percentage who had blood pressure measured and diagnosis among women by age group

Blood pressure measurement and diagnosis									
Age Group (years)	Women								
	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
25-34	205	11.7	5.9-17.6	75.0	67.0-83.0	3.0	0.3-5.7	10.3	6.0-14.5
35-44	318	10.7	6.0-15.4	69.5	63.7-75.3	4.7	2.2-7.1	15.1	10.1-20.1
45-54	377	9.3	6.0-12.6	52.4	46.0-58.8	6.0	2.1-9.9	32.3	26.5-38.1
55-64	254	6.7	1.8-11.6	44.0	35.9-52.1	4.5	1.8-7.2	44.8	36.8-52.8
25-64	**1154**	**9.9**	**6.9-12.9**	**62.1**	**58.7-65.5**	**4.6**	**2.8-6.3**	**23.5**	**21.0-25.9**

Table 56. Percentage who had blood pressure measured and diagnosis among both sexes by age group

Blood pressure measurement and diagnosis									
Age Group (years)	Both sexes								
	N	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
25-34	396	15.6	10.5-20.8	72.0	66.5-77.6	3.2	0.8-5.6	9.1	7.0-11.3
35-44	614	13.1	9.1-17.1	69.6	64.6-74.5	3.8	2.3-5.3	13.6	10.4-16.7
45-54	693	9.4	6.0-12.8	56.8	51.5-62.2	5.3	2.7-7.9	28.5	23.2-33.7
55-64	489	8.0	3.2-12.8	49.8	44.3-55.3	4.4	3.1-5.7	37.8	31.3-44.3
25-64	**2192**	**11.9**	**9.0-14.8**	**63.4**	**60.3-66.6**	**4.1**	**2.9-5.4**	**20.6**	**18.4-22.8**

Overall, as shown in table 57, 43.8% of adults (95% CI 40.5-47.0) were found during the survey to have raised blood pressure (SBP≥140 and/or DBP ≥90mm Hg), with prevalence significantly lower in women (36.4% 95% CI 32.9-39.8) than men (50.1% 95% CI 45.8-54.4). Prevalence increased with age, as would be expected. Table 58 shows that when those already taking medication for hypertension were included, the prevalence rate rose to 49.0% (95% CI 45.9-52.0).

Table 59 shows that stage 2 hypertension (SBP≥160 and/or DBP ≥100mm Hg) was found in 15.2% of the population (95% CI 13.4-17.1), with rates higher in men (18.2%, 95% CI 15.1-21.4) than women (11.8%, 95% CI 9.5-14.1). Table 60 shows that when those already taking medication for hypertension was included, the prevalence rose to 23.1% (95% CI 21.3-24.9), with no significant difference by gender. Prevalence increased by age, for stage 2 hypertension in both genders and overall.

Among those who have raised blood pressure (SBP ≥140 and/or DBP≥90 mm Hg) 80.2% were not receiving any medication (95% CI 77.5-82.8), 15.7% (95% CI 13.5-18.0) were receiving medication but still had raised blood pressure and only 4.1% were receiving medication and had their blood pressure controlled (95% CI 3.1-5.1). The prevalence of having raised blood pressure despite taking medication increased with age. However the prevalence of those with raised blood pressure who were not receiving medication decreased with age. These patterns were consistent across the two gender sub-groups. Overall women were significantly more likely to be receiving medication for raised blood pressure and significantly more likely to be taking medication but also more likely to be poorly controlled on medication.

Table 57. Percentage with raised blood pressure (SBP≥ 140 and/or DBP ≥ 90 mmHg, excluding those on medication for raised blood pressure)

SBP ≥140 and/or DBP ≥ 90 mmHg, excluding those on medication for raised blood pressure										
Age Group (years)	Men				Women				Both Sexes		
	n	%	95% CI		n	%	95% CI		n	%	95% CI
25-34	188	34.0	26.8-41.1		198	20.7	14.3-27.1		386	27.7	23.6-31.8
35-44	291	49.9	41.7-58.2		299	29.5	23.5-35.6		590	40.3	34.4-46.2
45-54	294	57.2	51.9-62.4		323	50.3	44.5-56.2		617	54.0	49.7-58.4
55-64	191	67.4	58.6-76.3		191	59.1	51.7-66.6		382	63.8	57.1-70.5
25-64	**964**	**50.1**	**45.8-54.4**		**1011**	**36.4**	**32.9-39.8**		**1975**	**43.8**	**40.5-47.0**

Table 58. Percentage with raised blood pressure (SBP ≥140 and/or DBP ≥ 90 mmHg or currently on medication for raised blood pressure)

SBP ≥140 and/or DBP ≥ 90 mmHg or currently on medication for raised blood pressure										
Age Group (years)	Men				Women				Both Sexes		
	n	%	95% CI		n	%	95% CI		n	%	95% CI
25-34	191	34.9	27.7-42.0		205	23.8	17.1-30.6		396	29.6	25.5-33.7
35-44	297	50.9	42.5-59.4		319	33.6	28.2-39.0		616	42.6	36.9-48.3
45-54	316	60.1	55.1-65.2		378	58.6	53.4-63.8		694	59.4	55.4-63.4
55-64	240	74.3	67.2-81.5		257	71.0	64.8-77.2		497	72.8	67.6-78.0
25-64	**1044**	**53.4**	**49.2-57.6**		**1159**	**44.1**	**41.0-47.3**		**2203**	**49.0**	**45.9-52.0**

Table 59. Percentage with elevated blood pressure (SBP ≥160 and/or DBP ≥ 100 mmHg, excluding those on medication for raised blood pressure)

SBP ≥160 and/or DBP ≥ 100 mmHg, excluding those on medication for raised blood pressure										
Age Group (years)	Men				Women				Both Sexes	
	n	%	95% CI		n	%	95% CI		n	%	95% CI
25-34	188	8.5	4.3-12.7		198	2.9	0.7-5.1		386	5.9	3.3-8.4
35-44	291	15.1	11.3-19.0		299	6.9	3.7-10.2		590	11.2	8.6-13.9
45-54	294	27.0	20.2-33.8		323	18.9	14.2-23.6		617	23.3	19.1-27.5
55-64	191	27.0	17.5-36.5		191	28.3	21.2-35.4		382	27.6	20.9-34.2
25-64	**964**	**18.2**	**15.1-21.4**		**1011**	**11.8**	**9.5-14.1**		**1975**	**15.2**	**13.4-17.1**

Table 60. Percentage with elevated blood pressure (SBP ≥160 and/or DBP ≥ 100 mmHg or currently on medication for raised blood pressure)

SBP ≥160 and/or DBP ≥ 100 mmHg or currently on medication for raised blood pressure										
Age Group (years)	Men				Women				Both Sexes	
	n	%	95% CI		n	%	95% CI		n	%	95% CI
25-34	191	9.8	5.7-13.8		6.7	6.7	2.6-10.9		396	8.3	5.3-11.4
35-44	297	16.8	12.8-20.9		12.3	12.3	7.9-16.7		616	14.6	11.5-17.8
45-54	316	32.0	25.1-38.9		32.5	32.5	26.7-38.3		694	32.3	27.8-36.7
55-64	240	42.4	35.0-49.8		49.1	49.1	43.3-55.0		497	45.5	40.8-50.2
25-64	**1044**	**23.6**	**20.5-26.7**		**22.5**	**22.5**	**20.2-24.9**		**2203**	**23.1**	**21.3-24.9**

Biochemical measurements

Fasting blood glucose

Participants were asked questions relating to testing for diabetes, and medication for diabetes. Fasting blood glucose was taken, but mean fasting blood glucose results excluded those currently on medication for diabetes (Table 61). Any participants who indicated they had not fasted prior to the measurement were not included in the analysis

The mean fasting glucose for adults 25-64 in Palau was 114.6mg/dl (95% CI 112.3-117.0), with no significant differences by gender, but increasing levels by age.

Table 61. Mean fasting blood glucose in mg/dl by gender and age group

Mean fasting blood glucose (mg/dl)										
Age Group (years)	Men				Women				Both Sexes	
	n	Mean	95% CI		n	Mean	95% CI		n	Mean	95% CI
25-34	152	105.0	101.7-108.2		170	101.3	95.6-107.0		322	103.2	100.1-106.4
35-44	236	114.5	108.4-120.5		254	113.5	106.9-120.1		490	114.0	110.2-117.8
45-54	260	120.3	116.1-124.6		311	116.9	111.6-122.2		571	118.7	115.6-121.8
55-64	189	126.9	118.3-135.4		215	126.1	115.8-136.3		404	126.5	119.9-133.1
25-64	**837**	**115.7**	**112.5-119.0**		**950**	**113.4**	**109.2-117.6**		**1787**	**114.6**	**112.3-117.0**

Overall as shown in Table 62, 16.1% (95% CI 13.0-19.3) of men and women aged 25-64 had impaired fasting glycaemia (defined as plasma venous value ≥110mg/dl and <126mg/dl or capillary whole blood value: ≥100mg/dl and <110mg/dl). There were no significant differences by age or gender.

Table 62. Mean impaired fasting blood glucose by gender and age group

Impaired Fasting Fasting Blood Glucose (plasma venous value: ≥6.1mmol/L (110mg/dl) and <7.0mmol/L (126mg/dl)									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	95% CI	%	95% CI	n	%	95% CI
25-34	153	11.4	5.7-17.1	170	8.9	5.0-12.9	323	10.2	6.9-13.5
35-44	237	16.8	11.7-22.0	254	12.2	7.6-16.8	491	14.6	11.1-18.2
45-54	262	21.3	17.4-25.2	313	19.1	12.7-25.6	575	20.2	16.0-24.5
55-64	191	22.9	15.6-30.2	217	19.2	11.0-27.3	408	21.1	15.1-27.2
25-64	**843**	**17.6**	**13.7-21.6**	**954**	**14.4**	**11.1-17.8**	**1797**	**16.1**	**13.0-19.3**

Raised blood glucose is defined as having a fasting plasma capillary value of ≥126mg/dl. Overall 20.4% (95% CI 17.6-23.2) of adults aged 25-64 years had raised blood glucose or were on medication for diabetes, with no significant difference by gender. Rates did however increase significantly with age as shown in Table 63, with 32.7% (95% CI 27.2-38.2) of 55 to 64 year olds was affected.

Overall 7.7% (95% CI 6.4-9.0) were taking medication for diabetes with rates increasing with age, but no significant difference between men and women (Table 64).

Table 63. Percentage of raised blood glucose or currently on medication for diabetes

Raised blood glucose (plasma venous values : ≥ 7.0mmol/L (126mg/dl) or currently on medication for diabetes **										
Age Group (years)	Men				Women				Both Sexes		
	n	%	95% CI		n	%	95% CI		n	%	95% CI
25-34	153	10.8	5.9-15.8		170	8.9	2.0-15.8		323	9.9	5.6-14.2
35-44	237	21.3	14.9-27.7		254	17.3	11.4-23.3		491	19.4	15.4-23.4
45-54	262	25.4	21.0-29.9		313	21.9	16.6-27.3		575	23.7	20.1-27.4
55-64	191	30.7	22.7-38.8		217	34.9	26.5-43.3		408	32.7	27.2-38.2
25-64	**843**	**21.3**	**17.4-25.1**		**954**	**19.5**	**15.5-23.5**		**1797**	**20.4**	**17.6-23.2**

Table 64. Percentage on medication currently for diabetes

Currently on medication for diabetes									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	193	3.2	0.0-6.9	205	2.0	0.3-3.6	398	2.6	0.5-4.7
35-44	297	0.9	0.0-2.0	321	6.5	3.5-9.5	618	3.6	2.3-4.9
45-54	318	9.6	5.4-13.8	379	8.6	5.3-11.8	697	9.1	6.5-11.7
55-64	240	16.5	11.1-21.9	259	24.2	16.8-31.7	499	20.1	15.3-24.8
25-64	**1048**	**6.6**	**4.6-8.7**	**1164**	**8.9**	**6.8-11.1**	**2212**	**7.7**	**6.4-9.0**

Total cholesterol

Table 65 shows the mean fasting total cholesterol was 179.5mg/dl (95% CI 177.6-181.4), with no significant difference by age or gender. Questions on history of measurement, existing diagnosis and medication for raised cholesterol were included in STEPS 1 questionnaire.

Table 65. Mean levels of total blood cholesterol (mg/dl) by gender and age group

Mean total cholesterol (mg/dl)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34	123	172.0	168.1-175.9	121	177.1	171.0-183.1	244	174.3	171.4-177.2
35-44	191	176.5	173.7-179.2	193	174.0	170.7-177.3	384	175.3	173.2-177.4
45-54	221	178.1	174.2-182.0	280	188.1	183.2-193.0	501	183.2	179.3-187.1
55-64	164	183.0	179.8-186.2	183	191.5	184.6-198.5	347	187.0	183.1-190.8
25-64	**699**	**177.0**	**175.2-178.8**	**777**	**182.3**	**179.3-185.3**	**1476**	**179.5**	**177.6-181.4**

Overall (Table 66) 25.8% (95% CI 22.9 – 28.7) of people age 25-64 had total cholesterol levels above the recommended level of 5.0mmol/l or 190mg/dl or were taking medication for raised cholesterol. While more women than men had raised cholesterol, the difference was not significant. Prevalence increased with age.

Overall (Table 67) 7.2% (95% CI 5.4-9.0) were taking medication for raised cholesterol or had fasting total cholesterol of ≥6.2mmol/l or ≥ 240mg/dl. Again, prevalence increased with age, and the difference between men and women was not significant.

Table 66. Percentage with raised blood cholesterol (≥ 5.0 mmol/L or ≥ 190 mg/dl) or currently on medication for cholesterol

Total cholesterol ≥ 5.0 mmol/L or ≥ 190 mg/dl									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	123	17.3	11.6-23.1	121	22.2	13.1-31.3	244	19.5	14.4-24.6
35-44	191	19.3	15.1-23.5	193	15.9	9.6-22.3	384	17.7	14.1-21.3
45-54	221	25.9	18.1-33.6	280	35.7	27.7-43.7	501	30.9	23.7-38.1
55-64	164	31.0	24.7-37.3	183	46.7	39.4-53.9	347	38.3	33.3-43.3
25-64	**699**	**22.8**	**20.0-25.6**	**777**	**29.1**	**25.1-33.2**	**1476**	**25.8**	**22.9-28.7**

Table 67. Percentage with raised blood cholesterol (≥ 6.2 mmol/L or ≥ 240 mg/dl) or currently on medication for cholesterol

Total cholesterol ≥ 6.2 mmol/L or ≥ 240 mg/dl									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	123	1.8	0.0-3.7	121	3.1	0.0-6.2	244	2.4	0.3-4.4
35-44	191	2.7	0.5-5.0	193	3.2	1.4-5.0	384	2.9	1.2-4.7
45-54	221	8.1	3.7-12.6	280	13.2	8.1-18.4	501	10.7	6.6-14.8
55-64	164	10.0	4.5-15.5	183	19.3	10.9-27.6	347	14.3	9.5-19.1
25-64	**699**	**5.3**	**3.6-7.1**	**777**	**9.2**	**6.6-11.8**	**1476**	**7.2**	**5.4-9.0**

Triglycerides

Overall (Table 68) the mean fasting triglyceride level was 171.5 mg/dL (95% CI 1.8-2.0) with no significant difference by age or gender.

Table 68 Mean fasting triglycerides (mg/dl) by gender and age group

Mean fasting triglycerides (mg/dl)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34	147	161.1	147.6-174.7	164	154.7	143.6-165.7	311	158.0	148.8-167.2
35-44	221	190.0	165.8-214.2	246	153.3	137.8-168.9	467	172.1	155.9-188.4
45-54	247	181.2	167.3-195.1	303	176.3	162.5-190.1	550	178.8	168.3-189.3
55-64	178	183.8	167.9-199.7	203	175.9	160.0-191.8	381	180.0	168.8-191.2
25-64	**793**	**178.8**	**169.6-188.0**	**916**	**163.8**	**153.5-174.1**	**1709**	**171.5**	**163.7-179.4**

Overall 44.7% (95% CI 40.2-49.2) of adults had meant fasting triglycerides above 150 mg/dL (1.7 mmol/L) (Table 69). While there was a trend of increasing prevalence by age, this was not significant. There was also no significant difference between men and women. Table 70 shows the raised triglycerides values, defined as fasting levels ≥ 2.0 mmol/L or ≥ 180 mg/dl was found in 35.1% of adults 25-64 years of age, with a non-significant trend towards increasing prevalence by age. While prevalence in men 38.8% (95% CI 34.6-43.0) was higher than in women 31.2% (95% CI 25.7-36.7), this difference was not significant.

Table 69. Percentage of respondents with fasting triglycerides ≥ 1.7 mmol/L or ≥ 150 mg/dl by gender and age group

Percentage of respondents with fasting triglycerides ≥ 1.7 mmol/L or ≥ 150 mg/dl									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	147	41.4	34.0-48.9	164	39.6	**33.0-46.2**	311	40.6	**35.9-45.2**
35-44	221	49.9	38.7-61.0	246	33.3	25.8-40.7	467	41.8	34.2-49.4
45-54	247	51.6	44.5-58.7	303	44.4	37.6-51.2	550	48.1	42.7-53.5
55-64	178	52.4	46.0-58.8	203	48.9	40.0-57.8	381	50.7	44.8-56.6
25-64	**793**	**48.5**	**43.3-53.7**	**916**	**40.6**	**35.6-45.7**	**1709**	**44.7**	**40.2-49.2**

Table 70. Percentage of respondents with fasting triglycerides ≥ 2.0 mmol/L or ≥ 180 mg/dl by gender and age group

Percentage of respondents with fasting triglycerides ≥ 2.0 mmol/L or ≥ 180 mg/dl									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	147	34.7	27.9-41.5	164	28.8	21.4-36.2	311	31.9	27.6-36.1
35-44	221	42.2	30.7-53.6	246	24.8	16.7-32.9	467	33.7	26.2-41.2
45-54	247	38.2	31.8-44.7	303	35.8	28.8-42.7	550	37.0	32.1-42.0
55-64	178	40.2	33.2-47.3	203	38.4	29.4-47.4	381	39.4	33.0-45.7
25-64	**793**	**38.8**	**34.6-43.0**	**916**	**31.2**	**25.7-36.7**	**1709**	**35.1**	**31.1-39.1**

Combined risk factors

Assessment of overall risk of NCDs can be defined as low, moderate or high, based on the presence of the following risk factors:

Current daily smoker (does not include chewing tobacco)

Less than 5 servings of fruit and vegetables a day

Low level of physical activity (<600 MET minutes)

Being overweight or obese (BMI ≥25kg/m^2)

Raised BP (SBP ≥140mm Hg and/or DBP ≥ 90mm Hg or currently on medication for raised BP)

The presence of no risk factors is defined as low risk, 1-2 risk factors as moderate risk and presence of 3-5 risk factors as high risk.

Overall only 1.0% of both sexes (95% CI 0.5-1.4) was defined as low risk, while 40.8% (95% CI 38.2-43.3) were defined as moderate risk and 58.3% (95% CI 55.6-61.0) were categorized as high risk (Tables 71-73). Those aged 45-64 years were significantly more likely to be defined as high risk than those aged 25-44 years. This was similar in both men and women. There was no significant difference overall by gender for the prevalence of any of the risk categories.

Table 71. Percentage of NCD risk categories among men by age group

Summary of Combined Risk Factors							
Age Group (years)	Men						
	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
25-44	392	0.2	0.0-0.6	49.1	43.9-54.3	50.7	45.4-56.0
45-64	494	0.5	0.0-1.3	26.4	21.5-31.3	73.1	68.0-78.2
25-64	**886**	**0.4**	**0.0-0.8**	**38.4**	**34.9-41.9**	**61.2**	**57.8-64.6**

Table 72 Percentage of NCD risk categories among women by age group

Summary of Combined Risk Factors							
Age Group (years)	Women						
	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
25-44	446	2.0	0.3-3.8	51.1	46.2-56.1	46.8	42.0-51.7
45-64	578	1.0	0.3-1.8	33.8	29.4-38.2	65.2	60.9-69.5
25-64	**1024**	**1.6**	**0.6-2.6**	**43.2**	**39.2-47.3**	**55.2**	**51.1-59.3**

Table 73 Percentage of NCD risk categories among both sexes by age group

Summary of Combined Risk Factors							
Age Group (years)	Both Sexes						
	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
25-44	838	1.1	0.3-1.9	50.1	46.1-54.1	48.8	44.6-53.0
45-64	1072	0.8	0.3-1.3	29.9	27.4-32.4	69.3	66.7-72.0
25-64	**1910**	**1.0**	**0.5-1.4**	**40.8**	**38.2-43.3**	**58.3**	**55.6-61.0**

The risk of developing cardiovascular disease in the next ten years can be assessed using WHO/ISH risk prediction charts for those aged 40 years and over. These charts use three risk factors (along with gender and age) to assess risk:

Current daily smoker raised BP (SBP ≥140mm Hg and/or DBP ≥ 90mm Hg or currently on medication for raised BP)

Raised blood glucose (plasma venous value ≥ 7.0 mmol/L or 126mg/dl, or currently on medication for diabetes)

Table 74 shows that overall, 3.8 % (95% CI 2.7—5.0) of the population aged 40-64 years have a 30% or more risk of developing CVD in the next ten years. Rates in those aged 55-64 years were significantly higher than in those 54 years and under. There was no significant difference by gender.

Table 74 Percentage of CVD risk categories by gender and age group

Summary of Combined Risk Factors for CVD										
Age Group (years)	Men				Women				Both Sexes	
	n	30% or more risk	95% CI		n	30% or more risk	95% CI		n	30% or more risk	95% CI
40-54	300	0.4	0.0-1.3		373	1.4	0.1-2.6		673	0.9	0.1-1.6
55-64	148	8.8	3.3-14.3		177	12.7	6.6-18.7		325	10.7	7.0-14.4
40-64	448	3.0	1.3-4.7		550	4.6	2.7-6.6		998	3.8	2.7-5.0

LIMITATIONS

Due to a number of issues the data collection ran from September 2011 to June 2013, and as such does not represent a specific year. While the staff involved in data collection was well trained, self-reported measures are open to false or inaccurate responses from respondents.

The physical activity assessment proved particularly challenging as highlighted earlier; following assessment of the findings it was clear that many respondents had not understood the instructions, and in particular did not understand the different intensity levels for activity. Many reported extremely high levels of work-related physical activity, with only 40% indicating they had no work-related activity and some reporting that for 8-10 hours a day they were physically active at work. Following further discussion among the STEPS coordinating team in Palau, it was agreed that much of the data for physical activity was unlikely to be accurate. A decision was therefore made not to include most of the findings in this report. The only findings which are included are those related to whether respondents did or did not undertake activity in the three domains (work, leisure, home).

DISCUSSION & RECOMMENDATIONS

This report documents the findings of the first STEPS survey in Palau. It builds on previous community surveys that have been undertaken to help assess the extent of the NCD burden and risk factors in Palau. It provides a comprehensive picture of the extent of NCDs in adults aged 25 to 64 years. Findings highlight significant areas of concern for some risk factors, along with high levels of some of the intermediate risk factors.

Tobacco and betel nut

Overall over one fifth of men were daily smokers (20.2%), with only 5.8% of women indicating they were daily smokers. Most of the smokers utilize manufactured cigarettes (86.8%). Additionally 21% indicated they were former daily smokers. Mean age of smoking initiation was 20.5 years.

Use of betel nuts was extremely high. Among all adults, 60.5 % chewed betel nut daily and most (86%) added tobacco to their chew. Interestingly, more women reported chewing betel nut daily and more women added tobacco to their chew than men. The average number of chews per day was 5.2.

Despite efforts to control tobacco use, 34% of adults reported that they were exposed to Environmental Tobacco Smoke (ETS) in the home in the past 7 days and 27% reported that they were exposed to ETS in the workplace in the past 7 days. Women and men reported similar rates of ETS exposure at home; however, men reported much higher rates of ETS exposure at workplace than women. (Note that smoke free legislation came into effect in February 2012 during the data collection period).

There is clearly a need for ongoing efforts to control tobacco use including stricter enforcement of existing tobacco laws while continuing to raise taxes on tobacco products, regulate tobacco packaging and labeling, implement tobacco free policies in all public places including worksites. Palau Ministry of Health and community partners also need to ensure tobacco cessation services are available and continue to raise awareness of the dangers of tobacco

use through evidence based social marketing campaigns and programs in schools. This needs to include some focus on the use of tobacco in betel chews.

Alcohol

Overall, the survey found that 37.2% of respondents currently drink alcohol, defined as having consumed alcohol in the past 30 days. There was a higher proportion of males who currently used alcohol at 50.1% compared to women at 23.2%. There was also a visible trend towards more of the younger age groups reporting that they were current drinkers.

The mean intake of alcohol per drinking occasion was 7.3 units; 7.8 units for men and 4.6 units for women. The number of drinking occasions per month was not significantly different in men and women, with an overall average of 5.4.

Nearly half of the population reported they were either lifetime abstainers (28.8%) or had abstained in the last 12 months (18.4%). Women were more likely to have abstained than men.

There is a need for ongoing education about the risks of heavy alcohol consumption in one occasion, particularly in men. Efforts to control alcohol intake should include availability of counselling or support for those that wish to abstain, along with ongoing efforts to control access to alcohol through legislation, and increasing prices through taxation. While there is some legislation in place that targets the sale and consumption of alcohol, the depth of this may be insufficient and enforcement is also lacking. Further legislation is needed to regulate alcohol consumption in public places as well as at cultural and traditional events, and targeting advertising.

Public Health should also include some specific interventions for the younger age groups to prevent them from developing habits that will eventually lead to dependence of alcohol, alongside efforts targeting other adults.

Diet

Intake of fruits and vegetables was insufficient across most of the population with 91.9% reporting less than 5 servings of fruits and/or vegetables a day. The mean number of servings was only 2.1 (1.9 servings for men and 2.3 servings for women). Of concern is that 27% reported no intake of fruit and/or vegetables on a typical day.

Action is clearly needed to target both those who consume no fruit and vegetables and those who eat less than the recommended servings a day. This might include increasing the availability of fruit and vegetables around Palau by promoting locally grown produce through community and school incentive programs. Efforts are also needed to decrease the cost of fruit and vegetables by promoting food security policies to ensure continued access to fresh and wholesome food products. Increased awareness of the need for fruits and vegetables is also needed, and should begin in the schools. Schools should also ensure that children are taught about how to prepare healthy meals.

National policies are needed to include fruits and vegetables in meals/snacks served at all public and social gathering meals (schools, customs, churches, conferences, meetings, work events, sporting events, traditional group gatherings, etc.) Policies are also needed so that meals/snacks served in public and social gatherings demonstrate appropriate serving size.

On average adults were consuming 2.2 meals outside the home in a week. These may be meals in restaurants or takeaways or at functions and community events. There are currently no controls on the nutritional quality of foods served in restaurants and other eating establishments. Efforts should be made to work with caterers to ensure that their cooking practices support healthy eating, and that menu labelling provides options for healthier choices.

Physical activity

As previously indicated, the data on physical activity (PA) was problematic. Assessing PA levels is challenging, and efforts should be made for the next STEPS survey to ensure that materials used and surveyors involved are able to support the collection of high quality data. There is a definite need to understand the physical activity behavior of adults, to support targeting of interventions.

Overweight and obesity

Overall only 22.1% of adults were found to be of normal weight. While levels of underweight were low (1%), 77% were overweight or obese. Of these, 46.2% were obese. Rates were higher overall among older adults. Interestingly, unlike many Pacific Islands, there was no significant difference in the prevalence of overweight or obesity between men and women. (Many Pacific Island communities report significantly higher levels of overweight and obesity among women).

These high levels of overweight and obesity indicate the need for action to improve diets and physical activity across the population, but especially targeting older adults. However the high levels of overweight and obesity (68.8%) seen in those aged 25-34 years suggest that overweight is beginning to be a problem for a substantial part of the population in childhood, adolescence and early adulthood, and further efforts are needed here also to control the problem.

Blood pressure

The survey found that most adults aged 25-64 years had previously had their blood pressure measured. Among those previously diagnosed as having high blood pressure, 44.6% were taking medication but most on medication were not achieving optimal blood pressure control. Approximately three quarters of those diagnosed with hypertension had received lifestyle advice including salt intake, weight loss and/or physical activity. All persons diagnosed as having raised blood pressure should receive lifestyle advice, and efforts are needed to ensure that this is routinely provided.

In this survey, 49% had raised blood pressure (SBP ≥140 and/or DBP ≥90 mmHg) or were on medication for raised blood pressure, with prevalence significantly higher in men than women. Overall, 23.1% have stage II hypertension (SBP ≥160 and/or DBP ≥100 mmHg) or were on blood pressure medication. As would be expected, prevalence increases with age but even among 25-34 year olds 29.6% have raised blood pressure or were on blood pressure medication.

The prevalence of raised blood pressure, especially among the younger adults is alarming. High blood pressure is a major risk factor for CVD. Efforts are urgently needed to improve diets and physical activity levels across the population. Additionally more effort is needed to identify those at risk and improve blood pressure control among those already diagnosed through intensive lifestyle support and medication.

Blood glucose and lipids

The prevalence of raised blood glucose (defined as fasting plasma venous value of ≥ 7.0 mmol/l or 126mg/dl) was 20.4%, including those previously diagnosed as diabetic. While confirmation of diabetes diagnosis requires two fasting blood glucose measurements, it is possible that up to 20.4% of adults aged 25-64 years have diabetes. This is an alarming figure, particularly as only 13.1% had been previously diagnosed; indicating that most would be newly diagnosed if confirmed. The survey also found that 31.1% of 25-64 year olds had never had their blood sugar measured.

Early diagnosis of diabetes is critical to reducing the risk of complications and screening should be more widely available and utilized. Screening should be more widely implemented in workplaces and general communities, and a more systematic approach should be considered, to ensure wider coverage. This screening should include both physical and biochemical measurements.

Attention to controlling blood glucose levels is imperative for all age groups. The mean fasting glucose is above normal range across all groups and education efforts need to be broad and inclusive.

Elevated cholesterol levels and triglyceride levels are a risk factor for cardiovascular disease, the leading cause of death in Palau. Over one quarter of adults 25-64 years were found to have cholesterol levels above 5mmol/l (190mg/dl), with 7.2% over 6.2mmol/l, while 35.1% had triglycerides of 2mmol/l (180mg/dl) or above. Additionally 8.8% were found to have a 30% risk of developing CVD in the next ten years. There is a need for screening programmers to identify those at high risk and ensure that they receive necessary treatment and advice.

Overall recommendations

The findings of this survey indicate the extent of the NCD crisis in Palau and the need for concerted action to prevent and effectively treat those affected. This report should be widely used to inform planning and targeting of these actions.

Screening programs to be widely available for all adults, and to be linked with the delivery of treatment and counselling services

Access to counselling and cessation support should be available for those wishing to quit smoking and/or alcohol

Enforcement of existing controls on alcohol and tobacco use and sale are needed alongside ongoing efforts to increase taxes.

Actions to control betel nut chewing, especially with added tobacco are urgently needed.

Efforts to increase the availability of fruits and vegetables, including reduction in price and increase in availability. Interventions should include policies to ensure fruit and vegetable access in schools and other settings such as workplaces and government sites.

Prevention of overweight and obesity must begin in children and adolescence

Increased opportunities for physical activities

STEPS survey should be repeated in 5-6 years to monitor trends. Effort is needed in advance of this to ensure the reliability of all data collected, particularly physical activity.

APPENDICES

Annex One: Additional TABLES

Mean number of years of education								
Age Group (years)	Men			Women			Both Sexes	
	n	Mean		n	Mean		n	Mean
25-34	182	12.4		200	13.4		382	12.9
35-44	287	12.6		315	13.1		602	12.9
45-54	308	12.7		371	13.0		679	12.8
55-64	233	12.6		253	12.5		486	12.6
25-64	**1010**	**12.6**		**1139**	**13.0**		**2149**	**12.8**

Highest level of education							
Age Group (years)	Men						
	n	% No formal schooling	% Less than primary school	% Primary school completed	% Secondary school completed	% College/ University completed	% Post graduate degree completed
25-34	189	1.1	5.3	12.2	40.7	37.6	3.2
35-44	295	0.7	3.1	11.5	44.7	36.9	3.1
45-54	316	0.6	2.8	16.5	38.3	38.9	2.8
55-64	238	0.8	2.5	13.4	41.2	38.7	3.4
25-64	**1038**	**0.8**	**3.3**	**13.6**	**41.2**	**38.1**	**3.1**

Highest level of education							
Age Group (years)	Women						
	n	% No formal schooling	% Less than primary school	% Primary school completed	% Secondary school completed	% College/ University completed	% Post graduate degree completed
25-34	203	-	3.0	7.9	32.5	52.7	3.9
35-44	321	-	3.1	9.7	40.5	41.1	5.6
45-54	374	-	2.7	10.7	42.2	40.9	3.5
55-64	257	-	4.3	16.0	34.2	39.3	6.2
25-64	**1155**	**-**	**3.2**	**11.1**	**38.3**	**42.7**	**4.8**

Ethnic group of respondents				
Age Group (years)	Both Sexes			
	n	% Ethnic Palauan	% Ethnic Filipino	% Ethnic Others
25-34	398	61.8	25.9	12.3
35-44	618	71.3	21.6	7.1
45-54	697	76.5	17.5	6.0
55-64	499	86.1	10.6	3.2
25-64	**2212**	**74.6**	**18.6**	**6.8**

Marital status							
Age Group (years)	Women						
	n	% Never married	% Currently married	% Separated	% Divorced	% Widowed	% Cohabiting
25-34	203	40.4	47.8	2.5	1.5	1.0	6.9
35-44	315	19.4	68.3	3.2	4.4	2.5	2.2
45-54	378	10.6	68.5	3.7	6.6	9.5	1.1
55-64	256	7.4	61.3	3.1	7.4	19.9	0.8
25-64	**1152**	**17.5**	**63.2**	**3.2**	**5.3**	**8.4**	**2.3**

Marital status							
Age Group (years)	Both Sexes						
	n	% Never married	% Currently married	% Separated	% Divorced	% Widowed	% Cohabiting
25-34	394	47.0	43.9	2.0	0.8	0.5	5.8
35-44	611	20.6	68.4	2.8	4.1	1.5	2.6
45-54	695	13.4	69.8	3.9	5.8	6.2	1.0
55-64	494	8.1	68.4	2.8	6.5	13.4	0.8
25-64	**2194**	**20.2**	**64.4**	**3.0**	**4.6**	**5.5**	**2.3**

Employment status					
Age Group (years)	Men				
	n	% Government employee	% Non-government employee	% Self-employed	% Unpaid
25-34	193	26.9	62.7	5.7	4.7
35-44	296	43.6	47.3	3.7	5.4
45-54	317	48.9	34.7	8.2	8.2
55-64	239	34.7	20.1	10.5	34.7
25-64	**1045**	**40.1**	**40.1**	**7.0**	**12.8**

Employment status					
Age Group (years)	Women				
	n	% Government employee	% Non-government employee	% Self-employed	% Unpaid
25-34	205	23.9	46.8	4.9	24.4
35-44	321	35.2	38.0	6.9	19.9
45-54	378	36.0	30.7	13.0	20.4
55-64	259	15.8	15.4	13.1	55.6
25-64	**1163**	**29.1**	**32.2**	**9.9**	**28.8**

Unpaid work and unemployed							
Age Group (years)	Men						
	n	% Non-paid	% Student	% Home-maker	% Retired	Unemployed	
						% Able to work	% Not able to work
25-34	9	0.0	33.3	11.1	0.0	44.4	11.1
35-44	16	6.3	6.3	18.8	0.0	62.5	6.3
45-54	26	0.0	0.0	11.5	26.9	50.0	11.5
55-64	83	0.0	0.0	0.0	85.5	6.0	8.4
25-64	**134**	**0.7**	**3.0**	**5.2**	**58.2**	**23.9**	**9.0**

Unpaid work and unemployed							
Age Group (years)	Women						
	n	% Non-paid	% Student	% Home-maker	% Retired	Unemployed	
						% Able to work	% Not able to work
25-34	50	8.0	4.0	30.0	0.0	46.0	12.0
35-44	64	1.6	1.6	32.8	0.0	50.0	14.1
45-54	77	5.2	0.0	28.6	1.3	54.5	10.4
55-64	144	0.7	0.7	13.9	58.3	16.7	9.7
25-64	**335**	**3.0**	**1.2**	**23.3**	**25.4**	**36.1**	**11.0**

Unpaid work and unemployed							
Age Group (years)	Both Sexes						
	n	% Non-paid	% Student	% Home-maker	% Retired	Unemployed	
						% Able to work	% Not able to work
25-34	59	6.8	8.5	27.1	0.0	45.8	11.9
35-44	80	2.5	2.5	30.0	0.0	52.5	12.5
45-54	103	3.9	0.0	24.3	7.8	53.4	10.7
55-64	227	0.4	0.4	8.8	68.3	12.8	9.3
25-64	**469**	**2.3**	**1.7**	**18.1**	**34.8**	**32.6**	**10.4**

Mean Number of betel nut-chewed at one time										
Age Group (years)	Men			Women			Both Sexes			
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI	
25-34	68	2.2	1.7-2.7	87	2.5	2.1-2.9	155	2.4	2.0-2.7	
35-44	100	2.4	1.9-2.9	146	2.7	2.3-3.2	246	2.6	2.2-2.9	
45-54	119	2.7	2.4-3.1	162	2.4	2.1-2.8	281	2.6	2.3-2.9	
55-64	76	2.8	2.4-3.2	112	2.2	1.8-2.6	188	2.5	2.2-2.8	
25-64	**363**	**2.5**	**2.2-2.8**	**507**	**2.5**	**2.2-2.8**	**870**	**2.5**	**2.3-2.7**	

Mean number of times each day do you chew									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34	24	4.9	4.3-5.5	28	5.2	4.7-5.7	52	5.1	4.7-5.5
35-44	24	5.7	4.8-6.6	34	5.1	3.8-6.4	58	5.3	4.3-6.3
45-54	38	4.8	4.1-5.5	46	5.1	4.4-5.7	84	4.9	4.3-5.5
55-64	23	5.3	3.9-6.8	37	5.5	4.8-6.1	60	5.4	4.6-6.2
25-64	**109**	**5.1**	**4.5-5.7**	**145**	**5.2**	**4.6-5.8**	**254**	**5.2**	**4.6-5.7**

Alcohol consumption status									
Age Group (years)	Men								
	n	% Current drinker (past 30 days)	95% CI	% Drank in past 12 months, not current	95% CI	% Past 12 months abstainer	95% CI	% Lifetime abstainer	95% CI
25-34	191	59.1	49.9-68.2	17.0	10.9-23.0	7.1	2.5-11.7	16.9	11.6-22.2
35-44	297	51.7	43.5-59.9	14.8	10.3-19.3	15.7	10.8-20.6	17.9	10.6-25.2
45-54	314	44.7	38.2-51.1	10.8	7.8-13.9	19.5	14.9-24.1	25.0	17.3-32.7
55-64	239	42.6	35.1-50.1	13.9	10.0-17.8	15.3	10.3-20.4	28.2	16.9-39.5
25-64	**1041**	**50.1**	**44.7-55.5**	**14.2**	**11.9-16.4**	**14.4**	**11.3-17.4**	**21.3**	**15.3-27.4**

Alcohol consumption status									
Age Group (years)	Women								
	n	% Current drinker (past 30 days)	95% CI	% Drank in past 12 months, not current	95% CI	% Past 12 months abstainer	95% CI	% Lifetime abstainer	95% CI
25-34	204	30.9	24.0-37.9	18.2	13.2-23.2	19.4	13.8-25.0	31.5	23.5-39.5
35-44	320	23.5	17.6-29.5	18.4	13.4-23.3	21.1	13.2-29.0	37.0	24.9-49.0
45-54	378	22.3	17.2-27.4	17.3	13.4-21.2	23.4	17.3-29.4	37.0	27.8-46.2
55-64	258	12.0	6.1-17.9	13.0	8.9-17.1	29.6	21.9-37.3	45.4	35.8-55.1
25-64	**1160**	**23.2**	**19.6-26.7**	**17.1**	**14.8-19.4**	**22.7**	**18.0-27.4**	**37.0**	**29.5-44.5**

Mean number of drinking occasions in the past 30 days among current (past 30 days) drinkers									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34	99	5.6	3.4-7.7	62	5.1	3.9-6.2	161	5.4	3.8-7.0
35-44	152	6.2	4.8-7.7	69	3.4	1.8-5.1	221	5.4	4.3-6.5
45-54	140	5.8	4.5-7.1	87	4.4	3.2-5.6	227	5.4	4.5-6.3
55-64	101	5.7	4.1-7.3	34	3.5	1.0-5.9	135	5.3	3.8-6.7
25-64	**492**	**5.8**	**5.1-6.5**	**252**	**4.3**	**3.4-5.2**	**744**	**5.4**	**4.8-6.0**

Category III drinking among all respondents									
Age Group (years)	Men			Women			Both Sexes		
	n	% Category III	95% CI	n	% Category III	95% CI	n	% Category III	95% CI
25-34	182	3.6	0.0-8.3	202	2.6	0.6-4.6	384	3.1	0.7-5.6
35-44	290	2.4	0.7-4.1	313	0.3	0.0-0.8	603	1.4	0.4-2.3
45-54	304	2.2	0.5-3.9	372	0.7	0.0-1.5	676	1.5	0.6-2.3
55-64	231	1.6	0.0-3.4	257	0.3	0.0-0.8	488	1.0	0.1-2.0
25-64	**1007**	**2.5**	**1.1-3.9**	**1144**	**1.0**	**0.5-1.5**	**2151**	**1.8**	**1.0-2.6**

Category II drinking among all respondents									
Age Group (years)	Men			Women			Both Sexes		
	n	% Category II	95% CI	n	% Category II	95% CI	n	% Category II	95% CI
25-34	182	1.0	0.0-2.9	202	1.0	0.0-2.2	384	1.0	0.0-2.1
35-44	290	2.7	0.1-5.3	313	1.3	0.0-2.7	603	2.0	0.6-3.4
45-54	304	2.8	0.9-4.7	372	1.2	0.0-2.5	676	2.0	0.9-3.2
55-64	231	2.0	0.0-4.1	257	0.3	0.0-1.1	488	1.2	0.1-2.4
25-64	**1007**	**2.2**	**1.2-3.1**	**1144**	**1.0**	**0.4-1.6**	**2151**	**1.6**	**1.0-2.2**

Mean number of times with five/four or more drinks during a single occasion in the past 30 days among current drinkers							
Age Group (years)	Men				Women		
	n	Mean number of times	95% CI		n	Mean number of times	95% CI
25-34	101	4.6	2.9-6.3		60	4.2	3.1-5.4
35-44	153	4.2	3.3-5.1		72	2.1	1.1-3.2
45-54	137	4.8	3.8-5.9		84	3.0	2.3-3.7
55-64	98	4.7	3.3-6.1		34	2.6	0.2-5.0
25-64	**489**	**4.6**	**3.9-5.2**		**250**	**3.1**	**2.4-3.9**

Frequency and quantity of drinks consumed in the past 7 days							
Age Group (years)	Men						
	n	% Drank on 4+ days	95% CI	% 5+ drinks on any day	95% CI	% 20+ drinks in 7 days	95% CI
25-34	101	14.9	8.0-21.8	47.9	33.7-62.2	17.7	6.4-29.0
35-44	149	15.0	8.9-21.0	56.6	46.0-67.3	18.8	10.5-27.0
45-54	135	17.6	10.0-25.1	60.9	51.5-70.4	20.7	12.7-28.6
55-64	97	18.3	10.1-26.6	45.0	33.5-56.5	15.6	8.4-22.8
25-64	**482**	**16.1**	**12.8-19.3**	**53.1**	**47.2-59.1**	**18.4**	**13.9-22.9**

Frequency and quantity of drinks consumed in the past 7 days							
Age Group (years)	Women						
	n	% Drank on 4+ days	95% CI	% 4+ drinks on any day	95% CI	% 15+ drinks in 7 days	95% CI
25-34	59	6.8	2.4-11.2	37.3	25.4-49.2	8.8	0.0-20.5
35-44	69	5.7	0.0-11.8	34.4	19.8-49.0	2.3	0.0-5.7
45-54	79	16.9	9.4-24.4	42.4	27.6-57.3	12.8	4.5-21.1
55-64	29	9.8	0.0-21.0	27.9	9.3-46.5	9.8	0.0-22.7
25-64	**236**	**9.1**	**5.0-13.3**	**36.8**	**27.6-46.0**	**7.8**	**2.6-13.1**

Frequency and quantity of drinks consumed in the past 7 days			
Age Group (years)	Both Sexes		
	n	% Drank on 4+ days	95% CI
25-34	160	12.3	6.8-17.9
35-44	218	12.3	7.4-17.1
45-54	214	17.4	11.5-23.2
55-64	126	16.7	9.2-24.3
25-64	**718**	**14.0**	**10.7-17.4**

Mean days for consuming 500g of salt in the household	
n	Mean days
2193	84.8

		Type of oil or fat most often used for meal preparation in household						
n (house-holds)	% Vegetable oil	95% CI	% Butter	95% CI	% Margarine	95% CI	% Other	95% CI
17	**93.2**	**91.9-94.6**	**0.7**	**0.3-1.0**	**0.5**	**0.0-1.0**	**5.0**	**3.6-6.3**

Currently taking blood pressure drugs prescribed by doctor or health worker among those diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	% taking meds	95% CI	n	% taking meds	95% CI	n	% taking meds	95% CI
25-34	21	12.2	0.0-24.9	24	16.4	1.1-31.8	45	14.4	5.5-23.3
35-44	48	13.5	2.5-24.6	62	32.3	19.3-45.3	110	23.6	14.0-33.3
45-54	86	33.2	24.8-41.5	131	56.4	46.6-66.3	217	45.9	39.4-52.4
55-64	83	62.4	50.7-74.1	118	78.0	71.6-84.3	201	70.9	63.7-78.1
25-64	**238**	**34.9**	**28.3-41.5**	**335**	**52.9**	**45.7-60.1**	**573**	**44.6**	**39.1-50.1**

Advised by doctor or health worker to reduce salt intake among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	20	62.7	36.8-88.5	24	58.2	40.2-76.2	44	60.3	43.2-77.4
35-44	48	68.8	57.0-80.5	62	69.1	51.8-86.4	110	68.9	58.0-79.9
45-54	87	74.1	62.9-85.4	131	84.4	77.0-91.8	218	79.7	72.0-87.4
55-64	83	85.6	76.6-94.5	117	88.2	82.1-94.3	200	87.0	81.7-92.3
25-64	**238**	**74.9**	**66.8-82.9**	**334**	**79.0**	**72.8-85.2**	**572**	**77.1**	**71.1-83.1**

Advised by doctor or health worker to lose weight among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	21	59.4	31.0-87.7	24	55.2	35.0-75.4	45	57.2	39.6-74.8
35-44	48	77.1	63.9-90.2	62	73.1	60.3-86.0	110	75.0	64.2-85.7
45-54	87	67.5	55.1-80.0	131	77.9	71.1-84.7	218	73.2	65.6-80.8
55-64	83	83.5	74.1-92.9	117	77.1	70.3-83.9	200	80.0	74.2-85.8
25-64	**239**	**73.2**	**66.3-80.1**	**334**	**73.8**	**67.4-80.1**	**573**	**73.5**	**67.8-79.2**

Advised by doctor or health worker to stop smoking among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	20	59.3	31.2-87.4	22	32.3	10.5-54.0	42	45.5	27.3-63.6
35-44	46	52.2	32.3-72.0	59	47.9	31.2-64.6	105	49.9	37.4-62.3
45-54	85	46.9	34.9-58.8	123	54.6	40.8-68.5	208	51.0	39.6-62.4
55-64	79	56.5	44.4-68.6	109	50.6	38.7-62.6	188	53.3	43.8-62.8
25-64	**230**	**52.6**	**42.4-62.7**	**313**	**49.1**	**38.4-59.8**	**543**	**50.7**	**41.8-59.6**

Advised by doctor or health worker to start or do more exercise among those previously diagnosed										
Age Group (years)	Men				Women				Both Sexes	
	n	%	95% CI		n	%	95% CI		n	%	95% CI
25-34	20	62.8	32.4-93.1		24	50.7	30.6-70.9		44	56.3	38.3-74.4
35-44	48	69.8	53.1-86.5		62	75.2	62.5-87.8		110	72.7	61.3-84.0
45-54	87	76.1	66.5-85.8		130	84.6	75.9-93.2		217	80.7	74.1-87.3
55-64	83	85.1	78.0-92.1		116	82.9	76.8-88.9		199	83.9	79.8-87.9
25-64	**238**	**75.7**	**69.0-82.4**		**332**	**77.7**	**72.3-83.1**		**570**	**76.8**	**71.5-82.1**

Seen a traditional healer among those previously diagnosed										
Age Group (years)	Men				Women				Both Sexes	
	n	%	95% CI		n	%	95% CI		n	%	95% CI
25-34	21	2.0	0.0-6.2		24	1.5	0.0-4.4		45	1.8	0.0-5.2
35-44	48	4.2	0.0-9.5		62	12.8	5.1-20.4		110	8.8	4.1-13.5
45-54	87	8.1	3.0-13.2		132	11.2	4.3-18.2		219	9.8	5.0-14.6
55-64	83	8.8	2.5-15.0		117	19.6	10.2-29.0		200	14.7	8.2-21.2
25-64	**239**	**6.6**	**3.8-9.5**		**335**	**12.9**	**8.8-17.0**		**574**	**10.0**	**7.4-12.7**

Currently taking herbal or traditional remedy for high blood pressure among those previously diagnosed										
Age Group (years)	Men				Women				Both Sexes	
	n	%	95% CI		n	%	95% CI		n	%	95% CI
25-34	21	2.0	0.0-6.2		24	4.5	0.0-13.6		45	3.3	0.0-8.4
35-44	48	6.3	0.0-13.0		62	6.0	0.0-12.7		110	6.1	1.9-10.4
45-54	87	11.2	3.0-19.4		132	14.5	6.7-22.4		219	13.0	6.8-19.2
55-64	83	12.4	5.9-18.8		118	21.0	11.0-31.0		201	17.1	10.7-23.4
25-64	**239**	**9.2**	**5.5-13.0**		**336**	**13.5**	**7.7-19.3**		**575**	**11.5**	**8.3-14.7**

Blood sugar measurement and diagnosis									
Age Group (years)	Men								
	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
25-34	191	54.1	44.7-63.5	42.3	33.4-51.1	0.5	0.0-1.4	3.2	0.0-6.9
35-44	296	32.7	23.9-41.5	60.7	52.2-69.2	0.9	0.0-2.0	5.6	1.7-9.5
45-54	316	28.1	21.7-34.4	57.0	49.0-64.9	0.9	0.0-1.8	14.1	8.7-19.5
55-64	236	22.9	15.6-30.1	54.9	47.0-62.7	1.4	0.0-3.4	20.8	14.9-26.7
25-64	**1039**	**35.3**	**29.6-41.1**	**53.8**	**48.2-59.5**	**0.9**	**0.3-1.5**	**9.9**	**7.2-12.7**

Blood sugar measurement and diagnosis									
Age Group (years)	Women								
	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
25-34	204	37.0	27.7-46.3	55.0	45.3-64.7	4.2	0.2-8.1	3.8	1.3-6.3
35-44	317	26.5	20.8-32.1	59.5	51.4-67.6	4.6	1.2-7.9	9.5	6.1-12.9
45-54	376	23.6	18.1-29.1	61.7	55.4-68.0	1.9	0.3-3.5	12.8	8.8-16.9
55-64	258	15.4	8.0-22.9	54.3	45.3-63.3	2.9	0.4-5.4	27.4	19.5-35.3
25-64	**1155**	**26.5**	**22.0-31.1**	**58.0**	**52.2-63.8**	**3.5**	**1.7-5.2**	**12.0**	**9.0-15.0**

Blood sugar measurement and diagnosis									
Age Group (years)	Both sexes								
	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
25-34	395	46.0	38.5-53.5	48.3	41.2-55.4	2.2	0.3-4.2	3.5	1.3-5.6
35-44	613	29.7	23.7-35.7	60.1	53.3-67.0	2.7	1.0-4.4	7.5	5.1-9.9
45-54	692	25.9	21.5-30.3	59.2	53.3-65.2	1.4	0.4-2.3	13.5	10.2-16.8
55-64	494	19.4	12.7-26.1	54.6	46.7-62.4	2.1	0.6-3.6	23.9	17.8-30.0
25-64	**2194**	**31.1**	**26.6-35.7**	**55.8**	**50.6-61.1**	**2.1**	**1.3-3.0**	**10.9**	**8.7-13.1**

Currently taking insulin prescribed for diabetes among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	% taking insulin	95% CI	n	% taking insulin	95% CI	n	% taking insulin	95% CI
25-34	3	42.9	0.0-100.0	10	0.0	0.0-0.0	13	16.1	0.0-46.2
35-44	15	0.0	0.0-0.0	41	3.7	0.0-9.2	56	2.5	0.0-6.3
45-54	45	2.9	0.0-7.2	46	8.0	0.9-15.0	91	5.3	1.5-9.0
55-64	49	9.2	0.0-18.6	69	8.5	1.6-15.4	118	8.9	2.0-15.8
25-64	**112**	**8.0**	**0.2-15.7**	**166**	**6.1**	**2.5-9.6**	**278**	**6.9**	**2.8-11.0**

Currently taking oral drugs prescribed for diabetes among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	% taking meds	95% CI	n	% taking meds	95% CI	n	% taking meds	95% CI
25-34	3	57.1	0.0-100.0	10	34.5	8.7-60.2	13	43.0	12.7-73.3
35-44	15	13.2	0.0-27.5	41	45.9	32.4-59.4	56	35.5	26.3-44.8
45-54	46	53.3	38.7-68.0	47	46.9	29.3-64.6	93	50.4	36.5-64.2
55-64	49	71.3	52.4-90.2	72	78.9	68.8-89.1	121	75.4	67.3-83.6
25-64	**113**	**53.7**	**40.0-67.4**	**170**	**56.5**	**49.1-64.0**	**283**	**55.3**	**47.7-62.9**

Advised by doctor or health worker to have special prescribed diet among those previously diagnosed												
Age Group (years)	Men				Women				Both Sexes			
	n	%	95% CI		n	%	95% CI		n	%	95% CI	
25-34	3	100.0	100.0-100.0		10	82.8	59.3-100.0		13	89.2	73.5-100.0	
35-44	15	50.0	15.7-84.3		41	68.8	55.8-81.8		56	62.9	46.8-78.9	
45-54	46	53.3	39.7-66.9		47	67.5	52.5-82.6		93	59.9	49.0-70.9	
55-64	51	77.8	65.4-90.2		72	80.2	71.3-89.0		123	79.0	71.7-86.3	
25-64	**115**	**65.8**	**55.6-76.1**		**170**	**73.9**	**66.1-81.7**		**285**	**70.3**	**63.0-77.6**	

Advised by doctor or health worker to lose weight among those previously diagnosed												
Age Group (years)	Men				Women				Both Sexes			
	n	%	95% CI		n	%	95% CI		n	%	95% CI	
25-34	3	100.0	100.0-100.0		10	86.2	59.5-100.0		13	91.4	73.9-100.0	
35-44	15	78.9	51.7-100.0		41	85.3	74.9-95.8		56	83.3	69.8-96.8	
45-54	46	61.0	48.7-73.2		47	75.4	59.8-91.1		93	67.7	57.1-78.3	
55-64	51	78.6	65.8-91.4		72	86.6	77.0-96.1		123	82.8	74.2-91.5	
25-64	**115**	**73.8**	**64.6-82.9**		**170**	**83.3**	**75.9-90.7**		**285**	**79.0**	**71.8-86.3**	

Advised by doctor or health worker to stop smoking among those previously diagnosed												
Age Group (years)	Men				Women				Both Sexes			
	n	%	95% CI		n	%	95% CI		n	%	95% CI	
25-34	3	57.1	0.0-100.0		10	89.7	68.8-100.0		13	77.4	46.0-100.0	
35-44	14	44.4	17.4-71.5		38	46.5	24.8-68.3		52	45.9	28.0-63.7	
45-54	44	27.0	14.6-39.4		44	42.0	22.4-61.6		88	33.8	19.9-47.7	
55-64	48	57.1	38.2-76.1		66	50.1	32.0-68.1		114	53.4	38.6-68.2	
25-64	**109**	**43.8**	**30.0-57.7**		**158**	**51.5**	**36.6-66.3**		**267**	**48.0**	**35.2-60.9**	

Currently taking herbal or traditional treatment for diabetes among those previously diagnosed												
Age Group (years)	Men				Women				Both Sexes			
	n	%	95% CI		n	%	95% CI		n	%	95% CI	
25-34	3	0.0	0.0-0.0		10	0.0	0.0-0.0		13	0.0	0.0-0.0	
35-44	15	0.0	0.0-0.0		41	7.3	0.0-15.9		56	5.0	0.0-11.0	
45-54	46	18.1	7.0-29.2		47	25.4	13.3-37.4		93	21.5	13.2-29.7	
55-64	51	15.9	4.7-27.1		73	15.6	4.0-27.2		124	15.7	6.3-25.2	
25-64	**115**	**12.8**	**6.8-18.9**		**171**	**14.1**	**7.6-20.7**		**286**	**13.6**	**8.6-18.5**	

BMI≥25										
Age Group (years)	Men				Women				Both Sexes	
	n	% BMI≥25	95% CI		n	% BMI≥25	95% CI		n	% BMI≥25	95% CI
25-34	189	70.0	62.6-77.5		185	67.4	57.5-77.2		374	68.8	61.9-75.7
35-44	286	78.6	72.6-84.6		308	72.5	64.6-80.3		594	75.7	70.0-81.3
45-54	315	79.5	74.0-85.0		376	82.3	77.1-87.4		691	80.8	77.3-84.4
55-64	239	84.1	77.6-90.6		253	85.4	82.0-88.8		492	84.7	81.2-88.3
25-64	**1029**	**77.6**	**74.4-80.9**		**1122**	**76.3**	**72.1-80.5**		**2151**	**77.0**	**73.7-80.3**

Mean waist / hip ratio							
Age Group (years)	Men				Women		
	n	Mean	95% CI		n	Mean	95% CI
25-34	190	0.9	0.9-0.9		187	0.9	0.9-0.9
35-44	293	1.0	0.9-1.0		310	0.9	0.9-0.9
45-54	316	1.0	1.0-1.0		375	0.9	0.9-0.9
55-64	239	1.0	1.0-1.0		259	0.9	0.9-0.9
25-64	**1038**	**1.0**	**1.0-1.0**		**1131**	**0.9**	**0.9-0.9**

Mean systolic blood pressure (mmHg) (including those already on medication)										
Age Group (years)	Men				Women				Both Sexes	
	n	Mean	95% CI		n	Mean	95% CI		n	Mean	95% CI
25-34	191	133.0	131.2-134.8		205	121.9	118.6-125.2		396	127.7	126.0-129.4
35-44	297	138.0	135.5-140.4		319	129.2	126.6-131.8		616	133.7	131.6-135.9
45-54	316	145.0	141.8-148.2		378	142.6	139.5-145.7		694	143.8	141.4-146.2
55-64	240	150.4	146.5-154.2		257	153.6	150.0-157.3		497	151.9	149.1-154.6
25-64	**1044**	**140.8**	**139.0-142.5**		**1159**	**135.1**	**133.1-137.0**		**2203**	**138.0**	**136.6-139.5**

Respondents with treated and/or controlled raised blood pressure							
Age Group (years)	Men						
	n	% On medication and SBP<140 and DBP<90	95% CI	% On medication and SBP≥140 and/ orDBP≥90	95% CI	% Not on medication and SBP≥140 and/ orDBP≥90	95% CI
25-34	63	1.4	0.0-4.3	2.8	0.0-6.4	95.8	91.5-100.0
35-44	140	1.3	0.0-3.2	2.9	0.4-5.4	95.8	93.1-98.5
45-54	173	3.3	0.5-6.1	8.9	4.3-13.5	87.8	82.6-93.1
55-64	171	4.9	0.6-9.2	24.3	16.2-32.4	70.8	60.4-81.2
25-64	**547**	**2.8**	**1.6-4.0**	**10.2**	**7.6-12.7**	**87.0**	**84.0-90.0**

Respondents with treated and/or controlled raised blood pressure							
Age Group (years)	Women						
	n	% On medication and SBP<140 and DBP<90	95% CI	% On medication and SBP≥140 and/ orDBP≥90	95% CI	% Not on medication and SBP≥140 and/ orDBP≥90	95% CI
25-34	46	3.6	0.0-8.9	14.4	4.3-24.4	82.1	70.6-93.5
35-44	110	7.3	2.3-12.3	10.4	3.2-17.6	82.3	73.4-91.2
45-54	204	7.4	3.7-11.1	21.8	14.9-28.7	70.8	63.1-78.5
55-64	169	3.3	0.6-6.0	39.6	30.8-48.4	57.1	48.6-65.6
25-64	**529**	**5.7**	**3.9-7.5**	**23.0**	**19.2-26.9**	**71.2**	**67.4-75.0**

Respondents with treated and/or controlled raised blood pressure							
Age Group (years)	Both Sexes						
	n	% On medication and SBP<140 and DBP<90	95% CI	% On medication and SBP≥140 and/ orDBP≥90	95% CI	% Not on medication and SBP≥140 and/ orDBP≥90	95% CI
25-34	109	2.2	0.0-4.8	7.3	2.9-11.6	90.5	85.8-95.2
35-44	250	3.6	1.5-5.7	5.8	3.2-8.3	90.6	86.5-94.7
45-54	377	5.3	2.9-7.7	15.1	10.7-19.5	79.6	74.6-84.5
55-64	340	4.2	1.2-7.2	31.1	24.0-38.3	64.7	56.9-72.5
25-64	**1076**	**4.1**	**3.1-5.1**	**15.7**	**13.5-18.0**	**80.2**	**77.5-82.8**

Mean fasting blood glucose (mg/dl)										
Age Group (years)	Men				Women				Both Sexes		
	n	Mean	95% CI		n	Mean	95% CI		n	Mean	95% CI
25-34	152	105.0	101.7-108.2		170	101.3	95.6-107.0		322	103.2	100.1-106.4
35-44	236	114.5	108.4-120.5		254	113.5	106.9-120.1		490	114.0	110.2-117.8
45-54	260	120.3	116.1-124.6		311	116.9	111.6-122.2		571	118.7	115.6-121.8
55-64	189	126.9	118.3-135.4		215	126.1	115.8-136.3		404	126.5	119.9-133.1
25-64	**837**	**115.7**	**112.5-119.0**		**950**	**113.4**	**109.2-117.6**		**1787**	**114.6**	**112.3-117.0**

Mean total cholesterol (mg/dl)										
Age Group (years)	Men				Women				Both Sexes		
	n	Mean	95% CI		n	Mean	95% CI		n	Mean	95% CI
25-34	123	172.0	168.1-175.9		121	177.1	171.0-183.1		244	174.3	171.4-177.2
35-44	191	176.5	173.7-179.2		193	174.0	170.7-177.3		384	175.3	173.2-177.4
45-54	221	178.1	174.2-182.0		280	188.1	183.2-193.0		501	183.2	179.3-187.1
55-64	164	183.0	179.8-186.2		183	191.5	184.6-198.5		347	187.0	183.1-190.8
25-64	**699**	**177.0**	**175.2-178.8**		**777**	**182.3**	**179.3-185.3**		**1476**	**179.5**	**177.6-181.4**

Mean fasting triglycerides (mg/dl)										
Age Group (years)	Men				Women				Both Sexes	
	n	Mean	95% CI		n	Mean	95% CI		n	Mean	95% CI
25-34	147	161.1	147.6-174.7		164	154.7	143.6-165.7		311	158.0	148.8-167.2
35-44	221	190.0	165.8-214.2		246	153.3	137.8-168.9		467	172.2	156.0-188.4
45-54	247	181.2	167.3-195.1		303	176.3	162.5-190.1		550	178.9	168.4-189.4
55-64	178	183.8	167.9-199.7		203	175.9	160.0-191.8		381	180.0	168.8-191.2
25-64	**793**	**178.8**	**169.6-188.0**		**916**	**163.8**	**153.5-174.1**		**1709**	**171.6**	**163.7-179.5**

Annex 2

National STEPS Survey Questionnaire
for Chronic Noncommunicable Diseases (NCDs) Risk Factors

Palau 2011

World Health Organization
Western Pacific Region

Survey Information

Location and Date		Response	Code
1	Hamlet ID	⌊_⌊_⌊_⌊_⌋	I1
2	Hamlet name		I2
3	Interviewer ID	⌊_⌊_⌊_⌊_⌋	I3
4	Date of completion of the questionnaire	⌊_⌊_⌋ ⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋ dd mm year	I4

Participant Id Number ⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋ ⌊_⌊_⌋

Consent, Interview Language and Name		Response		Code
5	Consent has been read and obtained	Yes	1	I5
		No	2 If NO, END	
6	Interview Language	English	1	I6
		Tagalog	2	
7	Time of interview (24 hour clock)	⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins		I7
8	Family Surname			I8
9	First Name			I9
10	Contact phone number where possible			I10

Record and file identification information (I5 to I10) separately from the completed questionnaire.

Demographic Information

Demographic Information			
Question		Response	Code
11	Sex (Record Male / Female as observed)	Male 1 Female 2	C1
12	What is your date of birth? Don't Know 77 77 7777	⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋ If known, Go to C4 dd mm year	C2
13	How old are you?	Years ⌊_⌋⌊_⌋	C3
14	In total, how many years have you spent at school or in full-time study (excluding pre-school)?	Years ⌊_⌋⌊_⌋	C4
15	What is the highest level of education you have completed?	No formal schooling 1 Less than primary school 2 Primary school completed 3 Secondary school completed 4 College/University completed 5 Post graduate degree 6 Refused 88	C5
16	What is your ethnic background?	Palauan 1 Pilipino 2 Other 3 Refused 88	C6
17	What is your marital status?	Never married 1 Currently married 2 Separated 3 Divorced 4 Widowed 5 Cohabitating 6 Refused 88	C7
18	Which of the following best describes your main work status over the past 12 months? (USE SHOWCARD)	Government employee 1 Non-government employee 2 Self-employed 3 Non-paid 4 Student 5 Homemaker 6 Retired 7 Unemployed (able to work) 8 Unemployed (unable to work) 9 Refused 88	C8
19	How many people older than 18 years, including yourself, live in your household?	Number of people ⌊_⌋⌊_⌋	C9

Demographic Information, Continued			
Question		Response	Code
20	Taking the past year, can you tell me what the average earnings of the household have been? (RECORD ONLY ONE, NOT ALL 3)	Per week ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ Go to T1a	C10a
		OR per month ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ Go to T1a	C10b
		OR per year ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ Go to T1a	C10c
		Refused 88	C10d
21	If you don't know the amount, can you give an estimate of the annual household income if I read some options to you? Is it (READ OPTIONS)	£ Quintile (Q) 1 1 More than Q 1, £ Q 2 2 More than Q 2, £ Q 3 3 More than Q 3, £ Q 4 4 More than Q 4 5 Don't Know 77 Refused 88	C11

Step 1 Behavioural Measurements

Tobacco Use			
Now I am going to ask you some questions about various health behaviours. This includes things like smoking, drinking alcohol, eating fruits and vegetables and physical activity. Let's start with tobacco.			
Question		Response	Code
22	Have you ever smoked tobacco products?	Yes 1 No 2 If No, go to X1	T1a
23	Do you currently smoke any tobacco products, such as cigarettes, cigars or pipes? (USE SHOWCARD)	Yes 1 No 2 If No, go to T6	T1
24	Do you currently smoke tobacco products daily?	Yes 1 No 2 If No, go to T6	T2
25	How old were you when you first started smoking daily?	Age (years) Don't know 77 ⌊_⌋⌊_⌋ If Known, go to T5a	T3
26	Do you remember how long ago it was? (RECORD ONLY 1, NOT ALL 3) Don't know 77	In Years ⌊_⌋⌊_⌋ If Known, go to T5a	T4a
		OR in Months ⌊_⌋⌊_⌋ If Known, go to T5a	T4b
		OR in Weeks ⌊_⌋⌊_⌋	T4c
27	On average, how many of the following do you smoke each day? (RECORD FOR EACH TYPE, USE SHOWCARD) Don't Know 77	Manufactured cigarettes ⌊_⌋⌊_⌋	T5a
		Hand-rolled cigarettes ⌊_⌋⌊_⌋	T5b
		Pipes full of tobacco ⌊_⌋⌊_⌋	T5c
		Cigars, cheroots, cigarillos ⌊_⌋⌊_⌋	T5d
		Other ⌊_⌋⌊_⌋ If Other, go to T5other, else go to T9	T5e
		Other (please specify): ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ Go to T9	T5other
28	In the past, did you ever smoke daily?	Yes 1 No 2 If No, go to T9	T6
29	How old were you when you stopped smoking daily?	Age (years) Don't Know 77 ⌊_⌋⌊_⌋ If Known, go to T9	T7
30	How long ago did you stop smoking daily? (RECORD ONLY 1, NOT ALL 3) Don't Know 77	Years ago ⌊_⌋⌊_⌋ If Known, go to T9	T8a
		OR Months ago ⌊_⌋⌊_⌋ If Known, go to T9	T8b
		OR Weeks ago ⌊_⌋⌊_⌋	T8c

31	During the past 7 days, on how many days did someone in your home smoke when you were present?	Number of days Don't know 77 ⌊_⌋⌊_⌋	T9
32	During the past 7 days, on how many days did someone smoke in closed areas in your workplace (in the building, in a work area or a specific office) when you were present?	Number of days Don't know or don't work in a closed area 77 ⌊_⌋⌊_⌋	T10

Betel Nut Use

Question		Response (see comments at the end of page)	Code
33	Do you currently chew betel nut?	Yes 1 No 2 If No, go to X5	X1
34	If Yes, Do you currently chew betel nuts daily?	Yes 1 No 2	X2
35	When you chew, how many nuts on average do you chew at one time?	Number of Betel Nuts ⌊_⌋⌊_⌋	X3
36	On average, how many times each day do you chew?	Times per day ⌊_⌋⌊_⌋	X4

Betel Nut with Tobacco

Question		Response	Code
37	Do you currently chew betel nut with Tobacco?	Yes 1 No 2 If No, go to A1a	X5
38	Do you currently chew betel nut with Tobacco daily?	Number of days Don't Know 77 ⌊_⌋⌊_⌋	X6
39	During the past 30 days, during how many occasions did you chew betel nut with Tobacco?	Number of bowls Don't Know 77 ⌊_⌋⌊_⌋	X7

Alcohol Consumption

The next questions ask about the consumption of alcohol.

Question		Response	Code
40	Have you ever consumed an alcoholic drink such as beer, wine, spirits or fermented cider? (USE SHOWCARD OR SHOW EXAMPLES)	Yes 1 No 2 If No, go to D1	A1a
41	Have you consumed an alcoholic drink within the past 12 months?	Yes 1 No 2 If No, go to D1	A1b
42	During the past 12 months, how frequently have you had at least one alcoholic drink? (READ RESPONSES, USE SHOWCARD)	Daily 1 5-6 days per week 2 1-4 days per week 3 1-3 days per month 4 Less than once a month 5	A2
43	Have you consumed an alcoholic drink within the past 30 days?	Yes 1 No 2 If No, go to D1	A3
44	During the past 30 days, on how many occasions did you have at least one alcoholic drink?	Number Don't know 77 ⌊_⌋⌊_⌋	A4
45	During the past 30 days, when you drank alcohol, on average, how many standard alcoholic drinks did you have during one drinking occasion? (USE SHOWCARD)	Number Don't know 77 ⌊_⌋⌊_⌋	A5
46	During the past 30 days, what was the largest number of standard alcoholic drinks you had on a single occasion, counting all types of alcoholic drinks together?	Largest number Don't Know 77 ⌊_⌋⌊_⌋	A6

47	During the past 30 days, how many times did you have for men: five or more for women: four or more standard alcoholic drinks in a single drinking occasion?	Number of times Don't Know 77 ⌊_⌋⌊_⌋	A7
48	During each of the past 7 days, how many standard alcoholic drinks did you have each day? (USE SHOWCARD) Don't Know 77	Monday ⌊_⌋⌊_⌋	A8a
		Tuesday ⌊_⌋⌊_⌋	A8b
		Wednesday ⌊_⌋⌊_⌋	A8c
		Thursday ⌊_⌋⌊_⌋	A8d
		Friday ⌊_⌋⌊_⌋	A8e
		Saturday ⌊_⌋⌊_⌋	A8f
		Sunday ⌊_⌋⌊_⌋	A8g

Diet

The next questions ask about the fruits and vegetables that you usually eat. I have a nutrition card here that shows you some examples of local fruits and vegetables. Each picture represents the size of a serving. As you answer these questions please think of a typical week in the last year.

Question		Response	Code
49	In a typical week, on how many days do you eat fruit? (USE SHOWCARD)	Number of days ⌊_⌋⌊_⌋ If Zero days, go to D3 Don't Know 77	D1
50	How many servings of fruit do you eat on one of those days? (USE SHOWCARD)	Number of servings Don't Know 77 ⌊_⌋⌊_⌋	D2
51	In a typical week, on how many days do you eat vegetables? (USE SHOWCARD)	Number of days ⌊_⌋⌊_⌋ If Zero days, go to D5 Don't Know 77	D3
52	How many servings of vegetables do you eat on one of those days? (USE SHOWCARD)	Number of servings Don't know 77 ⌊_⌋⌊_⌋	D4
53	What type of oil or fat is most often used for meal preparation in your household? (USE SHOWCARD) (SELECT ONLY ONE)	Vegetable oil 1 Lard or suet 2 Butter or ghee 3 Margarine 4 Other 5 If Other, go to D5 other None in particular 6 None used 7 Don't know 77	D5
		Other ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	D5other
54	On average, how many meals per week do you eat that were not prepared at a home? By meal, I mean breakfast, lunch and dinner.	Number Don't know 77 ⌊_⌋⌊_⌋	D6
55	On average how long does it take to consume 500g of salt? (USE SHOWCARD)	Number of days ⌊_⌋⌊_⌋ If Zero days, go to P1 Don't Know 77	X8

Physical Activity

Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person.

Think first about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment. In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.

Question		Response	Code
Work			
56	Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like [carrying or lifting heavy loads, digging or construction work] for at least 10 minutes continuously? (USE SHOWCARD)	Yes 1 No 2 If No, go to P 4	P1
57	In a typical week, on how many days do you do vigorous-intensity activities as part of your work?	Number of days ⌊__⌋	P2
58	How much time do you spend doing vigorous-intensity activities at work on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P3 (a-b)
59	Does your work involve moderate-intensity activity, that causes small increases in breathing or heart rate such as brisk walking [or carrying light loads] for at least 10 minutes continuously? (USE SHOWCARD)	Yes 1 No 2 If No, go to P 7	P4
60	In a typical week, on how many days do you do moderate-intensity activities as part of your work?	Number of days ⌊__⌋	P5
61	How much time do you spend doing moderate-intensity activities at work on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P6 (a-b)
Travel to and from places			
The next questions exclude the physical activities at work that you have already mentioned. Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship.			
62	Do you walk or use a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places?	Yes 1 No 2 If No, go to P 10	P7
63	In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places?	Number of days ⌊__⌋	P8
64	How much time do you spend walking or bicycling for travel on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P9 (a-b)

Physical Activity, Continued			
Question		Response	Code
Recreational activities			
The next questions exclude the work and transport activities that you have already mentioned. Now I would like to ask you about sports, fitness and recreational activities (leisure).			
65	Do you do any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing or heart rate like [running or football] for at least 10 minutes continuously? (USE SHOWCARD)	Yes 1 No 2 If No, go to P 13	P10
66	In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (leisure) activities?	Number of days ⌊__⌋	P11
67	How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P12 (a-b)
68	Do you do any moderate-intensity sports, fitness or recreational (leisure) activities that cause a small increase in breathing or heart rate such as brisk walking, [cycling, swimming, volleyball] for at least 10 minutes continuously? (USE SHOWCARD)	Yes 1 No 2 If No, go to P16	P13
69	In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (leisure) activities?	Number of days ⌊__⌋	P14
70	How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P15 (a-b)

Physical Activity				
Sedentary behaviour				
The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent sitting at a desk, sitting with friends, traveling in car, bus, train, reading, playing cards or watching television, but do not include time spent sleeping. (USE SHOWCARD)				
71	How much time do you usually spend sitting or reclining on a typical day?	Hours : minutes	⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P16 (a-b)

History of Raised Blood Pressure			
Question		Response	Code
72	Have you ever had your blood pressure measured by a doctor or other health worker?	Yes 1 No 2 If No, go to H6	H1
73	Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension?	Yes 1 No 2 If No, go to H6	H2a
74	Have you been told in the past 12 months?	Yes 1 No 2	H2b
75	Are you currently receiving any of the following treatments/advice for high blood pressure prescribed by a doctor or other health worker?		
	Drugs (medication) that you have taken in the past two weeks	Yes 1 No 2	H3a
	Advice to reduce salt intake	Yes 1 No 2	H3b
	Advice or treatment to lose weight	Yes 1 No 2	H3c
	Advice or treatment to stop smoking	Yes 1 No 2	H3d
	Advice to start or do more exercise	Yes 1 No 2	H3e
76	Have you ever seen a traditional healer for raised blood pressure or hypertension?	Yes 1 No 2	H4
77	Are you currently taking any herbal or traditional remedy for your raised blood pressure?	Yes 1 No 2	H5

History of Diabetes			
Question		Response	Code
78	Have you ever had your blood sugar measured by a doctor or other health worker?	Yes 1 No 2 If No, go to M1	H6
79	Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes?	Yes 1 No 2 If No, go to M1	H7a
80	Have you been told in the past 12 months?	Yes 1 No 2	H7b

81	Are you currently receiving any of the following treatments/advice for diabetes prescribed by a doctor or other health worker?		
	Insulin	Yes 1 No 2	H8a
	Drugs (medication) that you have taken in the past two weeks	Yes 1 No 2	H8b
	Special prescribed diet	Yes 1 No 2	H8c
	Advice or treatment to lose weight	Yes 1 No 2	H8d
	Advice or treatment to stop smoking	Yes 1 No 2	H8e
	Advice to start or do more exercise	Yes 1 No 2	H8f
82	Have you ever seen a traditional healer for diabetes or raised blood sugar?	Yes 1 No 2	H9
83	Are you currently taking any herbal or traditional remedy for your diabetes?	Yes 1 No 2	H10

Step 2 Physical Measurements

Height and Weight			
Question		Response	Code
84	Interviewer ID	⌊_⌊_⌊_⌋	M1
85	Device IDs for height and weight	Height ⌊_⌊_⌋ Weight ⌊_⌊_⌋	M2a M2b
86	Height	in Centimetres (cm) ⌊_⌊_⌊_⌋.⌊_⌋	M3
87	Weight If too large for scale 666.6	in Kilograms (kg) ⌊_⌊_⌊_⌋.⌊_⌋	M4
88	For women: Are you pregnant?	Yes 1 If Yes, go to M 8 No 2	M5
Waist			
89	Device ID for waist	⌊_⌊_⌋	M6
90	Waist circumference	in Centimetres (cm) ⌊_⌊_⌊_⌋.⌊_⌋	M7
Blood Pressure			
91	Interviewer ID	⌊_⌊_⌊_⌋	M8
92	Device ID for blood pressure	⌊_⌊_⌋	M9

93	Cuff size used	Small 1 Medium 2 Large 3	M10
94	Reading 1	Systolic (mmHg) ⌊_⌊_⌊_⌋	M11a
		Diastolic (mmHg) ⌊_⌊_⌊_⌋	M11b
95	Reading 2	Systolic (mmHg) ⌊_⌊_⌊_⌋	M12a
		Diastolic (mmHg) ⌊_⌊_⌊_⌋	M12b
96	Reading 3	Systolic (mmHg) ⌊_⌊_⌊_⌋	M13a
		Diastolic (mmHg) ⌊_⌊_⌊_⌋	M13b
97	During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker?	Yes 1 No 2	M14
98	Hip circumference	in Centimeters (cm) ⌊_⌊_⌊_⌋ . ⌊_⌋	M15

Step 3 Biochemical Measurements

Blood Glucose			
Question		Response	Code
100	During the past 12 hours have you had anything to eat or drink, other than water?	Yes 1 No 2	B1
101	Technician ID	⌊_⌊_⌊_⌊_⌋	B2
102	Device ID	⌊_⌊_⌋	B3
103	Time of day blood specimen taken (24 hour clock)	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ (hrs : mins)	B4
104	Fasting blood glucose	mmol/l ⌊_⌊_⌋ . ⌊_⌊_⌋	B5
105	Today, have you taken insulin or other drugs (medication) that have been prescribed by a doctor or other health worker for raised blood glucose?	Yes 1 No 2	B6
Blood Lipids			
106	Device ID	⌊_⌊_⌋	B7
107	Total cholesterol	mmol/l ⌊_⌊_⌋ . ⌊_⌊_⌋	B8
108	During the past two weeks, have you been treated for raised cholesterol with drugs (medication) prescribed by a doctor or other health worker?	Yes 1 No 2	B9
109	Triglycerides	mmol/l ⌊_⌊_⌋ . ⌊_⌊_⌋	B10