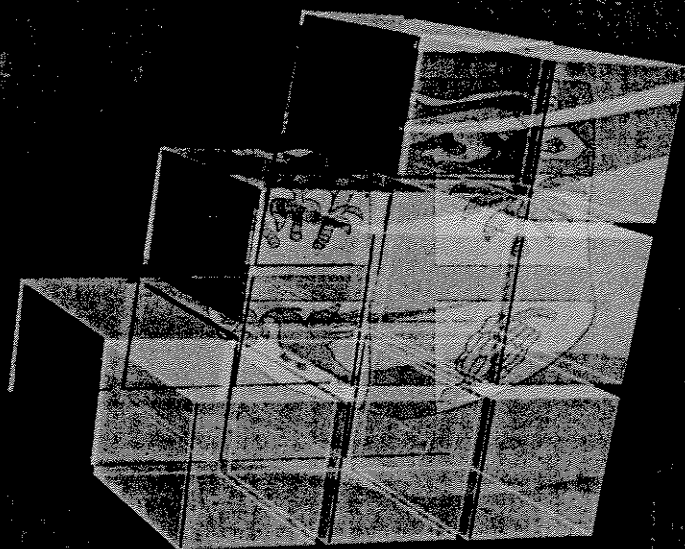


# MINISTRY of Health

SHAPING FIJI'S FUTURE



## FIJI NON-COMMUNICABLE DISEASES (NCD) STEPS SURVEY 2002

*A collaborative effort between the Ministry of Health, World Health Organization (WHO), the Fiji School of Medicine (FSM), and the Menzies Center for Population Health Research of the University of Tasmania, supported by the Australian Agency for International Development (AusAID)*

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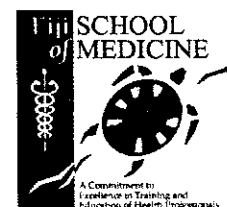
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## Foreword



Minister of Health Honorable Mr Solomon Naivalu

The Fiji NCD STEPS survey 2001 - 2002 has proved to be an important milestone and has provided the platform of necessary baseline information for the formulation of the National Strategic Plan on Prevention and Control of Non-communicable Diseases 2004-2008.

From its inception as a World Health Organisation (WHO) initiative, Fiji was quick to embrace the STEPS surveillance leading to the planning and implementation of this important national survey which was to be a big start of an on-going surveillance system for NCD and its direct and associated risk factors.

The Ministry of Health is indeed grateful to WHO, Menzies Center and the Fiji School of Medicine for the technical assistance provided that guided the survey from planning to implementation and analysis. The Ministry also acknowledges financial assistance from AusAID and WHO.

The previous national surveys on NCD dates back to the 1980s in which prevalence of NCDs were ascertained for the age group 20 years and above but little was done in terms of documentation of the risk factors that is common across most of the common NCDs. This was the component ushered in by the Fiji NCD STEPS survey presenting the ministry the opportunity to also re-look at its NCD prevention and control strategies and consider "Risk Approach" at the individual but more so at the community or population level.

Like any other National survey, the Fiji NCD STEPS survey project team experienced some grueling times in the planning and implementation of a survey that is a first of its kind for Fiji and all credit goes to the team for the

hard work and persistent effort put into making the survey what this report says it is.

The Fiji NCD STEPS survey is a milestone for medical research in Fiji for it entails validated methodology and research instruments for NCD never undertaken before. It is also a milestone as it marks the beginning of an era of renewed commitment by the Ministry of Health and government of Fiji in the fight against Non-communicable diseases and its risk factors as it resulted afterwards in the formulation of the comprehensive National NCD Strategic Plan 2004 - 2008.

I sincerely hope that through this report every reader will grasp the magnitude of NCD and its risk factors and move individuals and communities towards a much healthier lifestyle.

A handwritten signature in black ink, appearing to be 'S. Naivalu', written in a cursive style.



World Health Organisation Representative in the South Pacific  
Dr Chen Ken

The World Health Organisation is proud to be part of this collaborative effort between the Ministry of Health, the Fiji School of Medicine and the Menzies Centre for Population Health Research of the University of Tasmania (Australia) supported by AusAID

The publishing of the Fiji Non-Communicable Diseases STEPSwise Approach Risk Factor (NCD STEPS) survey marks a milestone in medical research in Fiji as it provides baseline data that will assist the Ministry of Health in addressing the escalating issue of non communicable diseases (NCDs).

Fiji was one of the four countries selected to pilot the WHO NCD STEPS Survey with Marshall Islands, The Federated States of Micronesia and Samoa. The STEPSwise Approach is a simple, standardized method for collecting, analysing and disseminating data for NCD risk factors in WHO member countries.

By using the same standardized questions and protocols, all countries can use STEPS information not only for monitoring within country trends, but also for making between country comparisons. The approach encourages the collection of small amounts of useful data information on a regular and continuing basis adopting standard methodology and sample size to detect trends in age and sex group.

STEPS risk factors is a sequential process, starting with gathering information on key risk factors by the use of interviewer administered questionnaires (STEP 1), then moving to simple physical measurements (STEP 2), and only then recommending the collection of blood sample for biochemical assessment (STEP 3).

The baseline data provided by NCD STEPS will ensure that the right emphasis is placed on the risk factors that need to be addressed in the efforts to control obesity, high blood pressure, diabetes, and physical inactivity.

WHO is grateful to AusAID for their financial assistance, the Menzies Centre for Population Research and the Fiji School of Medicine for their technical assistance and the staff of the Ministry of Health who traveled the length and breadth of the country to obtain this much-needed data.

WHO congratulates you all on this tremendous effort as we continue to work together to tackle the concerning issue of Non Communicable Diseases which is on the rise in Pacific Island countries. The Fiji STEPS survey is a landmark in the implementation of the Tonga Commitment to Healthy Lifestyle and Supportive Environments made by the Ministers of Health of Pacific Island Countries in March 2003.



## List of Abbreviations

| Term       | Meaning  |
|------------|--|
| AD         | Atherogenic Dyslipidemia                                   |
| AusAID     | Australian Agency for International Development            |
| BP         | Blood Pressure   |
| BMI        | Body Mass Index  |
| CEO-Health | Chief Executive Officer - Health                           |
| Cent-East  | Locally used for Central Eastern Health Services           |
| CI         | Confidence Interval  |
| CVD        | Cardiovascular Diseases                                    |
| DBP        | Diastolic Blood Pressure                                   |
| DM         | Diabetes Mellitus  |
| FBS        | Fasting Blood Sugar  |
| FSM        | Fiji School of Medicine                                    |
| FNASUS     | Fiji National Adult Substance Abuse Survey                 |
| HDL        | High Density Lipoprotein                                   |
| HP         | Health Promotion   |
| HTN        | Hypertension   |
| MOH        | Ministry of Health   |
| NCEP       | National Cholesterol European Project                      |
| NA-NCD     | National Advisor on Non-communicable Diseases              |
| NFNC       | National Food and Nutrition Center                         |
| NHRC       | National Health Research Committee                         |
| NIDDM      | Non-insulin Diabetes Mellitus                              |
| NCHP       | National Center for Health Promotion                       |
| NCD        | Non communicable diseases                                  |
| NDC        | National Diabetic Center                                   |
| PA         | Physical Activity  |
| SD         | Sub-division   |
| SBP        | Systolic Blood Pressure                                    |
| SDHS       | Sub-divisional Health Sister                               |
| SDMO       | Sub-divisional Medical Officer                             |
| SEARO      | South East Asia Regional Office of WHO                     |
| WPRO       | Western Pacific Regional Office of WHO                     |
| WHO        | World Health Organisation                                  |
| WHO-EPI    | World Health Organisation Expanded Program of Immunisation |
| WHR        | Waist Hip Ratio  |

### 3 Executive Summary

The Fiji NCD-STEPS survey was a nation-wide cross-sectional assessment of 15 to 64 year olds carried out from February to May 2002 using the WHO NCD STEPS surveillance methodology and instruments with these main objectives:

- To investigate and document the prevalence of key NCDs in Fiji.
- To determine the prevalence of and better understand the major risk factors and their associations for common NCDs in Fiji.

Using random cluster sampling, the targeted sample size was 7050 but data was obtained from 6788 individuals with 6783 valid participants following the data cleaning process. For the 3rd STEP of biochemical measurements blood samples were drawn only from the 25-64 year age group.

The overall prevalence of current smokers was 37% and among them, 43% were daily smokers with manufactured cigarettes being the most frequent form of tobacco used (77%).

As for alcohol use, binge drinking was more common in the 35-44 year age group in both genders as compared to other age groups and amongst current kava users, 47% reported smoking tobacco and 20% reported drinking alcohol during or after kava consumption.

There was generally low consumption of fruits and vegetables with 66% of survey participants eating less than one serving of fruit per day and 26% eating less than one serving of vegetables per day.

Generally, the least active segments of the population surveyed in many of the physical activity variables examined were women, people in the age groups over 35 years, those living in urban areas and Indo-Fijians.

For biochemical risk factors, there was a trend of an increasing mean cholesterol level with age, with a persistent tendency for levels in each age group to be higher for males than females.

There was a higher proportion of urban males (49%) in the high-risk triglyceride group ( $\geq 1.70$  mmol/L) as compared to either rural males (24%) or urban females (28%).

HDL cholesterol levels were used to categorize individuals into a high-risk group. The proportion of males in this high-risk group ( $\leq 0.90$  mmol/L) was 31% and for females was 35%, a difference that was not statistically significant.

The overall proportion of overweight (BMI: 25-29.9) in the Fiji population between the ages of 15-64 was 29% and for obesity 18%. Generally females had higher BMI than males (Mean BMI - 26.7 vs 24.2) and Fijians more than Indo-Fijians.

There is a rapid increase in the proportion of overweight / obesity in both genders prior to the age of 30 years. By measurement of waist-hip ratio (WHR) there was a significantly higher rate of high-risk central obesity among females (45%) than males (4%).

The prevalence of hypertension in the population of 15-64yrs was 19.1%, and 63% of them were newly diagnosed. There is a higher proportion of hypertension among Fijians (21%) as compared with Indo-Fijians (16%) and the proportion of uncontrolled previously diagnosed cases is higher among Fijians (81%) than among Indo-Fijians (58%).

The prevalence of diabetes in Fiji was 16% for the age group 25-64 yrs and among them the proportions of newly diagnosed cases was 53.2%. There is a much higher proportion of diabetes among Indo-Fijians (21.2%) as compared with Fijians (11.5%). There is also a difference in the overall prevalence of diabetes by locality with a prevalence of 24.7% in the urban area and 12.8% in the rural area.

Approximately one-fifth of all those with a previous diagnosis of diabetes and/or hypertension reported current use of herbs or traditional remedies.

These results are milestone achievements in NCD research and are keys to the development of effective strategies for the prevention and control of non-communicable diseases in Fiji.

In conclusion the NCD STEPS 2002 revealed not only high prevalence of health conditions in Hypertension, Diabetes and Obesity in the Fiji population surveyed but also the high rates of risk factors associated with it. There is a need to address these in a comprehensive and holistic way at National, Community and individual level in order to prevent and control the continuing rise in Non-communicable Disease burden arising from it.



## 4 Introduction

### 4.1 Background Information and Rationale

The growing burden of non-communicable diseases (NCD) represents a major challenge to health development as it is a burden that cannot be countered simply by accessing greater internal or external funding to spend within the system, due to the astronomical cost factor. A WHO report on the NCD burden in the Pacific countries identified the essential need to mount preventative programs to halt the rapid rise in risk factors that underpins the disease increase.

In recognition of the increased burden of NCDs, WHO has given NCD prevention control and surveillance some priority in its program of work. NCD Surveillance is seen as a necessary tool in designing prevention and control programs with specific goals and measurable outcomes. Country specific data on risk factors is essential in order to set priorities, develop targeted programs and monitor interventions on NCDs. It is this approach that has been implemented by Fiji, while adding items of local relevance.

Primary Prevention and Health Promotion through both community based strategies together with individual high risk clinical intervention has been identified as the key components for the prevention and control of NCDs. The description and quantification of the major risk factors of NCDs is the opportunity that the WHO STEPwise Approach to Risk Factor Surveillance (NCD-STEPs) presents for the prevention and control of a disease group that has been neglected long enough.

As identified in the WHO STEPwise Approach, the underlying principle is that all surveillance sites gather the same core items on a limited number of risk factors, with the option of including additional items of local relevance. The WHO STEPS surveillance programme aims to ensure that the STEPS implementation at the country level is strategic, coordinated, builds capacity and is sustainable.

A vast body of knowledge now exists about the risk factors for NCDs and experience in the prevention and control of them. It also has been shown in a number of countries, both developed and developing, that a comprehensive, long term approach has the potential to reduce risk factors in the population and in turn disability and death. In this sense, the risk factors of today predict the diseases of the future.

A risk factor refers to any attribute, characteristic or exposure of an individual, which increases the likelihood of developing a non-communicable disease. The major risk factors for one NCD are also likely to affect one or more of the other NCDs.

In addition some of the NCD "risk factors" tend to appear in 'clusters' in individuals (i.e. physical inactivity often clustering with obesity and high blood pressure). It has been estimated, for example that social class, tobacco and alcohol use, obesity, blood pressure and diabetes explain about half of the variance in stroke in males and two thirds in females.

Table 4.1 Risk factors common to major non communicable conditions

| Risk factor           | Condition                |          |        |                          |
|-----------------------|--------------------------|----------|--------|--------------------------|
|                       | Cardio-vascular disease* | Diabetes | Cancer | Respiratory conditions** |
| Smoking               | /                        | /        | /      | /                        |
| Alcohol               | /                        |          | /      |                          |
| Nutrition             | /                        | /        | /      | /                        |
| Physical inactivity   | /                        | /        | /      |                          |
| Obesity               | /                        | /        | /      | /                        |
| Raised blood pressure | /                        | /        | /      |                          |
| Blood glucose         | /                        | /        | /      |                          |
| Blood lipids          | /                        | /        |        |                          |

\*Including heart disease, stroke, hypertension

\*\* Including chronic-obstructive pulmonary disease and asthma

### 4.2 The National Context

#### 4.2.1 Geography

Fiji lies in the heart of the Pacific Ocean midway between the Equator and the South Pole and between longitudes 175 and 178 west and latitudes 15 and 22 south. The Fiji Islands are made up of approximately 330 islands of which, one third are inhabited. There are two major islands Viti Levu and Vanua Levu. Fiji's total land area is 18, 333 square kilometers.

#### 4.2.2 Population

On August 25 1996, the population of Fiji stood at 775,077 with 359, 495 persons in the urban areas and 415, 582 in the rural areas. Of the total, 393 575 were Fijians, 338 818 were Indo Fijians and the remaining made up the other races. Fiji has a relatively young population with about 53 percent or 413,100 persons below the age of 25 years. The economically active-population in 1986 was 62 percent of the total population or 441, 852 persons and in 1996 it was estimated at 67 percent or 523, 428 persons. The number of people aged 60 years and over was estimated at 47,027 persons or 6 percent of the total projected population in 1996.

Fiji is becoming increasingly urbanized as internal migration to towns and cities continue with the extension of urban boundaries also contributing to this trend. By 1996, some 46 percent of the total population were living in urban areas, up from 39 percent in 1986.

#### 4.2.3 Economy

Fiji's economy has improved considerably following the political crisis of 2000 with all sectors performing relatively well with the exception of sugar. According to a document prepared by the Ministry of Information, the economy was on track in 2002 to expand by 4.4 percent compared to 4.3 percent in 2001 with an outlook for the economy to grow by 5.7 percent in 2003. The tourism sector is expected to lead economic growth this year (2003) with strong contributions also from the wholesale and retail sector and the building and construction sector as a result of Fiji hosting the 2003 South Pacific Games.



## 4.2.4 Government

Fiji is a former British colony that gained independence from Great Britain in 1970. Fiji became a republic in 1987 and is currently run by the democratically elected government. Fiji complies with the spirit of the WHO constitution, which states that health is the right of the individual. The country's health status meets or exceeds most of the WHO goals for the year 2000 and this can be attributed to improved health standards, sound comprehensive health care programmes of the Ministry of Health and otherwise. The Government's focus for health lies in preventative health care, whilst at the same time recognizing curative health care needs as an important entity that is all inclusive in a national health system.

## 4.2.5 Social Services and Health Status

Fiji generally has a good standard of health and people are living longer with life expectancy of 67.0 years for males and 67.9 years for females. Infant mortality has fallen by 62 percent in the past 20 years and is now at 16.3 deaths per 1000 live births. Good obstetrical services contribute to the lower infant death rate with about 95% of births being attended to by trained medical personnel all resulting in a marked decrease in Maternal Mortality rate to 43 per 100 000 by 2002.

## 4.2.6 NCDs in Fiji

NCDs have been the leading cause of deaths in Fiji over the past three decades. In the year 2000, it was noted that 82% of all deaths recorded in Fiji were attributed to NCDs, with Coronary Heart diseases and Stroke responsible for one third of all deaths in the 40-59 age group. This is a marked increase from the figures released following a national survey in 1980, which placed the deaths caused by NCD at just over 50 percent.

According to a WHO report, based on the current trends, by the year 2020 NCDs are expected to account for 73 percent of deaths and 60 percent of the global disease burden. As quoted in the report, most of the increase will result from the epidemiological transition in developing countries, although the burden of NCDs in developed countries also continues to increase.

Studies have confirmed that the incidence of chronic NCDs, have been increasing markedly in many developing countries especially in urbanized populations with a link between crude mortality rates from cardiovascular diseases and per capita national income.

In Fiji, changes have taken place rapidly over the last three decades with the prevalence of diseases such as diabetes, hypertension and heart disease increasing in populations with which they have previously not been associated. The change in disease patterns has been accompanied by increasing westernization, which results in social, cultural and economic change, most evident in the urban populations. The burden of disease caused by NCDs is increasing rapidly and is expected to have significant social, economic and health consequences on the country and the rest of the world.

Type II Diabetes Mellitus is one of the major NCDs in Fiji with its severe complications and chronicity affecting the adult population mainly in their working age group. Over the past thirty years, the prevalence of diabetes, in Fiji, has increased progressively with an estimated 500 new cases reported per year through the Diabetes notification and in-patient reporting system of the Ministry of Health. In 1999, it was estimated that F\$5.8m or 6% of the total health budget was expended on diabetes.

A study conducted in 1999 on the cost of diabetes in the Western Pacific region revealed a total estimated expenditure of NZ\$2,316,568 for diabetes related admissions at all hospitals in Fiji in 1999. The study revealed that medical and nursing staff interviewed indicated an increasing number of persons presenting with uncontrolled diabetes and advanced stage complications. It was also suggested that the reason for admission for persons with diabetes is less likely to be recorded as diabetes and more likely to be for a complication.

The study also revealed that senior medical and surgical staff at the Colonial War Memorial Hospital in Suva and the National Diabetes Centre and in community services stated that there was a significant increase in persons presenting with late stage complication. The study estimated that there was either:

- an increase in the number of persons with diabetes;
- there is a failure in the service delivery model resulting in persons not being diagnosed with early stages of the disease; or
- persons with diabetes are not accessing regular clinical services for ongoing management.

Surgical staff at the CWM Hospital stated that people are increasingly presenting with advanced ulceration of lower limbs. The study showed that for the year 2000, 5.15% of the admissions to the surgical unit were for persons with diabetes. The rate for amputations was 5.73%, whereas for a three-month period in 2001 the rate for admissions had increased to 15%. In many cases 5 to 7 surgical procedures were undertaken prior to amputation.

## 4.2.7 NCD Management Structure and Services

Following the National Survey in 1980, the National Diabetes Centre was established to strengthen efforts to prevent and control diabetes mellitus with a non-governmental arm, the National Diabetes Foundation formed to support the diabetes prevention and control programme.

A national NCD Taskforce was formed in 1991 to coordinate activities in place for the prevention and control of NCDs and to establish interventions to improve the status. Fiji adopted the Healthy Islands concept as the unifying theme for health promotion and health protection in the country for the 21st Century as endorsed by the Pacific Islands Ministers of Health who met in Yanuca Fiji in 1995.

Five priority areas of action for the control of NCDs were identified in the 1998-2002 National Health Plan. These were:-

1 Ministry of Health

2 Fiji Medical Journal, Vol 13, No 11 & 12 Nov Dec 1985

3 Fiji Medical Journal Vol 13, No 11 & 12 Nov Dec 1985

4 Fiji Medical Journal July/August 1983.

(Healthcare Decision Making in the Western Pacific Region, Diabetes and the Care Continuum 2001: Carol M Beaver)

- a. Tobacco use, alcohol consumption, high fat intake, physical inactivity, obesity, and high blood pressure.
- b. Strengthening acute care services - and prevention of complications [Secondary prevention]
- c. Disease management and rehabilitation
- d. Reorientation and reorganization of services and new development
- e. Strengthening of the Health System Surveillance
- f. Supporting Research activities.

A national NCD stock take workshop was held in 1999 to address the five major NCDs, diabetes, hypertension, heart diseases, stroke and cancers. The main objectives of the workshop were to assess the burden caused by NCDs, assess the prevalence of risk factors for the major NCDs, take stock of existing initiatives and activities, to identify gaps, and to prioritise ongoing activities and develop a National NCD plan of action. Outcomes of the workshop included recommendations for addressing prevention and management of diabetes and diabetes related complications.

The NCD Taskforce, which was established in 1991 had membership drawn from various government and non governmental bodies. The Taskforce which had seen a number of members withdraw and seen very little activity was reactivated with membership drawn from Ministry of Health, Ministry of Education, Ministry of Youth, Employment Opportunities and Sports, Ministry of Agriculture, Counterstroke Association of Fiji, National Heart Foundation, National Diabetes Foundation in 2001.

The Taskforce is chaired by the Assistant Director Primary and Preventive Health Services and has four subcommittees: Research, Nutrition Policy in Schools, Diabetes Mellitus Management Prevention and Control, Rheumatic Fever Management and Prevention of Rheumatic Heart Disease.

Whilst a number of initiatives, namely those mentioned above, have been carried out to curb the rise in NCDs, the increasing number of deaths caused by NCDs and the increase in the number of adults and children suffering from NCDs reflects the need for further implementation of plans to control the emerging NCD epidemics. It is evident that a holistic approach needs to be taken when addressing the NCD epidemics with "Healthy Lifestyles" marketed as a product that can be achieved across all sections of the community.

Risk intervention both at community or population level and high risk individual level was realized to be the way forward in the battle against rising but neglected of NCDs. There was a need to develop a national strategic plan for such approach but the absence of baseline data especially of the risk factors hindered such activity to a certain extend.

The NCD STEPS is the WHO recommended surveillance tool which offers a simplified approach to surveillance and provides standardized materials and methods as part of technical collaboration with countries.

### 4.3 Developing WHO STEPS in Fiji

The WHO STEPwise approach aimed to see the collection and analysis of data in a regular and systematic way with Fiji being the first country to initiate NCD-STEPS survey in the Pacific. The Ministry of Health in adopting the WHO STEPwise Approach recognizes the need for a comprehensive long-term approach in order to reduce risk factors and in turn reduce the numbers of disabilities and deaths caused by NCDs.

In early 2001, Fiji began developing the NCD STEPS survey through a collaborative effort between the Fiji Ministry of Health, WHO, the Fiji School of Medicine (FSM), and the Menzies Center for Population Health Research (University of Tasmania, Australia). The comprehensive process of setting up the survey involved initial consultation between the Ministry of Health, WHO and the Fiji School of Medicine.

In preparation for the implementation of the project in Fiji, NCD Project Officer, Dr Asinate Boladua, Epidemiologist Dr Salanieta Saketa and Assistant Director Nursing Community Service Litia Cava attended training for the WHO STEPwise approach for the surveillance of risk factors for NCDs for the countries in the WPRO and SEARO held at Menzies Center for Population Health Research, University of Tasmania.

Following a series of meetings, the NCD Task force Research Subcommittee was given the responsibility to plan and implement the NCD Prevalence and Risk Factor Survey. Consecutive meetings followed to:

- Define study population,
- Agree on objectives of the activity and data elements to be collected,
- Study methodology,
- Budget for the entire process,
- Identify funding sources,
- Identify and negotiate with relevant parties regarding personnel,
- Prepare training materials and operational manual,
- Study proposal for submission to National Health Research Council for funding grant and to the Research Ethics Review Committee at the Fiji School of Medicine,
- Identify, price and procure all required equipment and materials, and
- Scouting of proposed data collecting sites and information dissemination on proposed survey to field staff.

A Pilot Study was carried out which involved 60 participants from an enumeration area in the city of Suva called Edenville. Training and data collection was conducted over a three-day period. Data collectors included (9) Red Cross volunteers as interviewers while nurses, doctors and laboratory technicians attended to the physical measurements and blood tests for glucose, cholesterol and triglycerides. The pilot identified many areas that were improved upon prior to the initiation of the training and data collection for the actual study population.

Training on the NCD STEPS survey was conducted for data collectors in the Central Eastern Division and representatives from the three Pacific Island countries [Samoa, Federated

States Of Micronesia and Marshall Islands] who were piloting the first phase of the study.

Following the completion of data collection, data entry was conducted at the Ministry of Health and was followed by a lengthy data cleaning process, before the data was transmitted to the Menzies Centre for scanning using the teleform system.

#### 4.4 Purpose

The overall aim of the Fiji NCD STEPS survey is to determine the prevalence of and better understand NCD and its major associated risk factors to provide baseline information and assist in the development of comprehensive National Strategic Plan on Prevention and Control of NCDs.

For surveillance purposes the survey aims to assist with:-

- Defining the magnitude of trends of the NCD risk factors.
- Planning and evaluation of health promotion activities to reduce prevalence of NCD risk factors.
- Predicting likely future demands for health services.

#### 4.5 Objectives

The main specific objectives of the Fiji NCD STEPS survey are:

- To investigate and document the prevalence of key NCDs amongst the target population
- To determine the prevalence of and better understand the major modifiable risk factors for common NCDs. These include, physical inactivity, poor diet, obesity, high blood cholesterol and lipids, tobacco, alcohol and kava abuse.
- To study and compare NCD and its risk factors across different strata of age, gender, ethnicity, and locality.

### 5 Methodology

The implementation of Fiji-STEPS involved months of planning, a week-long training activity, and a pilot survey, and was accomplished through the formation of MOH survey teams comprised of various staff including a Team Leader, field officers, doctors, medical assistants, nurse practitioners, laboratory technicians and administrative staff. The survey was conducted from February to May 2002.

#### 5.1 Survey Design

The 2002 Fiji-STEPS survey was designed as a population-based cross-sectional survey of 15 to 64 year olds and involved the collection of data across 3 "steps" as follows:

**STEP 1:** Interview data on selected health risk behaviors including smoking, alcohol consumption, fruit and vegetable consumption, physical inactivity, and kava consumption.

**STEP 2:** Physiological measures of health risks including blood

pressure, height, weight, waist circumference, and hip circumference.

**STEP 3:** Biochemical measures of health risks including fasting blood glucose, total cholesterol, HDL cholesterol, and triglycerides.

#### 5.2 Sampling

With the intention of using a variant of the WHO-EPI multi-stage cluster sampling methodology, initial sample size calculations were performed assuming a prevalence of approximately 10% for major variables of interest (e.g. diabetes), an ability to ascertain an estimated prevalence within 1% of the true prevalence, a 95% confidence level, and a design effect of 2. These calculations suggested that a total sample size of approximately 6,900 in the target population of 15 to 64 years would be sufficient for the purposes of this study.

As the WHO-EPI multi-stage cluster sampling methodology calls for the selection of 30 clusters, it was decided to target the collection of STEP 1 and STEP 2 data from 235 participants in each of 30 clusters totaling a target sample size of 7050. Given that biochemical abnormalities are quite rare in the 15 to 24 year age group and that the logistics and costs to collect these STEP 3 data are considerable, it was decided that STEP 3 data would only be collected from one-half of those in the 25 to 64 year age group. As the Fiji population data suggested that the total 25 to 64 year age group would comprise approximately 68.4% of the target population in the 15 to 64 year age group, it was estimated that STEP 3 data would be collected on around 2411 individuals (i.e.  $7050 \times .684 \times 0.5$ ).

A multi-stage cluster sampling methodology was used to select the 30 clusters. The entire Fiji population is distributed among a total of 86 tikinas throughout three administrative divisions. The sampling frame for the sampling process comprised all tikinas with a population of 2,500 or more. The smaller tikinas ( $n = 35$ ) were eliminated from the sampling frame as they largely included tikinas in very remote areas that if chosen would impose significant logistical challenges with little yield in terms of potential numbers of participants. Of the total of 86 tikinas, 51 were included in the sampling frame representing over 95% of the total Fiji population. The first stage of the sampling process involved the probability-proportional-to-size selection of 18 of these tikinas that would include the 30 clusters.

The second stage of the sampling process involved the selection of enumeration areas, which defined a cluster, within the 18 tikinas chosen in stage one. In the case of tikinas with a single cluster, this single cluster was chosen randomly from a list of enumeration areas within that tikina. In the case of tikinas with more than one cluster, these were chosen with PPS. The third stage of the sampling process involved the selection of starting households within the chosen clusters using recognized WHO EPI cluster sampling methodology.

Within each cluster the selection of participants within the target population of 15 to 64 year olds for STEPS 1 and 2 was performed in a house-to-house search and with informed consent irrespective of age, gender or ethnicity, until the target participant number of 235 was reached. From those chosen for STEPS 1 and 2, participants for STEP 3 were chosen randomly



(via a coin flip) as approximately one-half of those aged 25 to 64 years who had been selected for the other two STEPS.

For each cluster, data was also collected regarding the total number of households approached, the number of those who refused consent to being a participant, and the number of those in STEP 1 who also participated in STEP 2 and STEP 3. This data was included in a weighting formula used to calculate STEP-specific weighting factors for data analysis.

## 5.2.1 Data Collection Process

### 5.2.1.1 STEP 1 - Behavioral Risk Factors

Data for behavioral risk factors was collected using a face-to-face structured interview with questions on selected health risk behaviors including smoking, alcohol consumption, fruit and vegetable consumption, physical inactivity, and kava consumption. The questions were mainly derived from the WHO STEP wise Approach to Risk Factor Surveillance generic questionnaire. There were some adoptions and additions to the questions including kava and questions about NCD conditions and treatment. The questionnaire is in the appendix.

While the interview form was in English, the actual interview was conducted in either English, Fijian or Hindi depending upon the wishes of the participant. Interviews in Fijian or Hindi followed a standardized script translated from the original English version. All interviews followed a standardized informed consent process and was conducted in a private setting as individually arranged by one of approximately 40 interviewers, all of whom were Fiji MOH personnel specifically trained in the NCD-STEPS methodology. The MOH interviewer also made arrangements with the participants to come to a central site for STEPS 2 and 3 (usually on the following day), and in the case of those participating in STEP 3, the interviewer also provided the participant with fasting instructions.

### 5.2.1.2 STEPS 2 and 3

Selected nursing stations and hospitals were used as a temporary survey base for STEPS 2 and 3 where stations were set up for registration, physical measurements, biochemical measurements and checkout. Approximately 50 participants a day attended the STEP 2 and 3 stations each day.

## STEP 2 - Physical Measurements

Targeted physiological measures of health risks for NCDs were measured including blood pressure, height, weight, waist circumference, and hip circumference. Selected MOH personnel were trained in conducting these measurements through the use of specific protocols with quality control monitored through the use of periodically conducted performance checklists for each measurement.

Blood pressure (BP) was measured with the Omron HEM 907 BP monitor. BP was measured twice and if the difference between the first and second readings was 10 mm Hg or more then a third reading was taken. For those with two readings, the mean value of the two readings was used in the analysis. For those with three readings, the mean value of the second

and third readings was used in the analysis.

Height was measured twice with a body meter to the nearest 0.1 cm and the mean of these two measurements was used in the analysis. Weight was measured once to the nearest 0.1 kg with the Heine Portable Professional Adult Scale, which was checked for accuracy against standard weights at the beginning and end of each day. Waist and hip circumference were measured twice to the nearest 0.1 cm with the Figure Finder constant tension tape. If there was a difference between the first and second readings of 2 cm or more, then a third reading was taken. For those with two readings, the mean value of the two readings was used in the analysis. For those with three readings, the mean value of the closest two readings was used in the analysis. Neither waist nor hip circumference were measured in female participants who responded affirmatively to a question as to whether or not they were pregnant.

## STEP 3 - Biochemical Measurements

Targeted biochemical measures of health risks for NCDs were measured including fasting blood glucose, total cholesterol, HDL cholesterol, and triglycerides. MOH laboratory personnel were trained in conducting these measurements through the use of specific protocols with monitored quality control. A venous blood sample was collected and prior to spinning the venous sample down to obtain a serum sample, a drop of whole blood was applied to a glucose test strip and measured in a hand-held glucometer. The serum samples were transported on ice to a hospital laboratory facility where the other three biochemical measurements were conducted using standard methods with a Reflotron analyzer.

## 5.3 Data Entry and Cleaning

Data for all three STEPS were hand-entered onto coded forms with unique computer-generated identification numbers that were designed to be electronically read by a software application called Teleform that then populated an EpiInfo 6.04d database. Additionally, a random selection of 10% of all completed forms were also entered manually using EpiInfo 6.04d to test for consistency between the two data entry methods.

The process of automated data entry using Teleform was followed by a series of activities to yield a "cleaned" and valid dataset. These activities included identifying, investigating, and resolving as necessary, various issues related to duplicate records, data values outside of preset ranges, and inconsistencies between answers to different but related questions.

## 5.4 Weighting of Data

Due to the complex multi-stage cluster sampling methodology used in Fiji-STEPS, it was necessary to devise a weighting formula to accommodate weighted data analysis (Appendix 2). This formula includes three factors related to the probability of selecting the study population using the Fiji-STEPS multi-stage sampling methodology, one factor to accomplish a post-stratification adjustment related to the sample's distribution of ethnic/gender/age groups relative to the total Fiji population aged 15 to 64 years, and one factor related to the STEP 2 response rate. Inadequate data on STEP 3 participation precluded calculation of a response rate factor similar to that

used for STEP 2.

## 5.5 Data Analysis

Data analysis was accomplished using the Windows-based EpiInfo 2002 - Version 2. Frequency distributions with 95% confidence intervals were calculated using weighted complex sample frequencies for all categorical variables. Descriptive statistics including weighted complex sample means with 95% confidence intervals were calculated for all numeric variables.

Associations between variables were analyzed for the major exposure variables of interest including 10-year age groups, gender, ethnicity and area (i.e. rural vs. urban). These associations were calculated using EpiInfo's complex sample table function. Statistically significant differences between groups were identified by non-overlapping 95% confidence intervals for either weighted proportions or weighted means. The Physical Activity section of the survey however was analysed by Dr Ben Smith at the Center of Physical Activity and Health in Sydney Australia using the Statistical Package for Social Sciences (SPSS).

## 6 RESULTS

### 6.1 Description of the sample

The targeted sample size was 7050 (235 participants from 30 clusters). Data were obtained from 6788 individuals with the data being reduced to 6763 following the data cleaning process and details of sample characteristics are outlined in table 6.1 and Figure 6.1 below.

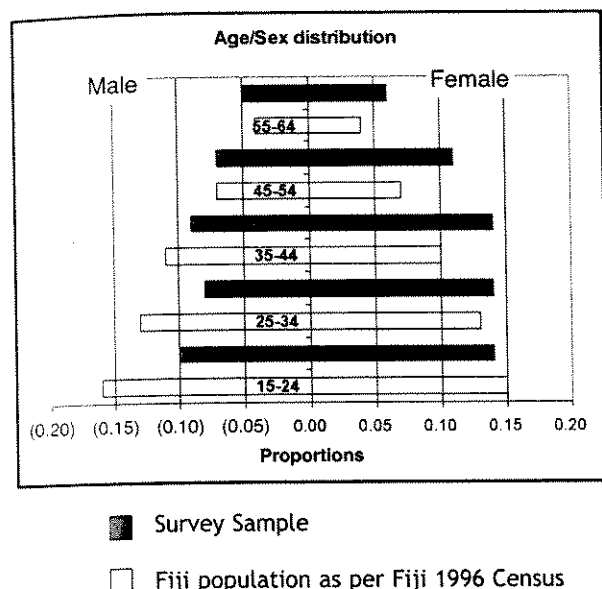
#### 6.1.1 SURVEY SAMPLE CHARACTERISTICS

Table 6. 1: Demographic Description of Study Sample and Sampling Frame\*

| Demographic Characteristic | Study Sample |                       |                     |           | Sampling Frame* |            |
|----------------------------|--------------|-----------------------|---------------------|-----------|-----------------|------------|
|                            | Number       | Unweighted Proportion | Weighted Proportion | 95% CI    | Number          | Proportion |
| <b>Gender</b>              |              |                       |                     |           |                 |            |
| Male                       | 2752         | 40.7%                 | 53.2%               | +/- 2.8%  | 241,379         | 50.6%      |
| Female                     | 4011         | 59.3%                 | 46.8%               | +/- 2.8%  | 235,186         | 49.4%      |
| Total                      | 6763         |                       |                     |           | 476,565         |            |
| <b>Ethnicity</b>           |              |                       |                     |           |                 |            |
| Indigenous Fijian          | 3805         | 56.3%                 | 57.2%               | +/- 17.9% | 230,878         | 48.4%      |
| Indo-Fijian                | 2768         | 40.9%                 | 38.9%               | +/- 18.0% | 219,150         | 46.0%      |
| Others                     | 190          | 2.8%                  | 3.8%                | +/- 2.7%  | 26,537          | 5.6%       |
| Total                      | 6763         |                       |                     |           | 476,565         |            |
| <b>Agegroup</b>            |              |                       |                     |           |                 |            |
| 15-24 years                | 1647         | 24.4%                 | 30.9%               | +/- 2.5%  | 150,637         | 31.6%      |
| 25-34 years                | 1505         | 22.3%                 | 25.8%               | +/- 1.8%  | 122,501         | 25.7%      |
| 35-44 years                | 1580         | 23.4%                 | 21.0%               | +/- 1.8%  | 99,959          | 21.0%      |
| 45-54 years                | 1241         | 18.3%                 | 13.7%               | +/- 0.7%  | 65,764          | 13.8%      |
| 55-64 years                | 790          | 11.7%                 | 8.6%                | +/- 1.1%  | 37,704          | 7.9%       |
| Total                      | 6763         |                       |                     |           | 476,565         |            |
| <b>Locality</b>            |              |                       |                     |           |                 |            |
| Rural                      | 3793         | 56.1%                 | 73.2%               | +/- 20.2% | 243,776         | 51.2%      |
| Urban                      | 2970         | 43.9%                 | 26.8%               | +/- 20.2% | 232,789         | 48.8%      |
| Total                      | 6763         |                       |                     |           | 476,565         |            |

Of the 6763 respondents in the survey 2752 were males and 4011 were females. In terms of ethnicity Fijians made up 56.3% of the surveyed population with Indo-Fijians at 40.9% and other groups namely Chinese, other Pacific Islanders and Part Europeans making up 2.8%. Of all these, 56.1% resided in rural areas whilst 43.9% in urban centers and highest proportion of population was in the 15-24 years age group.

Figure 6.1: Age and gender distribution of Fiji Population and Survey Sample

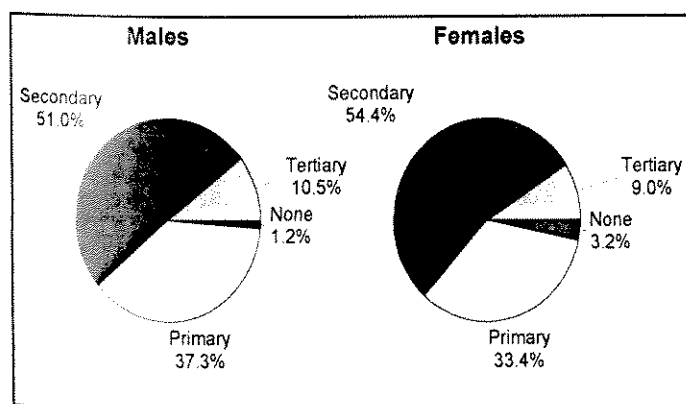


## 6.1.2 Level of Education

In line with other research done in Fiji, the survey indicated that Fiji had a well-educated population with only a very small percentage having not completed primary school (males: 1.2%; females: 3.2%). A large number of the sample population had completed lower secondary school (males 59.9%; females: 54.3%) with more than 10% of all surveyed males and females completing secondary school (males: 13.2%; females: 14.9%). Earlier studies done in Fiji indicate that over 98% of children between the ages of 6-14 are attending primary school.

There is no significant difference between the numbers of years spent in school by males (9.6 years) and females (9.7 years). As expected, the mean number of years spent in school decreased from 10.7 to 7.2 as the age increased 15 to 64 years, reflecting what is commonly known that the younger age-group spend more time in school than the older age group.

Figure 6.2: Frequency of level of education by gender



## 6.2 Behavioural Risk Factors

### 6.2.1 Tobacco Use

(Detail tables in Appendix Table 2.1 - 2.12)

Prevalence of tobacco use was assessed according to smoking status that each participant reported on as response to the questions. These are defined as follows:

- Current smokers - those who have smoked any tobacco products (such as cigarettes, cigars or rolled tobacco) in the past 12 months
- Daily smokers - those who are smoking any tobacco products every day.

These categorizations of smoking status are of common use as it also gives insight into the addictive characteristics of tobacco smoke.

This survey showed that the overall proportion of current smokers was 36.6% ( $\pm 5.9$ ) among whom 42.7% ( $\pm 6.3$ ) reported daily smoking. The overall prevalence of current smoking in the NCD-STEPS survey is comparable with the results of the Fiji National Adult Substance Use Survey conducted in 1999 that identified the overall prevalence of smoking at 38%.

There was a greater proportion of current smokers being male (53.0%  $\pm 6.5$ ) than female (18.0%  $\pm 5.3$ ). Amongst current smokers, there were also a higher proportion of daily smokers among males (49.0%  $\pm 6.3$ ) than among females (21.4%  $\pm 6.8$ ).

While there was no statistically significant difference in the proportion of current smokers by age group among females, it is notable that there is a statistically significant increase in the proportion of male smokers in the 25-34 year age group (60.6%  $\pm 10.2$ ) as compared to the 15-24 year age group (38.6%  $\pm 7.0$ ). The proportion of current male smokers after this remains statistically similar.

The survey revealed that there were a higher proportion of current smokers in rural areas (40.7%  $\pm 7.1$ ) as compared to urban areas (25.7%  $\pm 3.9$ ). However, among current smokers there was no statistically significant difference in the proportion of daily smokers in rural areas (42.4%  $\pm 7.8$ ) as compared to urban areas (44.0%  $\pm 2.7$ ).

There were also a higher proportion of current smokers among Fijians (45.1%  $\pm 4.8$ ) as compared to Indo-Fijians (24.1%  $\pm 3.7$ ). Table 6.2 reveals that this higher proportion of current smokers among Fijians was found for both genders. However, among current smokers, there were a higher proportion of daily smokers among Indo-Fijians (59.0%  $\pm 7.0$ ) as compared to Fijians (36.2%  $\pm 5.8$ ). Further analysis of this data revealed that these ethnic differences in both current smoking (Fijian > Indo-Fijian) and in daily smoking (Indo-Fijian > Fijian) were found to be statistically significant for both genders. While this might be explained by differences in tobacco use related to kava consumption, the analysis of this relationship was inconclusive.



Table 6. 2: Current smoking status by gender and ethnicity

| Ethnic Group | N    | Males         |        |     |                   |        |     |             |        |      |
|--------------|------|---------------|--------|-----|-------------------|--------|-----|-------------|--------|------|
|              |      | Daily Smokers |        |     | Non-daily Smokers |        |     | Non-smokers |        |      |
|              |      | %             | 95% CI | n   | %                 | 95% CI | n   | %           | 95% CI | n    |
| Fijian       | 1651 | 26.4          | ± 6.0  | 410 | 34.7              | ± 3.1  | 573 | 38.9        | ± 5.0  | 668  |
| Indian       | 1033 | 25.4          | ± 5.5  | 289 | 17.1              | ± 3.4  | 203 | 57.6        | ± 6.2  | 541  |
| Others       | 66   | 26.3          | ±11.1  | 16  | 15.3              | ±11.9  | 12  | 58.4        | ±19.7  | 38   |
| TOTAL        | 2750 | 26.0          | ± 4.5  | 715 | 27.0              | ± 4.8  | 788 | 47.0        | ± 6.5  | 1247 |

| Ethnic Group | N    | Females       |        |     |                   |        |     |             |        |      |
|--------------|------|---------------|--------|-----|-------------------|--------|-----|-------------|--------|------|
|              |      | Daily Smokers |        |     | Non-daily Smokers |        |     | Non-smokers |        |      |
|              |      | %             | 95% CI | n   | %                 | 95% CI | n   | %           | 95% CI | n    |
| Fijian       | 2149 | 5             | ± 2.0  | 126 | 22.2              | ± 3.3  | 470 | 72.8        | ± 3.9  | 1553 |
| Indian       | 1733 | 1.4           | ± 0.6  | 35  | 1.6               | ± 0.5  | 32  | 97          | ± 0.9  | 1666 |
| Others       | 123  | 10.5          | ± 5.5  | 14  | 21.1              | ±14.6  | 20  | 68.4        | ±10.4  | 89   |
| TOTAL        | 4005 | 3.9           | ± 1.4  | 175 | 14.2              | ± 4.6  | 522 | 82.0        | ± 5.3  | 3308 |

### 6.2.1.1 Age of Initiation

The mean age of initiation for the total population was 21.4 years ( $\pm 0.6$ ). The youngest age of initiation was 7 years of age. Table 6.3 reveals that the mean age of initiation of smoking among current smokers was lower among males (20.7 years  $\pm 0.6$ ) as compared to females (25.0 years  $\pm 2.1$ ). However, this difference in age of initiation by age group only existed for the two oldest groups and is probably biased by recall. This could suggest that females in the younger cohorts are beginning to smoke as early as males.

Table 6. 3: Age started smoking for current smokers by gender

| Age   | Males |      |           | Females |      |           |
|-------|-------|------|-----------|---------|------|-----------|
|       | N     | Mean | 95%CI     | N       | Mean | 95% CI    |
| 15-24 | 135   | 18.3 | $\pm 0.5$ | 24      | 18.9 | $\pm 1.3$ |
| 25-34 | 165   | 20.0 | $\pm 0.9$ | 47      | 21.2 | $\pm 2.0$ |
| 35-44 | 170   | 21.3 | $\pm 0.8$ | 37      | 24.1 | $\pm 4.1$ |
| 45-54 | 144   | 23.2 | $\pm 1.2$ | 44      | 30.6 | $\pm 3.9$ |
| 55-64 | 95    | 23.6 | $\pm 1.8$ | 22      | 36.4 | $\pm 9.6$ |
| TOTAL | 709   | 20.7 | $\pm 0.6$ | 174     | 25.0 | $\pm 2.1$ |

### 6.2.1.2 Years of smoking

Although the total mean number of years of smoking by gender was similar, some differences were noted when stratified by agegroup as evident in table 6.4. The only difference in years of smoking since initiation between genders is in the two oldest 10-year agegroups. The only statistically significant difference however, was in the 45-54 years agegroup. This could suggest that females generally give up smoking more than males.

Table 6. 4: Years of smoking for current smokers by gender

| Age   | Males |      |           | Females |      |            |
|-------|-------|------|-----------|---------|------|------------|
|       | N     | Mean | 95%CI     | N       | Mean | 95%CI      |
| 15-24 | 135   | 3.5  | $\pm 0.5$ | 24      | 3.2  | $\pm 1.2$  |
| 25-34 | 165   | 9.7  | $\pm 1.1$ | 47      | 9.2  | $\pm 2.2$  |
| 35-44 | 170   | 18.6 | $\pm 0.9$ | 37      | 17.0 | $\pm 4.1$  |
| 45-54 | 144   | 26.1 | $\pm 1.2$ | 44      | 19.1 | $\pm 4.0$  |
| 55-64 | 95    | 35.9 | $\pm 1.8$ | 22      | 24.1 | $\pm 10.4$ |
| TOTAL | 709   | 15.1 | $\pm 1.6$ | 174     | 13.5 | $\pm 2.4$  |

### 6.2.1.3 Types of tobacco

Analysis of the data reveals that approximately 3/4 of all current smokers reported using manufactured cigarettes, 1/4 of all current smokers reported using hand-rolled cigarettes, and that approximately 1/10th reported using cigars and cheroots. These proportions are not statistically different by either age group or gender.

### 6.2.1.4 Quantity of tobacco smoked

The total mean number of both types of cigarettes smoked daily (i.e. manufactured and hand-rolled) by current smokers was 8.3 ( $\pm 0.7$ ), with a higher mean number smoked daily for males (8.6  $\pm 0.7$ ) as compared to females (5.7  $\pm 1.4$ ).

However, Table 6.5 shows that the number of cigarettes smoked per day by current smokers, of either manufactured or hand-rolled cigarettes did not vary by either agegroup or gender. While the mean number of cigarettes smoked was consistently higher among males as compared to females for either type of cigarette, this difference was not statistically significant.

Table 6. 5: Consumption of manufactured and hand-rolled cigarettes/day for current smokers by gender

| Age   | Manufactured Cigarettes |       |     |         |       |     |
|-------|-------------------------|-------|-----|---------|-------|-----|
|       | Males                   |       |     | Females |       |     |
|       | Mean                    | 95%CI | N   | Mean    | 95%CI | N   |
| 15-24 | 6.3                     | ±1.4  | 123 | 4.2     | ±3.3  | 24  |
| 25-34 | 7.1                     | ±1.3  | 142 | 5.7     | ±1.2  | 42  |
| 35-44 | 7.9                     | ±0.9  | 127 | 6.5     | ±1.4  | 30  |
| 45-54 | 8.2                     | ±1.3  | 111 | 5.6     | ±1.6  | 32  |
| 55-64 | 8.0                     | ±2.1  | 72  | 3.5     | ±2.4  | 10  |
| TOTAL | 7.3                     | ±0.8  | 575 | 5.4     | ±1.3  | 138 |
| Age   | Hand-rolled cigarettes  |       |     |         |       |     |
|       | Males                   |       |     | Females |       |     |
|       | Mean                    | 95%CI | N   | Mean    | 95%CI | N   |
| 15-24 | 4.3                     | ±1.4  | 22  | 3.0     | -     | 3   |
| 25-34 | 5.4                     | ±1.9  | 34  | 4.5     | ±1.6  | 6   |
| 35-44 | 7.6                     | ±1.0  | 44  | 7.5     | ±6.4  | 10  |
| 45-54 | 7.5                     | ±1.9  | 42  | 2.5     | ±1.4  | 10  |
| 55-64 | 7.7                     | ±1.9  | 32  | 3.7     | ±1.2  | 7   |
| TOTAL | 6.5                     | ±1.4  | 174 | 4.6     | ±2.0  | 36  |

## 6.2. Conclusion

Tobacco use (i.e. current smokers) has an overall prevalence of 36.6% (±5.9) with 42.7% (±6.3) of the current smokers smoking on a daily basis for the 15-64 year olds in Fiji. Generally, although the age of initiation are similar, the males smoke a higher number of cigarettes per day, has a higher proportion of current and daily smokers and also are less likely and later to quit than females.

In terms of ethnicity, there were more current smokers amongst the indigenous Fijians but a higher prevalence of daily smokers among Indo-Fijians. This could be indicative of the higher addictive behaviors among Indo-Fijians.

There were also a significantly higher proportion of current smokers in the rural area than the urban whilst the variations in age groups were inconclusive except to note that the mean age of initiation of tobacco use for both genders is approximately 18 years. These figures should guide planned activities carried out on Tobacco control especially in defining specific target groups of focus.

## 6.2.2 Alcohol Consumption

(Detail tables in Appendix Tables 4.1 - 4.22)

Prevalence of alcohol consumption was assessed by status of usage and the consumption behaviour of "binge drinking" was specifically assessed due to its associated cardiovascular risks. Below were the definitions used:

- Ever drinkers - those who have ever consumed a drink that contains alcohol (such as beer, coolers, wine, spirits, home brew or fermented cider).
- Current drinkers - those who have consumed a drink that contains alcohol in the past 12 months.
- Binge drinking - 5 or more drinks per drinking day for males; 4 or more drinks per drinking day for females.

Overall, the survey revealed that 45.0% (±5.0) had ever consumed alcohol. There was noted to be a higher proportion of males (70.0% ± 5.9) that had ever consumed alcohol as compared to females (16.5% ± 5.9). There was also a higher proportion of Fijians (50.0% ± 4.8) who had ever consumed alcohol as compared to Indo-Fijians (37.1% ± 6.6). However, the difference by ethnicity was only found among females with Fijian females having a much higher proportion of ever use (21.0% ± 6.7) as compared to Indo-Fijian females (7.6% ± 4.3).

There was no difference in having ever consumed alcohol by area. While overall there was little difference in the proportion of those who had ever consumed by age group, Table 6.6 reveals a clear trend for an increasing proportion of ever use in younger age groups among females.

Table 6. 6: Ever consumption of alcohol by agegroup and gender

| Age   | Total population |               |       |      | Male |               |       |      | Female |               |       |     |
|-------|------------------|---------------|-------|------|------|---------------|-------|------|--------|---------------|-------|-----|
|       | N                | Ever Consumed |       |      | N    | Ever Consumed |       |      | N      | Ever Consumed |       |     |
|       |                  | %             | 95%CI | n    |      | %             | 95%CI | n    |        | %             | 95%CI | n   |
| 15-24 | 1645             | 38.8          | ±6.9  | 601  | 690  | 57.6          | ±8.3  | 413  | 955    | 16.5          | ±6.3  | 188 |
| 25-34 | 1505             | 51.6          | ±5.7  | 695  | 565  | 77.4          | ±7.4  | 444  | 940    | 21.7          | ±7.4  | 251 |
| 35-44 | 1579             | 48.3          | ±6.3  | 678  | 632  | 76.4          | ±6.5  | 491  | 947    | 16.9          | ±7.1  | 187 |
| 45-54 | 1240             | 44.8          | ±5.0  | 478  | 499  | 74.1          | ±5.8  | 375  | 741    | 12.1          | ±6.1  | 103 |
| 55-64 | 788              | 39.2          | ±5.9  | 289  | 362  | 70.9          | ±7.4  | 251  | 426    | 7.6           | ±5.7  | 38  |
| Total | 6757             | 45.0          | ±5.0  | 2741 | 2748 | 70.0          | ±5.9  | 1974 | 4009   | 16.5          | ±5.9  | 767 |

Current alcohol use was defined as having had any alcohol consumption in the past 12 months. Overall, 23.8% (±3.0) were current consumers. As with ever consumers, there was noted to be a higher proportion of males (39.9% ± 4.3) that had ever consumed alcohol as compared to females (5.5% ± 3.0). However, in contrast to ever consumers, there were no differences in current consumption by ethnicity with the exception of "other" females who showed a much higher proportion of current use (17.8% ± 7.6) as compared to either Fijian females (5.9% ± 3.4) or Indo-Fijian females (3.7% ± 2.4). There was also no difference in current alcohol consumption by area.

Table 6.7 reveal that current consumption of alcohol tended to increase among the younger agegroups overall and in both genders.

Table 6. 7: Current alcohol consumption (in the past 12 months) by agegroup and gender

| Age   | Total population |                   |       |      | Men  |                   |       |      | Women |                   |       |     |
|-------|------------------|-------------------|-------|------|------|-------------------|-------|------|-------|-------------------|-------|-----|
|       | N                | Current Consumers |       |      | N    | Current Consumers |       |      | N     | Current Consumers |       |     |
|       |                  | %                 | 95%CI | n    |      | %                 | 95%CI | n    |       | %                 | 95%CI | n   |
| 15-24 | 1645             | 26.4              | ±5.5  | 406  | 690  | 42.0              | ± 7.8 | 305  | 955   | 7.8               | ±3.8  | 101 |
| 25-34 | 1505             | 29.3              | ±3.9  | 382  | 565  | 49.4              | ± 6.4 | 296  | 940   | 6.1               | ±3.9  | 86  |
| 35-44 | 1579             | 22.8              | ±4.6  | 312  | 632  | 39.2              | ± 7.2 | 248  | 947   | 4.4               | ±3.7  | 64  |
| 45-54 | 1240             | 16.6              | ±6.6  | 177  | 499  | 28.0              | ±10.5 | 142  | 741   | 3.9               | ±2.6  | 35  |
| 55-64 | 788              | 11.7              | ±3.9  | 86   | 362  | 22.1              | ± 8.1 | 79   | 426   | 1.2               | ±1.1  | 7   |
| Total | 6757             | 23.8              | ±3.0  | 1363 | 2748 | 39.9              | ± 4.3 | 1070 | 4009  | 5.5               | ±3.0  | 293 |

### 6.2.2.1 Quantity of alcohol consumed

Standard drink is defined as drink with 10g of alcohol and is approximated as a 1 glass/can/bottle(375ml) of regular beer or 1 gla of wine.

| Type of Beverage                           | Volume of Standard Drink |
|--|--------------------------|
| Beer                                       | 330 ml                   |
| Wine                                       | 120 ml                   |
| Spirits (Vodka, Rum, Gin, Home brew, etc.) | 40 ml                    |

Table 6.8 shows that among current drinkers, the average number of standard drinks consumed per drinking day for males (14.4 drinks ±2.7) was approximately twice that consumed by females (7.0 drinks ±1.1). Not with standing the possibility of bias in the way the question could have been interpreted, the results are not at all surprising considering the culture of drinking alcohol and kava in the country. There was also trend for younger age groups to consume a higher mean number of drinks per drinking day overall and in both genders.

Table 6. 8: Average number of standard drinks per drinking day among current consumers of alcohol by agegroup and gender

| Age   | Total population |        |      | Men  |        |      | Women |        |     |
|-------|------------------|--------|------|------|--------|------|-------|--------|-----|
|       | Mean             | 95% CI | N    | Mean | 95% CI | N    | Mean  | 95% CI | N   |
| 15-24 | 13.9             | ±2.0   | 405  | 14.8 | ±2.1   | 305  | 7.6   | ±1.6   | 100 |
| 25-34 | 16.0             | ±2.9   | 377  | 16.9 | ±3.1   | 293  | 7.5   | ±1.7   | 84  |
| 35-44 | 13.2             | ±3.9   | 307  | 13.8 | ±4.4   | 245  | 7.0   | ±2.7   | 62  |
| 45-54 | 8.8              | ±1.5   | 171  | 9.3  | ±1.5   | 139  | 3.7   | ±1.5   | 32  |
| 55-64 | 6.9              | ±2.6   | 85   | 7.1  | ±2.9   | 78   | 3.0   | ±2.5   | 7   |
| Total | 13.6             | ±2.5   | 1345 | 14.4 | ±2.7   | 1060 | 7.0   | ±1.1   | 285 |

Overall there was no difference in the mean number of drinks consumed per drinking day by area. However, the mean number of standard drinks consumed by urban females per drinking day (7.9 drinks ±0.9) was marginally more than that for rural females (5.9 drinks ±1.1). Table 6.9 shows that the mean number of standard drinks consumed per drinking day was approximately twice as much for Fijians (17.4 drinks ±2.0) as compared to Indo-Fijians (8.4 drinks ±1.7) and that this difference was seen in both gender:

Table 6. 9: Average number of standard drinks per drinking day by ethnicity and gender

| Ethnic Group | Total population |       |      | Men  |       |      | Women |       |     |
|--------------|------------------|-------|------|------|-------|------|-------|-------|-----|
|              | Mean             | 95%CI | N    | Mean | 95%CI | N    | Mean  | 95%CI | N   |
| Fijians      | 17.4             | ±2.0  | 746  | 18.7 | ±2.0  | 568  | 8.3   | ±1.9  | 178 |
| Indians      | 8.4              | ±1.7  | 542  | 8.8  | ±1.8  | 464  | 3.1   | ±1.3  | 78  |
| Others       | 15.3             | ±5.7  | 57   | 18.1 | ±8.2  | 28   | 8.2   | ±1.9  | 29  |
| Total        | 13.6             | ±2.5  | 1345 | 14.4 | ±2.7  | 1060 | 7.0   | ±1.1  | 285 |

### 6.2.2.2 Binge Drinking

Binge drinking was defined as having a mean of 5 or more standard drinks per drinking day for males and a mean of 4 or more standard drinks per drinking day for females. Table 6.10 shows that overall 77.3% ( $\pm 6.3$ ) of current alcohol consumers were binge drinkers, with a higher proportion for males (79.5%  $\pm 6.8$ ) as compared to females (58.6%  $\pm 8.0$ ). There was also a trend for a higher proportion of binge drinking in younger age groups.

Table 6. 10: Proportion of current drinkers who binge drink on drinking days by agegroup and gender

| Age   | Total population |              |            |     | Men  |              |            |     | Women |              |            |     |
|-------|------------------|--------------|------------|-----|------|--------------|------------|-----|-------|--------------|------------|-----|
|       | N                | Binge drink* |            |     | N    | Binge drink* |            |     | N     | Binge drink* |            |     |
|       |                  | %            | 95%CI      | n   |      | %            | 95%CI      | n   |       | %            | 95%CI      | n   |
| 15-24 | 405              | 83.5         | $\pm 5.7$  | 325 | 305  | 86.2         | $\pm 5.0$  | 261 | 100   | 65.4         | $\pm 10.5$ | 64  |
| 25-34 | 377              | 84.0         | $\pm 6.3$  | 308 | 293  | 86.3         | $\pm 6.5$  | 258 | 84    | 62.3         | $\pm 16.0$ | 50  |
| 35-44 | 307              | 68.1         | $\pm 10.6$ | 206 | 245  | 70.0         | $\pm 11.9$ | 172 | 62    | 48.4         | $\pm 21.4$ | 34  |
| 45-54 | 171              | 67.4         | $\pm 7.9$  | 113 | 139  | 70.9         | $\pm 9.0$  | 99  | 32    | 36.9         | $\pm 22.0$ | 14  |
| 55-64 | 85               | 40.9         | $\pm 15.5$ | 32  | 78   | 41.0         | $\pm 16.4$ | 30  | 7     | 39.0         | $\pm 51.2$ | 2   |
| Total | 1345             | 77.3         | $\pm 6.3$  | 984 | 1060 | 79.5         | $\pm 6.8$  | 820 | 285   | 58.6         | $\pm 8.0$  | 164 |

\* 5 or more drinks for men and 4 or more drinks for women

Also, Table 6.11 shows an overall higher proportion of binge drinking among both Fijians (88.5%  $\pm 3.6$ ) and "Others" (84.6%  $\pm 7.5$ ) as compared to Indo-Fijians (61.3%  $\pm 4.7$ ). While this pattern is found in both genders, the proportion of Fijian females (71.3%  $\pm 11.0$ ) and "Other" females (71.7%  $\pm 12.7$ ) who binge drink on drinking days is approximately three times the proportion in Indo-Fijian females (19.9%  $\pm 11.0$ ).

Table 6. 11: Proportion of current drinkers who binge drink on drinking days by ethnicity and gender

| Ethnic Group | Total population |              |           |     | Men  |              |            |     | Women |              |            |     |
|--------------|------------------|--------------|-----------|-----|------|--------------|------------|-----|-------|--------------|------------|-----|
|              | N                | Binge drink* |           |     | N    | Binge drink* |            |     | N     | Binge drink* |            |     |
|              |                  | %            | 95%CI     | n   |      | %            | 95%CI      | n   |       | %            | 95%CI      | n   |
| Fijians      | 746              | 88.5         | $\pm 3.6$ | 643 | 568  | 90.9         | $\pm 3.5$  | 512 | 178   | 71.3         | $\pm 11.0$ | 131 |
| Indians      | 542              | 61.3         | $\pm 4.7$ | 297 | 464  | 64.2         | $\pm 4.6$  | 283 | 78    | 19.9         | $\pm 11.0$ | 14  |
| Others       | 57               | 84.6         | $\pm 7.5$ | 44  | 28   | 89.8         | $\pm 10.5$ | 25  | 29    | 71.7         | $\pm 12.7$ | 19  |
| Total        | 1345             | 77.3         | $\pm 6.3$ | 984 | 1060 | 79.5         | $\pm 6.8$  | 820 | 285   | 58.6         | $\pm 8.0$  | 164 |

### 6.2.2.3 Conclusion

45% ( $\pm 5.0$ ) of Fiji's population between the ages of 15-64 had ever used alcohol and 23.8% ( $\pm 3.0$ ) have consumed alcohol within the past 12 months. Generally, there is higher rates of alcohol consumption amongst males than females and a higher prevalence of consumption among the indigenous Fijians than the Indo-Fijians.

77.3% of current drinkers were binge drinking and it was more common in younger males of Fijian descent but those of other ethnic origin also compared well with the two main ones in a few of the strata analysis.

### 6.2.3 Kava Consumption

(Detailed tables in Appendix Tables 3.1 - 3.11)

Unlike alcohol use, Kava prevalence was only measured by two status of usage and is defined as follows:

- Ever kava user - those who have ever tried or drunk kava.
- Current kava user - those who have drunk kava in the past 30 days.

The study revealed that 65.0% ( $\pm 7.6$ ) had ever consumed kava. Among ever consumers of kava, 79.6% ( $\pm 4.3$ ) were current users.

#### 6.2.3.1 Differences in ever consumption and current consumption by gender, ethnicity and area

Table 6.12 provides a more detailed breakdown of ever users and current users by gender and ethnicity. More males (78.9%  $\pm 5.7$ ) were ever consumers than females (49.1%  $\pm 10.4$ ) and similarly, more males (88.6%  $\pm 3.1$ ) were current consumers than females (63.1%  $\pm 6.5$ ).

Table 6.12 also shows that while a higher proportion of Fijian Males (86.4%  $\pm 4.3$ ) are ever users as compared to Indo-Fijian Males (69.6%  $\pm 8.6$ ), there are no ethnic differences among current male users. However, Fijian females have a much higher proportion of ever use (67.9%  $\pm 6.4$ ) than do Indo-Fijian females (20.1%  $\pm 7.0$ ), and a higher proportion of current use (66.9%  $\pm 5.9$ ) than Indo-Fijian females (45.6%  $\pm 13.8$ ). For both genders, there were no differences in the proportions of either ever or current kava consumption by area.

Table 6. 12: Ever and current kava consumption by gender and ethnicity

| Ethnic Group | Males       |               |              |             |                     |              |             |
|--------------|-------------|---------------|--------------|-------------|---------------------|--------------|-------------|
|              | N           | Ever Consumed |              |             | Current Consumers * |              |             |
|              |             | %             | 95%CI        | n           | %                   | 95%CI        | n           |
| Fijian       | 1651        | 86.4          | ± 4.3        | 1439        | 88.3                | ± 2.9        | 1254        |
| Indian       | 1033        | 69.6          | ± 8.6        | 780         | 90.7                | ± 3.2        | 699         |
| Others       | 66          | 64.5          | ±13.9        | 46          | 71.3                | ±29.2        | 29          |
| <b>TOTAL</b> | <b>2750</b> | <b>78.9</b>   | <b>± 5.7</b> | <b>2265</b> | <b>88.6</b>         | <b>± 3.1</b> | <b>1982</b> |

| Ethnic Group | Females     |               |              |             |                     |              |             |
|--------------|-------------|---------------|--------------|-------------|---------------------|--------------|-------------|
|              | N           | Ever Consumed |              |             | Current Consumers * |              |             |
|              |             | %             | 95%CI        | n           | %                   | 95%CI        | n           |
| Fijian       | 2153        | 67.9          | ± 6.4        | 1492        | 66.9                | ± 5.9        | 968         |
| Indian       | 1733        | 20.1          | ± 7.0        | 387         | 45.6                | ±13.8        | 151         |
| Others       | 124         | 59            | ±13.5        | 75          | 56.4                | ±16.5        | 34          |
| <b>TOTAL</b> | <b>4010</b> | <b>49.1</b>   | <b>±10.4</b> | <b>1954</b> | <b>63.1</b>         | <b>± 6.5</b> | <b>1153</b> |

\* Current consumers are reported as a proportion of ever consumers, and are defined as those who reported drinking kava at least once in the past 30 days

### 6.2.3.2 Age of initiation of kava use among ever users

Table 6.13 shows the mean age at which males and females in ten-year age groups report having first tried kava. Overall, Males report earlier use ( $20.7 \pm 0.5$  years) than do females ( $24.2 \pm 0.9$  years). However, as was also noted in tobacco and alcohol use, the difference in mean age of first use between males and females has become less over time. Furthermore, this table also reveals a trend over time for both males and females of earlier age of first use of kava.

Table 6. 13: Mean age first tried kava by gender and agegroup among ever users

| Age          | Males       |             |              | Females     |             |              |
|--------------|-------------|-------------|--------------|-------------|-------------|--------------|
|              | N           | Mean        | 95%CI        | N           | Mean        | 95%CI        |
| 15-24        | 453         | 17.7        | ± 0.4        | 395         | 18.2        | ± 0.4        |
| 25-34        | 481         | 20.4        | ± 0.5        | 514         | 21.8        | ± 0.6        |
| 35-44        | 559         | 21.3        | ± 0.5        | 496         | 26.2        | ± 1.4        |
| 45-54        | 450         | 23.3        | ± 1.0        | 339         | 29.6        | ± 2.3        |
| 55-64        | 312         | 24.6        | ± 1.3        | 195         | 34.3        | ± 3.2        |
| <b>TOTAL</b> | <b>2255</b> | <b>20.7</b> | <b>± 0.5</b> | <b>1939</b> | <b>24.2</b> | <b>± 0.9</b> |

### 6.2.3.3 Frequency of kava consumption among current users

Current kava consumers were asked how many days they had drunk kava in the last 30 days. Overall, 81.5% ( $\pm 3.6$ ) of current users reported drinking kava from 1-19 days in the last month and the remainder ( $18.5 \pm 3.6$ ) reported drinking kava on 20 or more days in the past month. Daily use was reported by 10.4% ( $\pm 2.9$ ) of current users.

Males represented a higher proportion than females for drinking kava on 20 or more days in the past month and for daily

use. While 23.7% ( $\pm 4.2$ ) of males reported drinking kava on 20 or more days in the past month, only 5.2% ( $\pm 1.8$ ) of females reported this frequency of use. Similarly, while 13.7% ( $\pm 3.5$ ) of males reported daily use, only 1.9% ( $\pm 0.9$ ) of females reported daily use.

There were no differences in frequency of kava drinking by ethnicity, agegroup or locality.

### 6.2.3.4 Use of other substances and eating habits in association with kava use

As earlier surveys had indicated a strong association between kava consumption and the use of other substances respondents were asked if they were likely to smoke tobacco or drink alcohol during or after kava consumption. Among kava users, 47.0% ( $\pm 3.8$ ) reported smoking tobacco during or after kava consumption, and 20.2% ( $\pm 2.1$ ) reported drinking alcohol during or after kava consumption.

Table 6.14 shows more detailed data by gender and age group regarding the likelihood among kava users of smoking tobacco or drinking alcohol during or after kava consumption.





**Table 6. 14: Proportion of ever kava users likely to smoke tobacco or drink alcohol during or after kava consumption by gender and age group**

| Age   | Males         |       |      |               |        |     | Females       |        |     |               |        |     |
|-------|---------------|-------|------|---------------|--------|-----|---------------|--------|-----|---------------|--------|-----|
|       | Smoke tobacco |       |      | Drink alcohol |        |     | Smoke tobacco |        |     | Drink alcohol |        |     |
|       | %             | 95%CI | N    | %             | 95% CI | N   | %             | 95% CI | N   | %             | 95% CI | N   |
| 15-24 | 49.4          | ±9.9  | 217  | 37.1          | ± 5.1  | 178 | 26.6          | ± 5.7  | 92  | 9.7           | ± 5.0  | 39  |
| 25-34 | 63.7          | ±6.3  | 304  | 37.8          | ± 6.4  | 195 | 30.5          | ± 5.5  | 157 | 5.9           | ± 3.2  | 40  |
| 35-44 | 57.2          | ±5.1  | 316  | 21.5          | ± 3.2  | 127 | 28.9          | ± 6.3  | 142 | 5.0           | ± 2.5  | 29  |
| 45-54 | 59.7          | ±5.3  | 268  | 17.3          | ± 3.8  | 81  | 24.6          | ±24.6  | 86  | 0.6           | ± 0.8  | 5   |
| 55-64 | 58.9          | ±7.9  | 174  | 7.8           | ± 3.5  | 26  | 21.3          | ± 6.3  | 40  | 0.6           | ± 0.9  | 2   |
| Total | 57.6          | ±4.9  | 1279 | 28.1          | ± 3.7  | 607 | 27.4          | ± 3.5  | 517 | 5.4           | ± 2.1  | 115 |

This table shows that a higher proportion of males (57.6% ± 4.9) were likely to smoke tobacco in association with kava than were females (27.4% ± 3.5). This is consistent with the higher proportion of males overall who smoke tobacco as compared to females. Also, this tendency to smoke tobacco in association with kava consumption shows no differences by agegroup in either gender.

There were also a higher proportion of males (28.1 % ± 3.7) who were likely to drink alcohol in association with kava than among females (5.4% ± 2.1). This is again consistent with the higher proportion of males overall who drink alcohol as compared to females. This practice is referred to locally as "wash down". As opposed to tobacco use with kava, the data reveal that the practice of using alcohol with kava is increasingly prevalent in younger age groups among both males and females.

When asked what type of food was consumed during or after a kava drinking session, high proportions reported eating "lollies" (i.e. sweet candies) among both males (33.6% ± 4.9) and females (52.1% ± 7.7). This is reported to be a common practice during a kava drinking session to eliminate the taste and numbness associated with drinking kava. High proportions also reported eating "cooked food" among both males (52.1% ± 8.2) and females (43.7% ± 8.8). This is reportedly most often done at the end of a kava drinking session.

### 6.2.3.5 Conclusion

Amongst the Fiji population of 15-64 years of age, the survey revealed that 65% (±7.6) had ever consumed kava and 79.6% (±4.3) have consumed kava within the past 30 days. There are a higher proportion of ever and current users of Kava among males compared to females and indigenous Fijians compared to Indo-Fijians however, no difference between populations residing in the urban and rural areas was found.

Kava proves to be an important associated risk factor of NCDs because of its close linkage to tobacco and alcohol usage. Hence, there is a need to address Kava use in any comprehensive planning or activities against NCDs in Fiji and the Pacific where it is commonly used.

### 6.2.4 Fruit and Vegetable Intake

(Detailed tables in Appendix Tables 5.1 - 5.14)

In order to assess the eating pattern of the surveyed population, the respondents were asked how often they ate fruit and vegetables and the type of oil or fat used in food preparation.

Low consumption of fruit and vegetables has been identified as a risk factor in the development of a range of chronic diseases, including coronary heart disease, stroke and many forms of cancer.

The survey revealed that only 1.2% (±0.7) of males and 0.6% (±0.1) of females consumed 5 or more servings of fruit per day. For vegetable consumption, only 2.9% (±1.2) of males and 2.2% (±1.1) of females reported consuming 5 or more servings per day. Certain research has indicated that the required intake of fruit for optimal health benefits is seven daily serves of fruit and vegetable. Clearly, there is a very small proportion of the surveyed population consuming adequate amounts of fruits and vegetables.

This low level of consumption is mostly seen for fruits with 65.9% (±3.8) of survey participants reporting eating less than one serving of fruit per day. The high proportions eating this very small amount of fruit was consistent across age group, gender, ethnicity and area with no statistically significant differences.

While the low level of consumption of vegetables was not as bad as with fruits, still over one-quarter of participants (26.4% ±4.6) reported eating less than one serving of vegetables per day. Overall there were no differences in this by gender, age group or locality. However, as noted in table 6.15, there was a difference by ethnicity such that a larger proportion of both Fijians (32.4% ±9.6) and Others (38.5% ±11.3) reported eating less than one serving of vegetables per day as compared with Indo-Fijians (16.2% ±5.8). In other words, Indo-Fijians eat larger amounts of vegetables as compared to either Fijians or Others.

Figure 6.3. Percentage of population by servings of fruit consumed per day

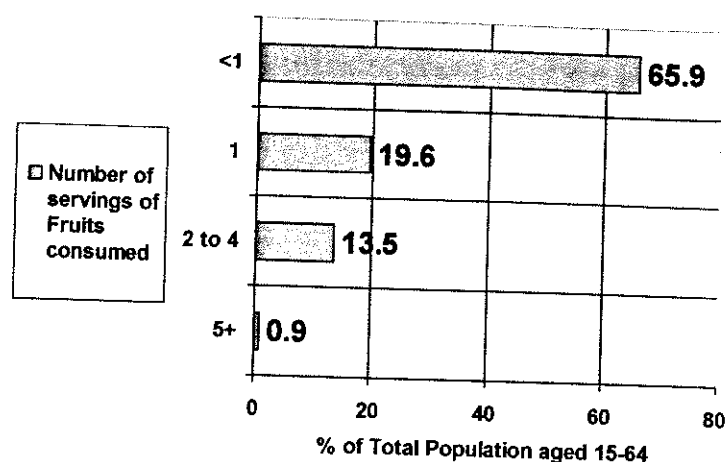


Table 6. 15: Servings of vegetables consumed per day by ethnicity and gender

| Males   |      |                      |       |      |                   |       |     |                      |       |      |                            |       |    |
|---------|------|----------------------|-------|------|-------------------|-------|-----|----------------------|-------|------|----------------------------|-------|----|
| Age     | N    | < 1 serving per day* |       |      | 1 serving per day |       |     | 2-4 servings per day |       |      | 5 or more servings per day |       |    |
|         |      | %                    | 95%CI | n    | %                 | 95%CI | n   | %                    | 95%CI | n    | %                          | 95%CI | n  |
| Fijian  | 1651 | 32.4                 | ± 9.6 | 570  | 18.2              | ±3.1  | 303 | 46.2                 | ± 9.5 | 723  | 3.3                        | ± 1.3 | 55 |
| Indian  | 1034 | 16.2                 | ± 5.8 | 189  | 28                | ±7.1  | 285 | 53.7                 | ±12.1 | 536  | 2.1                        | ± 1.3 | 24 |
| Others  | 66   | 38.5                 | ±11.3 | 29   | 23.7              | ±8.4  | 14  | 31.6                 | ±11.6 | 21   | 6.2                        | ±12.4 | 2  |
| Total   | 2751 | 26.3                 | ± 6.2 | 788  | 22.3              | ±4.4  | 602 | 48.5                 | ± 6.9 | 1280 | 2.9                        | ± 1.2 | 81 |
| Females |      |                      |       |      |                   |       |     |                      |       |      |                            |       |    |
| Age     | N    | < 1 serving per day* |       |      | 1 serving per day |       |     | 2-4 servings per day |       |      | 5 or more servings per day |       |    |
|         |      | %                    | 95%CI | n    | %                 | 95%CI | n   | %                    | 95%CI | n    | %                          | 95%CI | n  |
| Fijian  | 2151 | 34.1                 | ± 9.1 | 783  | 18.6              | ± 2.2 | 427 | 44.9                 | ± 8.5 | 95   | 2.4                        | ± 1.5 | 46 |
| Indian  | 1732 | 15.3                 | ± 5.1 | 297  | 27.6              | ± 5.5 | 489 | 55.5                 | ± 9.4 | 920  | 1.5                        | ± 0.7 | 26 |
| Others  | 124  | 25.1                 | ±13.1 | 43   | 24                | ±11.0 | 29  | 44.3                 | ±16.3 | 49   | 6.6                        | ±13.6 | 3  |
| Total   | 4007 | 26.5                 | ± 5.8 | 1123 | 22.3              | ± 3.6 | 945 | 50                   | ± 5.7 | 1864 | 2.2                        | ± 1.1 | 75 |

\*Includes "Don't eat vegetables at all"

\*Includes "Don't eat vegetables at all"

In regards to the use of the type of oil most often used for food preparation at home, among those who usually prepare food, the vast majority reported using vegetable oil (96.5% ±1.9). There were no differences in this by gender, age group, ethnicity, or locality (Appendix tables 5.13 and 5.14).

#### 6.2.4.1 Conclusion

There is generally low consumption of fruit and vegetables in the Fiji population aged 15-64 years with 65% (±3.8) consuming less than one fruit serving per day. Indo-Fijians consume more vegetables and fruits compared to Fijians and other ethnic groups. The most common type of oil used in preparation of food in Fiji is vegetable oil.

#### 6.2.5 Physical Activity

##### 6.2.5.1 Measurements

Physical activity participation in the Fiji STEPS survey was measured by asking participants to report on the frequency and amount of different types of activity they undertook on a

typical day as part of work, travel and leisure.

In the work and travel domains of activity, respondents were required to rate the frequency that they participated in different types of activity on a four-point ordinal scale, ranging from 'almost always' through to 'almost never'. A strength of this form of question is that it enables a categorization of activity levels without requiring respondents to undertake what can be the difficult task of quantifying the time they spent in activities of different intensities (i.e. moderate or vigorous). A limitation of this approach is that it does not provide sufficient detail to determine how much of each individual's work and travel activity contributes towards the accumulation of the recommended amounts of activity for health gain, which are stated in terms of the frequency and duration of moderate- and vigorous-intensity activity.

In the Fiji STEPS survey, it is only in the leisure-time domain that respondents were required to report the amount of time that they spent in moderate- or vigorous-intensity activities. This provides data that can be used to estimate the proportion of people who meet established criteria for 'sufficient activity' in the leisure domain. However, it should be noted that only people who reported 'almost always' or 'usually' undertaking

moderate- or vigorous-intensity activity were asked to report an amount of time. Therefore, in order to estimate a weekly duration of moderate- and vigorous-intensity leisure time activities, frequency values needed to be ascribed to 'almost always' and 'usually', which were six and four times per week respectively.

## 6.2.5.2 Analyses

In the analyses of the physical activity data collected in the Fiji STEPS survey, each domain of activity was firstly addressed separately. This enabled examination of the extent to which leisure, work and travel activity are a major part of physical activity participation in Fiji. In addition, when these questions are repeated in future, participation in each type of activity can be used as separate indicators of the impact of physical activity promotion strategies in this nation.

For each of these domains of physical activity, respondents are categorized as undertaking 'nil', 'low', 'moderate' or 'high' levels of activity. The criteria for defining each category are given in each of the following sections that present the participation levels in different types of activity. A common feature of the criteria for categorising participation in each domain of activity is that vigorous-intensity activity is given greater weight than moderate-intensity activity. Hence, to be categorized as high in each domain participants can report 'usually' undertaking vigorous-intensity activity, but must report 'almost always' undertaking moderate-intensity activity.

As well as examining levels of participation in each type of activity, variables were created to estimate the proportion of participants who undertook sufficient physical activity for health gain. The criteria for sufficient activity were drawn from the widely cited recommendation to undertake moderate-intensity activity for 30 minutes or more on most days of the week, or 20 minutes of vigorous-intensity activity on at least three days per week. As noted above, however, it was only in the leisure domain that the duration of activity was given by respondents, therefore the data concerning leisure-time activity are the primary basis used for determining sufficient physical activity participation.

## Definition Of Categories Within Each Domain

Categories of participation in work activity were defined as follows:

|          |   |
|----------|---|
| Nil      | Usually or almost always sitting or standing and almost never undertaking moderate or vigorous activity |
| Low      | Sometimes undertaking moderate or vigorous activity   |
| Moderate | Usually or almost always undertaking moderate activity or usually undertaking vigorous activity         |
| High     | Almost always undertaking moderate and vigorous activity  |

The criteria used to define levels of participation in active commuting were:

|          |   |
|----------|---|
| Nil      | Almost never traveling by public transport, bicycle or walking  |
| Low      | Sometimes traveling by public transport, bicycle or walking     |
| Moderate | Usually traveling by public transport, bicycle or walking       |
| High     | Almost always traveling by public transport, bicycle or walking |

The criteria used to define levels of participation in leisure-time activity were:

|          |   |
|----------|---|
| Nil      | Almost never undertaking moderate or vigorous leisure-time activity   |
| Low      | Sometimes undertaking moderate or vigorous leisure-time activity OR; undertaking moderate or vigorous activity usually or almost always but moderate minutes < 30, vigorous minutes < 20 and total (mod + vig) < 30 |
| Moderate | Usually or almost always undertaking moderate or vigorous activity and moderate minutes ≥ 30, vigorous minutes ≥ 20 OR total minutes ≥ 30   |
| High     | Almost always undertaking moderate activity and moderate minutes ≥ 60 OR total minutes ≥ 60 OR; undertaking vigorous activity usually or almost always and vigorous minutes ≥ 60                                    |

For all domains:

Insufficient = Nil + Low

Sufficient = Moderate + High

## Results

(Detailed tables in Appendix Table 6.1 - 6.9)

Overall, the proportion of the Fiji population reporting insufficient physical activity in the three domains was 41% (work domain), 14.8% (travel domain) and 76.1% (leisure domain) (Appendix Table 6.1 - 6.9). This generally shows that whilst the Fiji population in the age group 15 - 64 years may be quite active at work and travel there is not a big proportion taking up physical activity at leisure time for possible additional health gain.

## Work and Travel

In both work and travel domain a big proportion of the surveyed population reported either moderate or high levels of physical activity and this is consistent even when stratified into specific age, gender, ethnicity and locality (Appendix Table 6.1 - 6.6) groups. This means that the Fiji population is quite active in daily functionality of work and travel.

In these two domains, the least active segments of the population are females, those of Indo-Fijian descent and living in the urban areas. It is interesting to note that in the work domain the age group 35 years and above reported higher levels of activity than the younger age group like 15-24 years

(Figure 6.4). This could be partly due to the fact that a big proportion of the 15-24 years considered themselves not working as compared to the 35-44 years, which is actually the working age group in Fiji. This is further evidenced in the travel domain where this difference is not observed.

Figure 6.4. Insufficient physical activity participation by age group across the three domains

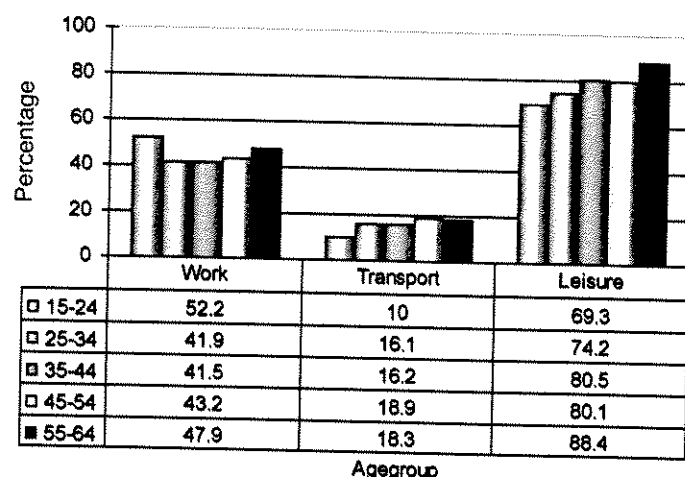
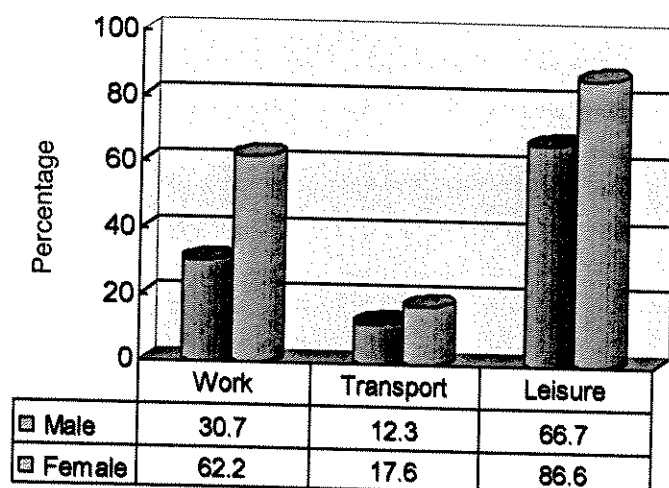


Figure 6.5. Insufficient physical activity participation by gender across the three domains

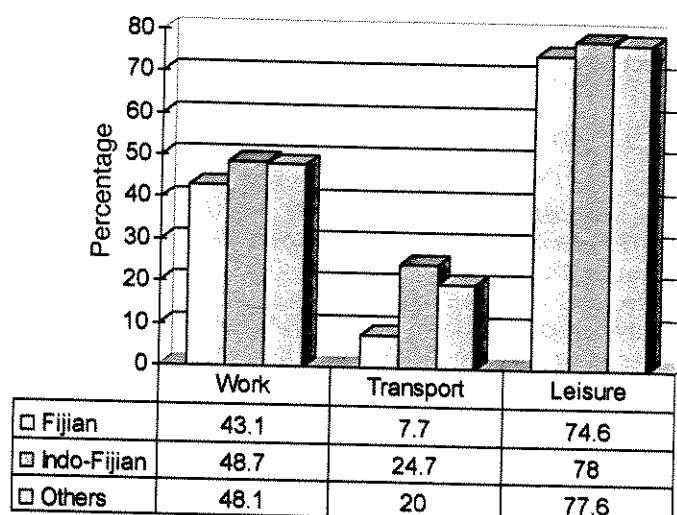


## Leisure

Measuring activity in the leisure domain gives an indication of the proportion of the population that does additional physical activity for sporting or health gain hence the attempt to quantify the measurements.



Figure 6.6. Insufficient physical activity participation, stratified by ethnicity



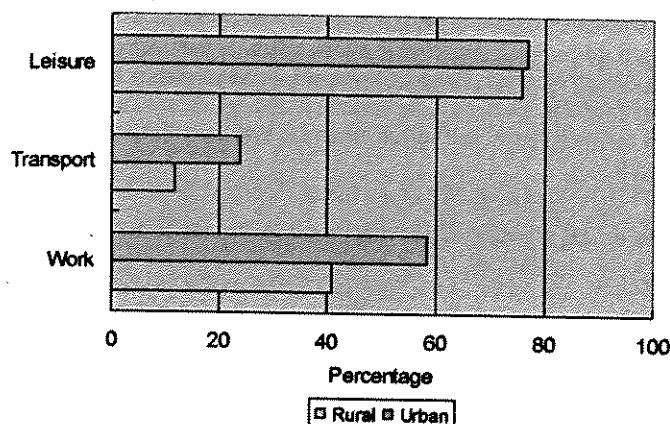
A distinctive overall finding was the low proportion of the adult Fiji population (15-64 years) who were in the moderate or high categories of leisure-time activity, which was just under 25% (Appendix table 6.6 - 6.9). In a number of countries where physical activity has been monitored at the population level using questions that measure leisure-time activity, such as Australia, the United States and Canada, the prevalence of sufficient physical activity has been reported to be between 35% and 55%.

This suggests that adult Fiji population (15-64 years) are relatively inactive, however, it must be understood that the questions used to measure leisure-time activity in Fiji were not as detailed as those used in these other nations. For instance, in Fiji, respondents were required to classify the frequency of their leisure-time activity on an ordinal scale and not report the actual number of sessions they usually undertook, and only those people who reported 'usually' or 'almost always' undertaking leisure-time activity were required to report on the duration of this.

This question structure may have increased the likelihood of under-recording of leisure-time activity, at least for some respondents. Another consideration is that leisure-time activity was measured in the Fiji STEPS survey following a series of questions about travel behavior, and therefore the time spent walking to and from places would have been filtered out of the responses about leisure-time activity, which may not have been the case in physical activity instruments used in other nations.

Insufficient physical activity participation in the leisure domain is generally higher in older age group (Figure 6.4) and female gender (Figure 6.5) group. The ethnic (Indo-fijian > Fijian) and locality difference (urban > rural) seen in the domain of work and travel is similar in the leisure domain but not as marked (Figure 6.6 and 6.7).

Figure 6.7. Insufficient physical activity participation by locality across the three domains



### 6.2.5.3 Conclusion

These findings present a snapshot of physical activity participation in Fiji across various domains of activity (work, commuting and leisure) and among a range of major population sub-groups in this nation. An important outcome from these analyses was the identification of the least active segments of the Fijian population, who could be considered priority groups for strategies to address this risk factor. Women, people in the age groups over 35 years, those living in urban areas and Indo-Fijians, were the least active groups in many of the physical activity variables examined.

In contrast with leisure-time activity participation, almost half of respondents reported moderate or high levels of work activity and over 80% reported moderate or high levels of active commuting. These findings suggest that the adult Fiji population (15-64 years) is more likely to accrue their regular physical activity participation through functional rather than leisure-time activities, but this cannot be truly ascertained without quantification of time spent in activities of moderate or vigorous-intensity in the work and travel domains. The physical activity variables derived from the analyses of the STEPS survey will fulfill the important role of providing a set of indicators that can be used to monitor trends in physical activity in Fiji and to evaluate the impact of strategies to address this major chronic disease risk factor at the population level.

## 6.3 Non-communicable Disease Biochemical Risk Indicators

### 6.3.1 Total Cholesterol

(Detailed tables in Appendix Tables 10.6 - 10.11)

Elevated blood cholesterol is recognized as an important risk factor for coronary artery disease. The mean cholesterol of surveyed males was 5.39 ( $\pm 0.19$ ) mmol/L and of surveyed females was 5.02 ( $\pm 0.16$ ) mmol/L a difference of borderline statistical significance. For both males and females, there was a trend of an increasing mean cholesterol level with age and with a persistent tendency for rates in each age group to be higher for males than females. However, as noted in Table 6.16, the only age group with a statistically significant difference between males and females was among 35-44 year olds with a mean cholesterol of 5.54 ( $\pm 0.21$ ) mmol/L for males and 4.86 ( $\pm 0.19$ ) mmol/L for females.

Table 6. 16: Mean total fasting cholesterol (mmol/L) by gender and age group

| Age   | Males |      |            | Females |      |            |
|-------|-------|------|------------|---------|------|------------|
|       | N     | Mean | 95%CI      | N       | Mean | 95%CI      |
| 25-34 | 205   | 5.04 | $\pm 0.32$ | 350     | 4.68 | $\pm 0.16$ |
| 35-44 | 255   | 5.54 | $\pm 0.21$ | 436     | 4.86 | $\pm 0.19$ |
| 45-54 | 222   | 5.62 | $\pm 0.32$ | 401     | 5.39 | $\pm 0.26$ |
| 55-64 | 166   | 5.53 | $\pm 0.24$ | 216     | 5.43 | $\pm 0.21$ |
| TOTAL | 848   | 5.39 | $\pm 0.19$ | 1403    | 5.02 | $\pm 0.16$ |

The mean cholesterol for each subject was used to categorize individuals into a high risk-group with a total cholesterol  $\geq 5.20$  mmol/L. The proportion of males in this high-risk group was 49.1% ( $\pm 5.8$ ) and for females was 37.8%  $\pm 5.6$ , a difference that was not statistically significant. As with mean cholesterol, Table 6.17 reveals that there was a trend for both males and females of an increasing proportion in the high-risk cholesterol group with age with a persistent tendency for rates in each age group to be higher for males than females. However, again the only age group with a statistically significant difference between males and females was among 35-44 year olds with 50.5%  $\pm 8.7$  in the high-risk group for males and 28.7%  $\pm 7.1$  in the high-risk group for females.

Table 6. 17: Total fasting cholesterol high-risk category by gender and agegroup

| Age   | Males |                               |            |     | Females |                               |           |     |
|-------|-------|-------------------------------|------------|-----|---------|-------------------------------|-----------|-----|
|       | N     | Elevated ( $\geq 5.2$ mmol/L) |            |     | N       | Elevated ( $\geq 5.2$ mmol/L) |           |     |
|       |       | %                             | 95%CI      | n   |         | %                             | 95%CI     | n   |
| 25-34 | 205   | 39.9                          | $\pm 11.6$ | 85  | 350     | 29.7                          | $\pm 6.4$ | 108 |
| 35-44 | 255   | 50.5                          | $\pm 8.7$  | 124 | 436     | 28.7                          | $\pm 7.1$ | 128 |
| 45-54 | 222   | 55.4                          | $\pm 8.7$  | 129 | 401     | 49.8                          | $\pm 8.1$ | 206 |
| 55-64 | 166   | 58.8                          | $\pm 6.7$  | 95  | 216     | 54.0                          | $\pm 6.9$ | 116 |
| Total | 848   | 49.1                          | $\pm 5.8$  | 433 | 1403    | 37.8                          | $\pm 5.6$ | 558 |

In regards to ethnicity, while there were no ethnic differences among males or females in either mean cholesterol or the proportion in the high-risk cholesterol group, Table 6.18 reveals that there was a difference among Indo-Fijians by gender for the proportion in the high-risk cholesterol group such that 52.6%  $\pm 8.5$  of Indo-Fijian males were in the high-risk group, compared to only 34.6%  $\pm 7.6$  of Indo-Fijian females.

Table 6. 18: Total fasting cholesterol high-risk category by gender and ethnicity

| Ethnic group | Males |                               |            |     | Females |                               |            |     |
|--------------|-------|-------------------------------|------------|-----|---------|-------------------------------|------------|-----|
|              | N     | Elevated ( $\geq 5.2$ mmol/L) |            |     | N       | Elevated ( $\geq 5.2$ mmol/L) |            |     |
|              |       | %                             | 95%CI      | n   |         | %                             | 95%CI      | n   |
| Fijian       | 499   | 45.3                          | $\pm 8.3$  | 232 | 732     | 39.9                          | $\pm 6.3$  | 294 |
| Indian       | 333   | 52.6                          | $\pm 8.5$  | 191 | 636     | 34.6                          | $\pm 7.6$  | 249 |
| Others       | 16    | 66.6                          | $\pm 28.2$ | 10  | 35      | 40.5                          | $\pm 28.7$ | 15  |
| Total        | 848   | 49.1                          | $\pm 5.8$  | 433 | 1403    | 37.8                          | $\pm 5.6$  | 558 |



There were no differences for either mean cholesterol or high-risk cholesterol by locality for either gender.

### 6.3.2 Triglycerides

(Detailed tables in Appendix Tables 10.12 - 10.17)

Elevated blood triglyceride is an independent risk factor for coronary artery disease. The mean triglyceride of surveyed males was  $1.47 \pm 0.16$  mmol/L and of surveyed females was  $1.31 \pm 0.11$  mmol/L although this difference was not statistically significant. As compared to cholesterol, an increasing trend for mean triglyceride level with age did not exist for either males or females, and there was no consistent tendency for rates in each age group to be higher for either gender.

The triglyceride level for each subject was used to categorize individuals into a high-risk group with a triglyceride level  $\geq 1.70$  mmol/L. The proportion of males in this high-risk group was  $29.6\% \pm 7.1$  and for females was  $23.3\% \pm 5.1$ , a difference that was not statistically significant. As with mean triglyceride, Table 6.19 reveals that a trend of an increasing proportion in the high-risk triglyceride group with age did not exist for either males or females, and there was no consistent tendency for rates in each age group to be higher for either gender. However, there was a statistically significant difference between males and females among 35-44 year olds with  $31.2\% \pm 7.4$  in the high-risk group for males and  $18.4\% \pm 4.5$  in the high-risk group for females.

Table 6. 19: Fasting triglyceride high-risk category by gender and age group

| Age   | Males |                           |            |     | Females |                           |           |     |
|-------|-------|---------------------------|------------|-----|---------|---------------------------|-----------|-----|
|       | N     | High ( $\geq 1.7$ mmol/L) |            |     | N       | High ( $\geq 1.7$ mmol/L) |           |     |
|       |       | %                         | 95%CI      | n   |         | %                         | 95%CI     | n   |
| 25-34 | 205   | 24.9                      | $\pm 9.8$  | 58  | 349     | 19.7                      | $\pm 6.0$ | 69  |
| 35-44 | 255   | 31.2                      | $\pm 7.4$  | 84  | 436     | 18.4                      | $\pm 4.5$ | 86  |
| 45-54 | 223   | 40.1                      | $\pm 10.4$ | 92  | 400     | 29.1                      | $\pm 8.7$ | 121 |
| 55-64 | 167   | 20.6                      | $\pm 9.4$  | 43  | 215     | 31.2                      | $\pm 7.6$ | 68  |
| Total | 850   | 29.6                      | $\pm 7.1$  | 277 | 1400    | 23.3                      | $\pm 5.1$ | 344 |

In regards to ethnicity, whilst there were no differences among males or females in either mean triglyceride or in the proportion in the high-risk triglyceride group, there was a difference among Indo-Fijians by gender for the proportion in the high-risk triglyceride group such that  $37.6\% \pm 10.6$  of Indo-Fijian males were in the high-risk group, compared to only  $21.4\% \pm 4.9$  of Indo-Fijian females.

Table 6.20: Fasting triglyceride high-risk category by gender and ethnicity

| Ethnicity    | Males |                           |            |     | Females |                           |            |     |
|--------------|-------|---------------------------|------------|-----|---------|---------------------------|------------|-----|
|              | N     | High ( $\geq 1.7$ mmol/L) |            |     | N       | High ( $\geq 1.7$ mmol/L) |            |     |
|              |       | %                         | 95%CI      | n   |         | %                         | 95%CI      | n   |
| Fijians      | 499   | 22.5                      | $\pm 9.2$  | 126 | 730     | 24.5                      | $\pm 7.3$  | 184 |
| Indo-Fijians | 335   | 37.6                      | $\pm 10.6$ | 144 | 635     | 21.4                      | $\pm 4.9$  | 152 |
| Others       | 16    | 43.4                      | $\pm 18.8$ | 7   | 35      | 24.1                      | $\pm 18.2$ | 8   |
| Total        | 850   | 29.6                      | $\pm 7.1$  | 277 | 1400    | 23.3                      | $\pm 5.1$  | 344 |

As opposed to total cholesterol, there were differences for both mean triglyceride and high-risk triglyceride by locality between the gender groups.

Table 6.21 reveals that urban males had a higher mean fasting triglyceride level ( $1.85 \pm 0.25$ ) as compared to either rural males ( $1.36 \pm 0.16$ ) or urban females ( $1.45 \pm 0.13$ ). The difference between rural and urban females was not statistically significant.

Table 6. 21: Fasting mean triglyceride (mmol/L) by area and gender

| Area  | Males |      |            | Females |      |            |
|-------|-------|------|------------|---------|------|------------|
|       | N     | Mean | 95%CI      | N       | Mean | 95%CI      |
| Rural | 557   | 1.36 | $\pm 0.16$ | 700     | 1.25 | $\pm 0.14$ |
| Urban | 293   | 1.85 | $\pm 0.25$ | 700     | 1.45 | $\pm 0.13$ |
| TOTAL | 850   | 1.47 | $\pm 0.16$ | 1400    | 1.31 | $\pm 0.11$ |

Similarly, table 6.22 shows that a higher proportion of urban males were in the high-risk triglyceride group ( $48.8\% \pm 7.9$ ) as compared to either rural males ( $24.0\% \pm 6.8$ ) or urban females ( $27.9\% \pm 4.9$ ).

Table 6.22: Fasting triglyceride high-risk category by area and gender

| Area  | Males |                           |           |     | Females |                           |           |     |
|-------|-------|---------------------------|-----------|-----|---------|---------------------------|-----------|-----|
|       | N     | High ( $\geq 1.7$ mmol/L) |           |     | N       | High ( $\geq 1.7$ mmol/L) |           |     |
|       |       | %                         | 95%CI     | n   |         | %                         | 95%CI     | n   |
| Rural | 557   | 24.0                      | $\pm 6.8$ | 136 | 700     | 21.0                      | $\pm 6.7$ | 151 |
| Urban | 293   | 48.8                      | $\pm 7.9$ | 141 | 700     | 27.9                      | $\pm 4.9$ | 193 |
| Total | 850   | 29.6                      | $\pm 7.1$ | 277 | 1400    | 23.3                      | $\pm 5.1$ | 344 |

### 6.3.3 HDL

(Detailed tables in Appendix Tables 10.18 - 10.23)

Higher levels of HDL cholesterol are known to be protective against cardiovascular disease. As such, low levels of HDL cholesterol are recognized as an independent risk factor for coronary artery disease. The mean HDL cholesterol of surveyed males was  $1.11 \pm 0.05$  mmol/L and of surveyed females was  $1.05 \pm 0.04$  mmol/L although this difference was not statistically significant. No trend for difference in mean HDL cholesterol level was shown with age for either males or females. Although HDL cholesterol levels were consistently lower in females than in males this difference was not statistically significant.

The HDL cholesterol level for each subject was used to categorize individuals into a high-risk group with a HDL cholesterol level  $\leq 0.90$  mmol/L. The proportion of males in this high-risk group was  $30.9\% \pm 4.8$  and for females was  $35.4\% \pm 4.3$ , a difference that was not statistically significant. As with mean HDL cholesterol, there was no trend identified for difference in the proportion in the high-risk HDL cholesterol group with age for either males or females. Similarly, although the proportions of females with a high-risk HDL cholesterol level were consistently higher than in males this difference was not statistically significant.

In regards to ethnicity, there were no differences among males

or females in either mean HDL cholesterol or in the proportion in the high-risk HDL cholesterol group.

In regards to locality, there was a borderline difference for mean HDL cholesterol between urban males (1.04mmol/L  $\pm$ 0.03) and rural males (1.14mmol/L  $\pm$ 0.07). Similarly, table 6.23 shows that there was a higher proportion of urban males with a high-risk HDL cholesterol (37.4%  $\pm$ 1.7) than in rural males (29.1%  $\pm$ 5.7).

**Table 6. 23: Fasting HDL cholesterol risk categories by area: Males and Females**

| Area  | Males |                          |           |     | Females |                          |           |     |
|-------|-------|--------------------------|-----------|-----|---------|--------------------------|-----------|-----|
|       | N     | Low ( $\leq$ 0.9 mmol/L) |           |     | N       | Low ( $\leq$ 0.9 mmol/L) |           |     |
|       |       | %                        | 95%CI     | n   |         | %                        | 95%CI     | n   |
| Rural | 558   | 29.1                     | $\pm$ 5.7 | 160 | 701     | 35.3                     | $\pm$ 6.1 | 249 |
| Urban | 293   | 37.4                     | $\pm$ 1.7 | 112 | 701     | 35.5                     | $\pm$ 4.2 | 240 |
| Total | 851   | 30.9                     | $\pm$ 4.8 | 272 | 1402    | 35.3                     | $\pm$ 4.3 | 489 |

### 6.3.4 Atherogenic dyslipidemia

Atherogenic dyslipidemia is defined by elevation of serum triglycerides, presence of small LDL particles, and low HDL cholesterol levels (see ATP-3, NCEP). For clinical purposes, we can define atherogenic dyslipidemia (AD) as an elevated triglyceride ( $\geq$  1.70mmol/L) plus a low HDL cholesterol ( $<$  1.04mmol/L).

Of all those with fasting results for the biochemical measures, 17.7%  $\pm$ 4.2 met the criteria for AD. Overall, there were no statistically significant differences in the proportion of those with AD by either gender or age group. However, as was with fasting total cholesterol and fasting triglycerides, table 6.24 shows that there was a difference among Indo-Fijian participants wherein the prevalence of AD in males was 24.6%  $\pm$ 7.5 and in females was 13.7%  $\pm$ 2.7.

**Table 6. 24: Prevalence of Atherogenic Dyslipidemia by ethnicity and gender**

| Ethnic group | Males |      |            |     | Females |      |            |     |
|--------------|-------|------|------------|-----|---------|------|------------|-----|
|              | N     | Yes* |            |     | N       | Yes* |            |     |
|              |       | %    | 95%CI      | n   |         | %    | 95%CI      | n   |
| Fijian       | 499   | 14.8 | $\pm$ 7.4  | 84  | 729     | 17.5 | $\pm$ 5.4  | 128 |
| Indian       | 335   | 24.6 | $\pm$ 7.5  | 87  | 635     | 13.7 | $\pm$ 2.7  | 93  |
| Others       | 16    | 28.0 | $\pm$ 20.4 | 4   | 35      | 15.1 | $\pm$ 21.4 | 4   |
| Total        | 850   | 19.4 | $\pm$ 4.7  | 175 | 1399    | 15.9 | $\pm$ 3.3  | 255 |

\*Fasting Triglyceride  $\geq$  1.7 mmol/L and Fasting HDL  $<$  1.0 mmol/L

Also, similar to the data seen for fasting triglycerides, table 6.25 shows that there was a higher proportion of AD among urban males (30.8%  $\pm$ 4.3) as compared to either rural males (16.1%  $\pm$ 5.6) or urban females (18.1%  $\pm$ 3.0). This suggests that urban males have contributory dietary and other lifestyle habits different from those in females and rural males.

**Table 6. 25: Prevalence of Atherogenic Dyslipidemia by area and gender**

| Area  | Males |      |           |     | Females |      |           |     |
|-------|-------|------|-----------|-----|---------|------|-----------|-----|
|       | N     | Yes* |           |     | N       | Yes* |           |     |
|       |       | %    | 95%CI     | n   |         | %    | 95%CI     | n   |
| Rural | 557   | 16.1 | $\pm$ 5.6 | 88  | 700     | 14.9 | $\pm$ 4.5 | 103 |
| Urban | 293   | 30.8 | $\pm$ 4.3 | 87  | 699     | 18.1 | $\pm$ 3.0 | 122 |
| Total | 850   | 19.4 | $\pm$ 5.1 | 175 | 1399    | 15.9 | $\pm$ 3.3 | 225 |

\*Fasting Triglyceride  $\geq$  1.7 mmol/L and Fasting HDL  $<$  1.0 mmol/L

### 6.3.5 Conclusion

The main analysis was done in strata of gender since the differences are of clinical relevance. In the surveyed population in Fiji, the overall proportion of those with high risk cholesterol level was 49.1% ( $\pm$ 5.8) for males and 37.8% ( $\pm$ 5.6) for females. This gender difference was also observed with triglyceride risk levels even when stratified by age although for both lipids statistical significance was only in the 35-44 years age group.

The opposite was seen in HDL Cholesterol risk levels where females had higher proportion although not statistically significant but when combined with triglyceride to define dyslipidemia, the higher proportion of risk level in males remained.

With biochemical fat levels being direct indicators of coronary heart diseases, more measures should be employed in Fiji to reduce such high risk levels in the population.

## 6.4 Health Conditions

### 6.4.1 Overweight and Obesity

(Detailed tables in Appendix Tables 9.1 - 9.13)

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<sup>2</sup>. Risk categories were calculated for BMI as follows:

|            |                    |
|------------|--------------------|
| Normal     | BMI $<$ 25.0       |
| Overweight | BMI = 25.0 to 29.9 |
| Obese      | BMI $>$ 29.9       |

#### 6.4.1.1 Height and Weight

Males had a mean height of 173.4cm ( $\pm$  1.2) and a mean weight of 73.2kg ( $\pm$  2.9). In comparison, females had a mean height of 161.2cm ( $\pm$  1.6) but were not significantly lighter with a mean weight of 69.6kg ( $\pm$  3.5). For males and females, both the mean height and weight were higher for Fijians than for Indo-Fijians. There were no significant differences for mean height and weight by area.

### 6.4.1.2 BMI and risk factor categories

Table 6. 26: Body mass index (kg/m<sup>2</sup>) by gender, age group and ethnicity

| Age          | Males       |             |             | Females*    |             |             |
|--------------|-------------|-------------|-------------|-------------|-------------|-------------|
|              | N           | Mean        | 95%CI       | N           | Mean        | 95%CI       |
| 15-24        | 674         | 22.1        | ±0.7        | 680         | 23.5        | ±0.9        |
| 25-34        | 548         | 24.4        | ±0.8        | 643         | 27.1        | ±1.0        |
| 35-44        | 615         | 25.3        | ±0.8        | 680         | 27.7        | ±0.8        |
| 45-54        | 489         | 26.0        | ±1.1        | 527         | 29.4        | ±1.1        |
| 55-64        | 359         | 26.1        | ±0.7        | 329         | 30.0        | ±1.0        |
| Ethnicity    | N           | Mean        | 95%CI       | N           | Mean        | 95%CI       |
| Fijian       | 1631        | 25.3        | ±0.5        | 1566        | 28.0        | ±0.7        |
| Indo-Fijian  | 990         | 22.5        | ±0.5        | 1206        | 24.4        | ±0.4        |
| Others       | 64          | 26.7        | ±1.0        | 87          | 29.3        | ±2.2        |
| <b>TOTAL</b> | <b>2685</b> | <b>24.2</b> | <b>±0.7</b> | <b>2859</b> | <b>26.7</b> | <b>±0.8</b> |

\* Pregnant females excluded

Table 6.26 shows the mean BMI by gender, age group and ethnicity. The table shows that the mean BMI was higher for females (26.7 ± 0.8) as compared to males (24.2 ± 0.7) and that there was a trend of increasing BMI by age group for both genders. Furthermore, for both genders, Fijians had a higher mean BMI as compared to Indo-Fijians.

As noted in Table 6.27, the proportion of obesity increases with age in both genders, and there are a significantly higher proportion of females with obesity in all age groups as compared to males. Also, for both genders, Fijians tend to have a higher proportion of obesity than do Indo-Fijians, although this difference is only of borderline significance for males.

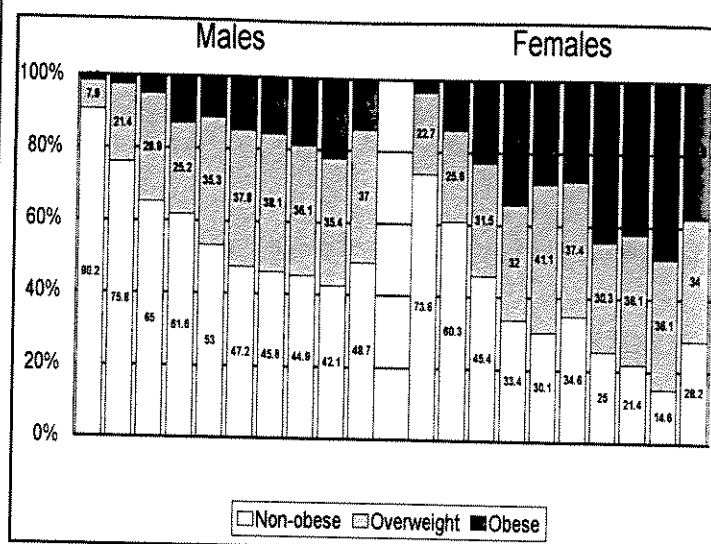
Figure 6.8 shows the distribution of BMI risk categories by gender in 5-year age groups and illustrates a rapid increase in the proportion of obesity in both genders up to the age group 30-34 years. The proportion of overweight/obesity in males levels at approximately 50% before a decline in the much older age group. However, in females the proportion of overweight/obesity tends to gradually increase with age to a level of 70-80% for females aged 50 years or more. This would have tremendous implications in selection of target groups for intervention programmes.

Table 6. 27: Proportion of obesity (BMI>29.9) by gender, agegroup and ethnicity

| Age          | Males       |            |             |            | Females†    |             |              |            |
|--------------|-------------|------------|-------------|------------|-------------|-------------|--------------|------------|
|              | N           | Obese      |             |            | N           | Obese       |              |            |
|              |             | %          | 95%CI       | n          |             | %           | 95%CI        | n          |
| 15-24        | 674         | 2.3        | ±1.4        | 20         | 680         | 8.9         | ± 2.3        | 67         |
| 25-34        | 548         | 9.2        | ±4.6        | 56         | 643         | 29.2        | ± 6.3        | 192        |
| 35-44        | 615         | 13.2       | ±4.9        | 93         | 680         | 28.5        | ± 6.1        | 213        |
| 45-54        | 489         | 17.3       | ±6.7        | 91         | 527         | 43.6        | ± 8.8        | 228        |
| 55-64        | 359         | 18.9       | ±5.7        | 69         | 329         | 44.8        | ± 6.9        | 148        |
| Ethnicity    | N           | %          | 95%CI       | n          | N           | %           | 95%CI        | n          |
| Fijian       | 1631        | 11.3       | ±3.6        | 249        | 1566        | 32.0        | ± 4.6        | 583        |
| Indo-Fijian  | 990         | 5.9        | ±2.0        | 62         | 1206        | 15.8        | ± 2.5        | 222        |
| Others       | 64          | 26.4       | ±8.9        | 18         | 87          | 39.7        | ±17.4        | 43         |
| <b>TOTAL</b> | <b>2685</b> | <b>9.8</b> | <b>±3.0</b> | <b>329</b> | <b>2859</b> | <b>26.4</b> | <b>± 4.3</b> | <b>848</b> |

† Pregnant females excluded

Figure 6.8 Prevalance of BMI categories by gender and age group



### 6.4.1.3 Waist/Hip measurements and risk categories

The measurement of waist-hip ratio (WHR) is used as a measure of central obesity and has been suggested to be a risk factor more specific to cardiovascular disease as visceral fat is more a predictor of morbidity and mortality than cutaneous or other types. Table 6.28 shows an increasing trend of central obesity with age. There is also a significantly higher rate of high-risk central obesity among females (44.6% ± 5.1) than in males (4.0% ± 1.0). There were no differences in the proportion of high-risk WHR in both genders by either ethnicity or area.

It is notable that the magnitude of difference for high-risk WHR between males and females is considerably greater than that noted for obesity as measured by BMI. This suggests that females may be at a relatively increased risk for cardiovascular disease than for other consequences of obesity as compared to males but other factors and further studies are needed to ascertain such in Fiji.

Risk categories for waist measurement only were also calculated (see Detailed Results in Appendix 1) and revealed a similar pattern of risk as with the high-risk WHR category. The only notable difference was that there were a considerably higher proportion of Fijian females at high risk (44.5% ± 5.3) as compared to Indo-Fijian females (25.4% ± 5.1). This difference by ethnicity among females was not found in the high-risk WHR category and likely relates to the fact that Indo-Fijian females are generally of a smaller build as compared to Fijian females, such that waist measurement alone shows them to be at a lower risk relative to WHR and may have implications on the decision of which measurement should be used in Fiji for measurement of abdominal obesity.

**Table 6. 28: Risk categories for waist-hip ratio (WHR) by gender, age group and ethnicity**

| Age          | Males       |                      |             |            | Females†    |                       |              |             |
|--------------|-------------|----------------------|-------------|------------|-------------|-----------------------|--------------|-------------|
|              | N           | High-risk WHR (>1.0) |             |            | N           | High-risk WHR (>0.85) |              |             |
|              |             | %                    | 95%CI       | n          |             | %                     | 95%CI        | n           |
| 15-24        | 674         | 0.1                  | ±0.3        | 1          | 680         | 18.8                  | ± 4.8        | 114         |
| 25-34        | 548         | 1.5                  | ±1.0        | 10         | 644         | 43.4                  | ± 7.6        | 261         |
| 35-44        | 616         | 4.6                  | ±2.1        | 32         | 680         | 57.5                  | ± 7.2        | 381         |
| 45-54        | 489         | 11.2                 | ±3.1        | 58         | 527         | 65.0                  | ± 6.1        | 348         |
| 55-64        | 359         | 13.8                 | ±4.8        | 64         | 329         | 72.5                  | ± 6.8        | 235         |
| Ethnicity    | N           | %                    | 95%CI       | n          | N           | %                     | 95%CI        | n           |
| Fijian       | 1631        | 3.1                  | ±0.9        | 68         | 1568        | 47.8                  | ± 5.3        | 779         |
| Indo-Fijian  | 990         | 5.7                  | ±2.0        | 95         | 1205        | 40.5                  | ± 8.0        | 524         |
| Others       | 65          | 2.1                  | ±3.3        | 2          | 87          | 34.0                  | ±15.2        | 36          |
| <b>TOTAL</b> | <b>2686</b> | <b>4.0</b>           | <b>±1.0</b> | <b>165</b> | <b>2860</b> | <b>44.6</b>           | <b>± 5.1</b> | <b>1339</b> |

† Pregnant females excluded

#### 6.4.1.4 Conclusion

The overall proportion of the Fiji population aged 15-64 years who were overweight (i.e. with a BMI between 25 - 29.9) was 29% and obese (i.e. with a BMI  $\geq 30$ ) was 18%. Females in Fiji were by far more obese than males both by measure of overall BMI (26.4% verse 9.8%) and WHR (44.6% verse 4.0%) for abdominal obesity.

In terms of ethnicity, Fijians almost double the rate of obesity compared to Indo-Fijians. It was also observed that there is monotonic rapid increase of obesity with age up to the 30 - 34 years age group implying that maximal weight gain is occurring in the younger generation in Fiji.

### 6.4.2 Hypertension (High Blood Pressure)

(Detailed tables in Appendix Tables 9.14 - 9.22)

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, on 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. Summary data on the prevalence of hypertension includes those with:

- a mean systolic pressure  $> 139$  mmHg, whether or not they had previously been told by a health worker that they had high blood pressure, OR
- a mean diastolic pressure  $> 89$  mmHg, whether or not they had previously been told by a health worker that they had high blood pressure, OR
- normal mean systolic and diastolic pressures (i.e. normotensive) AND who were currently receiving anti-hypertensive medication, whether or not they had previously been told by a health worker that they had high blood pressure.

Those participants who reported having been ever told by a health worker that they had high blood pressure but who were normotensive and NOT on anti-hypertensive medication were NOT included among those considered to have hypertension.

#### 6.4.2.1 Most recent measurement of blood pressure

The results indicated that more than 90% of the population had their blood pressure measured within the last five years. 62% ( $\pm 4.3$ ) of males and 60.1% ( $\pm 4.5$ ) of females reported having had their blood pressure measured within the last 12 months. Only 7.2% ( $\pm 1.9$ ) of males and 8.8% ( $\pm 2.1$ ) of females had not had their blood pressure measured in the last five years. There were no significant differences in time since most recent blood pressure measurement by gender, age, ethnicity or locality.

#### 6.4.2.2 Prevalence of Hypertension

As shown in Figure 6.9, 19.1% ( $\pm 1.9$ ) ( $n=1402$ ) of those surveyed were hypertensive. Among those, 63.3% ( $\pm 5.2$ ) were previously unrecognized cases ( $n=787$ ).

The remainder of those with hypertension was previously diagnosed cases with 10.4% ( $n=174$ ) not being on medication, 15.4% ( $n=259$ ) being on medication but not under control, and only 10.9% ( $n=182$ ) being on medication and having a controlled blood pressure.

Table 6.29 provides a more detailed analysis of those with hypertension and indicates that while the prevalence of hypertension by gender was the same, that there were a greater proportion of newly diagnosed cases among males. This difference may suggest that females utilize health care services more than males. There is a greater proportion of hypertension with increasing age but a lesser proportion of newly diagnosed.

**Figure 6.9: Prevalence of hypertension with distribution of cases by previous diagnosis, treatment status and control**

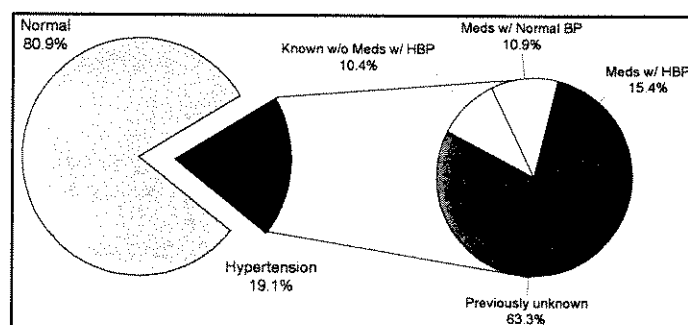


Table 6.29 also indicates that there is a higher proportion of hypertension among Fijians ( $20.7\% \pm 2.8$ ) as compared with Indo-Fijians ( $16.3\% \pm 1.6$ ). Furthermore, the proportion of newly diagnosed cases is higher among Fijians ( $70.9\% \pm 4.4$ ) than among Indo-Fijians ( $50.6\% \pm 5.4$ ), and the proportion of uncontrolled previously diagnosed cases is higher among Fijians ( $80.8\% \pm 6.9$ ) than among Indo-Fijians ( $57.5\% \pm 6.5$ ). This suggests that hypertension is not being as well recognized among Fijians as compared to Indo-Fijians, and that when it is recognized that it is not being as well controlled among Fijians as compared to Indo-Fijians. These differences could relate to

disparities in access to health care or variations in health seeking behaviour. There was no difference in the prevalence of hypertension by locality.

Table 6. 29: Prevalence of Hypertension with Status of Diagnosis by Gender, Agegroup, Ethnicity and Area

| Group     |      | Hypertension<br>(among all in group) |       |      | Newly diagnosed<br>(among hypertension) |       |     | Previously<br>diagnosed but uncontrolled* |       |     |
|-----------|------|--------------------------------------|-------|------|---|-------|-----|---|-------|-----|
| Gender    | N    | %                                    | 95%CI | n    | %                                       | 95%CI | n   | %   | 95%CI | n   |
| Male      | 2681 | 19.8                                 | ±2.3  | 590  | 73.0                                    | ± 6.8 | 396 | 62.6                                      | ± 8.2 | 125 |
| Female    | 3929 | 18.3                                 | ±1.8  | 812  | 51.4                                    | ± 4.7 | 391 | 75.5                                      | ± 7.2 | 308 |
| Agegroup  | N    | %                                    | 95%CI | n    | %                                       | 95%CI | n   | %   | 95%CI | n   |
| 15-24     | 1598 | 9.1                                  | ±2.3  | 120  | 92.0                                    | ± 4.8 | 108 | 44.0                                      | ±34.3 | 5   |
| 25-34     | 1470 | 12.1                                 | ±2.9  | 164  | 84.0                                    | ± 6.1 | 124 | 63.8                                      | ±18.7 | 23  |
| 35-44     | 1544 | 18.3                                 | ±2.2  | 275  | 61.8                                    | ± 7.6 | 167 | 70.9                                      | ±10.5 | 77  |
| 45-54     | 1217 | 34.8                                 | ±4.0  | 433  | 52.2                                    | ± 6.8 | 212 | 65.5                                      | ± 7.3 | 150 |
| 55-64     | 781  | 52.1                                 | ±5.7  | 410  | 44.3                                    | ± 7.2 | 176 | 77.8                                      | ± 6.4 | 17  |
| Ethnicity | N    | %                                    | 95%CI | n    | %                                       | 95%CI | n   | %   | 95%CI | n   |
| Fijian    | 3760 | 20.7                                 | ±2.8  | 828  | 70.9                                    | ± 4.4 | 538 | 80.8                                      | ± 6.9 | 236 |
| Indian    | 2665 | 16.3                                 | ±1.6  | 540  | 50.6                                    | ± 5.4 | 233 | 57.5                                      | ± 6.5 | 18  |
| Other     | 185  | 23.7                                 | ±7.2  | 34   | 53.3                                    | ±19.7 | 16  | 78.9                                      | ±23.7 | 13  |
| Area      | N    | %                                    | 95%CI | n    | %                                       | 95%CI | n   | %   | 95%CI | n   |
| Rural     | 3715 | 19.7                                 | ±2.4  | 827  | 65.4                                    | ± 5.4 | 497 | 72.3                                      | ± 8.7 | 238 |
| Urban     | 2895 | 17.4                                 | ±1.8  | 575  | 56.9                                    | ± 8.3 | 290 | 65.2                                      | ± 5.3 | 195 |
| Total     | N    | %                                    | 95%CI | n    | %                                       | 95%CI | n   | %   | 95%CI | n   |
|           | 6610 | 19.1                                 | ±1.9  | 1402 | 63.3                                    | ± 5.2 | 787 | 70.3                                      | ± 7.2 | 433 |

\* "not controlled" indicates a systolic BP > 139mmHG or a diastolic BP > 89mmHG

### 6.4.2.3 Treatment for hypertension

As noted in Table 6.30, among those with a previous diagnosis of hypertension, less than half were on anti-hypertensive medication. This table also indicates that even smaller proportions were receiving other treatments for hypertension (e.g. special diet, advice to lose weight or stop smoking, herbal or traditional remedies). Of all treatments, only advice to stop smoking showed a statistically significant difference by gender, likely due to the fact that males are more likely to smoke tobacco.

It is notable that over one-fifth of all those with a previous diagnosis of hypertension reported current use of herbal or traditional remedies. This observation is consistent with the reported frequent use of traditional health practices by many of Fiji's ethnic populations.

Table 6. 30: Type of treatment among those with a previous diagnosis of hypertension by gender

| Treatment | Males |       |     | Females |       |     |
|-----------|-------|-------|-----|---------|-------|-----|
|           | %     | 95%CI | N   | %       | 95%CI | N   |
| Drugs     | 47.3  | ±10.0 | 110 | 47.1    | ±8.0  | 282 |
| Diet      | 46.8  | ± 8.6 | 112 | 48.6    | ±6.8  | 292 |
| Weight    | 33.9  | ± 8.5 | 80  | 34.0    | ±5.9  | 206 |
| Smoking   | 28.8  | ± 6.9 | 69  | 11.6    | ±4.7  | 67  |
| Herbal    | 25.9  | ± 8.2 | 62  | 21.0    | ±5.8  | 115 |

### 6.4.2.4 Conclusion

The prevalence of hypertension in the 15-64 years age group in Fiji is 19.1% (± 1.9), with Fijians having a higher proportion (20.7%± 2.8) than Indo-Fijians (16.3 ± 1.6) and 63% of these were previously unknown.

There were similar proportions between genders and dwelling area. and as expected there was a monotonic increase in hypertension with age. It was also established that when hypertension is recognized, Indo-Fijians do better in controlling it than Fijians and overall 20% were using traditional or herbal medicine.

These findings have important implications in intervention strategies for hypertension.

### 6.4.3 Diabetes

(Detailed tables in Appendix Table 10.1 - 10.5)

To assess the health status of the surveyed population, the participants were asked questions relating to recent blood sugar measurements, and treatment for diabetes. Summary data on the prevalence of diabetes for those in the 25-64 year age group includes those with:

- a fasting blood glucose greater than or equal to 6.1 mmol/L, whether or not they had previously been told by a health worker that they had diabetes, OR



- a normal fasting blood glucose (i.e. < 6.1 mmol/L) AND who were currently receiving anti-diabetes medication or were on a special diet prescribed by a health worker.

This is generally in accordance with the WHO guidelines on the diagnosis of diabetes.

Those participants who reported having been ever told by a health worker that they had diabetes but who had a normal fasting blood glucose and who were NOT on anti-diabetes medication or on a special diet prescribed by a health worker were NOT included among those considered to have diabetes.

### 6.4.3.1 Measurement of blood sugar in the last 12 months

Table 6.31 indicates that only 28.0% of the population had their blood glucose measured within the last 12 months with a significant difference between males (23.6%) and females (33.0%). As was similarly noted when participants had their blood pressure last measured, this difference by gender may be attributable to higher utilization rates of health services by females, although the routine practice of screening for diabetes during pregnancy could be a confounding factor.

There were also an increasing proportion of those who had their blood glucose measured in the last 12 months with increasing age. This trend for increased testing of blood glucose with age was not noted with the practice of taking blood pressure measurements. This is probably due to the fact that blood pressure measurements are routine in the primary care setting whereas blood glucose measurements are more likely to be conducted in older individuals in whom there is a greater suspicion of diabetes.

Table 6. 31: Blood sugar measured in the last 12 months: Males and Females

| Age   | Males |      |       |     | Females |      |       |      |
|-------|-------|------|-------|-----|---------|------|-------|------|
|       | N     | Yes  |       |     | N       | Yes  |       |      |
|       |       | %    | 95%CI | n   |         | %    | 95%CI | n    |
| 15-24 | 690   | 8.8  | ± 2.7 | 62  | 956     | 14.7 | ± 2.7 | 150  |
| 25-34 | 564   | 17.5 | ± 5.0 | 105 | 939     | 30.6 | ± 3.3 | 294  |
| 35-44 | 632   | 28.4 | ± 3.3 | 183 | 946     | 37.2 | ± 3.9 | 352  |
| 45-54 | 498   | 44.7 | ± 5.5 | 234 | 740     | 49.9 | ± 6.6 | 398  |
| 55-64 | 364   | 52.4 | ± 6.4 | 204 | 426     | 64.1 | ± 5.8 | 267  |
| TOTAL | 2748  | 23.6 | ± 2.7 | 788 | 4007    | 33.0 | ± 2.9 | 1461 |

### 6.4.3.2 Prevalence of Diabetes

As shown in Figure 6.10, of those who had their fasting blood sugar (FBS) tested, 16.0% ( $\pm 3.1$ ) (n=435) were diabetic and a further 10.5% (n=261) had an impaired fasting glucose (i.e. FBS > 5.6 mmol/L and < 6.1mmol/L). Among those with diabetes, 53.2% ( $\pm 6.6$ ) were previously unrecognized cases (n=215). The remainder of those with diabetes was previously diagnosed cases with 2.1% (n=12) not being on medication, 32.2% (n=151) being on medication but uncontrolled, and only 12.5% (n=57) being on medication and having a normal fasting blood glucose.

Figure 6.10: Prevalence of Diabetes with distribution of cases by previous diagnosis, treatment status and control

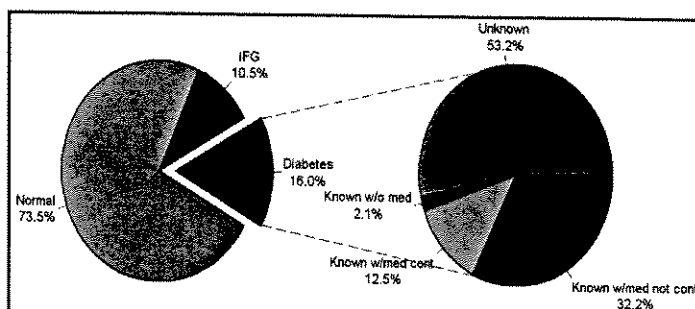


Table 6.32 provides a more detailed analysis of those with diabetes and indicates that the prevalence of diabetes by gender was the same. In regards to differences in prevalence by age group, not surprisingly there is a greater proportion of diabetes with increasing age. Similarly, there is a lesser proportion with newly diagnosed diabetes with increasing age.

Table 6.32 also indicates that there is a higher proportion of diabetes among Indo-Fijians (21.2%  $\pm 3.4$ ) as compared with Fijians (11.5%  $\pm 3.1$ ). Furthermore, the proportion of uncontrolled previously diagnosed cases of diabetes is higher among Indo-Fijians (80.2%  $\pm 8.1$ ) than among Fijians (54.5%  $\pm 13.2$ ). This suggests that when diabetes is recognized that it is not being as well controlled among Indo-Fijians as compared to Fijians.

This difference by ethnicity is opposite of that seen or observed in clinical setting as Fijians have higher rate of complications than Indo-Fijians. One needs to understand that one-off glucose measurement is not the best measure of good diabetes control.

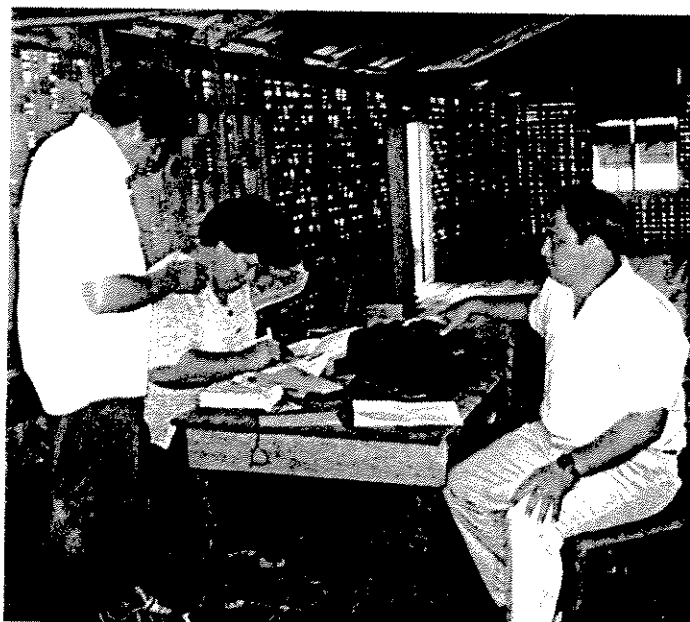


Table 6.32: Prevalence of Diabetes with Status of Diagnosis by Gender, Agegroup, Ethnicity and Area

| Group     |      | Diabetes<br>(Among all) |       |     | Newly Diagnosed<br>(Among diabetics) |       |     | Previously Diagnosed<br>but uncontrolled |       |     |
|-----------|------|-------------------------|-------|-----|--------------------------------------|-------|-----|--|-------|-----|
| Gender    | N    | %                       | 95%CI | n   | %                                    | 95%CI | n   | %  | 95%CI | n   |
| Male      | 862  | 14.6                    | ± 3.8 | 153 | 60.3                                 | ± 9.0 | 85  | 69.2                                     | ±13.3 | 48  |
| Female    | 1415 | 17.6                    | ± 3.6 | 282 | 46.9                                 | ± 8.7 | 130 | 68.6                                     | ±11.4 | 103 |
| Agegroup  | N    | %                       | 95%CI | n   | %                                    | 95%CI | n   | %  | 95%CI | n   |
| 25-34     | 561  | 4.8                     | ± 3.1 | 36  | 61.4                                 | ±22.5 | 22  | 49.7                                     | ±25.8 | 5   |
| 35-44     | 698  | 12.0                    | ± 3.4 | 90  | 59.9                                 | ±14.9 | 56  | 56.0                                     | ±27.2 | 19  |
| 45-54     | 631  | 26.5                    | ± 6.6 | 168 | 55.4                                 | ±14.9 | 84  | 74.1                                     | ±12.7 | 62  |
| 55-64     | 387  | 33.0                    | ± 7.4 | 141 | 42.3                                 | ± 9.8 | 53  | 74.8                                     | ±10.9 | 65  |
| Ethnicity | N    | %                       | 95%CI | n   | %                                    | 95%CI | n   | %  | 95%CI | n   |
| Fijian    | 1247 | 11.5                    | ± 3.1 | 170 | 49.2                                 | ± 9.4 | 87  | 54.5                                     | ±13.2 | 49  |
| Indian    | 979  | 21.2                    | ± 3.4 | 250 | 53.6                                 | ± 7.3 | 118 | 80.2                                     | ± 8.1 | 99  |
| Other     | 51   | 27.9                    | ±15.2 | 15  | 79.5                                 | ±22.8 | 10  | 75.4                                     | ±17.6 | 3   |
| Area      | N    | %                       | 95%CI | n   | %                                    | 95%CI | n   | %  | 95%CI | n   |
| Rural     | 1280 | 12.8                    | ± 2.9 | 181 | 51.5                                 | ± 9.8 | 87  | 65.0                                     | ±15.7 | 60  |
| Urban     | 997  | 24.7                    | ± 1.9 | 254 | 55.5                                 | ± 6.2 | 128 | 74.8                                     | ±10.4 | 9   |
| Total     | N    | %                       | 95%CI | n   | %                                    | 95%CI | n   | %  | 95%CI | n   |
|           | 2277 | 16.0                    | ± 3.1 | 435 | 53.2                                 | ± 6.6 | 215 | 68.8                                     | ±10.6 | 151 |

\* "uncontrolled" means fasting blood tasting glucose  $\geq 6.1$ mmol

There is also a difference in the overall prevalence of diabetes by locality with a prevalence of 24.7% (n=254) in the urban area and 12.8% (n=181) in the rural area. However, the rates of newly and previously diagnosed cases by locality are the same.

### 6.4.3.3 Treatment for diabetes

As noted in Table 6.33, among those with a previous diagnosis of diabetes, approximately two-thirds were on oral hypoglycemic medication and also on a special diet prescribed by a health worker. This table also indicates that smaller proportions were receiving other treatments for diabetes (e.g. insulin, advice to lose weight or stop smoking, herbal or traditional remedies). Of all treatments, only advice to stop smoking showed a statistically significant difference by gender, likely due to the fact that males are more likely to smoke tobacco.

It is notable that approximately one-fifth of all those with a previous diagnosis of diabetes reported current use of herbal or traditional remedies. This observation is consistent with the reported frequent use of traditional health practices by many of Fiji's ethnic populations.

Table 6. 33: Type of treatment among those with a previous diagnosis of diabetes by gender

| Treatment | Males |    |       | Females |     |       |
|-----------|-------|----|-------|---------|-----|-------|
|           | %     | N  | 95%CI | %       | N   | 95%CI |
| Insulin   | 3.8   | 5  | ± 3.8 | 7.8     | 18  | ± 3.9 |
| Drugs     | 62.3  | 84 | ±11.0 | 66.5    | 161 | ± 8.7 |
| Diet      | 66.7  | 85 | ±10.2 | 70.0    | 174 | ± 8.0 |
| Weight    | 43.2  | 54 | ±14.1 | 39.6    | 100 | ± 6.4 |
| Smoking   | 29.8  | 39 | ±10.3 | 8.7     | 18  | ± 4.0 |
| Herbal    | 19.3  | 26 | ± 9.9 | 18.6    | 37  | ± 7.5 |

### 6.4.3.4 Conclusion

The prevalence of Diabetes Mellitus in the 25-64 years age group in Fiji is 16.0% (±3.1) with the rate in Indo-Fijians (21.2% ± 1.9) almost doubling that in Fijians (11.5% ± 3.1) and 53.2% were previously unknown.

Unlike hypertension, there was significantly higher proportion of diabetes amongst urban dwellers (24.7%±1.9) as compared to rural (12.8% ± 2.9).

There were slightly higher rates in females than males and as expected the prevalence of diabetes was increasing with age.

## 7 Limitations

The WHO STEPWISE approach employed in this survey has been the gold standard for NCD prevalence surveys in Fiji and the Pacific since its inception. The population sample taken was quite representative of the 15-64yrs in Fiji given the sampling technique and the sampling frame used.

However the imbalance between gender in the sample (Table 6.1) is partly due to the timing of the survey as it was mostly conducted during working hours where men are at work either in offices in urban areas or at the plantation for those in the rural hence the greater proportion of women than men. Given that the weighted proportion is

comparable to the population and in most category of variables (except obesity) the men are at higher risk than women, the bias should if anything strengthen the gender associations.

There is also some apparent imbalance in locality between the sample and the population (Table 6.1) and this is mainly because the weighting formula did not account for locality.

Attempts were made to collect information on response rate, but this was not feasible on the ground as there was logistical difficulty tracking the responses due to lack of documentation.

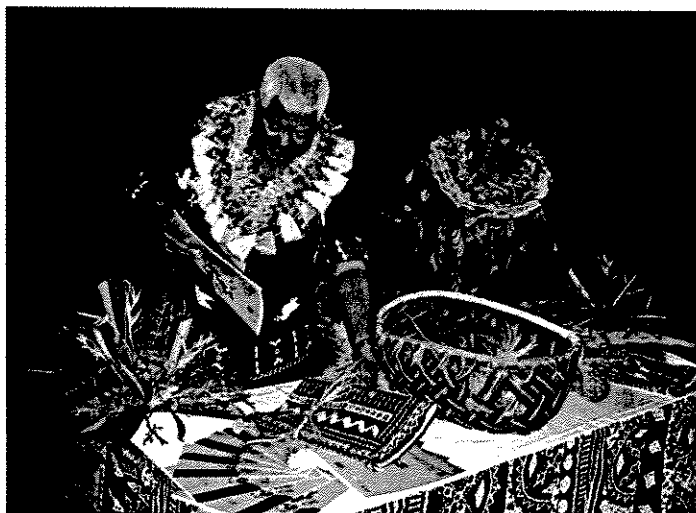
## 8 Conclusions

- The Fiji NCD-STEPS survey revealed that the point prevalence of non-communicable diseases mainly hypertension, diabetes and obesity are still relatively high and there has not been any decline since the last surveys in the '80s.
- NCD risk factors are highly prevalent in the Fiji population. Given that these risk factors could become non-communicable diseases (e.g. hypertension, diabetes, heart disease, stroke, cancer) of the future, it is essential that the Ministry of Health and partners work together aggressively to lower the proportion of these NCD risk factors in Fiji.
- Many of the NCD risk factors are linked and many individuals in Fiji are exposed to multiple NCD risk factors and there is a need to develop and implement integrated and comprehensive national strategies with multi-sectoral approach to combat these.

## 9 Recommendations

- Take more aggressive measures in decreasing tobacco use particularly targeting the younger age groups, males, Fijians and rural residents.
- Because of the association between kava use and other NCD risk factors (e.g alcohol and tobacco use), undertake health promotion activities to encourage more moderate kava consumption again targeting the younger age groups and males.
- Take more aggressive measures in reducing alcohol consumption particularly targeting the younger age groups, males, and Fijian females.
- Greatly increase health promotion efforts to highlight the benefits of fruit and vegetable consumption across all population sectors.
- Increase awareness among everyone regarding the adverse effects of excessive consumption of high-fat, high-salt, and high-sugar foods.
- Develop specific programs and improved environments to encourage increased physical activity in everyone, especially targeting females and adolescents.
- Increase the capacity of the healthcare system to identify, monitor and treat individuals with hypertension, particularly targeting Fijians.

- Increase the capacity of the healthcare system to identify, monitor and treat individuals with diabetes.
- Compare these findings with previous surveys and with other Pacific island countries as data become available.
- Maintain ongoing NCD risk factor surveillance to monitor and assess the effectiveness of health promotion and disease prevention strategies targeting NCDs and their risk factors.



# 10 Appendix 1: Detailed results

## 10.1 Demographic Information

Table 1. 1 Years spent in school: Males and Females

| Age   | Males |      |       | Females |      |       |
|-------|-------|------|-------|---------|------|-------|
|       | N     | Mean | 95%CI | N       | Mean | 95%CI |
| 15-24 | 688   | 10.5 | + 0.3 | 950     | 10.8 | + 0.4 |
| 25-34 | 560   | 10.0 | + 0.4 | 927     | 10.2 | + 0.4 |
| 35-44 | 626   | 9.2  | + 0.4 | 920     | 9.4  | + 0.4 |
| 45-54 | 481   | 8.5  | + 0.4 | 658     | 7.9  | + 0.4 |
| 55-64 | 342   | 7.2  | + 0.5 | 350     | 7.1  | + 0.4 |
| TOTAL | 2697  | 9.6  | + 0.3 | 3805    | 9.7  | + 0.3 |

Table 1. 2 Ethnicity: Males and Females

| Age   | N    | Males   |       |      |        |       |      |       |       |     |
|-------|------|---------|-------|------|--------|-------|------|-------|-------|-----|
|       |      | Fijian  |       |      | Indian |       |      | Other |       |     |
|       |      | %       | 95%CI | n    | %      | 95%CI | n    | %     | 95%CI | n   |
| 15-24 | 691  | 56.0    | +20.1 | 424  | 32.6   | +20.4 | 244  | 3.3   | + 4.0 | 23  |
| 25-34 | 565  | 57.6    | +20.9 | 348  | 37.5   | +21.5 | 200  | 4.8   | + 4.1 | 17  |
| 35-44 | 633  | 55.3    | +20.9 | 377  | 40.3   | +20.9 | 244  | 4.5   | + 4.0 | 12  |
| 45-54 | 499  | 55.5    | +19.9 | 289  | 41.4   | +19.7 | 203  | 3.1   | + 3.5 | 7   |
| 55-64 | 364  | 63.3    | +20.2 | 214  | 32.2   | +19.2 | 143  | 4.5   | + 2.9 | 7   |
| Total | 2752 | 56.8    | +19.1 | 1652 | 39.1   | +19.3 | 1034 | 4.0   | + 2.9 | 66  |
| Age   | N    | Females |       |      |        |       |      |       |       |     |
|       |      | Fijian  |       |      | Indian |       |      | Other |       |     |
|       |      | %       | 95%CI | n    | %      | 95%CI | n    | %     | 95%CI | n   |
| 15-24 | 956  | 57.3    | +18.4 | 520  | 39.1   | +18.6 | 404  | 3.6   | + 2.4 | 32  |
| 25-34 | 940  | 58.7    | +17.4 | 549  | 36.8   | +18.3 | 364  | 4.5   | + 3.1 | 27  |
| 35-44 | 947  | 55.4    | +18.8 | 514  | 41.3   | +18.7 | 404  | 3.2   | + 3.0 | 28  |
| 45-54 | 742  | 57.8    | +19.1 | 345  | 39.1   | +18.8 | 372  | 3.1   | + 3.4 | 25  |
| 55-64 | 426  | 61.8    | +20.0 | 225  | 35.5   | +19.5 | 190  | 2.8   | + 3.8 | 11  |
| Total | 4011 | 57.7    | +18.3 | 2153 | 38.7   | +18.3 | 1734 | 3.1   | + 2.6 | 124 |

Table 1. 3 Highest level of education: Males

| Age   | N    | Never Attended |    | Some Primary |    | Primary |     | Secondary |      | High school |     | University |     | Post grad |     |
|-------|------|----------------|----|--------------|----|---------|-----|-----------|------|-------------|-----|------------|-----|-----------|-----|
|       |      | %              | n  | %            | n  | %       | n   | %         | n    | %           | n   | %          | n   | %         | n   |
| 15-24 | 689  | 0.1            | 1  | 0.3          | 3  | 20.3    | 126 | 43.6      | 300  | 22.9        | 152 | 7.3        | 57  | 5.4       | 50  |
| 25-34 | 564  | 0.3            | 2  | 1.3          | 7  | 33      | 163 | 36.6      | 212  | 15.4        | 90  | 9.1        | 57  | 4.5       | 33  |
| 35-44 | 633  | 1.1            | 6  | 2.6          | 14 | 37.7    | 219 | 45.7      | 295  | 6.3         | 46  | 4.2        | 30  | 2.4       | 23  |
| 45-54 | 497  | 3.3            | 15 | 3.1          | 19 | 53.2    | 253 | 29.2      | 146  | 3.9         | 19  | 4.4        | 27  | 3         | 18  |
| 55-64 | 364  | 5.5            | 21 | 9.6          | 41 | 63.9    | 218 | 12.5      | 47   | 1.9         | 9   | 4          | 15  | 2.7       | 13  |
| Total | 2747 | 1.2            | 45 | 2.1          | 84 | 35.2    | 979 | 37.7      | 1000 | 13.2        | 316 | 6.5        | 186 | 4         | 137 |



Table 1. 4 Highest level of education: Females

| Age   | N    | Never Attended |     | Some Primary |     | Primary |      | Secondary |      | High school |     | University |     | Post grad |     |
|-------|------|----------------|-----|--------------|-----|---------|------|-----------|------|-------------|-----|------------|-----|-----------|-----|
|       |      | %              | n   | %            | n   | %       | n    | %         | n    | %           | n   | %          | n   | %         | n   |
| 15-24 | 956  | 0.4            | 3   | 0.8          | 6   | 14.1    | 115  | 42        | 387  | 27.4        | 276 | 9.7        | 97  | 5.7       | 6   |
| 25-34 | 940  | 0.8            | 9   | 0.7          | 7   | 25.2    | 213  | 45        | 413  | 18.7        | 194 | 5.8        | 6   | 3.7       | 43  |
| 35-44 | 942  | 2.2            | 22  | 1.3          | 18  | 33.2    | 289  | 50.3      | 482  | 7.6         | 76  | 3.5        | 34  | 1.8       | 21  |
| 45-54 | 741  | 8.6            | 83  | 5.5          | 48  | 55.7    | 383  | 24.7      | 179  | 1.7         | 17  | 1.7        | 16  | 2         | 15  |
| 55-64 | 425  | 12.7           | 74  | 6            | 35  | 65.1    | 248  | 14.2      | 58   | -           | 0   | 0.3        | 2   | 1.6       | 8   |
| Total | 4004 | 3.2            | 191 | 2            | 114 | 31.4    | 1248 | 39.4      | 1519 | 14.9        | 563 | 5.5        | 210 | 3.5       | 159 |

## 10.2 Tobacco Use

Table 2. 1 Current smoking status: Males

| AGE   | N    | Daily smokers |       |     | Non-daily Smokers |       |     | Non-smokers |       |      |
|-------|------|---------------|-------|-----|-------------------|-------|-----|-------------|-------|------|
|       |      | %             | 95%CI | n   | %                 | 95%CI | n   | %           | 95%CI | n    |
| 15-24 | 690  | 18.7          | ± 8.2 | 137 | 19.9              | ± 6.5 | 140 | 61.4        | ±10.9 | 413  |
| 25-34 | 565  | 31.5          | ± 7.5 | 167 | 29.1              | ± 5.8 | 180 | 39.4        | ± 7.5 | 218  |
| 35-44 | 633  | 27.1          | ± 4.9 | 171 | 30.4              | ± 5.2 | 187 | 42.5        | ± 6.2 | 275  |
| 45-54 | 498  | 29.6          | ± 7.3 | 145 | 28.8              | ± 8.5 | 154 | 41.7        | ± 6.5 | 199  |
| 55-64 | 364  | 27.8          | ± 6.3 | 95  | 35.9              | ± 4.9 | 127 | 36.3        | ±10.0 | 142  |
| TOTAL | 2750 | 26.0          | ± 4.5 | 715 | 27.0              | ± 4.8 | 788 | 47.0        | ± 6.5 | 1247 |

Table 2. 2 Current smoking status: Females

| AGE   | N    | Daily smokers |       |     | Non-daily Smokers |       |     | Non-smokers |       |      |
|-------|------|---------------|-------|-----|-------------------|-------|-----|-------------|-------|------|
|       |      | %             | 95%CI | n   | %                 | 95%CI | n   | %           | 95%CI | n    |
| 15-24 | 954  | 2.3           | ± 0.9 | 24  | 12.2              | ± 3.9 | 106 | 85.6        | ± 4.6 | 824  |
| 25-34 | 940  | 4.6           | ± 2.0 | 48  | 17.0              | ± 5.4 | 153 | 79.0        | ± 6.2 | 739  |
| 35-44 | 946  | 3.8           | ± 2.3 | 37  | 15.5              | ± 6.3 | 136 | 80.7        | ± 7.0 | 773  |
| 45-54 | 741  | 5.2           | ± 3.1 | 44  | 13.2              | ± 6.3 | 79  | 81.6        | ± 7.5 | 618  |
| 55-64 | 424  | 5.0           | ± 2.5 | 22  | 13.2              | ± 5.7 | 48  | 81.9        | ± 6.6 | 354  |
| TOTAL | 4005 | 3.9           | ± 1.4 | 175 | 14.2              | ± 4.6 | 522 | 82.0        | ± 5.3 | 3308 |

Table 2. 3 Current smoking status by area: Males

| Area  | N    | Daily Smokers |       |     | Non-daily Smokers |       |     | Non-smokers |       |      |
|-------|------|---------------|-------|-----|-------------------|-------|-----|-------------|-------|------|
|       |      | %             | 95%CI | n   | %                 | 95%CI | n   | %           | 95%CI | n    |
| Rural | 1716 | 28            | ±5.6  | 491 | 28.9              | ±6.0  | 541 | 43.1        | ±7.5  | 684  |
| Urban | 1034 | 19.5          | ±3.8  | 224 | 21.1              | ±2.6  | 247 | 59.4        | ±6.0  | 563  |
| TOTAL | 2750 | 26.0          | ±4.5  | 715 | 27.0              | ±4.8  | 788 | 47.0        | ±6.5  | 1247 |

Table 2. 4 Current smoking by area: Females

| Area  | N    | Daily Smokers |       |     | Non-daily Smokers |       |     | Non-smokers |       |      |
|-------|------|---------------|-------|-----|-------------------|-------|-----|-------------|-------|------|
|       |      | %             | 95%CI | n   | %                 | 95%CI | n   | %           | 95%CI | n    |
| Rural | 2071 | 3.9           | ±1.8  | 90  | 16.7              | ±5.8  | 357 | 79.4        | ±6.6  | 1624 |
| Urban | 1934 | 3.9           | ±2.2  | 85  | 8.3               | ±4.4  | 165 | 87.9        | ±6.5  | 1684 |
| TOTAL | 4005 | 3.9           | ±1.4  | 175 | 14.2              | ±4.6  | 522 | 82.0        | ±5.3  | 3308 |



Table 2. 5 Current smoking status by ethnicity: Males

| Ethnic Group | N    | Daily Smokers |       |     | Non-daily Smokers |       |     | Non-smokers |       |      |
|--------------|------|---------------|-------|-----|-------------------|-------|-----|-------------|-------|------|
|              |      | %             | 95%CI | n   | %                 | 95%CI | n   | %           | 95%CI | n    |
| Fijian       | 1651 | 26.4          | ± 6.0 | 410 | 34.7              | ± 3.1 | 573 | 38.9        | ± 5.0 | 668  |
| Indian       | 1033 | 25.4          | ± 5.5 | 289 | 17.1              | ± 3.4 | 203 | 57.6        | ± 6.2 | 541  |
| Others       | 66   | 26.3          | ±11.1 | 16  | 15.3              | ±11.9 | 12  | 58.4        | ±19.7 | 38   |
| TOTAL        | 2750 | 26.0          | ± 4.5 | 715 | 27.0              | ± 4.8 | 788 | 47.0        | ± 6.5 | 1247 |

Table 2. 6 Current smoking status by ethnicity: Females

| Ethnic Group | N    | Daily Smokers |       |     | Non-daily Smokers |       |     | Non-smokers |       |      |
|--------------|------|---------------|-------|-----|-------------------|-------|-----|-------------|-------|------|
|              |      | %             | 95%CI | n   | %                 | 95%CI | n   | %           | 95%CI | n    |
| Fijian       | 2149 | 5             | ± 2.0 | 126 | 22.2              | ± 3.3 | 470 | 72.8        | ± 3.9 | 1553 |
| Indian       | 1733 | 1.4           | ± 0.6 | 35  | 1.6               | ± 0.5 | 32  | 97          | ± 0.9 | 1666 |
| Others       | 123  | 10.5          | ± 5.5 | 14  | 21.1              | ±14.6 | 20  | 68.4        | ±10.4 | 89   |
| TOTAL        | 4005 | 3.9           | ± 1.4 | 175 | 14.2              | ± 4.6 | 522 | 82.0        | ± 5.3 | 3308 |

Table 2. 7 Age started smoking, for current smokers: Males and Females

| Age   | Males |      |       | Females |      |       |
|-------|-------|------|-------|---------|------|-------|
|       | N     | Mean | 95%CI | N       | Mean | 95%CI |
| 15-24 | 135   | 18.3 | ±0.5  | 24      | 18.9 | ±1.3  |
| 25-34 | 165   | 20.0 | ±0.9  | 47      | 21.2 | ±2.0  |
| 35-44 | 170   | 21.3 | ±0.8  | 37      | 24.1 | ±4.1  |
| 45-54 | 144   | 23.2 | ±1.2  | 44      | 30.6 | ±3.9  |
| 55-64 | 95    | 23.6 | ±1.8  | 22      | 36.4 | ±9.6  |
| TOTAL | 709   | 20.7 | ±0.6  | 174     | 25.0 | ±2.1  |

Table 2. 8 Years of smoking, for current smokers: Males and Females

| Age   | Males |      |       | Females |      |       |
|-------|-------|------|-------|---------|------|-------|
|       | N     | Mean | 95%CI | N       | Mean | 95%CI |
| 15-24 | 135   | 3.5  | ±0.5  | 24      | 3.2  | ± 1.2 |
| 25-34 | 165   | 9.7  | ±1.1  | 47      | 9.2  | ± 2.2 |
| 35-44 | 170   | 18.6 | ±0.9  | 37      | 17.0 | ± 4.1 |
| 45-54 | 144   | 26.1 | ±1.2  | 44      | 19.1 | ± 4.0 |
| 55-64 | 95    | 35.9 | ±1.8  | 22      | 24.1 | ±10.4 |
| TOTAL | 709   | 15.1 | ±1.6  | 174     | 13.5 | ± 2.4 |

Table 2. 9 Percentage smoking various types of Cigarettes, for current smokers: Males

| Age   | Manufactured Cigarettes |       |     | Hand-rolled Cigarettes |       |     | Pipes full of tobacco |       |   | Cigars and cheroots |       |    | Other |       |    |
|-------|-------------------------|-------|-----|------------------------|-------|-----|-----------------------|-------|---|---------------------|-------|----|-------|-------|----|
|       | %                       | 95%CI | n   | %                      | 95%CI | n   | %                     | 95%CI | n | %                   | 95%CI | n  | %     | 95%CI | n  |
| 15-24 | 89.1                    | ±13.2 | 123 | 17.0                   | ± 6.4 | 22  | -                     | -     | 0 | 4.2                 | ± 5.0 | 7  | 19.1  | ±17.2 | 22 |
| 25-34 | 82.0                    | ±14.5 | 142 | 22.6                   | ± 9.1 | 34  | -                     | -     | 0 | 9.2                 | ± 9.2 | 10 | 17.4  | ±12.8 | 26 |
| 35-44 | 71.6                    | ±15.8 | 127 | 28.5                   | ±10.6 | 44  | 1.2                   | ±1.9  | 2 | 17.1                | ± 9.3 | 23 | 12.5  | ±12.1 | 20 |
| 45-54 | 71.7                    | ±11.4 | 111 | 37.7                   | ±14.5 | 42  | -                     | -     | 0 | 19.8                | ± 8.1 | 18 | 11.8  | ±12.0 | 15 |
| 55-64 | 76.1                    | ± 9.0 | 72  | 40.3                   | ±14.3 | 32  | -                     | -     | 0 | 22.5                | ±13.9 | 18 | 9.6   | ± 9.4 | 11 |
| Total | 79.8                    | ±12.4 | 575 | 26.5                   | ± 7.5 | 174 | 0.3                   | ±0.5  | 2 | 11.0                | ± 5.8 | 76 | 15.1  | ±12.0 | 94 |

Table 2. 10 Percentage smoking various types of Cigarettes, for current smokers: Females

| Age   | Manufactured Cigarettes |       |     | Hand-rolled Cigarettes |       |    | Cigars and cheroots |       |    | Other |       |    |
|-------|-------------------------|-------|-----|------------------------|-------|----|---------------------|-------|----|-------|-------|----|
|       | %                       | 95%CI | n   | %                      | 95%CI | n  | %                   | 95%CI | n  | %     | 95%CI | n  |
| 15-24 | 100                     | 0     | 24  | 10.0                   | ±15.6 | 3  | -                   | -     | 0  | -     | -     | 0  |
| 25-34 | 80.9                    | ±13.9 | 42  | 21.2                   | ±16.9 | 6  | 10.4                | ±12.6 | 3  | 1.5   | ± 3.2 | 1  |
| 35-44 | 76.4                    | ±27.1 | 30  | 29.8                   | ±20.8 | 10 | 8.4                 | ±12.5 | 2  | 18.0  | ±23.8 | 4  |
| 45-54 | 65.0                    | ±29.3 | 32  | 26.9                   | ±17.6 | 10 | 8.2                 | ± 8.4 | 4  | 24.9  | ±30.1 | 6  |
| 55-64 | 40.0                    | ±26.7 | 10  | 41.0                   | ±21.9 | 7  | 18.9                | ±18.2 | 4  | 7.8   | ±12.5 | 2  |
| Total | 75.5                    | ±16.9 | 138 | 24.4                   | ±14.0 | 36 | 8.6                 | ± 6.4 | 13 | 9.8   | ±12.2 | 13 |

Table 2. 11 Consumption of manufactured Cigarettes/day, for current smokers of manufactured Cigarettes: Males and Females

| Age   | Males |       |     | Females |       |     |
|-------|-------|-------|-----|---------|-------|-----|
|       | Mean  | 95%CI | N   | Mean    | 95%CI | N   |
| 15-24 | 6.3   | ±1.4  | 123 | 4.2     | ±3.3  | 24  |
| 25-34 | 7.1   | ±1.3  | 142 | 5.7     | ±1.2  | 42  |
| 35-44 | 7.9   | ±0.9  | 127 | 6.5     | ±1.4  | 30  |
| 45-54 | 8.2   | ±1.3  | 111 | 5.6     | ±1.6  | 32  |
| 55-64 | 8.0   | ±2.1  | 72  | 3.5     | ±2.4  | 10  |
| TOTAL | 7.3   | ±0.8  | 575 | 5.4     | ±1.3  | 138 |

Table 2.12 Consumption of hand-rolled Cigarettes/day, for current smokers of hand-rolled Cigarettes: Males and Females

| Age   | Males |       |     | Females |       |    |
|-------|-------|-------|-----|---------|-------|----|
|       | Mean  | 95%CI | N   | Mean    | 95%CI | N  |
| 15-24 | 4.3   | ±1.4  | 22  | 3.0     | -     | 3  |
| 25-34 | 5.4   | ±1.9  | 34  | 4.5     | ±1.6  | 6  |
| 35-44 | 7.6   | ±1.0  | 44  | 7.5     | ±6.4  | 10 |
| 45-54 | 7.5   | ±1.9  | 42  | 2.5     | ±1.4  | 10 |
| 55-64 | 7.7   | ±1.9  | 32  | 3.7     | ±1.2  | 7  |
| TOTAL | 6.5   | ±1.4  | 174 | 4.6     | ±2.0  | 36 |

### 10.3 Kava/Yaqona Consumption

Table 3. 1 Ever Kava consumption status: Males and Females

| Age   | Total population |               |       |      | Men  |               |       |      | Women |               |       |      |
|-------|------------------|---------------|-------|------|------|---------------|-------|------|-------|---------------|-------|------|
|       | N                | Ever Consumed |       |      | N    | Ever Consumed |       |      | N     | Ever Consumed |       |      |
|       |                  | %             | 95%CI | n    |      | %             | 95%CI | n    |       | %             | 95%CI | n    |
| 15-24 | 1646             | 52.2          | ±11.2 | 851  | 690  | 62.2          | ±11.2 | 453  | 956   | 40.3          | ±12.1 | 398  |
| 25-34 | 1505             | 70.9          | ± 7.0 | 1004 | 565  | 84.8          | ± 6.9 | 485  | 940   | 54.9          | ±10.5 | 519  |
| 35-44 | 1580             | 70.9          | ± 8.3 | 1061 | 633  | 86.7          | ± 5.7 | 562  | 947   | 53.1          | ±12.9 | 499  |
| 45-54 | 1240             | 71.0          | ± 7.2 | 791  | 499  | 89.7          | ± 5.0 | 451  | 741   | 50.3          | ±12.2 | 340  |
| 55-64 | 789              | 68.8          | ± 8.2 | 512  | 363  | 87.1          | ± 7.1 | 314  | 426   | 50.6          | ± 9.8 | 198  |
| Total | 6760             | 65.0          | ± 8.2 | 4219 | 2750 | 78.9          | ± 6.1 | 2265 | 4010  | 49.1          | ±11.1 | 1954 |

Table 3. 2 Ever Kava consumption status by area: Males and Females

| Area  | Total population |               |       |      | Men  |               |       |      | Women |               |       |      |
|-------|------------------|---------------|-------|------|------|---------------|-------|------|-------|---------------|-------|------|
|       | N                | Ever Consumed |       |      | N    | Ever Consumed |       |      | N     | Ever Consumed |       |      |
|       |                  | %             | 95%CI | n    |      | %             | 95%CI | n    |       | %             | 95%CI | n    |
| Rural | 3791             | 69.3          | ± 9.4 | 2631 | 1716 | 81.8          | ±7.3  | 1474 | 2075  | 54.0          | ±13.2 | 1157 |
| Urban | 2969             | 53.1          | ±11.8 | 1588 | 1034 | 70.0          | ±6.9  | 791  | 1935  | 37.8          | ±16.9 | 797  |
| Total | 6760             | 65.0          | ± 8.2 | 4219 | 2750 | 78.9          | ±6.1  | 2265 | 4010  | 49.1          | ±11.1 | 1954 |

Table 3. 3 Ever Kava consumption status by ethnicity

| Ethnic Group | Total population |               |       |      | Men  |               |       |      | Women |               |       |      |
|--------------|------------------|---------------|-------|------|------|---------------|-------|------|-------|---------------|-------|------|
|              | N                | Ever Consumed |       |      | N    | Ever Consumed |       |      | N     | Ever Consumed |       |      |
|              |                  | %             | 95%CI | n    |      | %             | 95%CI | n    |       | %             | 95%CI | n    |
| Fijian       | 3804             | 77.7          | ± 5.4 | 2931 | 1651 | 86.4          | ± 4.6 | 1439 | 2153  | 67.9          | ± 6.9 | 1492 |
| Indian       | 2766             | 46.6          | ± 8.0 | 1167 | 1033 | 69.6          | ± 9.2 | 780  | 1733  | 20.1          | ± 7.5 | 387  |
| Others       | 190              | 62.1          | ±11.8 | 121  | 66   | 64.5          | ±14.9 | 46   | 124   | 59            | ±14.4 | 75   |
| Total        | 6760             | 65.0          | ± 8.2 | 4219 | 2750 | 78.9          | ± 6.1 | 2265 | 4010  | 49.1          | ±11.1 | 1954 |

Table 3. 4 Consumers of kava during the past 30 days

| Age   | Total population |                   |       |      | Men  |                   |       |      | Women |                   |       |      |
|-------|------------------|-------------------|-------|------|------|-------------------|-------|------|-------|-------------------|-------|------|
|       | N                | Current Consumers |       |      | N    | Current Consumers |       |      | N     | Current Consumers |       |      |
|       |                  | %                 | 95%CI | n    |      | %                 | 95%CI | n    |       | %                 | 95%CI | n    |
| 15-24 | 1645             | 38.2              | ±9.2  | 553  | 690  | 49.9              | ±10.1 | 345  | 955   | 24.3              | ± 9.2 | 208  |
| 25-34 | 1502             | 58.0              | ±5.6  | 748  | 565  | 78.3              | ± 6.6 | 440  | 937   | 34.3              | ± 7.3 | 308  |
| 35-44 | 1578             | 56.4              | ±6.9  | 787  | 631  | 77.8              | ± 7.3 | 496  | 947   | 32.5              | ± 9.0 | 291  |
| 45-54 | 1240             | 59.9              | ±6.8  | 630  | 499  | 82.3              | ± 6.1 | 415  | 741   | 35.0              | ±10.7 | 215  |
| 55-64 | 788              | 56.5              | ±8.8  | 410  | 363  | 80.0              | ± 9.2 | 282  | 425   | 33.1              | ± 8.3 | 128  |
| Total | 6753             | 51.7              | ±6.6  | 3128 | 2748 | 69.9              | ± 5.9 | 1978 | 4005  | 30.9              | ± 8.0 | 1150 |

Table 3. 5 Consumers of kava during the past 30 days by area

| Area  | Total population |                   |       |      | Men  |                   |       |      | Women |                   |       |      |
|-------|------------------|-------------------|-------|------|------|-------------------|-------|------|-------|-------------------|-------|------|
|       | N                | Current Consumers |       |      | N    | Current Consumers |       |      | N     | Current Consumers |       |      |
|       |                  | %                 | 95%CI | n    |      | %                 | 95%CI | n    |       | %                 | 95%CI | n    |
| Rural | 3786             | 56.7              | ±7.2  | 2076 | 1715 | 73.7              | ±6.7  | 1326 | 2071  | 35.6              | ±9.6  | 750  |
| Urban | 2967             | 38.0              | ±5.1  | 1052 | 1033 | 57.9              | ±5.3  | 1033 | 1934  | 20.0              | ±6.9  | 400  |
| Total | 6753             | 51.7              | ±6.6  | 3128 | 2748 | 69.9              | ±5.9  | 2748 | 4005  | 30.9              | ±8.0  | 1150 |

Table 3. 6 Consumers of kava during the past 30 days by ethnicity

| Age    | Total population |                   |       |      | Men  |                   |       |      | Women |                   |       |      |
|--------|------------------|-------------------|-------|------|------|-------------------|-------|------|-------|-------------------|-------|------|
|        | N                | Current Consumers |       |      | N    | Current Consumers |       |      | N     | Current Consumers |       |      |
|        |                  | %                 | 95%CI | n    |      | %                 | 95%CI | n    |       | %                 | 95%CI | n    |
| Fijian | 3799             | 61.7              | ± 5.5 | 2217 | 1650 | 76.3              | ± 5.5 | 1251 | 2149  | 45.3              | ± 6.0 | 966  |
| Indian | 2764             | 38.1              | ± 6.0 | 848  | 1032 | 63.2              | ± 7.8 | 698  | 1732  | 9.1               | ± 3.5 | 150  |
| Others | 190              | 40.4              | ±15.3 | 63   | 66   | 46.0              | ±21.5 | 29   | 124   | 33.3              | ±12.8 | 34   |
| Total  | 6753             | 51.7              | ± 6.6 | 3128 | 2748 | 69.9              | ± 5.9 | 1978 | 4005  | 30.9              | ± 8.0 | 1150 |

Table 3. 7 Frequency of kava consumption in the last month among current users by Gender

| Age   | Males   |           |       |      |          |       |     |
|-------|---------|-----------|-------|------|----------|-------|-----|
|       | N       | 1-19 days |       |      | 20+ days |       |     |
|       |         | %         | 95%CI | n    | %        | 95%CI | n   |
| 15-24 | 348     | 84.2      | ±9.7  | 294  | 15.8     | ±9.7  | 54  |
| 25-34 | 441     | 73.4      | ±5.7  | 330  | 26.6     | ±5.7  | 111 |
| 35-44 | 496     | 75.6      | ±5.6  | 375  | 24.4     | ±5.6  | 121 |
| 45-54 | 415     | 73.5      | ±6.0  | 296  | 26.5     | ±6.0  | 119 |
| 55-64 | 282     | 73.4      | ±7.0  | 202  | 26.6     | ±7.0  | 80  |
| Total | 1982    | 76.3      | ±4.5  | 1497 | 23.7     | ±4.5  | 485 |
| Age   | Females |           |       |      |          |       |     |
|       | N       | 1-19 days |       |      | 20+ days |       |     |
|       |         | %         | 95%CI | n    | %        | 95%CI | n   |
| 15-24 | 208     | 93.9      | ±5.7  | 196  | 6.1      | ±5.7  | 12  |
| 25-34 | 309     | 94.9      | ±3.2  | 295  | 5.1      | ±3.2  | 14  |
| 35-44 | 291     | 94.7      | ±2.6  | 273  | 5.3      | ±2.6  | 18  |
| 45-54 | 217     | 94.8      | ±3.6  | 203  | 5.2      | ±3.6  | 14  |
| 55-64 | 128     | 96.7      | ±3.4  | 124  | 3.3      | ±3.4  | 4   |
| Total | 1153    | 94.8      | ±1.9  | 1091 | 5.2      | ±1.9  | 62  |

Table 3. 8 Frequency of kava consumption in the last month among current users by Ethnicity

| Ethnic Group | Males   |           |       |      |          |       |     |
|--------------|---------|-----------|-------|------|----------|-------|-----|
|              | N       | 1-19 days |       |      | 20+ days |       |     |
|              |         | %         | 95%CI | n    | %        | 95%CI | n   |
| Fijian       | 1254    | 78.8      | ±6.2  | 984  | 21.2     | ± 6.2 | 270 |
| Indian       | 699     | 71.4      | ±4.7  | 488  | 28.6     | ± 4.7 | 211 |
| Others       | 29      | 84.6      | ±11.6 | 25   | 15.4     | ±11.6 | 4   |
| TOTAL        | 1982    | 76.3      | ±4.5  | 1497 | 23.7     | ± 4.5 | 485 |
| Ethnic Group | Females |           |       |      |          |       |     |
|              | N       | 1-19 days |       |      | 20+ days |       |     |
|              |         | %         | 95%CI | n    | %        | 95%CI | n   |
| Fijian       | 968     | 94.4      | ±2.2  | 914  | 5.6      | ±2.2  | 54  |
| Indian       | 151     | 95.8      | ±2.5  | 144  | 4.2      | ±2.5  | 7   |
| Others       | 34      | 99.0      | ±1.9  | 33   | 1.0      | ±1.9  | 1   |
| TOTAL        | 1153    | 94.8      | ±1.9  | 1091 | 5.2      | ±1.9  | 62  |

Table 3. 9 Frequency of kava consumption in the last month among current users by Area

| Area  | Males   |           |       |      |          |       |     |
|-------|---------|-----------|-------|------|----------|-------|-----|
|       | N       | 1-19 days |       |      | 20+ days |       |     |
|       |         | %         | 95%CI | n    | %        | 95%CI | n   |
| Rural | 1329    | 76.8      | ±5.4  | 1012 | 23.2     | ±5.4  | 317 |
| Urban | 653     | 74.6      | ±5.5  | 485  | 25.4     | ±5.5  | 168 |
| TOTAL | 1982    | 76.3      | ±4.5  | 1497 | 23.7     | ±4.5  | 485 |
| Area  | Females |           |       |      |          |       |     |
|       | N       | 1-19 days |       |      | 20+ days |       |     |
|       |         | %         | 95%CI | n    | %        | 95%CI | n   |
| Rural | 753     | 94.3      | ±2.3  | 710  | 5.7      | ±2.3  | 43  |
| Urban | 400     | 96.7      | ±1.5  | 381  | 3.4      | ±1.5  | 19  |
| TOTAL | 1153    | 94.8      | ±1.9  | 1091 | 5.2      | ±1.9  | 62  |

Table 3. 10 Proportion likely to smoke tobacco or drink alcohol during or after yaqona consumption by gender

| Age   | Males         |       |      |               |       |     | Females       |       |     |               |       |     |
|-------|---------------|-------|------|---------------|-------|-----|---------------|-------|-----|---------------|-------|-----|
|       | Smoke tobacco |       |      | Drink alcohol |       |     | Smoke tobacco |       |     | Drink alcohol |       |     |
|       | %             | 95%CI | n    | %             | 95%CI | n   | %             | 95%CI | n   | %             | 95%CI | n   |
| 15-24 | 49.4          | ±10.6 | 217  | 37.1          | ±5.5  | 177 | 26.6          | ±6.1  | 92  | 9.7           | ±5.4  | 39  |
| 25-34 | 63.7          | ± 6.8 | 304  | 37.8          | ±6.9  | 195 | 30.5          | ±5.9  | 157 | 5.9           | ±3.4  | 40  |
| 35-44 | 57.2          | ± 5.5 | 316  | 21.5          | ±3.4  | 127 | 28.9          | ±6.7  | 142 | 5.0           | ±2.6  | 29  |
| 45-54 | 59.7          | ± 5.7 | 268  | 17.3          | ±4.1  | 81  | 24.6          | ±6.8  | 86  | 0.6           | ±0.8  | 5   |
| 55-64 | 58.9          | ± 8.4 | 174  | 7.8           | ±3.8  | 26  | 21.3          | ±6.7  | 40  | 0.6           | ±1.0  | 2   |
| Total | 57.6          | ± 5.3 | 1279 | 28.1          | ±3.9  | 606 | 27.4          | ±3.8  | 517 | 5.4           | ±2.2  | 115 |

Table 3. 11 Type of food consumed during kava sessions: Males and Females

| Type of food | Males |       |      | Females |       |     |
|--------------|-------|-------|------|---------|-------|-----|
|              | %     | 95%CI | N    | %       | 95%CI | N   |
| Lollies      | 33.6  | ±5.3  | 740  | 52.1    | ±8.3  | 943 |
| Biscuits     | 8.6   | ±2.7  | 193  | 7.6     | ±2.5  | 138 |
| Bread        | 5.3   | ±2.0  | 122  | 2.7     | ±1.1  | 52  |
| Soft drinks  | 8.6   | ±2.5  | 213  | 5.9     | ±2.1  | 133 |
| Sweet snacks | 12.8  | ±2.5  | 286  | 16.1    | ±3.5  | 296 |
| Cooked food  | 52.1  | ±8.7  | 1122 | 43.7    | ±9.4  | 792 |

## 10.4 Alcohol Consumption

Table 4. 1 Alcohol consumption status: Males and Females

| Age   | Total population |               |       |      | Men  |               |       |      | Women |               |       |     |
|-------|------------------|---------------|-------|------|------|---------------|-------|------|-------|---------------|-------|-----|
|       | N                | Ever Consumed |       |      | N    | Ever Consumed |       |      | N     | Ever Consumed |       |     |
|       |                  | %             | 95%CI | n    |      | %             | 95%CI | n    |       | %             | 95%CI | n   |
| 15-24 | 1645             | 38.8          | ±6.9  | 601  | 690  | 57.6          | ±8.3  | 413  | 955   | 16.5          | ±6.3  | 188 |
| 25-34 | 1505             | 51.6          | ±5.7  | 695  | 565  | 77.4          | ±7.4  | 444  | 940   | 21.7          | ±7.4  | 251 |
| 35-44 | 1579             | 48.3          | ±6.3  | 678  | 632  | 76.4          | ±6.5  | 491  | 947   | 16.9          | ±7.1  | 187 |
| 45-54 | 1240             | 44.8          | ±5.0  | 478  | 499  | 74.1          | ±5.8  | 375  | 741   | 12.1          | ±6.1  | 103 |
| 55-64 | 788              | 39.2          | ±5.9  | 289  | 362  | 70.9          | ±7.4  | 251  | 426   | 7.6           | ±5.7  | 38  |
| Total | 6757             | 45.0          | ±5.0  | 2741 | 2748 | 70.0          | ±5.9  | 1974 | 4009  | 16.5          | ±5.9  | 767 |

Table 4. 2 Ever alcohol by area: Males and Females

| Area  | Total population |               |       |      | Men  |               |       |      | Women |               |       |     |
|-------|------------------|---------------|-------|------|------|---------------|-------|------|-------|---------------|-------|-----|
|       | N                | Ever Consumed |       |      | N    | Ever Consumed |       |      | N     | Ever Consumed |       |     |
|       |                  | %             | 95%CI | n    |      | %             | 95%CI | n    |       | %             | 95%CI | n   |
| Rural | 3788             | 46.2          | ± 5.8 | 1590 | 1715 | 72.1          | ±7.4  | 1291 | 2073  | 14.1          | ± 5.3 | 299 |
| Urban | 2969             | 41.6          | ±10.1 | 1151 | 1033 | 63.2          | ±6.5  | 683  | 1936  | 22.2          | ±13.7 | 468 |
| Total | 6757             | 45.0          | ± 5.0 | 2741 | 2748 | 70.0          | ±5.9  | 1974 | 4009  | 16.5          | ± 5.9 | 767 |



Table 4. 3 Ever alcohol by ethnicity: Males and Females

| Ethnic Group | Total population |               |       |      | Men  |               |       |      | Women |               |       |     |
|--------------|------------------|---------------|-------|------|------|---------------|-------|------|-------|---------------|-------|-----|
|              | N                | Ever Consumed |       |      | N    | Ever Consumed |       |      | N     | Ever Consumed |       |     |
|              |                  | %             | 95%CI | n    |      | %             | 95%CI | n    |       | %             | 95%CI | n   |
| Fijian       | 3802             | 50.0          | ± 4.8 | 1778 | 1650 | 75.8          | ± 5.1 | 1242 | 2152  | 21            | ± 6.7 | 536 |
| Indian       | 2765             | 37.1          | ± 6.6 | 863  | 1032 | 62.7          | ±10.4 | 689  | 1733  | 7.6           | ± 4.3 | 174 |
| Others       | 190              | 50.4          | ±12.9 | 100  | 66   | 59.2          | ±19.7 | 43   | 124   | 39.3          | ±12.1 | 57  |
| Total        | 6757             | 45.0          | ± 5.0 | 2741 | 2748 | 70.0          | ± 5.9 | 1974 | 4009  | 16.5          | ± 5.9 | 767 |

Table 4. 4 Consumers of alcohol during the past 12 months: Males and Females

| Age   | Total population |                   |       |      | Men  |                   |       |      | Women |                   |       |     |
|-------|------------------|-------------------|-------|------|------|-------------------|-------|------|-------|-------------------|-------|-----|
|       | N                | Current Consumers |       |      | N    | Current Consumers |       |      | N     | Current Consumers |       |     |
|       |                  | %                 | 95%CI | n    |      | %                 | 95%CI | n    |       | %                 | 95%CI | n   |
| 15-24 | 1645             | 26.4              | ±5.5  | 406  | 690  | 42.0              | ± 7.8 | 305  | 955   | 7.8               | ±3.8  | 101 |
| 25-34 | 1505             | 29.3              | ±3.9  | 382  | 565  | 49.4              | ± 6.4 | 296  | 940   | 6.1               | ±3.9  | 86  |
| 35-44 | 1579             | 22.8              | ±4.6  | 312  | 632  | 39.2              | ± 7.2 | 248  | 947   | 4.4               | ±3.7  | 64  |
| 45-54 | 1240             | 16.6              | ±6.6  | 177  | 499  | 28.0              | ±10.5 | 142  | 741   | 3.9               | ±2.6  | 35  |
| 55-64 | 788              | 11.7              | ±3.9  | 86   | 362  | 22.1              | ± 8.1 | 79   | 426   | 1.2               | ±1.1  | 7   |
| Total | 6757             | 23.8              | ±3.0  | 1363 | 2748 | 39.9              | ± 4.3 | 1070 | 4009  | 5.5               | ±3.0  | 293 |

Table 4. 5 Consumers of alcohol during the past 12 month by area: Males and Females

| Area  | Total population |                   |       |      | Men  |                   |       |      | Women |                   |       |     |
|-------|------------------|-------------------|-------|------|------|-------------------|-------|------|-------|-------------------|-------|-----|
|       | N                | Current Consumers |       |      | N    | Current Consumers |       |      | N     | Current Consumers |       |     |
|       |                  | %                 | 95%CI | n    |      | %                 | 95%CI | n    |       | %                 | 95%CI | n   |
| Rural | 3788             | 23.1              | ±3.3  | 708  | 1715 | 38.9              | ±5.3  | 634  | 2073  | 3.5               | ±1.7  | 74  |
| Urban | 2969             | 25.6              | ±6.4  | 655  | 1033 | 42.9              | ±6.1  | 436  | 1936  | 10.0              | ±7.2  | 219 |
| Total | 6757             | 23.8              | ±3.0  | 1353 | 2748 | 39.9              | ±4.3  | 1070 | 4009  | 5.5               | ±3.0  | 293 |

Table 4. 6 Consumers of alcohol during the past 12 months by ethnicity: Males and Females

| Ethnic Group | Total population |                   |       |      | Men  |                   |       |      | Women |                   |       |     |
|--------------|------------------|-------------------|-------|------|------|-------------------|-------|------|-------|-------------------|-------|-----|
|              | N                | Current Consumers |       |      | N    | Current Consumers |       |      | N     | Current Consumers |       |     |
|              |                  | %                 | 95%CI | n    |      | %                 | 95%CI | n    |       | %                 | 95%CI | n   |
| Fijian       | 3802             | 22.7              | ±3.1  | 753  | 1650 | 37.7              | ±4.5  | 573  | 2152  | 5.9               | ±3.4  | 180 |
| Indian       | 2765             | 25.0              | ±4.4  | 553  | 1032 | 43.5              | ±7.4  | 469  | 1733  | 3.7               | ±2.4  | 84  |
| Others       | 190              | 27.2              | ±8.5  | 57   | 66   | 34.6              | ±14.2 | 28   | 124   | 17.8              | ±7.6  | 29  |
| Total        | 6757             | 23.8              | ±3.0  | 1363 | 2748 | 39.9              | ±4.3  | 1070 | 4009  | 5.5               | ±3.0  | 293 |

Table 4. 7 Alcohol consumption per drinking day during the past 12 months, for current consumers of Alcohol: Males

| Total population |                                  |      |       |     |      |       |     |      |       |     |      |       |     |       |       |     |      |       |     |  |
|------------------|----------------------------------|------|-------|-----|------|-------|-----|------|-------|-----|------|-------|-----|-------|-------|-----|------|-------|-----|--|
| Age              | Standard Drinks per Drinking Day |      |       |     |      |       |     |      |       |     |      |       |     |       |       |     |      |       |     |  |
|                  | N                                | 1-2  |       |     | 3-4  |       |     | 5-8  |       |     | 9-12 |       |     | 13-20 |       |     | >20  |       |     |  |
|                  |                                  | %    | 95%CI | n   | %    | 95%CI | n   | %    | 95%CI | n   | %    | 95%CI | n   | %     | 95%CI | n   | %    | 95%CI | n   |  |
| 15-24            | 405                              | 8.4  | ± 3.3 | 45  | 9.2  | ±3.8  | 42  | 22.4 | ± 5.5 | 94  | 23.7 | ±6.2  | 86  | 18.1  | ± 5.9 | 68  | 18.2 | ±4.9  | 70  |  |
| 25-34            | 377                              | 8.2  | ± 3.6 | 42  | 9.2  | ±4.1  | 39  | 21.8 | ± 6.7 | 78  | 18.3 | ±5.5  | 64  | 18.7  | ± 3.2 | 66  | 23.8 | ±7.5  | 88  |  |
| 35-44            | 307                              | 12.3 | ± 5.7 | 46  | 20.2 | ±6.3  | 60  | 22.9 | ± 7.8 | 67  | 17.6 | ±4.8  | 55  | 9.4   | ± 3.5 | 27  | 17.6 | ±8.1  | 52  |  |
| 45-54            | 171                              | 11.6 | ± 6.8 | 25  | 22.0 | ±5.1  | 36  | 38.2 | ± 8.5 | 59  | 14.6 | ±4.8  | 25  | 6.7   | ± 3.8 | 12  | 7.0  | ±5.0  | 14  |  |
| 55-64            | 85                               | 31.8 | ±11.4 | 27  | 27.6 | ±9.4  | 27  | 17.7 | ±10.8 | 14  | 8.3  | ±7.0  | 7   | 10.3  | ±10.0 | 7   | 4.3  | ±6.8  | 3   |  |
| Total            | 1345                             | 10.4 | ± 3.2 | 185 | 13.4 | ±3.5  | 204 | 23.6 | ± 4.5 | 312 | 19.3 | ±3.0  | 237 | 15.2  | ± 3.1 | 180 | 18.2 | ±6.1  | 227 |  |

| Men   |      |      |        |    |      |        |     |      |        |     |      |        |     |      |        |     |      |       |     |
|-------|------|------|--------|----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|-------|-----|
| 15-24 | 305  | 5.8  | ± 2.9  | 17 | 8.0  | ± 3.7  | 27  | 20.9 | ± 6.5  | 63  | 25.0 | ± 7.5  | 70  | 20.7 | ± 6.4  | 66  | 19.6 | ± 5.4 | 62  |
| 25-34 | 293  | 6.2  | ± 3.3  | 16 | 7.5  | ± 4.7  | 19  | 22.0 | ± 7.4  | 64  | 18.9 | ± 5.8  | 56  | 19.6 | ± 3.5  | 58  | 25.7 | ± 8.2 | 80  |
| 35-44 | 245  | 9.1  | ± 6.2  | 22 | 20.9 | ± 6.7  | 51  | 23.2 | ± 8.7  | 55  | 18.2 | ± 5.3  | 46  | 10.1 | ± 3.7  | 25  | 18.5 | ± 9.0 | 46  |
| 45-54 | 139  | 7.4  | ± 6.9  | 11 | 21.7 | ± 4.9  | 29  | 40.5 | ± 9.4  | 53  | 15.6 | ± 5.7  | 22  | 7.1  | ± 4.2  | 10  | 7.8  | ± 5.6 | 14  |
| 55-64 | 78   | 30.5 | ± 12.9 | 23 | 28.4 | ± 9.4  | 25  | 16.9 | ± 11.6 | 13  | 8.8  | ± 7.4  | 7   | 10.9 | ± 10.6 | 7   | 4.5  | ± 7.3 | 3   |
| Total | 1060 | 7.9  | ± 2.9  | 89 | 12.7 | ± 4.1  | 151 | 23.4 | ± 5.2  | 248 | 20.0 | ± 3.4  | 201 | 16.5 | ± 3.3  | 166 | 19.6 | ± 6.8 | 205 |
| Women |      |      |        |    |      |        |     |      |        |     |      |        |     |      |        |     |      |       |     |
| 15-24 | 100  | 25.0 | ± 11.2 | 28 | 17.0 | ± 8.2  | 15  | 31.7 | ± 14.6 | 31  | 15.7 | ± 8.6  | 16  | 1.6  | ± 2.5  | 2   | 9.0  | ± 6.1 | 8   |
| 25-34 | 84   | 26.7 | ± 15.3 | 26 | 25.7 | ± 12.8 | 20  | 19.9 | ± 14.9 | 14  | 12.6 | ± 12.0 | 8   | 10.3 | ± 6.8  | 8   | 4.8  | ± 4.7 | 8   |
| 35-44 | 62   | 46.0 | ± 24.4 | 24 | 13.1 | ± 8.1  | 9   | 19.6 | ± 8.7  | 12  | 11.1 | ± 9.7  | 9   | 1.7  | ± 2.2  | 2   | 8.5  | ± 6.5 | 6   |
| 45-54 | 32   | 48.3 | ± 25.8 | 14 | 24.3 | ± 20.0 | 7   | 18.2 | ± 16.6 | 6   | 5.9  | ± 12.0 | 3   | 3.3  | ± 3.4  | 2   | -    | -     | 0   |
| 55-64 | 7    | 54.9 | ± 50.7 | 4  | 12.5 | ± 19.0 | 2   | 32.6 | ± 54.6 | 1   | -    | -      | 0   | -    | -      | 0   | -    | -     | 0   |
| Total | 285  | 31.7 | ± 8.7  | 96 | 19.4 | ± 6.1  | 53  | 25.1 | ± 9.1  | 64  | 12.8 | ± 4.6  | 36  | 4.2  | ± 2.7  | 14  | 6.7  | ± 3.6 | 22  |

Table 4. 8 Alcohol consumption per drinking day during the past 12 months, for current consumers of alcohol:  
Females

| Total population |      |                                  |        |     |      |       |     |      |        |     |      |       |     |       |       |     |      |       |     |
|------------------|------|----------------------------------|--------|-----|------|-------|-----|------|--------|-----|------|-------|-----|-------|-------|-----|------|-------|-----|
| Area             | N    | Standard Drinks per Drinking Day |        |     |      |       |     |      |        |     |      |       |     |       |       |     |      |       |     |
|                  |      | 1-2                              |        |     | 3-4  |       |     | 5-8  |        |     | 9-12 |       |     | 13-20 |       |     | >20  |       |     |
|                  |      | %                                | 95%CI  | n   | %    | 95%CI | n   | %    | 95%CI  | n   | %    | 95%CI | n   | %     | 95%CI | n   | %    | 95%CI | n   |
| Rural            | 700  | 8.8                              | ± 3.7  | 74  | 11.9 | ± 4.6 | 94  | 22.8 | ± 6.0  | 159 | 20.8 | ± 3.6 | 136 | 15.9  | ± 4.1 | 106 | 19.8 | ± 8.1 | 131 |
| Urban            | 645  | 14.4                             | ± 2.8  | 111 | 16.9 | ± 3.2 | 110 | 25.4 | ± 4.1  | 153 | 15.6 | ± 2.1 | 101 | 13.3  | ± 2.1 | 74  | 14.5 | ± 3.4 | 96  |
| Total            | 1345 | 10.4                             | ± 3.2  | 185 | 13.4 | ± 3.5 | 204 | 23.6 | ± 4.5  | 312 | 19.3 | ± 3.0 | 237 | 15.2  | ± 3.1 | 180 | 18.2 | ± 6.1 | 227 |
| Men              |      |                                  |        |     |      |       |     |      |        |     |      |       |     |       |       |     |      |       |     |
| Rural            | 630  | 7.4                              | ± 3.5  | 53  | 11.5 | ± 5.0 | 81  | 22.1 | ± 6.4  | 136 | 21.4 | ± 4.1 | 129 | 16.8  | ± 4.3 | 102 | 20.9 | ± 8.7 | 129 |
| Urban            | 430  | 9.2                              | ± 3.5  | 36  | 16.1 | ± 4.6 | 70  | 27.1 | ± 5.4  | 112 | 16.2 | ± 3.5 | 72  | 15.6  | ± 2.5 | 64  | 15.8 | ± 4.7 | 76  |
| Total            | 1060 | 7.9                              | ± 2.9  | 89  | 12.7 | ± 4.1 | 151 | 23.4 | ± 5.2  | 248 | 20.0 | ± 3.4 | 201 | 16.5  | ± 3.3 | 166 | 19.6 | ± 6.8 | 205 |
| Women            |      |                                  |        |     |      |       |     |      |        |     |      |       |     |       |       |     |      |       |     |
| Rural            | 70   | 28.2                             | ± 13.7 | 21  | 18.8 | ± 9.8 | 13  | 33.4 | ± 14.6 | 23  | 12.1 | ± 8.7 | 7   | 4.1   | ± 4.5 | 4   | 3.4  | ± 4.7 | 2   |
| Urban            | 215  | 34.4                             | ± 8.7  | 75  | 19.9 | ± 8.0 | 40  | 18.6 | ± 7.3  | 41  | 13.5 | ± 5.1 | 29  | 4.4   | ± 3.3 | 10  | 9.3  | ± 2.7 | 2   |
| Total            | 285  | 31.7                             | ± 8.7  | 96  | 19.4 | ± 6.1 | 53  | 25.1 | ± 9.1  | 64  | 12.8 | ± 4.6 | 36  | 4.2   | ± 2.7 | 14  | 6.7  | ± 3.6 | 22  |

Table 4. 9 Alcohol consumption per drinking day during the past 12 months, for current consumers of Alcohol by ethnicity

| Total population |      |                                  |        |     |      |        |     |      |        |     |      |        |     |       |        |     |      |        |     |
|------------------|------|----------------------------------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|-------|--------|-----|------|--------|-----|
| Ethnic Group     | N    | Standard Drinks per Drinking Day |        |     |      |        |     |      |        |     |      |        |     |       |        |     |      |        |     |
|                  |      | 1-2                              |        |     | 3-4  |        |     | 5-8  |        |     | 9-12 |        |     | 13-20 |        |     | >20  |        |     |
|                  |      | %                                | 95%CI  | n   | %    | 95%CI  | n   | %    | 95%CI  | n   | %    | 95%CI  | n   | %     | 95%CI  | n   | %    | 95%CI  | n   |
| Fijians          | 746  | 5.2                              | ± 2.0  | 53  | 7.5  | ± 2.3  | 72  | 18.2 | ± 3.1  | 146 | 23.3 | ± 3.6  | 161 | 18.4  | ± 4.0  | 126 | 27.6 | ± 5.6  | 188 |
| Indians          | 542  | 17.4                             | ± 4.0  | 124 | 21.7 | ± 2.9  | 124 | 31.2 | ± 5.7  | 153 | 14.0 | ± 3.2  | 64  | 10.3  | ± 3.7  | 47  | 5.3  | ± 3.9  | 30  |
| Others           | 57   | 10.3                             | ± 7.3  | 8   | 9.7  | ± 5.2  | 8   | 20.2 | ± 16.6 | 13  | 18.4 | ± 8.8  | 12  | 20.0  | ± 16.4 | 7   | 21.4 | ± 16.3 | 9   |
| Total            | 1345 | 10.4                             | ± 3.2  | 185 | 13.4 | ± 3.5  | 204 | 23.6 | ± 4.5  | 312 | 19.3 | ± 3.0  | 237 | 15.2  | ± 3.1  | 180 | 18.2 | ± 6.1  | 227 |
| Men              |      |                                  |        |     |      |        |     |      |        |     |      |        |     |       |        |     |      |        |     |
| Fijians          | 568  | 3.5                              | ± 1.9  | 21  | 5.6  | ± 2.1  | 35  | 16.1 | ± 3.5  | 97  | 24.4 | ± 4.3  | 131 | 20.3  | ± 4.2  | 115 | 30.2 | ± 6.0  | 169 |
| Indians          | 464  | 13.6                             | ± 2.6  | 67  | 22.3 | ± 2.9  | 114 | 32.8 | ± 5.6  | 145 | 15.0 | ± 3.4  | 64  | 10.8  | ± 3.8  | 45  | 5.6  | ± 4.2  | 29  |
| Others           | 28   | 6.2                              | ± 12.2 | 1   | 4.1  | ± 6.1  | 2   | 20.8 | ± 21.4 | 6   | 14.9 | ± 12.5 | 6   | 26.9  | ± 21.7 | 6   | 27.2 | ± 23.0 | 7   |
| Total            | 1060 | 7.9                              | ± 2.9  | 89  | 12.7 | ± 4.1  | 151 | 23.4 | ± 5.2  | 248 | 20.0 | ± 3.4  | 201 | 16.5  | ± 3.3  | 166 | 19.6 | ± 6.8  | 205 |
| Women            |      |                                  |        |     |      |        |     |      |        |     |      |        |     |       |        |     |      |        |     |
| Fijians          | 178  | 17.3                             | ± 5.8  | 32  | 21.1 | ± 6.9  | 37  | 33.0 | ± 12.0 | 49  | 15.2 | ± 7.0  | 30  | 4.6   | ± 3.2  | 11  | 8.9  | ± 5.7  | 19  |
| Indians          | 78   | 73.5                             | ± 13.6 | 57  | 13.2 | ± 12.4 | 10  | 8.4  | ± 4.1  | 8   | -    | -      | 0   | 3.9   | ± 6.9  | 2   | 1.0  | ± 1.7  | 1   |
| Others           | 29   | 20.6                             | ± 10.4 | 7   | 23.6 | ± 18.4 | 6   | 18.4 | ± 11.8 | 7   | 27.2 | ± 22.8 | 6   | 3.0   | ± 5.0  | 1   | 7.2  | ± 8.2  | 2   |
| Total            | 285  | 31.7                             | ± 8.7  | 96  | 19.4 | ± 6.1  | 53  | 25.1 | ± 9.1  | 64  | 12.8 | ± 4.6  | 36  | 4.2   | ± 2.7  | 14  | 6.7  | ± 3.6  | 22  |

Table 4. 10 Average number of standard drinks per drinking day by agegroup

| Age   | Total population |       |      | Men  |       |      | Women |       |     |
|-------|------------------|-------|------|------|-------|------|-------|-------|-----|
|       | Mean             | 95%CI | N    | Mean | 95%CI | N    | Mean  | 95%CI | N   |
| 15-24 | 13.9             | ± 2.0 | 405  | 14.8 | ± 2.1 | 305  | 7.6   | ± 1.6 | 100 |
| 25-34 | 16.0             | ± 2.9 | 377  | 16.9 | ± 3.1 | 293  | 7.5   | ± 1.7 | 84  |
| 35-44 | 13.2             | ± 3.9 | 307  | 13.8 | ± 4.4 | 245  | 7.0   | ± 2.7 | 62  |
| 45-54 | 8.8              | ± 1.5 | 171  | 9.3  | ± 1.5 | 139  | 3.7   | ± 1.5 | 32  |
| 55-64 | 6.9              | ± 2.6 | 85   | 7.1  | ± 2.9 | 78   | 3.0   | ± 2.5 | 7   |
| Total | 13.6             | ± 2.5 | 1345 | 14.4 | ± 2.7 | 1060 | 7.0   | ± 1.1 | 285 |

Table 4. 11 Average number of standard drinks per drinking day by area

| Area  | Total population |       |      | Men  |       |      | Women |       |     |
|-------|------------------|-------|------|------|-------|------|-------|-------|-----|
|       | Mean             | 95%CI | N    | Mean | 95%CI | N    | Mean  | 95%CI | N   |
| Rural | 14.5             | ±3.2  | 700  | 15.1 | ±3.5  | 630  | 5.9   | ±1.1  | 70  |
| Urban | 11.5             | ±0.8  | 645  | 12.5 | ±1.3  | 430  | 7.9   | ±0.9  | 215 |
| Total | 13.6             | ±2.5  | 1345 | 14.4 | ±2.7  | 1060 | 7.0   | ±1.1  | 285 |

Table 4. 12 Average number of standard drinks per drinking day by ethnicity

| Ethnic Group | Total population |       |      | Men  |       |      | Women |       |     |
|--------------|------------------|-------|------|------|-------|------|-------|-------|-----|
|              | Mean             | 95%CI | N    | Mean | 95%CI | N    | Mean  | 95%CI | N   |
| Fijians      | 17.4             | ±2.0  | 746  | 18.7 | ±2.0  | 568  | 8.3   | ±1.9  | 178 |
| Indians      | 8.4              | ±1.7  | 542  | 8.8  | ±1.8  | 464  | 3.1   | ±1.3  | 78  |
| Others       | 15.3             | ±5.7  | 57   | 18.1 | ±8.2  | 28   | 8.2   | ±1.9  | 29  |
| Total        | 13.6             | ±2.5  | 1345 | 14.4 | ±2.7  | 1060 | 7.0   | ±1.1  | 285 |

Table 4. 13 Proportion of current drinkers who binge drink on drinking days by agegroup

| Age   | Total population |              |       |     | Men  |              |       |     | Women |              |       |     |
|-------|------------------|--------------|-------|-----|------|--------------|-------|-----|-------|--------------|-------|-----|
|       | N                | Binge drink* |       |     | N    | Binge drink* |       |     | N     | Binge drink* |       |     |
|       |                  | %            | 95%CI | n   |      | %            | 95%CI | n   |       | %            | 95%CI | n   |
| 15-24 | 405              | 83.5         | ± 5.7 | 325 | 305  | 86.2         | ± 5.0 | 261 | 100   | 65.4         | ±10.5 | 64  |
| 25-34 | 377              | 84.0         | ± 6.3 | 308 | 293  | 86.3         | ± 6.5 | 258 | 84    | 62.3         | ±16.0 | 50  |
| 35-44 | 307              | 68.1         | ±10.6 | 206 | 245  | 70.0         | ±11.9 | 172 | 62    | 48.4         | ±21.4 | 34  |
| 45-54 | 171              | 67.4         | ± 7.9 | 113 | 139  | 70.9         | ± 9.0 | 99  | 32    | 36.9         | ±22.0 | 14  |
| 55-64 | 85               | 40.9         | ±15.5 | 32  | 78   | 41.0         | ±16.4 | 30  | 7     | 39.0         | ±51.2 | 2   |
| Total | 1345             | 77.3         | ± 6.3 | 984 | 1060 | 79.5         | ± 6.8 | 820 | 285   | 58.6         | ± 8.0 | 164 |

\* 5 or more drinks for men and 4 or more drinks for women

Table 4. 14 Proportion of current drinkers who binge drink on drinking days by area

| AGE   | Total population |              |       |     | Men  |              |       |     | Women |              |       |     |
|-------|------------------|--------------|-------|-----|------|--------------|-------|-----|-------|--------------|-------|-----|
|       | N                | Binge drink* |       |     | N    | Binge drink* |       |     | N     | Binge drink* |       |     |
|       |                  | %            | 95%CI | n   |      | %            | 95%CI | n   |       | %            | 95%CI | n   |
| Rural | 700              | 79.6         | ±8.0  | 536 | 630  | 81.1         | ±8.3  | 496 | 70    | 58.3         | ±13.8 | 40  |
| Urban | 645              | 71.4         | ±3.7  | 448 | 430  | 74.7         | ±7.2  | 324 | 215   | 58.8         | ± 8.2 | 124 |
| Total | 1345             | 77.3         | ±6.3  | 984 | 1060 | 79.5         | ±6.8  | 820 | 285   | 58.6         | ± 8.0 | 164 |

\* 5 or more drinks for men and 4 or more drinks for women

Table 4. 15 Proportion of current drinkers who binge drink on drinking days by ethnicity

| Ethnic Group | Total population |              |       |     | Men  |              |       |     | Women |              |       |     |
|--------------|------------------|--------------|-------|-----|------|--------------|-------|-----|-------|--------------|-------|-----|
|              | N                | Binge drink* |       |     | N    | Binge drink* |       |     | N     | Binge drink* |       |     |
|              |                  | %            | 95%CI | n   |      | %            | 95%CI | n   |       | %            | 95%CI | n   |
| Fijians      | 746              | 88.5         | ±3.6  | 643 | 568  | 90.9         | ± 3.5 | 512 | 178   | 71.3         | ±11.0 | 131 |
| Indians      | 542              | 61.3         | ±4.7  | 297 | 464  | 64.2         | ± 4.6 | 283 | 78    | 19.9         | ±11.0 | 14  |
| Others       | 57               | 84.6         | ±7.5  | 44  | 28   | 89.8         | ±10.5 | 25  | 29    | 71.7         | ±12.7 | 19  |
| Total        | 1345             | 77.3         | ±6.3  | 984 | 1060 | 79.5         | ± 6.8 | 820 | 285   | 58.6         | ± 8.0 | 164 |

Table 4. 16. Number of standard drinks consumed during past 7 days, for current consumers of alcohol: Males and Females

| Age   | Males |       |     | Females |       |    |
|-------|-------|-------|-----|---------|-------|----|
|       | Mean  | 95%CI | N   | Mean    | 95%CI | N  |
| 15-24 | 2.1   | ±0.5  | 116 | 2.3     | ±0.8  | 24 |
| 25-34 | 2.5   | ±0.8  | 111 | 0.9     | ±0.5  | 17 |
| 35-44 | 3.1   | ±1.2  | 103 | 1.5     | ±0.8  | 19 |
| 45-54 | 1.2   | ±0.3  | 79  | 0.4     | ±0.1  | 8  |
| 55-64 | 2.4   | ±2.6  | 36  | -       | -     | -  |
| TOTAL | 2.3   | ±0.4  | 445 | 1.5     | ±0.4  | 68 |

Table 4. 17 Alcohol risk levels by agegroup

| Total population |      |              |       |      |         |       |     |          |       |     |           |       |     |
|------------------|------|--------------|-------|------|---------|-------|-----|----------|-------|-----|-----------|-------|-----|
| Age              | N    | Non-drinkers |       |      | No risk |       |     | Low risk |       |     | High risk |       |     |
|                  |      | %            | 95%CI | n    | %       | 95%CI | n   | %        | 95%CI | n   | %         | 95%CI | n   |
| 15-24            | 1642 | 73.8         | ±5.4  | 1239 | 7.8     | ±1.6  | 105 | 8.0      | ±2.7  | 142 | 10.3      | ±3.4  | 156 |
| 25-34            | 1499 | 70.9         | ±3.8  | 1123 | 9.4     | ±3.3  | 98  | 6.9      | ±2.1  | 113 | 12.9      | ±3.2  | 165 |
| 35-44            | 1574 | 77.4         | ±4.6  | 1267 | 10.8    | ±4.5  | 125 | 5.4      | ±1.6  | 92  | 6.4       | ±1.7  | 90  |
| 45-54            | 1233 | 84.1         | ±6.3  | 1063 | 9.6     | ±4.6  | 88  | 3.9      | ±2.1  | 51  | 2.4       | ±1.1  | 31  |
| 55-64            | 786  | 88.6         | ±3.8  | 702  | 8.1     | ±3.9  | 59  | 1.6      | ±0.9  | 15  | 1.7       | ±1.2  | 10  |
| Total            | 6734 | 76.5         | ±2.9  | 5394 | 9.1     | ±2.7  | 475 | 6.1      | ±1.4  | 413 | 8.3       | ±2.1  | 452 |
| Men              |      |              |       |      |         |       |     |          |       |     |           |       |     |
| 15-24            | 689  | 58.1         | ± 7.7 | 385  | 14.4    | ±2.7  | 105 | 10.1     | ±3.5  | 69  | 17.4      | ±5.8  | 130 |
| 25-34            | 561  | 50.8         | ± 6.3 | 269  | 17.5    | ±6.3  | 98  | 9.1      | ±2.9  | 54  | 22.6      | ±5.8  | 140 |
| 35-44            | 629  | 60.9         | ± 7.2 | 384  | 20.4    | ±8.3  | 125 | 7.3      | ±1.8  | 47  | 11.3      | ±3.1  | 73  |
| 45-54            | 495  | 72.8         | ±10.3 | 357  | 18.2    | ±8.2  | 88  | 4.7      | ±2.4  | 24  | 4.3       | ±2.0  | 26  |
| 55-64            | 360  | 78.3         | ± 8.0 | 283  | 16.3    | ±8.0  | 59  | 2.0      | ±1.6  | 8   | 3.4       | ±2.4  | 10  |
| Total            | 2734 | 60.4         | ± 4.3 | 1678 | 17.1    | ±5.0  | 475 | 7.9      | ±1.3  | 202 | 14.6      | ±3.8  | 379 |
| Women            |      |              |       |      |         |       |     |          |       |     |           |       |     |
| 15-24            | 953  | 92.4         | ±3.8  | 854  |         |       |     | 5.6      | ±3.0  | 73  | 2.0       | ±1.2  | 26  |
| 25-34            | 938  | 94.0         | ±3.7  | 854  |         |       |     | 4.3      | ±2.5  | 59  | 1.7       | ±1.5  | 25  |
| 35-44            | 945  | 95.9         | ±3.7  | 883  |         |       |     | 3.3      | ±2.5  | 45  | 0.9       | ±1.2  | 17  |
| 45-54            | 738  | 96.6         | ±2.3  | 706  |         |       |     | 3.1      | ±2.1  | 27  | 0.3       | ±0.5  | 5   |
| 55-64            | 426  | 98.8         | ±1.1  | 419  |         |       |     | 1.2      | ±1.1  | 7   | -         | -     | 0   |
| Total            | 4000 | 94.7         | ±2.9  | 3716 |         |       |     | 4.0      | ±2.2  | 211 | 1.3       | ±0.8  | 73  |

Table 4. 18 Alcohol risk levels by area

| Total population |      |              |       |      |         |       |     |          |       |     |           |       |     |
|------------------|------|--------------|-------|------|---------|-------|-----|----------|-------|-----|-----------|-------|-----|
| Age              | N    | Non-drinkers |       |      | No risk |       |     | Low risk |       |     | High risk |       |     |
|                  |      | %            | 95%CI | n    | %       | 95%CI | n   | %        | 95%CI | n   | %         | 95%CI | n   |
| Rural            | 3776 | 77.2         | ±3.3  | 3080 | 8.6     | ±3.4  | 262 | 5.7      | ±1.2  | 186 | 8.5       | ±2.7  | 248 |
| Urban            | 2958 | 74.6         | ±6.4  | 2314 | 10.5    | ±3.0  | 213 | 7.1      | ±3.8  | 227 | 7.9       | ±2.4  | 204 |
| Total            | 6734 | 76.5         | ±2.9  | 5394 | 9.1     | ±2.7  | 475 | 6.1      | ±1.4  | 413 | 8.3       | ±2.1  | 452 |
| Men              |      |              |       |      |         |       |     |          |       |     |           |       |     |
| Rural            | 1707 | 61.4         | ±5.3  | 1081 | 15.6    | ±6.1  | 262 | 8.2      | ±1.5  | 129 | 14.9      | ±4.8  | 235 |
| Urban            | 1027 | 57.3         | ±6.2  | 597  | 22.1    | ±4.1  | 213 | 7.0      | ±2.4  | 73  | 13.6      | ±3.1  | 144 |
| Total            | 2734 | 60.4         | ±4.3  | 1678 | 17.1    | ±5.0  | 475 | 7.9      | ±1.3  | 202 | 14.6      | ±3.8  | 379 |
| Women            |      |              |       |      |         |       |     |          |       |     |           |       |     |
| Rural            | 2069 | 96.7         | ±1.7  | 1999 |         |       |     | 2.7      | ±1.4  | 57  | 0.7       | ±0.4  | 13  |
| Urban            | 1931 | 90.2         | ±7.1  | 1717 |         |       |     | 7.1      | ±5.3  | 154 | 2.7       | ±1.9  | 60  |
| Total            | 4000 | 94.7         | ±2.9  | 3716 |         |       |     | 4.0      | ±2.2  | 211 | 1.3       | ±0.8  | 73  |

Table 4. 19 Alcohol risk levels by area

| Total population |      |              |       |      |         |       |     |          |       |     |           |       |     |
|------------------|------|--------------|-------|------|---------|-------|-----|----------|-------|-----|-----------|-------|-----|
| Age              | N    | Non-drinkers |       |      | No risk |       |     | Low risk |       |     | High risk |       |     |
|                  |      | %            | 95%CI | n    | %       | 95%CI | n   | %        | 95%CI | n   | %         | 95%CI | n   |
| Fijians          | 3792 | 77.5         | ±3.1  | 3049 | 4.9     | ±1.0  | 148 | 6.7      | ±1.6  | 246 | 10.9      | ±2.3  | 349 |
| Indo-Fijians     | 2752 | 75.4         | ±4.4  | 2212 | 15.6    | ±4.0  | 318 | 5.0      | ±1.4  | 141 | 4.0       | ±1.7  | 81  |
| Others           | 190  | 72.8         | ±8.5  | 133  | 6.0     | ±5.5  | 9   | 7.8      | ±5.7  | 26  | 13.4      | ±6.4  | 22  |
| Total            | 6734 | 76.5         | ±2.9  | 5394 | 9.1     | ±2.7  | 475 | 6.1      | ±1.4  | 413 | 8.3       | ±2.1  | 452 |
| Men              |      |              |       |      |         |       |     |          |       |     |           |       |     |
| Fijians          | 1643 | 62.5         | ± 4.6 | 1077 | 9.3     | ± 1.9 | 148 | 9.0      | ±1.9  | 130 | 19.2      | ±3.9  | 288 |
| Indo-Fijians     | 1025 | 56.9         | ± 7.4 | 563  | 29.2    | ± 7.1 | 318 | 6.5      | ±1.4  | 66  | 7.4       | ±3.1  | 78  |
| Others           | 66   | 65.4         | ±14.2 | 38   | 10.7    | ±10.9 | 9   | 5.1      | ±5.1  | 6   | 18.7      | ±9.4  | 13  |
| Total            | 2734 | 60.4         | ± 4.3 | 1678 | 17.1    | ± 5.0 | 475 | 7.9      | ±1.3  | 202 | 14.6      | ±3.8  | 379 |
| Women            |      |              |       |      |         |       |     |          |       |     |           |       |     |
| Fijians          | 2149 | 94.2         | ±3.4  | 1972 |         |       |     | 4.1      | ±2.3  | 116 | 1.7       | ±1.3  | 61  |
| Indo-Fijians     | 1727 | 96.6         | ±2.3  | 1649 |         |       |     | 3.2      | ±2.3  | 75  | 0.2       | ±0.2  | 3   |
| Others           | 124  | 82.2         | ±7.6  | 95   |         |       |     | 11.1     | ±6.3  | 20  | 6.6       | ±4.4  | 9   |
| Total            | 4000 | 94.7         | ±2.9  | 3716 |         |       |     | 4.0      | ±2.2  | 211 | 1.3       | ±0.8  | 73  |

Table 4. 20 Number of days of binge drinking\* during past 12 months, for current consumers of alcohol: Males and Females

| Age   | Males |       |     | Females |       |     |
|-------|-------|-------|-----|---------|-------|-----|
|       | Mean  | 95%CI | N   | Mean    | 95%CI | N   |
| 15-24 | 10.1  | ±3.1  | 246 | 5.6     | ±2.1  | 63  |
| 25-34 | 10.2  | ±2.4  | 234 | 7.2     | ±6.2  | 49  |
| 35-44 | 11.0  | ±5.0  | 199 | 10.0    | ±5.6  | 40  |
| 45-54 | 9.9   | ±5.7  | 113 | 2.9     | ±2.3  | 21  |
| 55-64 | 9.4   | ±5.9  | 48  | 1.0     | -     | 1   |
| TOTAL | 10.3  | ±2.4  | 840 | 6.5     | ±3.7  | 174 |

Table 4.21: Risk categories for alcohol consumption among current drinkers by agegroup and gender

| Total |      |         |       |     |          |       |     |           |       |     |
|-------|------|---------|-------|-----|----------|-------|-----|-----------|-------|-----|
| Age   | N    | No Risk |       |     | Low Risk |       |     | High Risk |       |     |
|       |      | %       | 95%CI | n   | %        | 95%CI | n   | %         | 95%CI | n   |
| 15-24 | 403  | 29.8    | ± 5.8 | 105 | 30.7     | ±7.3  | 142 | 39.4      | ± 8.1 | 156 |
| 25-34 | 376  | 32.2    | ±11.0 | 98  | 23.6     | ±6.0  | 113 | 44.3      | ± 9.3 | 165 |
| 35-44 | 307  | 47.7    | ±13.5 | 125 | 24.0     | ±6.4  | 92  | 28.4      | ± 8.9 | 90  |
| 45-54 | 170  | 60.2    | ± 9.9 | 88  | 24.7     | ±9.9  | 51  | 15.1      | ± 6.7 | 31  |
| 55-64 | 84   | 71.0    | ±15.4 | 59  | 14.2     | ±8.6  | 15  | 14.8      | ±11.5 | 10  |
| TOTAL | 1340 | 38.7    | ±10.1 | 475 | 25.8     | ±4.6  | 413 | 35.5      | ± 8.5 | 452 |
| Male  |      |         |       |     |          |       |     |           |       |     |
| Age   | N    | No Risk |       |     | Low Risk |       |     | High Risk |       |     |
|       |      | %       | 95%CI | n   | %        | 95%CI | n   | %         | 95%CI | n   |
| 15-24 | 304  | 34.4    | ± 6.8 | 105 | 24.1     | ±7.0  | 69  | 41.4      | ± 8.9 | 130 |
| 25-34 | 292  | 35.5    | ±11.8 | 98  | 18.5     | ±5.8  | 54  | 45.9      | ±10.0 | 140 |
| 35-44 | 245  | 52.2    | ±13.9 | 125 | 18.8     | ±5.1  | 47  | 29.0      | ±10.0 | 73  |
| 45-54 | 138  | 67.0    | ± 8.2 | 88  | 17.2     | ±7.3  | 24  | 15.8      | ± 6.9 | 26  |
| 55-64 | 77   | 75.0    | ±13.9 | 59  | 9.3      | ±7.5  | 8   | 15.7      | ±12.6 | 10  |
| TOTAL | 1056 | 43.3    | ±10.6 | 475 | 19.9     | ±3.2  | 202 | 36.8      | ± 9.4 | 379 |



| Female |     |         |       |   |          |       |     |           |       |    |
|--------|-----|---------|-------|---|----------|-------|-----|-----------|-------|----|
| Age    | N   | No Risk |       |   | Low Risk |       |     | High Risk |       |    |
|        |     | %       | 95%CI | n | %        | 95%CI | n   | %         | 95%CI | n  |
| 15-24  | 99  |         |       |   | 73.5     | ±10.8 | 73  | 26.5      | ±10.8 | 26 |
| 25-34  | 84  |         |       |   | 71.6     | ±13.3 | 69  | 28.4      | ±13.3 | 25 |
| 35-44  | 62  |         |       |   | 78.8     | ±13.6 | 45  | 21.2      | ±13.6 | 17 |
| 45-54  | 32  |         |       |   | 90.8     | ±14.5 | 27  | 9.2       | ±14.5 | 5  |
| 55-64  | 7   |         |       |   | 100      | ± 0.0 | 7   | 0         | ± 0.0 | 0  |
| TOTAL  | 284 |         |       |   | 76.0     | ± 6.0 | 211 | 24.0      | ± 6.0 | 73 |

Table 4. 22 Largest number of drinks consumed on single occasion, for current consumers of alcohol: Males and Females

| Age   | Males |       |     | Females |       |     |
|-------|-------|-------|-----|---------|-------|-----|
|       | Mean  | 95%CI | N   | Mean    | 95%CI | N   |
| 15-24 | 17.3  | ±3.1  | 288 | 11.3    | ±2.8  | 92  |
| 25-34 | 19.0  | ±3.6  | 273 | 8.5     | ±3.1  | 75  |
| 35-44 | 16.1  | ±3.2  | 234 | 7.2     | ±2.0  | 49  |
| 45-54 | 11.1  | ±1.8  | 132 | 5.7     | ±2.2  | 28  |
| 55-64 | 9.7   | ±3.0  | 73  | 2.9     | ±2.6  | 7   |
| TOTAL | 16.7  | ±2.6  | 251 | 9.2     | ±1.7  | 251 |

## 10.5 Diet

Table 5. 1 Servings of fruit consumed per day: Males

| Age   | N    | < 1 serving per day* |       |      | 1 serving per day |       |     | 2-4 servings per day |       |     | 5 or more servings per day |       |    |
|-------|------|----------------------|-------|------|-------------------|-------|-----|----------------------|-------|-----|----------------------------|-------|----|
|       |      | %                    | 95%CI | n    | %                 | 95%CI | n   | %                    | 95%CI | n   | %                          | 95%CI | n  |
| 15-24 | 689  | 60.8                 | ±6.1  | 448  | 20.7              | ±4.1  | 132 | 17.6                 | ±5.9  | 102 | 1                          | ±0.7  | 7  |
| 25-34 | 565  | 66.7                 | ±6.7  | 382  | 20.1              | ±6.3  | 106 | 11.5                 | ±3.6  | 67  | 1.7                        | ±1.2  | 10 |
| 35-44 | 633  | 70.6                 | ±5.4  | 458  | 16.4              | ±3.1  | 98  | 11.8                 | ±4.2  | 69  | 1.2                        | ±1.4  | 8  |
| 45-54 | 499  | 63.1                 | ±9.3  | 334  | 22                | ±6.1  | 91  | 14                   | ±5.8  | 69  | 1                          | ±1.0  | 5  |
| 55-64 | 364  | 71                   | ±7.9  | 261  | 18.8              | ±6.1  | 63  | 9.5                  | ±4.0  | 37  | 0.7                        | ±1.1  | 3  |
| Total | 2750 | 65.5                 | ±5.3  | 1883 | 19.7              | ±3.4  | 490 | 13.6                 | ±3.5  | 344 | 1.2                        | ±0.7  | 33 |

\* Includes "Don't eat fruit at all"

Table 5. 2 Servings of fruit consumed per day by area: Males

| Age   | N    | < 1 serving per day* |       |      | 1 serving per day |       |     | 2-4 servings per day |       |     | 5 or more servings per day |       |    |
|-------|------|----------------------|-------|------|-------------------|-------|-----|----------------------|-------|-----|----------------------------|-------|----|
|       |      | %                    | 95%CI | n    | %                 | 95%CI | n   | %                    | 95%CI | n   | %                          | 95%CI | n  |
| Rural | 1716 | 68.2                 | ± 5.3 | 1166 | 19.3              | ±4.0  | 306 | 13.2                 | ±3.9  | 219 | 1.3                        | ±0.9  | 25 |
| Urban | 1034 | 63.3                 | ±13.5 | 717  | 20.9              | ±6.0  | 184 | 14.9                 | ±7.9  | 125 | 0.8                        | ±0.7  | 8  |
| Total | 2750 | 65.5                 | ± 5.3 | 1883 | 19.7              | ±3.4  | 490 | 13.6                 | ±3.5  | 344 | 1.2                        | ±0.7  | 33 |

\*Includes "Don't eat fruit at all"

Table 5. 3 Servings of fruit consumed per day by ethnicity: Males

| Age    | N    | < 1 serving per day* |       |      | 1 serving per day |       |     | 2-4 servings per day |       |     | 5 or more servings per day |       |    |
|--------|------|----------------------|-------|------|-------------------|-------|-----|----------------------|-------|-----|----------------------------|-------|----|
|        |      | %                    | 95%CI | n    | %                 | 95%CI | n   | %                    | 95%CI | n   | %                          | 95%CI | n  |
| Fijian | 1651 | 67.4                 | ± 6.6 | 1137 | 16.4              | ±4.7  | 263 | 14.3                 | ± 4.2 | 222 | 1.9                        | ±1.1  | 29 |
| Indian | 1033 | 63.4                 | ± 8.6 | 703  | 24.5              | ±4.8  | 217 | 11.9                 | ± 5.3 | 111 | 0.2                        | ±0.2  | 2  |
| Others | 66   | 59                   | ±12.5 | 43   | 18.5              | ±7.8  | 10  | 20.9                 | ±11.4 | 11  | 1.6                        | ±1.9  | 2  |
| Total  | 2750 | 65.5                 | ± 5.3 | 1883 | 19.7              | ±3.4  | 490 | 13.6                 | ± 3.5 | 344 | 1.2                        | ±0.7  | 33 |

\*Includes "Don't eat fruit at all"

Table 5. 4 Servings of fruit consumed per day: Females

| Age   | N    | < 1 serving per day* |       |      | 1 serving per day |       |     | 2-4 servings per day |       |     | 5 or more servings per day |       |    |
|-------|------|----------------------|-------|------|-------------------|-------|-----|----------------------|-------|-----|----------------------------|-------|----|
|       |      | %                    | 95%CI | n    | %                 | 95%CI | n   | %                    | 95%CI | n   | %                          | 95%CI | n  |
| 15-24 | 955  | 63.2                 | ±7.1  | 641  | 21.2              | ±3.7  | 190 | 14.7                 | ±4.5  | 118 | 1                          | ±1.4  | 6  |
| 25-34 | 937  | 65.2                 | ±5.1  | 639  | 20.3              | ±4.0  | 180 | 14.2                 | ±3.8  | 116 | 0.3                        | ±0.4  | 2  |
| 35-44 | 946  | 68.5                 | ±6.7  | 671  | 18.4              | ±3.5  | 165 | 12.5                 | ±4.6  | 103 | 0.6                        | ±0.5  | 7  |
| 45-54 | 741  | 68.9                 | ±7.2  | 511  | 18.4              | ±4.3  | 145 | 12.7                 | ±4.4  | 84  | 0.1                        | ±0.1  | 1  |
| 55-64 | 425  | 71.8                 | ±5.1  | 307  | 16.9              | ±3.8  | 72  | 10.6                 | ±3.5  | 43  | 0.7                        | ±0.9  | 3  |
| Total | 4004 | 66.4                 | ±5.5  | 2769 | 19.6              | ±2.9  | 752 | 13.4                 | ±3.5  | 464 | 0.6                        | ±0.4  | 19 |

\* Includes "Don't eat fruit at all"

Table 5. 5 Servings of fruit consumed per day by area Females

| Age   | N    | < 1 serving per day* |       |      | 1 serving per day |       |     | 2-4 servings per day |       |     | 5 or more servings per day |       |    |
|-------|------|----------------------|-------|------|-------------------|-------|-----|----------------------|-------|-----|----------------------------|-------|----|
|       |      | %                    | 95%CI | n    | %                 | 95%CI | n   | %                    | 95%CI | n   | %                          | 95%CI | n  |
| Rural | 2071 | 66.9                 | ±6.7  | 1435 | 19.5              | ±4.1  | 379 | 13                   | ±3.3  | 246 | 0.6                        | ±0.6  | 11 |
| Urban | 1933 | 65.3                 | ±9.2  | 1334 | 19.7              | ±1.0  | 373 | 14.6                 | ±8.6  | 218 | 0.4                        | ±0.3  | 8  |
| Total | 4004 | 66.4                 | ±5.5  | 2769 | 19.6              | ±2.9  | 752 | 13.4                 | ±3.5  | 464 | 0.6                        | ±0.4  | 19 |

\*Includes "Don't eat fruit at all"

Table 5. 6 Servings of fruit consumed per day by ethnicity: Females

| Age    | N    | < 1 serving per day* |       |      | 1 serving per day |       |     | 2-4 servings per day |       |     | 5 or more servings per day |       |    |
|--------|------|----------------------|-------|------|-------------------|-------|-----|----------------------|-------|-----|----------------------------|-------|----|
|        |      | %                    | 95%CI | n    | %                 | 95%CI | n   | %                    | 95%CI | n   | %                          | 95%CI | n  |
| Fijian | 2152 | 70.9                 | ± 5.6 | 1556 | 15.7              | ±3.3  | 327 | 12.8                 | ± 2.7 | 257 | 0.6                        | ±0.6  | 12 |
| Indian | 1730 | 60                   | ± 8.3 | 1133 | 25.5              | ±3.3  | 402 | 13.9                 | ± 6.8 | 188 | 0.5                        | ±0.6  | 7  |
| Others | 122  | 62.2                 | ±12.3 | 80   | 18.5              | ±6.3  | 23  | 19.3                 | ±12.9 | 19  | -                          | -     | 0  |
| Total  | 4004 | 66.4                 | ± 5.5 | 2769 | 19.6              | ±2.9  | 752 | 13.4                 | ± 3.5 | 464 | 0.6                        | ±0.4  | 19 |

\*Includes "Don't eat fruit at all"

Table 5. 7 Servings of vegetables consumed per day: Males

| Age   | N    | < 1 serving per day* |       |     | 1 serving per day |       |     | 2-4 servings per day |       |      | 5 or more servings per day |       |    |
|-------|------|----------------------|-------|-----|-------------------|-------|-----|----------------------|-------|------|----------------------------|-------|----|
|       |      | %                    | 95%CI | n   | %                 | 95%CI | n   | %                    | 95%CI | n    | %                          | 95%CI | n  |
| 15-24 | 690  | 26.1                 | ±8.7  | 210 | 23.6              | ±5.9  | 165 | 48.3                 | ± 9.7 | 298  | 2                          | ±1.2  | 17 |
| 25-34 | 565  | 29.2                 | ±7.9  | 176 | 23.2              | ±7.4  | 126 | 44                   | ±10.0 | 245  | 3.6                        | ±2.4  | 18 |
| 35-44 | 633  | 25.1                 | ±6.8  | 171 | 19.8              | ±4.2  | 137 | 52.4                 | ± 8.8 | 308  | 2.6                        | ±1.8  | 17 |
| 45-54 | 499  | 21.2                 | ±8.3  | 118 | 22.9              | ±6.6  | 106 | 52.4                 | ± 8.3 | 258  | 3.4                        | ±2.2  | 17 |
| 55-64 | 364  | 29.2                 | ±9.1  | 113 | 19.1              | ±7.9  | 68  | 47.6                 | ± 6.7 | 171  | 4.1                        | ±3.6  | 12 |
| Total | 2751 | 26.3                 | ±6.7  | 788 | 22.3              | ±4.7  | 602 | 48.5                 | ± 7.4 | 1280 | 2.9                        | ±1.3  | 81 |

\* Includes "Don't eat vegetables at all"

Table 5. 8 Servings of vegetables consumed per day by area Males

| Age   | N    | < 1 serving per day* |       |     | 1 serving per day |       |     | 2-4 servings per day |       |      | 5 or more servings per day |       |    |
|-------|------|----------------------|-------|-----|-------------------|-------|-----|----------------------|-------|------|----------------------------|-------|----|
|       |      | %                    | 95%CI | n   | %                 | 95%CI | n   | %                    | 95%CI | n    | %                          | 95%CI | n  |
| Rural | 1717 | 27.2                 | ± 7.9 | 496 | 21.4              | ±5.4  | 337 | 48.4                 | ± 7.2 | 829  | 3.1                        | ±1.6  | 55 |
| Urban | 1034 | 23.4                 | ±12.1 | 292 | 25                | ±8.5  | 265 | 49.1                 | ±19.9 | 451  | 2.3                        | ±1.9  | 26 |
| Total | 2751 | 26.3                 | ± 6.7 | 788 | 22.3              | ±4.7  | 602 | 48.5                 | ± 7.4 | 1280 | 2.9                        | ±1.3  | 81 |

\*Includes "Don't eat vegetables at all"

Table 5. 9 Servings of vegetables consumed per day by ethnicity: Males

| Age    | N    | < 1 serving per day* |       |     | 1 serving per day |       |     | 2-4 servings per day |       |      | 5 or more servings per day |       |    |
|--------|------|----------------------|-------|-----|-------------------|-------|-----|----------------------|-------|------|----------------------------|-------|----|
|        |      | %                    | 95%CI | n   | %                 | 95%CI | n   | %                    | 95%CI | n    | %                          | 95%CI | n  |
| Fijian | 1651 | 32.4                 | ±10.3 | 570 | 18.2              | ±3.4  | 303 | 46.2                 | ±10.2 | 723  | 3.3                        | ± 1.4 | 55 |
| Indian | 1034 | 16.2                 | ± 6.2 | 189 | 28                | ±7.6  | 285 | 53.7                 | ±13.0 | 536  | 2.1                        | ± 1.4 | 24 |
| Others | 66   | 38.5                 | ±12.1 | 29  | 23.7              | ±9.0  | 14  | 31.6                 | ±12.4 | 21   | 6.2                        | ±13.2 | 2  |
| Total  | 2751 | 26.3                 | ± 6.7 | 788 | 22.3              | ±4.7  | 602 | 48.5                 | ± 7.4 | 1280 | 2.9                        | ± 1.3 | 81 |

\*Includes "Don't eat vegetables at all"

Table 5. 10 Servings of vegetables consumed per day: Females

| Age   | N    | < 1 serving per day* |       |      | 1 serving per day |       |     | 2-4 servings per day |       |      | 5 or more servings per day |       |    |
|-------|------|----------------------|-------|------|-------------------|-------|-----|----------------------|-------|------|----------------------------|-------|----|
|       |      | %                    | 95%CI | n    | %                 | 95%CI | n   | %                    | 95%CI | n    | %                          | 95%CI | n  |
| 15-24 | 955  | 31.2                 | ±7.3  | 328  | 24.5              | ±4.6  | 236 | 41.7                 | ±5.9  | 374  | 2.6                        | ±2.5  | 17 |
| 25-34 | 940  | 23.7                 | ±6.1  | 247  | 23.3              | ±6.0  | 233 | 50.6                 | ±6.7  | 441  | 2.3                        | ±1.2  | 19 |
| 35-44 | 945  | 22.1                 | ±5.3  | 233  | 21.4              | ±4.9  | 214 | 50.4                 | ±8.2  | 479  | 2                          | ±1.3  | 19 |
| 45-54 | 741  | 26.5                 | ±8.2  | 184  | 21.1              | ±5.7  | 184 | 51.1                 | ±7.1  | 364  | 1.3                        | ±1.0  | 9  |
| 55-64 | 426  | 29.1                 | ±8.3  | 131  | 15.9              | ±5.0  | 78  | 52.4                 | ±9.3  | 206  | 2.5                        | ±1.8  | 11 |
| Total | 4007 | 26.5                 | ±6.2  | 1123 | 22.3              | ±3.8  | 945 | 50                   | ±6.1  | 1864 | 2.2                        | ±1.2  | 75 |

\*Includes "Don't eat vegetables at all"

Table 5. 11 Servings of vegetables consumed per day by area Females

| Age   | N    | < 1 serving per day* |       |      | 1 serving per day |       |     | 2-4 servings per day |       |      | 5 or more servings per day |       |    |
|-------|------|----------------------|-------|------|-------------------|-------|-----|----------------------|-------|------|----------------------------|-------|----|
|       |      | %                    | 95%CI | n    | %                 | 95%CI | n   | %                    | 95%CI | n    | %                          | 95%CI | n  |
| Rural | 2073 | 26.7                 | ±8.3  | 580  | 20.7              | ±4.2  | 423 | 50.2                 | ± 7.0 | 1022 | 2.5                        | ±1.5  | 48 |
| Urban | 1934 | 26.2                 | ±6.9  | 543  | 26                | ±6.1  | 522 | 46.2                 | ±10.8 | 842  | 1.6                        | ±1.4  | 27 |
| Total | 4007 | 26.5                 | ±6.2  | 1123 | 22.3              | ±3.8  | 945 | 50                   | ± 6.1 | 1864 | 2.2                        | ±1.2  | 75 |

\*Includes "Don't eat vegetables at all"

Table 5. 12 Servings of vegetables consumed per day by ethnicity: Females

| Age    | N    | < 1 serving per day* |       |      | 1 serving per day |       |     | 2-4 servings per day |       |      | 5 or more servings per day |       |    |
|--------|------|----------------------|-------|------|-------------------|-------|-----|----------------------|-------|------|----------------------------|-------|----|
|        |      | %                    | 95%CI | n    | %                 | 95%CI | n   | %                    | 95%CI | n    | %                          | 95%CI | n  |
| Fijian | 2151 | 34.1                 | ± 9.8 | 783  | 18.6              | ± 2.4 | 427 | 44.9                 | ± 9.1 | 95   | 2.4                        | ± 1.6 | 46 |
| Indian | 1732 | 15.3                 | ± 5.5 | 297  | 27.6              | ± 5.9 | 489 | 55.5                 | ±10.0 | 920  | 1.5                        | ± 0.7 | 26 |
| Others | 124  | 25.1                 | ±14.0 | 43   | 24                | ±11.8 | 29  | 44.3                 | ±17.5 | 49   | 6.6                        | ±14.5 | 3  |
| Total  | 4007 | 26.5                 | ± 6.2 | 1123 | 22.3              | ± 3.8 | 945 | 50                   | ± 6.1 | 1864 | 2.2                        | ± 1.2 | 75 |

\*Includes "Don't eat vegetables at all"

Table 5. 13 Type of oil or fat used, if subject prepares meals: Males

| Age   | N    | 1           |      | 2          |   | 3          |   | 4          |   | 5          |    | 6          |   | 7          |    |
|-------|------|-------------|------|------------|---|------------|---|------------|---|------------|----|------------|---|------------|----|
|       |      | % (95%CI)   | n    | % (95%CI)  | n | % (95%CI)  | n | % (95%CI)  | n | % (95%CI)  | n  | % (95%CI)  | n | % (95%CI)  | n  |
| 15-24 | 545  | 95.3 (±4.2) | 519  | 0          | 0 | 0.4 (±0.6) | 2 | 0.2 (±0.2) | 3 | 2.4 (±2.9) | 11 | 0.2 (±0.5) | 1 | 1.6 (±1.3) | 9  |
| 25-34 | 469  | 94.7 (±5.0) | 445  | 0          | 0 | 0.1 (±0.1) | 1 | 0.1 (±0.3) | 2 | 3.0 (±3.6) | 12 | 0.3 (±0.5) | 2 | 1.9 (±1.9) | 7  |
| 35-44 | 537  | 96.5 (±3.1) | 520  | 0.1 (±0.2) | 1 | 0          | 0 | 0.1 (±0.1) | 1 | 1.1 (±1.2) | 5  | 0          | 0 | 2.2 (±2.2) | 10 |
| 45-54 | 409  | 92.3 (±5.7) | 381  | 0.1 (±0.3) | 1 | 0.3 (±0.7) | 1 | 0.3 (±0.4) | 2 | 3.2 (±3.8) | 11 | 0.3 (±0.6) | 1 | 3.5 (±2.2) | 12 |
| 55-64 | 284  | 93.9 (±4.4) | 266  | 0.2 (±0.5) | 1 | 0          | 0 | 0.1 (±0.2) | 1 | 0.8 (±1.2) | 2  | 0.1 (±0.2) | 1 | 4.9 (±4.3) | 13 |
| Total | 2244 | 94.9 (±3.8) | 2131 | 0.1 (±0.1) | 3 | 0.2 (±0.2) | 4 | 0.1 (±0.2) | 9 | 2.3 (±2.3) | 41 | 0.2 (±0.3) | 5 | 2.3 (±1.5) | 51 |

1=vegetable oil, 2=lard or suet, 3=butter or ghee, 4=margarine, 5=other, 6=none in particular, 7=none used

Table 5. 14 Type of oil or fat used, if subject prepares meals: Females

| Age   | N    | 1           |      | 2          |    | 3          |   | 4           |    | 5          |    | 6          |    | 7          |     |
|-------|------|-------------|------|------------|----|------------|---|-------------|----|------------|----|------------|----|------------|-----|
|       |      | % (95%CI)   | n    | % (95%CI)  | n  | % (95%CI)  | n | % (95%CI)   | n  | % (95%CI)  | n  | % (95%CI)  | n  | % (95%CI)  | n   |
| 15-24 | 931  | 98.4 (±1.8) | 912  | 0.1 (±0.2) | 3  | 0.1 (±0.2) | 2 | 0.1 (±0.1)  | 2  | 1.1 (±1.4) | 10 | 0          |    | 2 (±0.3)   | 200 |
| 25-34 | 924  | 98.3 (±1.9) | 908  | 0.1 (±0.2) | 3  | 0          |   | 0.04 (±0.1) | 1  | 1.1 (±1.2) | 8  | 0          |    | 0.4 (±0.7) | 4   |
| 35-44 | 931  | 96.4 (±2.2) | 900  | 0.4 (±0.6) | 5  | 0 (±0.1)   | 1 | 0.1 (±0.2)  | 3  | 1.1 (±1.5) | 12 | 0.1 (±0.3) | 11 | 1.1 (±0.9) | 9   |
| 45-54 | 725  | 95.6 (±2.8) | 694  | 0.2 (±0.3) | 3  | 0.3 (±0.4) | 5 | 0.4 (±0.5)  | 3  | 1.1 (±1.5) | 7  | 0.3 (±0.5) | 2  | 2.0 (±1.9) | 11  |
| 55-64 | 417  | 96.6 (±2.4) | 401  | 0          |    | 0          |   | 0.2 (±0.4)  | 3  | 1.8 (±1.8) | 8  | 0          |    | 1.4 (±1.7) | 5   |
| Total | 3928 | 97.4 (±1.6) | 3815 | 0.2 (±0.2) | 14 | 0.1 (±0.1) | 8 | 0.1 (±0.1)  | 12 | 1.3 (±1.0) | 45 | 0.1 (±0.1) | 3  | 0.8 (±0.7) | 31  |

1=vegetable oil, 2=lard or suet, 3=butter or ghee, 4=margarine, 5=other, 6=none in particular, 7= none used

## 10.6 Physical Activity

Table 6. 1: Work activity, stratified by age and gender

| Total Population |      |             |       |     |     |       |     |      |       |      |          |       |      |      |       |     |
|------------------|------|-------------|-------|-----|-----|-------|-----|------|-------|------|----------|-------|------|------|-------|-----|
| Age              | N    | Not Working |       |     | Nil |       |     | Low  |       |      | Moderate |       |      | High |       |     |
|                  |      | %           | 95%CI | n   | %   | 95%CI | n   | %    | 95%CI | n    | %        | 95%CI | n    | %    | 95%CI | n   |
| 15-24            | 1600 | 13.0        | ±3.7  | 212 | 4.4 | ±1.7  | 98  | 41.0 | ±6.7  | 722  | 35.0     | ±4.8  | 499  | 6.6  | ±2.8  | 69  |
| 25-34            | 1485 | 7.3         | ±2.7  | 110 | 4.4 | ±1.8  | 80  | 34.5 | ±4.8  | 619  | 41.3     | ±4.3  | 571  | 12.6 | ±6.7  | 105 |
| 35-44            | 1552 | 5.4         | ±2.2  | 89  | 3.2 | ±2.0  | 62  | 36.1 | ±4.8  | 644  | 45.6     | ±5.2  | 658  | 9.8  | ±3.6  | 99  |
| 45-54            | 1218 | 7.3         | ±2.5  | 88  | 2.8 | ±1.4  | 45  | 37.3 | ±5.1  | 510  | 44.9     | ±5.0  | 508  | 7.8  | ±3.3  | 67  |
| 55-64            | 777  | 14.0        | ±4.5  | 115 | 4.2 | ±1.6  | 41  | 37.0 | ±3.4  | 304  | 40.1     | ±5.6  | 291  | 4.8  | ±3.8  | 26  |
| Total            | 6632 | 9.2         | ±2.6  | 614 | 3.9 | ±1.4  | 326 | 37.4 | ±4.0  | 2799 | 40.7     | ±4.0  | 2527 | 8.8  | ±3.7  | 366 |
| Male             |      |             |       |     |     |       |     |      |       |      |          |       |      |      |       |     |
| 15-24            | 678  | 13.9        | ±4.8  | 102 | 1.9 | ±1.5  | 20  | 30.4 | ±8.5  | 219  | 42.5     | ±7.0  | 276  | 11.2 | ± 4.6 | 61  |
| 25-34            | 563  | 7.8         | ±3.5  | 45  | 3.5 | ±2.2  | 26  | 19.8 | ±6.1  | 129  | 47.0     | ±7.3  | 270  | 21.7 | ±10.4 | 93  |
| 35-44            | 624  | 5.7         | ±2.7  | 36  | 3.3 | ±2.4  | 25  | 23.1 | ±4.9  | 162  | 50.5     | ±5.7  | 311  | 17.4 | ± 6.1 | 90  |
| 45-54            | 493  | 7.4         | ±3.5  | 32  | 2.4 | ±1.5  | 14  | 26.4 | ±6.8  | 141  | 51.0     | ±6.8  | 250  | 12.8 | ± 4.8 | 56  |
| 55-64            | 360  | 16.7        | ±4.6  | 68  | 2.9 | ±2.4  | 13  | 21.4 | ±4.9  | 87   | 50.1     | ±7.4  | 167  | 8.9  | ± 6.8 | 25  |
| Total            | 2718 | 9.9         | ±2.9  | 283 | 2.8 | ±1.4  | 98  | 24.9 | ±4.6  | 738  | 47.1     | ±5.4  | 1274 | 15.3 | ± 5.8 | 325 |
| Female           |      |             |       |     |     |       |     |      |       |      |          |       |      |      |       |     |
| 15-24            | 922  | 11.9        | ±4.1  | 110 | 7.3 | ±2.5  | 78  | 53.7 | ±5.1  | 503  | 26.1     | ±4.7  | 223  | 1.0  | ±1.1  | 8   |
| 25-34            | 922  | 6.6         | ±2.4  | 65  | 5.3 | ±1.9  | 54  | 51.7 | ±4.1  | 490  | 34.6     | ±4.1  | 301  | 1.8  | ±1.6  | 12  |
| 35-44            | 928  | 5.1         | ±2.7  | 53  | 3.0 | ±1.9  | 37  | 50.7 | ±5.4  | 482  | 40.0     | ±5.2  | 347  | 1.2  | ±1.2  | 9   |
| 45-54            | 725  | 7.2         | ±3.3  | 56  | 3.1 | ±1.7  | 31  | 49.4 | ±5.9  | 369  | 38.1     | ±6.2  | 258  | 2.2  | ±1.9  | 11  |
| 55-64            | 417  | 11.3        | ±6.0  | 47  | 5.7 | ±2.2  | 28  | 52.8 | ±6.0  | 217  | 29.8     | ±6.4  | 124  | 0.5  | ±1.0  | 1   |
| Total            | 3914 | 8.4         | ±2.8  | 331 | 5.1 | ±1.6  | 228 | 51.9 | ±3.2  | 2061 | 33.2     | ±3.4  | 1253 | 1.4  | ±1.0  | 41  |

Table 6. 2: Work activity, stratified by ethnicity and gender

| Total Population |      |             |       |     |     |       |     |      |       |      |          |       |      |      |       |     |
|------------------|------|-------------|-------|-----|-----|-------|-----|------|-------|------|----------|-------|------|------|-------|-----|
| Age              | N    | Not Working |       |     | Nil |       |     | Low  |       |      | Moderate |       |      | High |       |     |
|                  |      | %           | 95%CI | n   | %   | 95%CI | n   | %    | 95%CI | n    | %        | 95%CI | n    | %    | 95%CI | n   |
| Fijians          | 3732 | 11.5        | ±2.9  | 387 | 3.0 | 1.0   | 141 | 35.1 | 4.6   | 1471 | 43.2     | 5.1   | 1532 | 7.2  | ± 4.0 | 201 |
| Indo-Fijians     | 2719 | 6.2         | ±3.0  | 217 | 4.8 | 2.3   | 168 | 40.8 | 5.8   | 1257 | 37.6     | 4.5   | 923  | 10.6 | ± 5.5 | 154 |
| Others           | 181  | 4.8         | ±4.1  | 10  | 8.0 | 8.3   | 17  | 37.8 | 8.7   | 71   | 34.6     | 16.5  | 72   | 14.8 | ±16.6 | 11  |
| Total            | 6632 | 9.2         | ±2.6  | 614 | 3.9 | 1.4   | 326 | 37.4 | 4.0   | 2799 | 40.7     | 4.0   | 2527 | 8.8  | ± 3.7 | 366 |

| Male         |      |      |      |     |      |      |     |      |      |      |      |      |      |      |       |     |
|--------------|------|------|------|-----|------|------|-----|------|------|------|------|------|------|------|-------|-----|
| Fijians      | 1637 | 13.6 | ±3.4 | 206 | 1.7  | 0.9  | 33  | 20.4 | 4.5  | 378  | 51.6 | 5.7  | 839  | 12.6 | ± 6.6 | 181 |
| Indo-Fijians | 1016 | 5.3  | ±2.3 | 74  | 4.0  | 2.6  | 59  | 31.0 | 5.6  | 341  | 41.6 | 5.6  | 408  | 18.1 | ± 7.8 | 134 |
| Others       | 65   | 2.4  | ±3.0 | 3   | 6.5  | 11.2 | 6   | 28.2 | 12.4 | 19   | 37.3 | 25.3 | 27   | 25.5 | ±26.5 | 10  |
| Total        | 2718 | 9.9  | ±2.9 | 283 | 2.8  | 1.4  | 98  | 24.9 | 4.6  | 738  | 47.1 | 5.4  | 1274 | 15.3 | ± 5.8 | 325 |
| Female       |      |      |      |     |      |      |     |      |      |      |      |      |      |      |       |     |
| Fijians      | 2095 | 9.2  | ±3.1 | 181 | 4.4  | 1.6  | 108 | 51.8 | 4.1  | 1093 | 33.6 | 4.7  | 693  | 1.0  | ±1.1  | 20  |
| Indo-Fijians | 1703 | 7.2  | ±4.3 | 143 | 5.8  | 2.2  | 109 | 52.1 | 5.3  | 916  | 32.9 | 5.5  | 515  | 1.9  | ±1.9  | 20  |
| Others       | 116  | 7.9  | ±8.8 | 7   | 10.0 | 5.9  | 11  | 50.5 | 17.3 | 52   | 31.0 | 12.9 | 45   | 0.5  | ±1.1  | 1   |
| Total        | 3914 | 8.4  | ±2.8 | 331 | 5.1  | 1.6  | 228 | 51.9 | 3.2  | 2061 | 33.2 | 3.4  | 1253 | 1.4  | ±1.0  | 41  |

Table 6. 3: Work activity stratified by area and gender

| Total Population |      |             |       |     |     |       |     |      |       |      |          |       |      |      |       |     |
|------------------|------|-------------|-------|-----|-----|-------|-----|------|-------|------|----------|-------|------|------|-------|-----|
| Age              | N    | Not Working |       |     | Nil |       |     | Low  |       |      | Moderate |       |      | High |       |     |
|                  |      | %           | 95%CI | n   | %   | 95%CI | n   | %    | 95%CI | n    | %        | 95%CI | n    | %    | 95%CI | n   |
| Rural            | 3743 | 9.7         | ±3.2  | 366 | 2.6 | ±0.7  | 105 | 34.2 | ±3.5  | 1398 | 43.4     | ±4.4  | 1599 | 10.1 | ±4.4  | 275 |
| Urban            | 2889 | 7.8         | ±2.9  | 248 | 7.5 | ±2.7  | 221 | 46.3 | ±5.7  | 1401 | 33.1     | ±4.2  | 928  | 5.3  | ±4.1  | 91  |
| Total            | 6632 | 9.2         | ±2.6  | 614 | 3.9 | ±1.4  | 326 | 37.4 | ±4.0  | 2799 | 40.7     | ±4.0  | 2527 | 8.8  | ±3.7  | 366 |
| Male             |      |             |       |     |     |       |     |      |       |      |          |       |      |      |       |     |
| Rural            | 1707 | 10.6        | ±3.5  | 190 | 1.5 | ±0.7  | 29  | 20.9 | ±4.0  | 356  | 50.2     | ±6.2  | 886  | 16.9 | ±7.0  | 246 |
| Urban            | 1011 | 7.8         | ±4.3  | 93  | 7.1 | ±2.9  | 69  | 37.9 | ±4.7  | 382  | 37.2     | ±4.7  | 388  | 10.0 | ±6.1  | 79  |
| Total            | 2718 | 9.9         | ±2.9  | 283 | 2.8 | ±1.4  | 98  | 24.9 | ±4.6  | 738  | 47.1     | ±5.4  | 1274 | 15.3 | ±5.8  | 325 |
| Female           |      |             |       |     |     |       |     |      |       |      |          |       |      |      |       |     |
| Rural            | 2036 | 8.6         | ±3.6  | 176 | 4.0 | ±1.3  | 76  | 51.0 | ±3.5  | 1042 | 34.9     | ±3.6  | 713  | 1.5  | ±1.3  | 29  |
| Urban            | 1878 | 7.8         | ±2.9  | 155 | 7.8 | ±2.6  | 152 | 53.9 | ±6.6  | 1019 | 29.4     | ±6.0  | 540  | 1.0  | ±1.5  | 12  |
| Total            | 3914 | 8.4         | ±2.8  | 331 | 5.1 | ±1.6  | 228 | 51.9 | ±3.2  | 2061 | 33.2     | ±3.4  | 1253 | 1.4  | ±1.0  | 41  |

Table 6. 4: Physical activity participation during transportation, stratified by age and gender

| Total Population |      |     |       |     |      |       |      |          |       |      |      |       |      |
|------------------|------|-----|-------|-----|------|-------|------|----------|-------|------|------|-------|------|
| Age              | N    | Nil |       |     | Low  |       |      | Moderate |       |      | High |       |      |
|                  |      | %   | 95%CI | n   | %    | 95%CI | n    | %        | 95%CI | n    | %    | 95%CI | n    |
| 15-24            | 1627 | 0.9 | ±0.7  | 22  | 9.1  | ±3.2  | 181  | 24.2     | ±5.7  | 432  | 65.8 | ±5.8  | 992  |
| 25-34            | 1484 | 2.5 | ±1.7  | 40  | 13.6 | ±4.6  | 227  | 21.6     | ±5.3  | 378  | 62.3 | ±7.3  | 839  |
| 35-44            | 1552 | 2.2 | ±1.2  | 38  | 14.0 | ±4.3  | 247  | 25.7     | ±5.0  | 432  | 58.1 | ±7.1  | 835  |
| 45-54            | 1220 | 2.6 | ±1.2  | 37  | 16.4 | ±5.5  | 236  | 24.1     | ±4.8  | 316  | 57.0 | ±8.1  | 631  |
| 55-64            | 778  | 1.9 | ±1.3  | 19  | 16.4 | ±6.1  | 143  | 23.4     | ±5.7  | 197  | 58.4 | ±9.2  | 419  |
| Total            | 6661 | 1.9 | ±0.9  | 156 | 12.9 | ±3.9  | 1034 | 23.7     | ±4.6  | 1755 | 61.4 | ±6.4  | 3716 |
| Male             |      |     |       |     |      |       |      |          |       |      |      |       |      |
| 15-24            | 683  | 0.6 | ±0.7  | 6   | 5.3  | ±2.2  | 45   | 24.0     | ±6.9  | 174  | 70.1 | ±7.3  | 458  |
| 25-34            | 560  | 2.3 | ±1.7  | 15  | 12.7 | ±4.5  | 71   | 19.6     | ±6.0  | 134  | 65.3 | ±7.5  | 340  |
| 35-44            | 621  | 2.2 | ±1.4  | 18  | 12.5 | ±4.8  | 88   | 21.9     | ±5.7  | 145  | 63.3 | ±8.0  | 370  |
| 45-54            | 492  | 2.6 | ±1.5  | 15  | 13.7 | ±7.1  | 73   | 26.3     | ±4.9  | 140  | 57.4 | ±8.4  | 264  |
| 55-64            | 360  | 1.6 | ±1.6  | 7   | 14.5 | ±6.0  | 62   | 25.1     | ±6.8  | 93   | 58.8 | ±9.3  | 198  |
| Total            | 2716 | 1.7 | ±0.9  | 61  | 10.6 | ±3.3  | 339  | 22.8     | ±4.8  | 686  | 64.8 | ±6.1  | 1630 |
| Female           |      |     |       |     |      |       |      |          |       |      |      |       |      |
| 15-24            | 944  | 1.3 | ±0.9  | 16  | 13.5 | ±5.5  | 136  | 24.4     | ±5.8  | 258  | 60.8 | ±7.5  | 534  |
| 25-34            | 924  | 2.7 | ±2.0  | 25  | 14.7 | ±5.4  | 156  | 23.9     | ±5.4  | 244  | 58.7 | ±7.9  | 499  |
| 35-44            | 931  | 2.2 | ±1.5  | 20  | 15.5 | ±4.4  | 159  | 29.9     | ±5.4  | 287  | 52.3 | ±6.4  | 465  |
| 45-54            | 728  | 2.5 | ±1.2  | 22  | 19.3 | ±5.4  | 163  | 21.7     | ±5.7  | 176  | 56.5 | ±9.3  | 367  |
| 55-64            | 418  | 2.1 | ±1.8  | 12  | 18.4 | ±7.1  | 81   | 21.6     | ±5.5  | 104  | 57.9 | ±10.4 | 221  |
| Total            | 3945 | 2.1 | ±1.1  | 95  | 15.5 | ±4.7  | 695  | 24.8     | ±4.8  | 1069 | 57.6 | ±7.1  | 2086 |



Table 6. 5: Physical activity participation during transportation, stratified by ethnicity and gender

| Total Population |             |            |             |            |             |              |             |             |              |             |             |              |             |
|------------------|-------------|------------|-------------|------------|-------------|--------------|-------------|-------------|--------------|-------------|-------------|--------------|-------------|
| Age              | N           | Nil        |             |            | Low         |              |             | Moderate    |              |             | High        |              |             |
|                  |             | %          | 95%CI       | n          | %           | 95%CI        | n           | %           | 95%CI        | n           | %           | 95%CI        | n           |
| Fijians          | 3747        | 0.8        | ±0.8        | 40         | 7.0         | ± 3.0        | 352         | 26.6        | ± 4.9        | 1075        | 65.7        | ± 7.4        | 2280        |
| Indo-Fijians     | 2726        | 3.7        | ±1.4        | 113        | 21.0        | ± 3.6        | 643         | 20.4        | ± 6.6        | 642         | 55.0        | ± 8.1        | 1328        |
| Others           | 188         | 1.4        | ±1.6        | 3          | 18.6        | ±14.7        | 39          | 16.0        | ±11.4        | 38          | 64.0        | ±24.4        | 108         |
| <b>Total</b>     | <b>6661</b> | <b>1.9</b> | <b>±0.9</b> | <b>156</b> | <b>12.9</b> | <b>± 3.9</b> | <b>1034</b> | <b>23.7</b> | <b>± 4.6</b> | <b>1755</b> | <b>61.5</b> | <b>± 6.4</b> | <b>3716</b> |
| Male             |             |            |             |            |             |              |             |             |              |             |             |              |             |
| Fijians          | 1629        | 0.7        | ±0.8        | 17         | 5.3         | ± 2.6        | 109         | 25.7        | ± 5.3        | 442         | 68.3        | ± 7.2        | 1061        |
| Indo-Fijians     | 1022        | 3.4        | ±1.8        | 44         | 18.0        | ± 3.8        | 222         | 19.6        | ± 7.2        | 231         | 59.0        | ±10.2        | 525         |
| Others           | 65          | ----       | ±0.0        | 0          | 14.0        | ±14.3        | 8           | 14.1        | ±15.4        | 13          | 71.8        | ±24.9        | 44          |
| <b>Total</b>     | <b>2716</b> | <b>1.7</b> | <b>±0.9</b> | <b>61</b>  | <b>10.6</b> | <b>± 3.3</b> | <b>339</b>  | <b>22.8</b> | <b>± 4.8</b> | <b>686</b>  | <b>64.8</b> | <b>± 6.1</b> | <b>1630</b> |
| Female           |             |            |             |            |             |              |             |             |              |             |             |              |             |
| Fijians          | 2118        | 0.8        | ±0.8        | 23         | 8.9         | ± 3.5        | 243         | 27.5        | ± 5.2        | 633         | 62.7        | ± 7.9        | 1219        |
| Indo-Fijians     | 1704        | 4.0        | ±1.6        | 69         | 24.5        | ± 5.0        | 421         | 21.3        | ± 6.2        | 411         | 50.2        | ± 7.1        | 803         |
| Others           | 123         | 3.2        | ±3.3        | 3          | 24.4        | ±16.8        | 31          | 18.3        | ±11.2        | 25          | 54.2        | ±23.0        | 64          |
| <b>Total</b>     | <b>3945</b> | <b>2.1</b> | <b>±1.1</b> | <b>95</b>  | <b>15.5</b> | <b>± 4.7</b> | <b>695</b>  | <b>24.8</b> | <b>± 4.8</b> | <b>1069</b> | <b>57.6</b> | <b>± 7.1</b> | <b>2086</b> |

Table 6. 6: Physical activity participation during transportation, stratified by area and gender

| Total Population |             |            |             |            |             |             |             |             |             |             |             |              |             |
|------------------|-------------|------------|-------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|
| Age              | N           | Nil        |             |            | Low         |             |             | Moderate    |             |             | High        |              |             |
|                  |             | %          | 95%CI       | n          | %           | 95%CI       | n           | %           | 95%CI       | n           | %           | 95%CI        | n           |
| Rural            | 3729        | 1.3        | ±1.0        | 53         | 10.3        | ±4.2        | 410         | 23.0        | ±5.7        | 929         | 65.4        | ±6.7         | 2337        |
| Urban            | 2932        | 3.7        | ±1.0        | 103        | 20.0        | ±5.0        | 624         | 25.8        | ±6.9        | 826         | 50.6        | ±9.7         | 1379        |
| <b>Total</b>     | <b>6661</b> | <b>1.9</b> | <b>±0.9</b> | <b>156</b> | <b>12.9</b> | <b>±3.9</b> | <b>1034</b> | <b>23.7</b> | <b>±4.6</b> | <b>1755</b> | <b>61.4</b> | <b>±6.4</b>  | <b>3716</b> |
| Male             |             |            |             |            |             |             |             |             |             |             |             |              |             |
| Rural            | 1694        | 10.0       | ±0.8        | 19         | 8.5         | ±3.3        | 150         | 22.5        | ±5.9        | 415         | 68.0        | ± 6.3        | 1110        |
| Urban            | 1022        | 4.1        | ±1.5        | 42         | 17.4        | ±5.6        | 189         | 23.9        | ±7.5        | 271         | 54.5        | ±11.4        | 520         |
| <b>Total</b>     | <b>2716</b> | <b>1.7</b> | <b>±0.9</b> | <b>61</b>  | <b>10.6</b> | <b>±3.3</b> | <b>339</b>  | <b>22.8</b> | <b>±4.8</b> | <b>686</b>  | <b>64.8</b> | <b>± 6.1</b> | <b>1630</b> |
| Female           |             |            |             |            |             |             |             |             |             |             |             |              |             |
| Rural            | 2035        | 1.6        | ±1.4        | 34         | 12.6        | ±5.7        | 260         | 23.7        | ±6.0        | 514         | 62.2        | ±8.1         | 1227        |
| Urban            | 1910        | 3.3        | ±1.1        | 61         | 22.3        | ±4.4        | 435         | 27.4        | ±6.4        | 555         | 47.0        | ±7.7         | 859         |
| <b>Total</b>     | <b>3945</b> | <b>2.1</b> | <b>±1.1</b> | <b>95</b>  | <b>15.5</b> | <b>±4.7</b> | <b>695</b>  | <b>24.8</b> | <b>±4.8</b> | <b>1069</b> | <b>57.6</b> | <b>±7.1</b>  | <b>2086</b> |

Table 6. 7: Leisure activity participation, stratified by age and gender

| Total Population |             |             |             |            |             |             |             |             |             |            |             |             |            |
|------------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|------------|
| Age              | N           | Nil         |             |            | Low         |             |             | Moderate    |             |            | High        |             |            |
|                  |             | %           | 95%CI       | n          | %           | 95%CI       | n           | %           | 95%CI       | n          | %           | 95%CI       | n          |
| 15-24            | 1627        | 10.9        | ±3.2        | 213        | 58.4        | ±3.4        | 968         | 10.0        | ±1.6        | 170        | 20.7        | ±3.3        | 276        |
| 25-34            | 1482        | 11.2        | ±3.2        | 198        | 63.0        | ±4.4        | 963         | 10.3        | ±2.7        | 138        | 15.5        | ±3.3        | 183        |
| 35-44            | 1552        | 10.8        | ±2.8        | 190        | 69.7        | ±3.2        | 1063        | 10.4        | ±2.0        | 174        | 9.2         | ±1.9        | 125        |
| 45-54            | 1220        | 13.2        | ±3.1        | 175        | 66.9        | ±3.8        | 826         | 12.3        | ±2.7        | 140        | 7.6         | ±2.2        | 79         |
| 55-64            | 785         | 18.9        | ±4.1        | 161        | 69.4        | ±5.4        | 533         | 6.7         | ±1.7        | 56         | 5.0         | ±2.1        | 35         |
| <b>Total</b>     | <b>6666</b> | <b>12.0</b> | <b>±2.3</b> | <b>937</b> | <b>64.1</b> | <b>±2.8</b> | <b>4353</b> | <b>10.2</b> | <b>±1.3</b> | <b>678</b> | <b>13.8</b> | <b>±1.9</b> | <b>698</b> |

| Male   |      |      |      |     |      |      |      |      |      |     |      |      |     |
|--------|------|------|------|-----|------|------|------|------|------|-----|------|------|-----|
| 15-24  | 682  | 6.1  | ±2.9 | 48  | 49.0 | ±5.6 | 329  | 12.2 | ±2.4 | 90  | 32.8 | ±4.9 | 215 |
| 25-34  | 558  | 6.6  | ±3.1 | 44  | 56.9 | ±5.6 | 315  | 11.2 | ±3.7 | 55  | 25.4 | ±5.5 | 144 |
| 35-44  | 619  | 8.1  | ±2.6 | 55  | 68.5 | ±4.0 | 405  | 10.0 | ±2.5 | 73  | 13.4 | ±3.5 | 86  |
| 45-54  | 491  | 11.2 | ±3.3 | 55  | 62.8 | ±4.5 | 309  | 15.0 | ±4.3 | 74  | 10.9 | ±4.0 | 53  |
| 55-64  | 363  | 14.5 | ±5.8 | 56  | 70.4 | ±6.7 | 250  | 7.4  | ±2.3 | 29  | 7.7  | ±3.1 | 28  |
| Total  | 2713 | 6.1  | ±2.1 | 258 | 49.0 | ±3.4 | 1608 | 12.2 | ±1.3 | 321 | 32.8 | ±2.9 | 526 |
| Female |      |      |      |     |      |      |      |      |      |     |      |      |     |
| 15-24  | 945  | 16.5 | ±4.6 | 165 | 69.6 | ±4.7 | 639  | 7.5  | ±1.5 | 80  | 7.5  | ±2.2 | 61  |
| 25-34  | 924  | 16.5 | ±4.9 | 154 | 70.2 | ±4.6 | 648  | 9.3  | ±3.3 | 83  | 9.3  | ±1.7 | 39  |
| 35-44  | 933  | 13.8 | ±3.6 | 135 | 71.0 | ±3.8 | 658  | 10.7 | ±2.5 | 101 | 10.7 | ±1.8 | 39  |
| 45-54  | 729  | 15.4 | ±4.3 | 120 | 71.5 | ±5.0 | 517  | 9.3  | ±4.0 | 66  | 9.3  | ±1.8 | 26  |
| 55-64  | 422  | 23.5 | ±4.1 | 105 | 68.4 | ±5.1 | 283  | 5.9  | ±1.8 | 27  | 5.9  | ±2.0 | 7   |
| Total  | 3953 | 16.4 | ±2.9 | 679 | 70.2 | ±2.7 | 2745 | 8.8  | ±1.6 | 357 | 8.8  | ±1.1 | 172 |

Table 6. 8: Leisure activity participation, stratified by ethnicity and gender

| Total Population |      |      |       |     |      |       |      |          |       |     |      |       |     |
|------------------|------|------|-------|-----|------|-------|------|----------|-------|-----|------|-------|-----|
| Age              | N    | Nil  |       |     | Low  |       |      | Moderate |       |     | High |       |     |
|                  |      | %    | 95%CI | n   | %    | 95%CI | n    | %        | 95%CI | n   | %    | 95%CI | n   |
| Fijians          | 3760 | 12.3 | ±2.8  | 523 | 62.3 | ±3.4  | 2386 | 9.4      | ±1.3  | 365 | 16.0 | ±2.0  | 486 |
| Indo-Fijians     | 2721 | 11.1 | ±3.4  | 381 | 66.9 | ±3.3  | 1860 | 11.2     | ±2.2  | 290 | 10.8 | ±3.6  | 190 |
| Others           | 185  | 15.2 | ±5.3  | 33  | 62.4 | ±8.4  | 107  | 11.8     | ±4.1  | 23  | 10.6 | ±7.7  | 22  |
| Total            | 6666 | 12.0 | ±2.3  | 937 | 64.1 | ±2.8  | 4353 | 10.2     | ±1.3  | 678 | 13.8 | ±1.9  | 698 |
| Male             |      |      |       |     |      |       |      |          |       |     |      |       |     |
| Fijians          | 1635 | 7.7  | ±2.5  | 146 | 55.8 | ±3.8  | 920  | 11.3     | ±1.8  | 198 | 25.1 | ±2.7  | 371 |
| Indo-Fijians     | 1012 | 7.7  | ±3.0  | 100 | 63.1 | ±5.7  | 654  | 11.5     | ±2.2  | 116 | 17.7 | ±5.9  | 142 |
| Others           | 66   | 15.3 | ±6.5  | 12  | 57.2 | ±8.0  | 34   | 12.9     | ±7.0  | 7   | 14.6 | ±12.8 | 13  |
| Total            | 2713 | 8.0  | ±2.1  | 258 | 58.7 | ±3.4  | 1608 | 11.5     | ±1.3  | 321 | 21.8 | ±2.9  | 526 |
| Female           |      |      |       |     |      |       |      |          |       |     |      |       |     |
| Fijians          | 2125 | 17.4 | ±3.9  | 377 | 69.6 | ±3.9  | 1466 | 7.3      | ±1.3  | 167 | 5.7  | ±1.9  | 115 |
| Indo-Fijians     | 1709 | 15.1 | ±3.8  | 281 | 71.1 | ±2.0  | 1206 | 10.8     | ±2.8  | 174 | 3.0  | ±0.7  | 48  |
| Others           | 119  | 15.0 | ±8.8  | 21  | 69.2 | ±15.8 | 73   | 10.4     | ±7.5  | 16  | 5.4  | ±4.8  | 9   |
| Total            | 3953 | 16.4 | ±2.9  | 679 | 70.2 | ±2.7  | 2745 | 8.8      | ±1.6  | 357 | 4.6  | ±1.1  | 172 |

Table 6. 9: Leisure activity participation, stratified by area and gender

| Total Population |      |      |       |     |      |       |      |          |       |     |      |       |     |
|------------------|------|------|-------|-----|------|-------|------|----------|-------|-----|------|-------|-----|
| Age              | N    | Nil  |       |     | Low  |       |      | Moderate |       |     | High |       |     |
|                  |      | %    | 95%CI | n   | %    | 95%CI | n    | %        | 95%CI | n   | %    | 95%CI | n   |
| Rural            | 3735 | 11.4 | ±2.8  | 502 | 64.3 | ±3.5  | 2463 | 9.9      | ±1.6  | 360 | 14.4 | ±2.3  | 410 |
| Urban            | 2931 | 13.5 | ±1.9  | 435 | 63.4 | ±3.0  | 1890 | 10.9     | ±1.3  | 318 | 12.1 | ±2.0  | 288 |
| Total            | 6666 | 12.0 | ±2.3  | 937 | 64.1 | ±2.8  | 4353 | 10.2     | ±1.3  | 678 | 13.8 | ±1.9  | 698 |
| Male             |      |      |       |     |      |       |      |          |       |     |      |       |     |
| Rural            | 1694 | 7.3  | ±2.4  | 148 | 59.0 | ±4.2  | 1032 | 11.3     | ±1.5  | 186 | 22.4 | ±3.6  | 328 |
| Urban            | 1019 | 10.2 | ±1.8  | 110 | 57.7 | ±4.4  | 576  | 12.1     | ±1.9  | 135 | 20.0 | ±1.8  | 198 |
| Total            | 2713 | 8.0  | ±2.1  | 258 | 58.7 | ±3.4  | 1608 | 11.5     | ±1.3  | 321 | 21.8 | ±2.9  | 526 |
| Female           |      |      |       |     |      |       |      |          |       |     |      |       |     |
| Rural            | 2041 | 16.4 | ±3.9  | 354 | 70.8 | ±3.5  | 1431 | 8.3      | ±2.1  | 174 | 4.4  | ±1.4  | 82  |
| Urban            | 1912 | 16.6 | ±2.5  | 325 | 68.6 | ±2.9  | 1314 | 9.8      | ±1.4  | 183 | 5.1  | ±2.2  | 90  |
| Total            | 3953 | 16.4 | ±2.9  | 679 | 70.2 | ±2.7  | 2745 | 8.8      | ±1.6  | 357 | 4.6  | ±1.1  | 172 |

## 10.7 Medical History:- High Blood Pressure

Table 7. 1 Time elapsed since most recent blood pressure measurement: Males and Females

| Age          | N           | Males       |              |             |               |              |            |                |              |            |
|--------------|-------------|-------------|--------------|-------------|---------------|--------------|------------|----------------|--------------|------------|
|              |             | <12 Months  |              |             | 1-5 Years Ago |              |            | > 5 Years Ago* |              |            |
|              |             | %           | 95%CI        | n           | %             | 95%CI        | n          | %              | 95%CI        | n          |
| 15-24        | 204         | 63.1        | ±10.5        | 128         | 33.1          | ±11.0        | 67         | 3.8            | ± 2.6        | 9          |
| 25-34        | 327         | 56.4        | ± 7.1        | 185         | 35.4          | ± 6.0        | 113        | 8.2            | ± 3.8        | 29         |
| 35-44        | 447         | 52.3        | ± 8.3        | 250         | 35            | ± 7.4        | 153        | 9.7            | ± 3.8        | 44         |
| 45-54        | 425         | 68          | ± 6.1        | 286         | 24.7          | ± 6.0        | 108        | 7.3            | ± 3.5        | 31         |
| 55-64        | 336         | 75.1        | ± 6.4        | 250         | 20.8          | ± 6.2        | 69         | 4.1            | ± 2.3        | 17         |
| <b>Total</b> | <b>1739</b> | <b>62</b>   | <b>± 4.3</b> | <b>1099</b> | <b>30.8</b>   | <b>± 3.9</b> | <b>510</b> | <b>7.2</b>     | <b>± 1.9</b> | <b>130</b> |
| Age          | N           | Females     |              |             |               |              |            |                |              |            |
|              |             | <12 Months  |              |             | 1-5 Years Ago |              |            | > 5 Years Ago* |              |            |
|              |             | %           | 95%CI        | n           | %             | 95%CI        | n          | %              | 95%CI        | n          |
| 15-24        | 435         | 58.9        | ± 7.0        | 263         | 38.1          | ± 6.3        | 159        | 3              | ± 1.5        | 13         |
| 25-34        | 797         | 51.2        | ± 6.7        | 426         | 37.5          | ± 3.9        | 289        | 11.3           | ± 4.1        | 82         |
| 35-44        | 840         | 54.7        | ± 5.5        | 458         | 32.8          | ± 5.3        | 284        | 12.5           | ± 3.0        | 98         |
| 45-54        | 683         | 72.5        | ± 5.8        | 496         | 19.3          | ± 4.1        | 134        | 8.2            | ± 3.6        | 53         |
| 55-64        | 409         | 77          | ± 6.0        | 316         | 18.6          | ± 5.4        | 74         | 4.5            | ± 2.4        | 19         |
| <b>Total</b> | <b>3164</b> | <b>60.1</b> | <b>± 4.5</b> | <b>1959</b> | <b>31.1</b>   | <b>± 2.9</b> | <b>940</b> | <b>8.8</b>     | <b>± 2.1</b> | <b>265</b> |

Table 7. 2 Time elapsed since most recent blood pressure measurement by area: Males and Females

| Age          | N           | Males       |             |             |               |             |            |                |             |            |
|--------------|-------------|-------------|-------------|-------------|---------------|-------------|------------|----------------|-------------|------------|
|              |             | <12 Months  |             |             | 1-5 Years Ago |             |            | > 5 Years Ago* |             |            |
|              |             | %           | 95%CI       | n           | %             | 95%CI       | n          | %              | 95%CI       | n          |
| Rural        | 1061        | 62.1        | ±5.3        | 671         | 31.3          | ±5.1        | 319        | 6.6            | ±2.1        | 71         |
| Urban        | 678         | 61.8        | ±4.8        | 428         | 29.4          | ±3.9        | 191        | 8.8            | ±2.5        | 59         |
| <b>Total</b> | <b>1739</b> | <b>62</b>   | <b>±4.3</b> | <b>1099</b> | <b>30.8</b>   | <b>±3.9</b> | <b>510</b> | <b>7.2</b>     | <b>±1.9</b> | <b>130</b> |
| Age          | N           | Females     |             |             |               |             |            |                |             |            |
|              |             | <12 Months  |             |             | 1-5 Years Ago |             |            | > 5 Years Ago* |             |            |
|              |             | %           | 95%CI       | n           | %             | 95%CI       | n          | %              | 95%CI       | n          |
| Rural        | 1646        | 59.7        | ±5.8        | 1014        | 31.5          | ±3.5        | 495        | 8.7            | ±2.8        | 137        |
| Urban        | 1518        | 61          | ±5.4        | 945         | 30.2          | ±3.2        | 445        | 8.9            | ±2.6        | 128        |
| <b>Total</b> | <b>3164</b> | <b>60.1</b> | <b>±4.4</b> | <b>1959</b> | <b>31.1</b>   | <b>±2.9</b> | <b>940</b> | <b>8.8</b>     | <b>±2.1</b> | <b>265</b> |

Table 7.3 Time elapsed since most recent blood pressure measurement by ethnicity: Males and Females

| Age          | N           | Males       |              |             |               |              |            |                |             |            |
|--------------|-------------|-------------|--------------|-------------|---------------|--------------|------------|----------------|-------------|------------|
|              |             | <12 Months  |              |             | 1-5 Years Ago |              |            | > 5 Years Ago* |             |            |
|              |             | %           | 95%CI        | n           | %             | 95%CI        | n          | %              | 95%CI       | n          |
| Fijian       | 1038        | 59.5        | ± 5.1        | 616         | 32            | ± 5.3        | 332        | 8.5            | ±2.3        | 90         |
| Indian       | 653         | 68.6        | ± 6.7        | 460         | 26            | ± 6.2        | 157        | 5.1            | ±2.7        | 36         |
| Fijian       | 48          | 44.9        | ±14.1        | 23          | 48.8          | ±15.9        | 21         | 6.3            | ±6.2        | 4          |
| <b>Total</b> | <b>1739</b> | <b>62</b>   | <b>± 4.3</b> | <b>1099</b> | <b>30.8</b>   | <b>± 3.9</b> | <b>510</b> | <b>7.2</b>     | <b>±1.9</b> | <b>130</b> |
| Age          | N           | Females     |              |             |               |              |            |                |             |            |
|              |             | <12 Months  |              |             | 1-5 Years Ago |              |            | > 5 Years Ago* |             |            |
|              |             | %           | 95%CI        | n           | %             | 95%CI        | n          | %              | 95%CI       | n          |
| Fijian       | 1673        | 59.2        | ± 5.6        | 973         | 32.3          | ± 4.0        | 553        | 8.5            | ±2.5        | 147        |
| Indian       | 1397        | 61.5        | ± 7.1        | 928         | 29.5          | ± 4.6        | 359        | 9              | ±2.9        | 110        |
| Fijian       | 94          | 58.2        | ±15.1        | 58          | 30.9          | ±11.7        | 28         | 11             | ±9.2        | 8          |
| <b>Total</b> | <b>3164</b> | <b>60.1</b> | <b>± 2.5</b> | <b>1959</b> | <b>31.1</b>   | <b>± 2.9</b> | <b>940</b> | <b>8.8</b>     | <b>±2.1</b> | <b>265</b> |

Table 7. 4 Diagnosis of hypertension by health worker: Males and Females

| Age   | Male |      |       |     | Females |      |       |     |
|-------|------|------|-------|-----|---------|------|-------|-----|
|       | N    | HTN* |       |     | N       | HTN* |       |     |
|       |      | %    | 95%CI | n   |         | %    | 95%CI | n   |
| 15-24 | 688  | 1.1  | ±0.7  | 9   | 952     | 3.0  | ±1.2  | 26  |
| 25-34 | 563  | 3.2  | ±1.8  | 21  | 940     | 8.4  | ±2.6  | 83  |
| 35-44 | 633  | 7.9  | ±2.6  | 51  | 943     | 12.2 | ±2.3  | 119 |
| 45-54 | 499  | 13.4 | ±4.7  | 73  | 740     | 24.1 | ±4.1  | 185 |
| 55-64 | 364  | 23.0 | ±4.6  | 85  | 426     | 37.6 | ±7.1  | 156 |
| Total | 2747 | 6.5  | ±1.3  | 239 | 4001    | 12.4 | ±1.7  | 569 |

\* HTN = Hypertension or high blood pressure

Table 7. 5 Diagnosis of hypertension by health worker by area: Males and Females

| Area  | Males |      |       |     | Females |      |       |     |
|-------|-------|------|-------|-----|---------|------|-------|-----|
|       | N     | HTN* |       |     | N       | HTN* |       |     |
|       |       | %    | 95%CI | n   |         | %    | 95%CI | n   |
| Rural | 1715  | 6.2  | ±1.5  | 139 | 2070    | 12.8 | ±2.1  | 304 |
| Urban | 1032  | 7.5  | ±2.1  | 100 | 1931    | 11.5 | ±2.5  | 265 |
| Total | 2747  | 6.5  | ±1.3  | 239 | 4001    | 12.4 | ±1.7  | 569 |

\* HTN = Hypertension or high blood pressure

Table 7. 6 Diagnosis of hypertension by health worker by ethnicity: Males and Females

| Ethnic Group | Males |      |       |     | Females |      |       |     |
|--------------|-------|------|-------|-----|---------|------|-------|-----|
|              | N     | HTN* |       |     | N       | HTN* |       |     |
|              |       | %    | 95%CI | n   |         | %    | 95%CI | n   |
| Fijian       | 1649  | 6.1  | ± 1.7 | 137 | 2147    | 12.6 | ± 2.4 | 293 |
| Indian       | 1032  | 6.8  | ± 1.6 | 97  | 1731    | 11.7 | ± 1.9 | 252 |
| Other        | 66    | 10.9 | ±10.2 | 5   | 123     | 17.2 | ±11.2 | 24  |
| Total        | 2747  | 6.5  | ± 1.3 | 239 | 4001    | 12.4 | ± 1.7 | 569 |

\* HTN = Hypertension or high blood pressure

Table 7. 7 Type of blood pressure treatment for hypertension: Males & Females

| Treatment | Males |       |     | Females |       |     |
|-----------|-------|-------|-----|---------|-------|-----|
|           | %     | 95%CI | N   | %       | 95%CI | N   |
| Drugs     | 47.3  | ±10.8 | 110 | 47.1    | ±8.6  | 282 |
| Diet      | 46.8  | ± 9.2 | 112 | 48.6    | ±7.3  | 292 |
| Weight    | 33.9  | ± 9.2 | 80  | 34.0    | ±6.3  | 206 |
| Smoking   | 28.8  | ± 7.4 | 69  | 11.6    | ±5.0  | 67  |
| Herbal    | 25.9  | ± 8.7 | 62  | 21.0    | ±6.2  | 115 |

Table 7. 8 Prevalence of hypertension by age group: Males and Females

| Age   | Males |      |       |     | Females |      |       |     |
|-------|-------|------|-------|-----|---------|------|-------|-----|
|       | N     | %    | 95%CI | n   | N       | %    | 95%CI | n   |
| 15-24 | 671   | 12.6 | ±3.7  | 81  | 927     | 4.9  | ±2.0  | 39  |
| 25-34 | 546   | 14.7 | ±4.6  | 78  | 924     | 9.1  | ±2.2  | 86  |
| 35-44 | 616   | 19.3 | ±3.7  | 114 | 928     | 17.1 | ±2.8  | 161 |
| 45-54 | 489   | 33.0 | ±5.6  | 165 | 728     | 36.7 | ±5.2  | 268 |
| 55-64 | 359   | 42.1 | ±7.2  | 152 | 422     | 62.2 | ±6.7  | 258 |
| Total | 2681  | 19.8 | ±2.4  | 590 | 3929    | 18.3 | ±1.9  | 812 |

\* HTN = Hypertension or high blood pressure



Table 7. 9 Prevalence of hypertension by area: Males and Females

| Area         | Males       |             |             |            | Females     |             |             |            |
|--------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|------------|
|              | N           | %           | 95%CI       | n          | N           | %           | 95%CI       | n          |
| Rural        | 1676        | 20.3        | ±3.0        | 379        | 2039        | 18.9        | ±2.5        | 448        |
| Urban        | 1005        | 18.2        | ±2.4        | 211        | 1890        | 16.7        | ±2.2        | 364        |
| <b>Total</b> | <b>2681</b> | <b>19.8</b> | <b>±2.4</b> | <b>590</b> | <b>3929</b> | <b>18.3</b> | <b>±1.9</b> | <b>812</b> |

\* HTN = Hypertension or high blood pressure

Table 7. 10 Prevalence of hypertension by ethnicity: Males and Females

| Ethnic Group | Males       |             |              |            | Females     |             |              |            |
|--------------|-------------|-------------|--------------|------------|-------------|-------------|--------------|------------|
|              | N           | %           | 95%CI        | n          | N           | %           | 95%CI        | n          |
| Fijian       | 1628        | 21.8        | ± 3.7        | 376        | 2132        | 19.4        | ± 2.6        | 452        |
| Indian       | 988         | 15.8        | ± 2.6        | 199        | 1677        | 16.8        | ± 2.0        | 341        |
| Others       | 65          | 29.5        | ±12.2        | 15         | 120         | 16.1        | ±10.0        | 19         |
| <b>Total</b> | <b>2681</b> | <b>19.8</b> | <b>± 2.4</b> | <b>590</b> | <b>3929</b> | <b>18.3</b> | <b>± 1.9</b> | <b>812</b> |

\* HTN = Hypertension or high blood pressure

## 10.8 Medical History:- Diabetes

Table 8. 1 Blood sugar measured in the last 12 months: Males and Females

| Age          | Males       |             |             |            | Females     |             |             |             |
|--------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|-------------|
|              | N           | Yes         |             |            | N           | Yes         |             |             |
|              |             | %           | 95%CI       | n          |             | %           | 95%CI       | n           |
| 15-24        | 690         | 8.8         | ±2.9        | 62         | 956         | 14.7        | ±2.9        | 150         |
| 25-34        | 564         | 17.5        | ±5.2        | 105        | 939         | 30.6        | ±3.5        | 294         |
| 35-44        | 632         | 28.4        | ±3.5        | 183        | 946         | 37.2        | ±3.9        | 352         |
| 45-54        | 498         | 44.7        | ±5.9        | 234        | 740         | 49.9        | ±7.1        | 398         |
| 55-64        | 364         | 52.4        | ±6.9        | 204        | 426         | 64.1        | ±6.2        | 267         |
| <b>TOTAL</b> | <b>2748</b> | <b>23.6</b> | <b>±2.8</b> | <b>788</b> | <b>4007</b> | <b>33.0</b> | <b>±3.1</b> | <b>1461</b> |

Table 8. 2 Blood sugar measured in the last 12 months by area: Males and Females

| Area         | Males       |             |             |            | Females     |             |             |             |
|--------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|-------------|
|              | N           | Yes         |             |            | N           | Yes         |             |             |
|              |             | %           | 95%CI       | n          |             | %           | 95%CI       | n           |
| Rural        | 1715        | 22.1        | ±3.2        | 439        | 2073        | 32.5        | ±3.8        | 733         |
| Urban        | 1033        | 28.4        | ±4.0        | 349        | 1934        | 34.0        | ±4.3        | 728         |
| <b>TOTAL</b> | <b>2748</b> | <b>23.6</b> | <b>±2.8</b> | <b>788</b> | <b>4007</b> | <b>33.0</b> | <b>±3.1</b> | <b>1461</b> |

Table 8. 3 Blood sugar measured in the last 12 months by ethnicity: Males and Females

| Ethnic Group | Males       |             |              |            | Females     |             |             |             |
|--------------|-------------|-------------|--------------|------------|-------------|-------------|-------------|-------------|
|              | N           | Yes         |              |            | N           | Yes         |             |             |
|              |             | %           | 95%CI        | n          |             | %           | 95%CI       | n           |
| Fijian       | 1648        | 21.2        | ± 3.1        | 403        | 2151        | 30.9        | ±4.8        | 683         |
| Indian       | 1034        | 26.9        | ± 5.4        | 370        | 1732        | 36.0        | ±4.9        | 740         |
| Others       | 66          | 24.3        | ±11.1        | 15         | 124         | 33.4        | ±8.9        | 38          |
| <b>TOTAL</b> | <b>2748</b> | <b>23.6</b> | <b>± 2.8</b> | <b>788</b> | <b>4007</b> | <b>33.0</b> | <b>±3.1</b> | <b>1461</b> |



Table 8. 4 Self reported diabetes: Males and Females

| Age   | Males |          |       |     | Females |          |       |     |
|-------|-------|----------|-------|-----|---------|----------|-------|-----|
|       | N     | Diabetes |       |     | N       | Diabetes |       |     |
|       |       | %        | 95%CI | n   |         | %        | 95%CI | n   |
| 15-24 | 688   | 0.3      | ±0.7  | 2   | 954     | -        | -     | 0   |
| 25-34 | 564   | 1.0      | ±1.0  | 9   | 939     | 1.4      | ±1.0  | 15  |
| 35-44 | 633   | 3.1      | ±1.5  | 22  | 945     | 2.6      | ±1.4  | 32  |
| 45-54 | 497   | 7.7      | ±3.6  | 43  | 741     | 13.1     | ±3.1  | 108 |
| 55-64 | 364   | 13.5     | ±3.6  | 56  | 425     | 19.2     | ±3.9  | 87  |
| Total | 2746  | 3.2      | ±0.9  | 132 | 4004    | 4.5      | ±0.9  | 242 |

Table 8. 5 Self reported diabetes by area: Males and Females

| Area  | Males |          |       |     | Females |          |       |     |
|-------|-------|----------|-------|-----|---------|----------|-------|-----|
|       | N     | Diabetes |       |     | N       | Diabetes |       |     |
|       |       | %        | 95%CI | n   |         | %        | 95%CI | n   |
| Rural | 1713  | 2.5      | ±0.9  | 60  | 2070    | 4        | ±1.0  | 106 |
| Urban | 1033  | 5.2      | ±0.9  | 72  | 1934    | 5.7      | ±1.1  | 136 |
| Total | 2746  | 3.2      | ±0.9  | 132 | 4004    | 4.5      | ±0.9  | 242 |

Table 8. 6 Self reported diabetes by ethnicity: Males and Females

| Ethnic Group | Males |          |       |     | Females |          |       |     |
|--------------|-------|----------|-------|-----|---------|----------|-------|-----|
|              | N     | Diabetes |       |     | N       | Diabetes |       |     |
|              |       | %        | 95%CI | n   |         | %        | 95%CI | n   |
| Fijian       | 1647  | 2.3      | ±0.9  | 51  | 2150    | 3.5      | ±1.2  | 86  |
| Indian       | 1033  | 4.8      | ±1.3  | 81  | 1730    | 5.9      | ±1.6  | 147 |
| Others       | 66    | -        | -     | 0   | 124     | 6.3      | ±3.8  | 9   |
| Total        | 2746  | 3.2      | ±0.9  | 132 | 4004    | 4.5      | ±0.9  | 242 |

Table 8. 7 Type of blood glucose treatment for diabetics: Males & Females

| Treatment | Males |    |       | Females |     |       |
|-----------|-------|----|-------|---------|-----|-------|
|           | %     | N  | 95%CI | %       | N   | 95%CI |
| Insulin   | 3.8   | 5  | ± 4.1 | 7.8     | 18  | ±4.2  |
| Drugs     | 62.3  | 84 | ±11.8 | 66.5    | 161 | ±9.4  |
| Diet      | 66.7  | 85 | ±10.9 | 70.0    | 174 | ±8.6  |
| Weight    | 43.2  | 54 | ±15.1 | 39.6    | 100 | ±6.9  |
| Smoking   | 29.8  | 39 | ±11.0 | 8.7     | 18  | ±4.3  |
| Herbal    | 19.3  | 26 | ±10.6 | 18.6    | 37  | ±8.0  |

Table 8. 8 Prevalence of Diabetes by age group: Males and Females

| Age   | Males |      |       |     | Females |      |       |     |
|-------|-------|------|-------|-----|---------|------|-------|-----|
|       | N     | %    | 95%CI | n   | N       | %    | 95%CI | n   |
| 25-34 | 207   | 3.3  | ±2.6  | 11  | 354     | 6.7  | ±4.4  | 25  |
| 35-44 | 260   | 12.6 | ±4.9  | 36  | 438     | 11.3 | ±3.4  | 54  |
| 45-54 | 227   | 26.9 | ±9.9  | 54  | 404     | 26.2 | ±6.1  | 114 |
| 55-64 | 168   | 26.8 | ±8.7  | 52  | 219     | 38.7 | ±9.2  | 89  |
| Total | 862   | 14.6 | ±3.8  | 153 | 1415    | 17.6 | ±3.6  | 282 |

Table 8. 9 Prevalence of Diabetes by area: Males and Females

| Area  | Males |      |       |     | Females |      |       |     |
|-------|-------|------|-------|-----|---------|------|-------|-----|
|       | N     | %    | 95%CI | n   | N       | %    | 95%CI | n   |
| Rural | 569   | 11.4 | ±3.8  | 70  | 711     | 14.6 | ±3.3  | 111 |
| Urban | 293   | 25.6 | ±5.4  | 83  | 704     | 24.0 | ±5.8  | 171 |
| Total | 862   | 14.6 | ±3.8  | 153 | 1415    | 17.6 | ±3.6  | 282 |

Table 8. 10 Prevalence of Diabetes by ethnicity: Males and Females

| Ethnic Group | Males |      |       |     | Females |      |       |     |
|--------------|-------|------|-------|-----|---------|------|-------|-----|
|              | N     | %    | 95%CI | n   | N       | %    | 95%CI | n   |
| Fijian       | 508   | 8.3  | ± 2.6 | 54  | 739     | 14.8 | ± 4.3 | 116 |
| Indian       | 338   | 22.1 | ± 5.0 | 97  | 641     | 20.2 | ± 3.3 | 153 |
| Others       | 16    | 20.8 | ±24.8 | 2   | 35      | 37.4 | ±30.8 | 13  |
| Total        | 862   | 14.6 | ± 3.8 | 153 | 1415    | 17.6 | ± 3.6 | 282 |

## 10.9 Physical Measures

Table 9. 1 Height (m): Males and Females

| Age   | Males |       |       | Females |       |       |
|-------|-------|-------|-------|---------|-------|-------|
|       | N     | Mean  | 95%CI | N       | Mean  | 95%CI |
| 15-24 | 674   | 173.2 | ±1.5  | 930     | 161.6 | ±1.5  |
| 25-34 | 548   | 174.0 | ±1.3  | 924     | 162.1 | ±2.0  |
| 35-44 | 616   | 174.0 | ±1.4  | 933     | 161.2 | ±1.9  |
| 45-54 | 489   | 172.5 | ±1.4  | 732     | 160.1 | ±1.9  |
| 55-64 | 359   | 171.7 | ±1.3  | 422     | 158.6 | ±1.9  |
| TOTAL | 2686  | 173.4 | ±1.2  | 3941    | 161.2 | ±1.7  |

Table 9. 2 Weight (kg): Males and Females

| Age   | Males |      |       | Females* |      |       |
|-------|-------|------|-------|----------|------|-------|
|       | N     | Mean | 95%CI | N        | Mean | 95%CI |
| 15-24 | 674   | 66.7 | ±2.9  | 680      | 61.6 | ±3.4  |
| 25-34 | 548   | 74.2 | ±3.5  | 643      | 71.5 | ±4.6  |
| 35-44 | 615   | 76.9 | ±3.5  | 680      | 72.3 | ±4.0  |
| 45-54 | 489   | 77.9 | ±4.3  | 527      | 75.4 | ±4.6  |
| 55-64 | 359   | 77.3 | ±2.7  | 329      | 75.9 | ±4.0  |
| TOTAL | 2685  | 73.2 | ±3.1  | 2859     | 69.6 | ±3.8  |

\* Pregnant females excluded

Table 9. 3 Body mass index (kg/m<sup>2</sup>) by age group: Males and Females

| Age   | Males |      |       | Females* |      |       |
|-------|-------|------|-------|----------|------|-------|
|       | N     | Mean | 95%CI | N        | Mean | 95%CI |
| 15-24 | 674   | 22.1 | ±0.7  | 680      | 23.5 | ±1.0  |
| 25-34 | 548   | 24.4 | ±0.9  | 643      | 27.1 | ±1.1  |
| 35-44 | 615   | 25.3 | ±0.9  | 680      | 27.7 | ±0.9  |
| 45-54 | 489   | 26.0 | ±1.1  | 527      | 29.4 | ±1.1  |
| 55-64 | 359   | 26.1 | ±0.8  | 329      | 30.0 | ±1.0  |
| TOTAL | 2685  | 24.2 | ±0.7  | 2859     | 26.7 | ±0.9  |

\* Pregnant females excluded

Table 9. 4 Body mass index (kg/m<sup>2</sup>) by area: Males and Females

| Area  | Males |      |       | Females* |      |       |
|-------|-------|------|-------|----------|------|-------|
|       | N     | Mean | 95%CI | N        | Mean | 95%CI |
| Rural | 1679  | 24.3 | ±0.8  | 1537     | 26.8 | ±1.0  |
| Urban | 1006  | 24.2 | ±1.3  | 1322     | 26.4 | ±1.4  |
| TOTAL | 2685  | 24.2 | ±0.7  | 2859     | 26.7 | ±0.8  |

\* Pregnant females excluded

Table 9. 5 Body mass index (kg/m<sup>2</sup>) by ethnic group: Males and Females

| Ethnic Group | Males |      |       | Females* |      |       |
|--------------|-------|------|-------|----------|------|-------|
|              | N     | Mean | 95%CI | N        | Mean | 95%CI |
| Fijian       | 1631  | 25.3 | ±0.5  | 1566     | 28.0 | ±0.7  |
| Indian       | 990   | 22.5 | ±0.6  | 1206     | 24.4 | ±0.4  |
| Others       | 64    | 26.7 | ±1.1  | 87       | 29.3 | ±2.4  |
| TOTAL        | 2685  | 24.2 | ±0.7  | 2859     | 26.7 | ±0.9  |

\* Pregnant females excluded

Table 9. 6 Risk categories for body mass index (kg/m2): Males

| Age   | N    | Non Obese |       |      | Overweight |       |     | Obese |       |     |
|-------|------|-----------|-------|------|------------|-------|-----|-------|-------|-----|
|       |      | %         | 95%CI | n    | %          | 95%CI | n   | %     | 95%CI | n   |
| 15-24 | 674  | 82.8      | ±4.5  | 548  | 14.9       | ±4.2  | 106 | 2.3   | ±1.5  | 20  |
| 25-34 | 548  | 63.3      | ±7.7  | 332  | 27.5       | ±5.1  | 160 | 9.2   | ±4.9  | 56  |
| 35-44 | 615  | 50.3      | ±8.3  | 290  | 36.4       | ±7.1  | 232 | 13.2  | ±5.2  | 93  |
| 45-54 | 489  | 45.2      | ±9.3  | 209  | 37.4       | ±6.2  | 189 | 17.3  | ±7.2  | 91  |
| 55-64 | 359  | 45.2      | ±7.3  | 160  | 35.9       | ±6.5  | 130 | 18.9  | ±6.1  | 69  |
| TOTAL | 2685 | 62.7      | ±5.5  | 1539 | 27.5       | ±3.3  | 817 | 9.8   | ±3.2  | 329 |

Table 9. 7 Risk categories for body mass index (kg/m2): Females\*

| Age   | N    | Non Obese |       |      | Overweight |       |     | Obese |       |     |
|-------|------|-----------|-------|------|------------|-------|-----|-------|-------|-----|
|       |      | %         | 95%CI | n    | %          | 95%CI | n   | %     | 95%CI | n   |
| 15-24 | 680  | 66.9      | ±7.3  | 457  | 24.2       | ±6.9  | 156 | 8.9   | ±2.5  | 67  |
| 25-34 | 643  | 39.0      | ±7.8  | 241  | 31.8       | ±5.9  | 210 | 29.2  | ±6.8  | 192 |
| 35-44 | 680  | 32.2      | ±7.0  | 206  | 39.3       | ±3.8  | 261 | 28.5  | ±6.5  | 213 |
| 45-54 | 527  | 23.6      | ±8.1  | 125  | 32.7       | ±5.5  | 174 | 43.6  | ±9.5  | 228 |
| 55-64 | 329  | 20.0      | ±5.9  | 66   | 35.2       | ±5.7  | 115 | 44.8  | ±7.4  | 148 |
| TOTAL | 2859 | 42.2      | ±6.6  | 1095 | 31.5       | ±3.4  | 916 | 26.4  | ±4.6  | 848 |

\* Pregnant females excluded

Table 9. 8 Risk categories for body mass index (kg/m2) by Area: Males

| Area  | N    | Non Obese |       |      | Overweight |       |     | Obese |       |     |
|-------|------|-----------|-------|------|------------|-------|-----|-------|-------|-----|
|       |      | %         | 95%CI | n    | %          | 95%CI | n   | %     | 95%CI | n   |
| Rural | 1679 | 63.2      | ±6.5  | 985  | 28.4       | ±4.2  | 526 | 8.4   | ±2.9  | 168 |
| Urban | 1006 | 61.3      | ±8.4  | 554  | 24.6       | ±2.8  | 291 | 14.1  | ±7.7  | 161 |
| TOTAL | 2685 | 62.7      | ±5.5  | 1539 | 27.5       | ±3.3  | 817 | 9.8   | ±3.2  | 329 |

Table 9. 9 Risk categories for body mass index (kg/m2) by Area: Females\*

| Area  | N    | Non Obese |       |      | Overweight |       |     | Obese |       |     |
|-------|------|-----------|-------|------|------------|-------|-----|-------|-------|-----|
|       |      | %         | 95%CI | n    | %          | 95%CI | n   | %     | 95%CI | n   |
| Rural | 1537 | 40.8      | ±8.3  | 569  | 32.9       | ±4.4  | 526 | 26.3  | ±5.3  | 442 |
| Urban | 1322 | 45.4      | ±7.5  | 526  | 28.1       | ±3.7  | 390 | 26.5  | ±7.0  | 406 |
| TOTAL | 2859 | 42.2      | ±6.6  | 1095 | 31.5       | ±3.4  | 916 | 26.4  | ±4.6  | 848 |

\* Pregnant females excluded

Table 9. 10 Risk categories for body mass index (kg/m2) by ethnic group: Males

| Ethnic Group | N    | Non Obese |       |      | Overweight |       |     | Obese |       |     |
|--------------|------|-----------|-------|------|------------|-------|-----|-------|-------|-----|
|              |      | %         | 95%CI | n    | %          | 95%CI | n   | %     | 95%CI | n   |
| Fijian       | 1631 | 57.4      | ± 5.1 | 819  | 31.1       | ±2.7  | 563 | 11.3  | ±3.8  | 249 |
| Indian       | 990  | 72.7      | ± 5.3 | 691  | 21.4       | ±3.9  | 237 | 5.9   | ±2.1  | 62  |
| Others       | 64   | 41.6      | ±19.3 | 29   | 32.0       | ±9.7  | 17  | 26.4  | ±9.5  | 18  |
| TOTAL        | 2685 | 62.7      | ± 5.5 | 1539 | 27.5       | ±3.3  | 817 | 9.8   | ±3.2  | 329 |

Table 9. 11 Risk categories for body mass index (kg/m2) by ethnic group: Females\*

| Ethnic Group | N           | Non Obese   |              |             | Overweight  |              |            | Obese       |              |            |
|--------------|-------------|-------------|--------------|-------------|-------------|--------------|------------|-------------|--------------|------------|
|              |             | %           | 95%CI        | n           | %           | 95%CI        | n          | %           | 95%CI        | n          |
| Fijian       | 1566        | 32.8        | ± 5.8        | 444         | 35.2        | ± 3.7        | 539        | 32.0        | ± 5.0        | 583        |
| Indian       | 1206        | 57.9        | ± 4.2        | 627         | 26.3        | ± 3.1        | 357        | 15.8        | ± 2.7        | 222        |
| Others       | 87          | 37.9        | ±19.8        | 24          | 22.4        | ±11.9        | 20         | 39.7        | ±18.6        | 43         |
| <b>TOTAL</b> | <b>2859</b> | <b>42.2</b> | <b>± 6.6</b> | <b>1095</b> | <b>31.5</b> | <b>± 3.4</b> | <b>916</b> | <b>26.4</b> | <b>± 4.6</b> | <b>848</b> |

\* Pregnant females excluded

Table 9. 12 Waist Circumference (cm): Males and Females

| Age          | Males       |             |             | Females*    |             |             |
|--------------|-------------|-------------|-------------|-------------|-------------|-------------|
|              | N           | Mean        | 95%CI       | N           | Mean        | 95%CI       |
| 15-24        | 674         | 74.3        | ±1.8        | 871         | 74.3        | ±2.3        |
| 25-34        | 548         | 81.6        | ±2.2        | 876         | 83.7        | ±2.2        |
| 35-44        | 616         | 86.0        | ±1.5        | 920         | 86.8        | ±1.8        |
| 45-54        | 489         | 89.5        | ±2.3        | 732         | 90.9        | ±2.1        |
| 55-64        | 359         | 90.8        | ±1.8        | 422         | 93.4        | ±2.4        |
| <b>TOTAL</b> | <b>2686</b> | <b>82.6</b> | <b>±1.6</b> | <b>3821</b> | <b>83.6</b> | <b>±2.0</b> |

\* Pregnant females excluded

Table 9. 13: Substantially increased risk\* category for waist measurement by gender, agegroup and ethnicity

| Age          | Males       |                              |             |            | Females†    |                              |              |             |
|--------------|-------------|------------------------------|-------------|------------|-------------|------------------------------|--------------|-------------|
|              | N           | Substantially increased risk |             |            | N           | Substantially increased risk |              |             |
|              |             | %                            | 95%CI       | n          |             | %                            | 95%CI        | n           |
| 15-24        | 674         | 1.0                          | ±1.0        | 9          | 680         | 12.3                         | ± 3.4        | 85          |
| 25-34        | 548         | 4.2                          | ±3.0        | 27         | 644         | 37.5                         | ± 7.4        | 243         |
| 35-44        | 616         | 6.0                          | ±2.2        | 43         | 680         | 45.4                         | ± 7.3        | 321         |
| 45-54        | 489         | 15.3                         | ±6.0        | 82         | 527         | 60.0                         | ± 8.8        | 315         |
| 55-64        | 359         | 16.4                         | ±6.2        | 68         | 329         | 66.5                         | ± 6.1        | 217         |
| Ethnic       | N           | %                            | 95%CI       | n          | N           | %                            | 95%CI        | n           |
| Fijian       | 1631        | 6.2                          | ±2.4        | 154        | 1568        | 44.5                         | ± 5.6        | 783         |
| Indo-Fijian  | 990         | 5.2                          | ±2.2        | 68         | 1205        | 25.4                         | ± 5.5        | 355         |
| Others       | 65          | 12.5                         | ±9.6        | 7          | 87          | 40.6                         | ±20.7        | 43          |
| <b>TOTAL</b> | <b>2686</b> | <b>6.1</b>                   | <b>±2.1</b> | <b>229</b> | <b>2860</b> | <b>37.4</b>                  | <b>± 5.4</b> | <b>1181</b> |

† Pregnant females excluded

\*\* Substantially increased risk : males ≥ 102cm; females ≥ 88cm

**Table 9. 14 Currently on anti-hypertensive treatment with drugs prescribed by a health professional: Males and Females**

| Age          | Males      |             |             |           | Females    |             |             |            |
|--------------|------------|-------------|-------------|-----------|------------|-------------|-------------|------------|
|              | N          | Yes         |             |           | N          | Yes         |             |            |
|              |            | %           | 95%CI       | n         |            | %           | 95%CI       | n          |
| 15-24        | 49         | -           | -           | 0         | 90         | -           | -           | 0          |
| 25-34        | 66         | -           | -           | 0         | 125        | 2.7         | ±3.4        | 4          |
| 35-44        | 96         | 10.7        | ±9.3        | 9         | 179        | 11.9        | ±5.0        | 22         |
| 45-54        | 97         | 20.3        | ±8.0        | 20        | 207        | 35          | ±9.9        | 71         |
| 55-64        | 101        | 28.7        | ±9.2        | 32        | 147        | 42.3        | ±9.2        | 67         |
| <b>TOTAL</b> | <b>409</b> | <b>10.9</b> | <b>±3.1</b> | <b>61</b> | <b>748</b> | <b>18.7</b> | <b>±3.5</b> | <b>164</b> |

**Table 9. 15 Resting blood pressure (mmHg): Males†**

| Age          | Systolic    |              |             | Diastolic   |             |             |
|--------------|-------------|--------------|-------------|-------------|-------------|-------------|
|              | N           | Mean         | 95%CI       | N           | Mean        | 95%CI       |
| 15-24        | 657         | 124.5        | ±2.0        | 657         | 66.6        | ±1.2        |
| 25-34        | 527         | 125.9        | ±1.9        | 527         | 71.0        | ±2.0        |
| 35-44        | 572         | 126.0        | ±2.1        | 572         | 74.0        | ±1.8        |
| 45-54        | 421         | 128.5        | ±1.9        | 421         | 75.3        | ±1.7        |
| 55-64        | 287         | 131.5        | ±2.4        | 287         | 74.3        | ±1.9        |
| <b>TOTAL</b> | <b>2464</b> | <b>126.2</b> | <b>±1.4</b> | <b>2464</b> | <b>71.0</b> | <b>±1.3</b> |

† Excludes persons taking medication for high blood pressure

**Table 9. 16 Resting blood pressure (mmHg): Females†**

| Age          | Systolic    |              |             | Diastolic   |             |             |
|--------------|-------------|--------------|-------------|-------------|-------------|-------------|
|              | N           | Mean         | 95%CI       | N           | Mean        | 95%CI       |
| 15-24        | 897         | 115.3        | ±2.2        | 897         | 66.9        | ±1.5        |
| 25-34        | 875         | 118.3        | ±1.9        | 875         | 71.4        | ±1.5        |
| 35-44        | 834         | 121.2        | ±1.6        | 834         | 73.6        | ±1.5        |
| 45-54        | 589         | 129.4        | ±2.6        | 589         | 77.5        | ±1.3        |
| 55-64        | 291         | 139.6        | ±3.1        | 291         | 79.6        | ±2.0        |
| <b>TOTAL</b> | <b>3486</b> | <b>120.8</b> | <b>±1.8</b> | <b>3486</b> | <b>71.8</b> | <b>±1.3</b> |

† Excludes persons taking medication for high blood pressure

**Table 9. 17 Blood pressure risk categories: Males†**

| Age          | N           | Optimal     |             |            | Normal      |             |            | High-Normal |             |            | Grade 1 HTN |             |            | Grade 2 HTN |             |           | Grade 3 HTN |             |           |
|--------------|-------------|-------------|-------------|------------|-------------|-------------|------------|-------------|-------------|------------|-------------|-------------|------------|-------------|-------------|-----------|-------------|-------------|-----------|
|              |             | %           | 95%CI       | n          | %           | 95%CI       | n          | %           | 95%CI       | n          | %           | 95%CI       | n          | %           | 95%CI       | n         | %           | 95%CI       | n         |
| 15-24        | 665         | 39.5        | ±6.6        | 262        | 24.9        | ±3.8        | 176        | 23.6        | ±4.2        | 151        | 11.4        | ±3.4        | 72         | 0.6         | ±0.7        | 4         | -           | -           | 0         |
| 25-34        | 528         | 32.5        | ±5.2        | 174        | 30.2        | ±3.4        | 156        | 23.2        | ±4.4        | 127        | 12.8        | ±4.4        | 65         | 1.3         | ±1.2        | 6         | -           | -           | 0         |
| 35-44        | 563         | 35.6        | ±4.4        | 209        | 28.3        | ±3.6        | 158        | 21.8        | ±3.4        | 116        | 11.5        | ±2.8        | 63         | 2.5         | ±1.1        | 15        | 0.3         | ±0.5        | 2         |
| 45-54        | 409         | 32.5        | ±4.6        | 133        | 26.5        | ±3.9        | 105        | 18.1        | ±2.9        | 75         | 17.5        | ±3.8        | 73         | 3.2         | ±2.3        | 15        | 2.3         | ±1.9        | 8         |
| 55-64        | 269         | 29.3        | ±6.3        | 80         | 20.5        | ±4.3        | 59         | 21.3        | ±7.3        | 55         | 22.1        | ±9.0        | 57         | 6.8         | ±2.6        | 18        | -           | -           | 0         |
| <b>Total</b> | <b>2434</b> | <b>35.2</b> | <b>±4.0</b> | <b>858</b> | <b>26.9</b> | <b>±2.2</b> | <b>654</b> | <b>22.3</b> | <b>±2.2</b> | <b>524</b> | <b>13.3</b> | <b>±2.3</b> | <b>330</b> | <b>1.9</b>  | <b>±0.7</b> | <b>58</b> | <b>0.4</b>  | <b>±0.2</b> | <b>10</b> |

† Excludes persons taking medication for high blood pressure

†† HTN=Hypertension

Optimal: <120/<80; Normal:120-129/80-84; High-normal: 130-139/85-89; Hypertension: Grade 1=140-159/90-99,Grade2=160-179/100-109, Grade 3 is ≥180/≥110.



Table 9. 18 Blood pressure risk categories by area: Malest†

| Area  | N    | Optimal |       |     | Normal |       |     | High-Normal |       |     | Grade 1 HTN |       |     | Grade 2 HTN |       |    | Grade 3 HTN |       |    |
|-------|------|---------|-------|-----|--------|-------|-----|-------------|-------|-----|-------------|-------|-----|-------------|-------|----|-------------|-------|----|
|       |      | %       | 95%CI | n   | %      | 95%CI | n   | %           | 95%CI | n   | %           | 95%CI | n   | %           | 95%CI | n  | %           | 95%CI | n  |
| Rural | 1534 | 33.4    | ±4.6  | 489 | 26.8   | ±2.5  | 415 | 23.5        | ±2.4  | 359 | 13.8        | ±2.8  | 224 | 2.1         | ±0.9  | 41 | 0.3         | ±0.3  | 6  |
| Urban | 900  | 41.3    | ±5.8  | 369 | 27.3   | ±4.1  | 239 | 18.2        | ±3.6  | 165 | 11.4        | ±2.6  | 106 | 1.3         | ±0.5  | 17 | 0.4         | ±0.3  | 4  |
| Total | 2434 | 35.2    | ±3.7  | 858 | 26.9   | ±2.0  | 654 | 22.3        | ±2.1  | 524 | 13.3        | ±2.2  | 330 | 1.9         | ±0.7  | 58 | 0.4         | ±0.2  | 10 |

† Excludes persons taking medication for high blood pressure

†† HTN=Hypertension

Optimal: <120/<80; Normal:120-129/80-84; High-normal: 130-139/85-89; Hypertension: Grade 1=140-159/90-99, Grade2=160-179/100-109, Grade 3 is ≥180/≥110.

Table 9. 19 Blood pressure risk categories by ethnicity Malest†

| Ethnic group | N    | Optimal |       |     | Normal |       |     | High-Normal |       |     | Grade 1 HTN |       |     | Grade 2 HTN |       |    | Grade 3 HTN |       |    |
|--------------|------|---------|-------|-----|--------|-------|-----|-------------|-------|-----|-------------|-------|-----|-------------|-------|----|-------------|-------|----|
|              |      | %       | 95%CI | n   | %      | 95%CI | n   | %           | 95%CI | n   | %           | 95%CI | n   | %           | 95%CI | n  | %           | 95%CI | n  |
| Fijian       | 1492 | 28      | ± 4.2 | 435 | 27.8   | ± 2.2 | 413 | 25.2        | ± 2.5 | 361 | 16          | ± 3.0 | 233 | 2.7         | ±0.9  | 45 | 0.2         | ±0.2  | 5  |
| Indian       | 882  | 46.9    | ± 6.7 | 405 | 24.8   | ± 4.3 | 221 | 18.3        | ± 2.8 | 152 | 8.6         | ± 2.8 | 88  | 0.8         | ±0.5  | 11 | 0.6         | ±0.3  | 5  |
| Others       | 60   | 26.1    | ±10.6 | 18  | 34     | ±10.3 | 20  | 18.5        | ±11.3 | 11  | 19.5        | ±11.8 | 9   | 1.9         | ±2.4  | 2  | -           | -     | 0  |
| Total        | 2434 | 35.2    | ± 3.7 | 858 | 26.9   | ± 2.0 | 654 | 22.3        | ± 2.1 | 524 | 13.3        | ± 2.2 | 330 | 1.9         | ±0.7  | 58 | 0.4         | ±0.2  | 10 |

† Excludes persons taking medication for high blood pressure

†† HTN=Hypertension

Optimal: <120/<80; Normal:120-129/80-84; High-normal: 130-139/85-89; Hypertension: Grade 1=140-159/90-99, Grade 2=160-179/100-109, Grade 3 is ≥180/≥110.

Table 9. 20 Blood pressure risk categories: Femalest†

| Age   | N    | Optimal |       |      | Normal |       |     | High-Normal |       |     | Grade 1 HTN |       |     | Grade 2 HTN |       |    | Grade 3 HTN |       |    |
|-------|------|---------|-------|------|--------|-------|-----|-------------|-------|-----|-------------|-------|-----|-------------|-------|----|-------------|-------|----|
|       |      | %       | 95%CI | n    | %      | 95%CI | n   | %           | 95%CI | n   | %           | 95%CI | n   | %           | 95%CI | n  | %           | 95%CI | n  |
| 15-24 | 904  | 66.9    | ±7.5  | 633  | 20.2   | ±5.0  | 174 | 86          | ±3.2  | 65  | 4           | ±1.9  | 30  | 0.2         | ±0.4  | 2  | -           | -     | 0  |
| 25-34 | 840  | 59.1    | ±5.6  | 522  | 22.6   | ±4.1  | 172 | 11.5        | ±4.0  | 93  | 5.9         | ±2.0  | 44  | 0.72        | ±0.8  | 7  | 0.1         | ±0.2  | 2  |
| 35-44 | 811  | 50      | ±5.9  | 418  | 23.9   | ±3.9  | 184 | 15.6        | ±3.1  | 120 | 8.4         | ±2.3  | 70  | 1.8         | ±1.2  | 14 | 0.4         | ±0.4  | 5  |
| 45-54 | 542  | 36      | ±6.8  | 213  | 22.9   | ±3.6  | 116 | 18.9        | ±4.3  | 96  | 15.3        | ±2.1  | 83  | 5.6         | ±2.3  | 27 | 1.3         | ±1.1  | 7  |
| 55-64 | 260  | 21.3    | ±7.6  | 59   | 17.1   | ±6.2  | 49  | 19.2        | ±6.1  | 47  | 29          | ±8.9  | 65  | 11          | ±3.7  | 32 | 2.3         | ±1.9  | 8  |
| Total | 3357 | 54.6    | ±5.0  | 1845 | 21.8   | ±2.7  | 695 | 12.8        | ±2.4  | 421 | 8.4         | ±1.3  | 292 | 2.1         | ±0.6  | 82 | 0.4         | ±0.2  | 22 |

† Excludes persons taking medication for high blood pressure

†† HTN=Hypertension

Optimal: <120/<80; Normal:120-129/80-84; High-normal: 130-139/85-89; Hypertension: Grade 1=140-159/90-99, Grade 2=160-179/100-109, Grade 3 is ≥180/≥110.

Table 9. 21 Blood pressure risk categories by area: Femalest

| Area  | N    | Optimal |       |      | Normal |       |     | High-Normal |       |     | Grade 1 HTN |       |     | Grade 2 HTN |       |    | Grade 3 HTN |       |    |
|-------|------|---------|-------|------|--------|-------|-----|-------------|-------|-----|-------------|-------|-----|-------------|-------|----|-------------|-------|----|
|       |      | %       | 95%CI | n    | %      | 95%CI | n   | %           | 95%CI | n   | %           | 95%CI | n   | %           | 95%CI | n  | %           | 95%CI | n  |
| Rural | 1737 | 51.1    | ±5.6  | 859  | 23.3   | ±3.3  | 404 | 14          | ±3.0  | 243 | 9.2         | ±1.5  | 174 | 2.1         | ±0.7  | 49 | 0.1         | ±0.2  | 8  |
| Urban | 1620 | 62.7    | ±4.5  | 986  | 18.1   | ±1.9  | 291 | 10.1        | ±2.3  | 178 | 6.6         | ±1.1  | 118 | 1.8         | ±0.9  | 33 | 0.7         | ±0.3  | 14 |
| Total | 3357 | 54.6    | ±5.0  | 1845 | 21.8   | ±2.7  | 695 | 12.8        | ±2.4  | 421 | 8.4         | ±1.3  | 292 | 2.1         | ±0.6  | 82 | 0.4         | ±0.2  | 22 |

† Excludes persons taking medication for high blood pressure

†† HTN=Hypertension

Optimal: <120/<80; Normal:120-129/80-84; High-normal: 130-139/85-89; Hypertension: Grade 1=140-159/90-99, Grade 2=160-179/100-109, Grade 3 is ≥180/≥110.

Table 9. 22 Blood pressure risk categories by ethnicity Femalest

| Ethnic group | N    | Optimal |       |      | Normal |       |     | High-Normal |       |     | Grade 1 HTN |       |     | Grade 2 HTN |       |    | Grade 3 HTN |       |    |
|--------------|------|---------|-------|------|--------|-------|-----|-------------|-------|-----|-------------|-------|-----|-------------|-------|----|-------------|-------|----|
|              |      | %       | 95%CI | n    | %      | 95%CI | n   | %           | 95%CI | n   | %           | 95%CI | n   | %           | 95%CI | n  | %           | 95%CI | n  |
| Fijian       | 1842 | 47.4    | ± 4.5 | 886  | 24.2   | ± 3.2 | 423 | 15.5        | ±2.3  | 275 | 9.6         | ±1.7  | 185 | 2.6         | ±0.7  | 56 | 0.6         | ±0.3  | 17 |
| Indian       | 1419 | 65.6    | ± 2.5 | 904  | 17.5   | ± 1.6 | 250 | 8.4         | ±0.9  | 132 | 6.9         | ±1.6  | 103 | 1.3         | ±0.5  | 25 | 0.2         | ±0.2  | 5  |
| Others       | 96   | 51.1    | ±11.5 | 55   | 27.7   | ±11.4 | 22  | 15.9        | ±12.8 | 14  | 4.5         | ±4.0  | 4   | 0.7         | ±1.3  | 1  | 0.6         | ±0.3  | 17 |
| Total        | 3357 | 54.6    | ± 5.0 | 1845 | 21.8   | ± 2.7 | 695 | 12.8        | ±2.4  | 421 | 8.4         | ±1.3  | 292 | 2.1         | ±0.6  | 82 | 0.4         | ±0.2  | 22 |

† Excludes persons taking medication for high blood pressure

†† HTN=Hypertension

Optimal: <120/<80; Normal:120-129/80-84; High-normal: 130-139/85-89; Hypertension: Grade 1=140-159/90-99, Grade 2=160-179/100-109, Grade 3 is ≥180/≥110.

Table 9. 23 Hip Circumference (cm): Males and Females

| Age   | Males |      |       | Females† |       |       |
|-------|-------|------|-------|----------|-------|-------|
|       | N     | Mean | 95%CI | N        | Mean  | 95%CI |
| 15-24 | 674   | 90.4 | ±1.8  | 680      | 93.3  | ±2.1  |
| 25-34 | 548   | 94.4 | ±1.9  | 644      | 99.6  | ±2.2  |
| 35-44 | 616   | 95.8 | ±1.5  | 680      | 99.9  | ±2.1  |
| 45-54 | 489   | 96.4 | ±2.1  | 527      | 104.2 | ±4.5  |
| 55-64 | 359   | 95.6 | ±1.4  | 329      | 103.4 | ±2.3  |
| TOTAL | 2686  | 93.9 | ±1.6  | 2689     | 98.8  | ±2.1  |

† Pregnant females excluded

Table 9. 24 Waist-hip Circumference ratio: Males and Females

| Age   | Males |      |       | Females† |      |       |
|-------|-------|------|-------|----------|------|-------|
|       | N     | Mean | 95%CI | N        | Mean | 95%CI |
| 15-24 | 674   | 0.8  | ±0.01 | 678      | 0.8  | ±0.01 |
| 25-34 | 548   | 0.9  | ±0.01 | 643      | 0.8  | ±0.01 |
| 35-44 | 615   | 0.9  | ±0.01 | 679      | 0.9  | ±0.01 |
| 45-54 | 489   | 0.9  | ±0.01 | 527      | 0.9  | ±0.01 |
| 55-64 | 357   | 0.9  | ±0.01 | 329      | 0.9  | ±0.03 |
| TOTAL | 2683  | 0.9  | ±0.01 | 2856     | 0.8  | ±0.01 |

† Pregnant females excluded

Table 9. 25 Risk categories for waist-hip ratio: Males and Females

| Age   | Males |                        |       |     | Females |                       |       |      |
|-------|-------|------------------------|-------|-----|---------|-----------------------|-------|------|
|       | N     | High-risk WHR†† (>1.0) |       |     | N       | High-risk WHR (>0.85) |       |      |
|       |       | %                      | 95%CI | n   |         | %                     | 95%CI | n    |
| 15-24 | 674   | -                      | -     | 0   | 678     | 18.1                  | ±5.4  | 107  |
| 25-34 | 548   | 1.1                    | ±1.0  | 8   | 643     | 43.3                  | ±8.2  | 260  |
| 35-44 | 614   | 4.4                    | ±2.2  | 31  | 679     | 57.6                  | ±7.7  | 381  |
| 45-54 | 488   | 11.1                   | ±3.2  | 57  | 527     | 65.5                  | ±6.7  | 350  |
| 55-64 | 357   | 14.1                   | ±5.5  | 64  | 329     | 73.2                  | ±7.1  | 236  |
| TOTAL | 2681  | 3.9                    | ±1.1  | 160 | 2856    | 44.6                  | ±5.5  | 1334 |

† Pregnant females excluded

†† WHR=waist-to-hip ratio





Table 10. 11 Total cholesterol risk categories by ethnicity: Males and Females

| Ethnic group | N   | Males Elevated<br>( $\geq 5.2$ mmol/L) |            |     |      | Females Elevated<br>( $\geq 5.2$ mmol/L) |            |     |  |
|--------------|-----|--|------------|-----|------|--|------------|-----|--|
|              |     | %                                      | 95%CI      | n   |      | %  | 95%CI      | n   |  |
|              |     |  |            |     |      |  |            |     |  |
| Fijian       | 499 | 45.3                                   | $\pm 8.9$  | 232 | 732  | 39.9                                     | $\pm 6.72$ | 94  |  |
| Indian       | 333 | 52.6                                   | $\pm 9.1$  | 191 | 636  | 34.6                                     | $\pm 8.22$ | 49  |  |
| Others       | 16  | 66.6                                   | $\pm 30.2$ | 10  | 35   | 40.5                                     | $\pm 30.7$ | 15  |  |
| Total        | 848 | 49.1                                   | $\pm 6.2$  | 433 | 1403 | 37.8                                     | $\pm 6.0$  | 558 |  |

Table 10. 12 Fasting triglycerides (mmol/L) by age group: Males and Females

| Age   | Males |      |            | Females |      |            |
|-------|-------|------|------------|---------|------|------------|
|       | N     | Mean | 95%CI      | N       | Mean | 95%CI      |
| 25-34 | 205   | 1.36 | $\pm 0.28$ | 349     | 1.22 | $\pm 0.19$ |
| 35-44 | 255   | 1.53 | $\pm 0.16$ | 436     | 1.20 | $\pm 0.11$ |
| 45-54 | 223   | 1.66 | $\pm 0.26$ | 400     | 1.50 | $\pm 0.20$ |
| 55-64 | 167   | 1.32 | $\pm 0.19$ | 215     | 1.45 | $\pm 0.16$ |
| TOTAL | 850   | 1.47 | $\pm 0.17$ | 1400    | 1.31 | $\pm 0.12$ |

Table 10. 13 Fasting triglycerides (mmol/L) by ethnicity: Males and Females

| Ethnicity    | Males |      |            | Females |      |            |
|--------------|-------|------|------------|---------|------|------------|
|              | N     | Mean | 95%CI      | N       | Mean | 95%CI      |
| Fijians      | 499   | 1.33 | $\pm 0.21$ | 730     | 1.33 | $\pm 0.16$ |
| Indo-Fijians | 335   | 1.64 | $\pm 0.32$ | 635     | 1.26 | $\pm 0.15$ |
| Others       | 16    | 1.70 | $\pm 0.31$ | 35      | 1.69 | $\pm 0.70$ |
| TOTAL        | 850   | 1.47 | $\pm 0.17$ | 1400    | 1.31 | $\pm 0.12$ |

Table 10. 14 Fasting triglycerides (mmol/L) by area: Males and Females

| Area  | Males |      |            | Females |      |            |
|-------|-------|------|------------|---------|------|------------|
|       | N     | Mean | 95%CI      | N       | Mean | 95%CI      |
| Rural | 557   | 1.36 | $\pm 0.17$ | 700     | 1.25 | $\pm 0.15$ |
| Urban | 293   | 1.85 | $\pm 0.26$ | 700     | 1.45 | $\pm 0.14$ |
| TOTAL | 850   | 1.47 | $\pm 0.17$ | 1400    | 1.31 | $\pm 0.11$ |

Table 10. 15 Fasting triglycerides (mmol/L) risk categories by agegroup: Males and Females

| Age   | Males |                           |            |     | Females |                           |           |     |
|-------|-------|---------------------------|------------|-----|---------|---------------------------|-----------|-----|
|       | N     | High ( $\geq 1.7$ mmol/L) |            |     | N       | High ( $\geq 1.7$ mmol/L) |           |     |
|       |       | %                         | 95%CI      | n   |         | %                         | 95%CI     | n   |
| 25-34 | 205   | 24.9                      | $\pm 10.5$ | 58  | 349     | 19.7                      | $\pm 6.5$ | 69  |
| 35-44 | 255   | 31.2                      | $\pm 7.9$  | 84  | 436     | 18.4                      | $\pm 4.8$ | 86  |
| 45-54 | 223   | 40.1                      | $\pm 11.1$ | 92  | 400     | 29.1                      | $\pm 9.3$ | 121 |
| 55-64 | 167   | 20.6                      | $\pm 10.1$ | 43  | 215     | 31.2                      | $\pm 8.2$ | 68  |
| Total | 850   | 29.6                      | $\pm 7.6$  | 277 | 1400    | 23.3                      | $\pm 5.5$ | 344 |

Table 10. 16 Fasting triglycerides (mmol/L) risk categories by ethnicity: Males and Females

| Ethnicity    | Males |                          |            |     | Females |                          |            |     |
|--------------|-------|--------------------------|------------|-----|---------|--------------------------|------------|-----|
|              | N     | High( $\geq 1.7$ mmol/L) |            |     | N       | High( $\geq 1.7$ mmol/L) |            |     |
|              |       | %                        | 95%CI      | n   |         | %                        | 95%CI      | n   |
| Fijians      | 499   | 22.5                     | $\pm 9.9$  | 126 | 730     | 24.5                     | $\pm 7.8$  | 184 |
| Indo-Fijians | 335   | 37.6                     | $\pm 11.3$ | 144 | 635     | 21.4                     | $\pm 5.3$  | 152 |
| Others       | 16    | 43.4                     | $\pm 20.2$ | 73  | 5       | 24.1                     | $\pm 19.5$ | 8   |
| Total        | 850   | 29.6                     | $\pm 7.6$  | 277 | 1400    | 23.3                     | $\pm 5.5$  | 344 |

Table 10. 17 Fasting triglycerides (mmol/L) risk categories by area: Males and Females

| Area  | Males |                          |           |     | Females |                          |           |     |
|-------|-------|--------------------------|-----------|-----|---------|--------------------------|-----------|-----|
|       | N     | High( $\geq 1.7$ mmol/L) |           |     | N       | High( $\geq 1.7$ mmol/L) |           |     |
|       |       | %                        | 95%CI     | n   |         | %                        | 95%CI     | n   |
| Rural | 557   | 24.0                     | $\pm 7.3$ | 136 | 700     | 21.0                     | $\pm 7.2$ | 151 |
| Urban | 293   | 48.8                     | $\pm 8.5$ | 141 | 700     | 27.9                     | $\pm 5.3$ | 193 |
| Total | 850   | 29.6                     | $\pm 7.1$ | 277 | 1400    | 23.3                     | $\pm 5.5$ | 344 |

Table 10. 18 Fasting HDL cholesterol (mmol/L) by agegroup: Males and Females

| Age   | Males |      |            | Females |      |            |
|-------|-------|------|------------|---------|------|------------|
|       | N     | Mean | 95%CI      | N       | Mean | 95%CI      |
| 25-34 | 205   | 1.11 | $\pm 0.08$ | 351     | 1.03 | $\pm 0.05$ |
| 35-44 | 256   | 1.08 | $\pm 0.08$ | 436     | 1.06 | $\pm 0.06$ |
| 45-54 | 223   | 1.14 | $\pm 0.07$ | 400     | 1.05 | $\pm 0.05$ |
| 55-64 | 167   | 1.16 | $\pm 0.07$ | 215     | 1.05 | $\pm 0.07$ |
| TOTAL | 851   | 1.11 | $\pm 0.06$ | 1402    | 1.05 | $\pm 0.04$ |

Table 10. 19 Fasting HDL cholesterol (mmol/L) by ethnicity: Males and Females

| Ethnicity    | Males |      |            | Females |      |            |
|--------------|-------|------|------------|---------|------|------------|
|              | N     | Mean | 95%CI      | N       | Mean | 95%CI      |
| Fijians      | 500   | 1.16 | $\pm 0.09$ | 730     | 1.04 | $\pm 0.06$ |
| Indo-Fijians | 335   | 1.06 | $\pm 0.05$ | 637     | 1.06 | $\pm 0.07$ |
| Others       | 16    | 1.07 | $\pm 0.10$ | 35      | 1.08 | $\pm 0.11$ |
| TOTAL        | 851   | 1.11 | $\pm 0.06$ | 1402    | 1.05 | $\pm 0.04$ |

Table 10. 20 Fasting HDL cholesterol (mmol/L) by area: Males and Females

| Area  | Males |      |            | Females |      |            |
|-------|-------|------|------------|---------|------|------------|
|       | N     | Mean | 95%CI      | N       | Mean | 95%CI      |
| Rural | 558   | 1.14 | $\pm 0.07$ | 701     | 1.04 | $\pm 0.05$ |
| Urban | 293   | 1.04 | $\pm 0.03$ | 701     | 1.06 | $\pm 0.05$ |
| TOTAL | 851   | 1.11 | $\pm 0.05$ | 1402    | 1.05 | $\pm 0.04$ |



Table 10. 21 Fasting HDL cholesterol risk categories: Males and Females

| Age   | Males |                         |           |     | Females |                         |            |     |
|-------|-------|-------------------------|-----------|-----|---------|-------------------------|------------|-----|
|       | N     | Low( $\leq 0.9$ mmol/L) |           |     | N       | Low( $\leq 0.9$ mmol/L) |            |     |
|       |       | %                       | 95%CI     | n   |         | %                       | 95%CI      | n   |
| 25-34 | 205   | 29.3                    | $\pm 6.3$ | 64  | 351     | 35.4                    | $\pm 7.0$  | 125 |
| 35-44 | 256   | 29.2                    | $\pm 7.9$ | 67  | 436     | 35.3                    | $\pm 7.1$  | 148 |
| 45-54 | 223   | 29.2                    | $\pm 8.5$ | 67  | 400     | 33.9                    | $\pm 5.6$  | 138 |
| 55-64 | 167   | 24.9                    | $\pm 7.3$ | 74  | 215     | 37.7                    | $\pm 11.8$ | 78  |
| Total | 851   | 30.9                    | $\pm 5.1$ | 272 | 1402    | 35.4                    | $\pm 4.6$  | 489 |

Table 10. 22 Fasting HDL cholesterol risk categories by ethnicity: Males and Females

| Ethnic group | Males |                         |            |     | Females |                         |            |     |
|--------------|-------|-------------------------|------------|-----|---------|-------------------------|------------|-----|
|              | N     | Low( $\leq 0.9$ mmol/L) |            |     | N       | Low( $\leq 0.9$ mmol/L) |            |     |
|              |       | %                       | 95%CI      | n   |         | %                       | 95%CI      | n   |
| Fijian       | 500   | 27.9                    | $\pm 7.8$  | 152 | 730     | 36.5                    | $\pm 7.4$  | 276 |
| Indian       | 335   | 34.9                    | $\pm 6.1$  | 115 | 637     | 34.1                    | $\pm 7.3$  | 201 |
| Others       | 16    | 31.8                    | $\pm 22.8$ | 5   | 35      | 29.7                    | $\pm 19.3$ | 12  |
| Total        | 851   | 30.9                    | $\pm 5.1$  | 272 | 1402    | 35.3                    | $\pm 4.6$  | 489 |

Table 10. 23 Fasting HDL cholesterol risk categories by area: Males and Females

| Area  | Males |                         |           |     | Females |                         |           |     |
|-------|-------|-------------------------|-----------|-----|---------|-------------------------|-----------|-----|
|       | N     | Low( $\leq 0.9$ mmol/L) |           |     | N       | Low( $\leq 0.9$ mmol/L) |           |     |
|       |       | %                       | 95%CI     | n   |         | %                       | 95%CI     | n   |
| Rural | 558   | 29.1                    | $\pm 6.1$ | 160 | 701     | 35.3                    | $\pm 6.5$ | 249 |
| Urban | 293   | 37.4                    | $\pm 1.9$ | 112 | 701     | 35.5                    | $\pm 4.4$ | 240 |
| Total | 851   | 30.9                    | $\pm 5.1$ | 272 | 1402    | 35.3                    | $\pm 4.6$ | 489 |

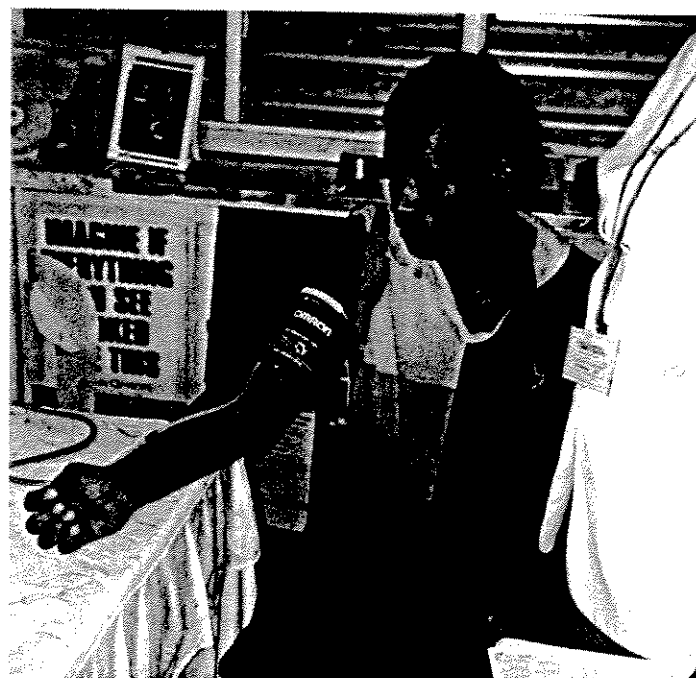
## 10.11 Data quality indices

Table 11. 1 Number of pregnant females

| Age   | N    | Pregnant |     |
|-------|------|----------|-----|
|       |      | %        | n   |
| 15-24 | 739  | 7.9      | 59  |
| 25-34 | 694  | 6.7      | 49  |
| 35-44 | 693  | 1.9      | 11  |
| 45-54 | 527  | -        | 0   |
| 55-64 | 329  | -        | 0   |
| TOTAL | 2982 | 4.6      | 119 |

Table 11. 2 Number of blood pressure and heart rate measurements taken

|            | One  |            |    | Two  |           |      | Three |           |      |
|------------|------|------------|----|------|-----------|------|-------|-----------|------|
|            | %    | 95%CI      | n  | %    | 95%CI     | n    | %     | 95%CI     | n    |
| Systolic   | 0.02 | $\pm 0.03$ | 2  | 77.5 | $\pm 4.6$ | 5238 | 20.4  | $\pm 3.8$ | 1387 |
| Diastolic  | 0.02 | $\pm 0.03$ | 1  | 77.5 | $\pm 4.6$ | 5239 | 20.4  | $\pm 3.8$ | 1387 |
| Heart rate | 0.2  | $\pm 0.11$ | 12 | 77.4 | $\pm 4.6$ | 5230 | 20.3  | $\pm 3.8$ | 1379 |





## 11 APPENDIX 2 WEIGHTING FORMULAS

- W1 = "Tikina factor" =  $(1 / \# \text{ of Tikinas chosen}) * (\text{Fiji population} / \text{Tikina population})$   
 =  $(1 / 19) * (775,077 / \text{Tikina population})$   
**Note:** This factor will increase the weight of participants from smaller Tikinas, which have a lesser probability of being chosen.
- W2(PPS) = "Cluster factor" for those clusters with more than 1 EA per cluster  
 =  $(1 / \# \text{ EAs selected from Tikina}) * (\text{Tikina population} / \text{EA population})$   
 W2(SRS) = "Cluster factor" for those clusters with only 1 EA per cluster  
 = Total # of EAs in that Tikina  
**Note:** EA = enumeration area = cluster.
- W3 = "Selection from EA factor"  
 =  $\text{EA population} / \# \text{ of potential participants in households approached}$   
**Note:** This will increase the weight of participants from clusters where a smaller proportion of potential participants were identified.
- W4 = "Weight to the sum of the EA population factor"  
 = 
$$\frac{\text{EA population}}{\# \text{ of S1 part.} * (\# \text{ HH approached} / \# \text{ HH with someone home}) * (\# \text{ of pot. part.} / \# \text{ of S1 part.})}$$
  
 = 
$$\frac{\text{EA population} * \# \text{ of households with someone home}}{\# \text{ of households approached} * \# \text{ of potential participants in households approached}}$$
  
**Note:** This is an intermediate step used to more accurately calculate a post-stratification re-weighting in conjunction with the use of the next weighting factor, W5.
- W5 = "Population proportion factor"  
 = 
$$\frac{(\text{Proportion of ethnicity/sex/age group in population})}{(\text{Proportion of ethnicity/sex/age group in sample})}$$
  
**Note:** Each participant can be classified within 1 of 30 ethnicity/sex/age groups. This factor will increase the weight of participants in ethnicity/sex/age groups with a smaller proportion of the total sample than the proportion of that group within the total 15-64 year-old population.
- W6 = "Step 2 response rate factor"  
 =  $\# \text{ participants for Step 1} / \# \text{ participants for Step 2}$   
**Note:** This will increase the weight of participants from clusters with a lower response rate for Step 2.
- W7 = "Step 3 response rate factor"  
 =  $\# \text{ scheduled for Step 3} / \# \text{ with Step 3 measures}$   
**Note:** This will increase the weight of participants from clusters with a lower response rate for Step 3, and it will decrease the weight of participants from clusters where more participants showed up for Step 3 than were scheduled. This weighting factor can be < 1 since most of the "extra" (i.e. non-scheduled) Step 3 participants had not been initially chosen for Step 3. Also, this weighting factor will not be calculated for the few 15-24 year-olds with Step 3 measures (n=44), as they will be excluded from the analysis of the Step 3 variables.
- S1WT = Total Weighting Formula for Step 1 variables  
 =  $W1 * W2 * W3 * W4 * W5$   
 S2WT = Total Weighting Formula for Step 2 variables  
 =  $S1WT * W6 = W1 * W2 * W3 * W4 * W5 * W6$   
 S3WT = Total Weighting Formula for Step 3 variables  
 =  $S1WT * W7 = W1 * W2 * W3 * W4 * W5 * W7$



World Health Organisation

*In Collaboration With*

The Fiji School of Medicine  
&

The Menzies Centre for Population Health Research

## WHO STEPwise Approach to NCD Risk Factor Surveillance in Fiji

Subject ID:

Consent Form ☐

Appt. / Fasting Inst. ☐

Fasting Status ☐

STEP 1 ☐

STEP 2 ☐

STEP 3 ☐

CHECKOUT ☐

Data entered by

Data read by

Data entry completed ☐

Data entry problems ☐

(Write comments on page 10)

### Identification Information

|    |                        |                      |
|----|------------------------|----------------------|
| 11 | Family Name            | <input type="text"/> |
| 12 | First Name(s)          | <input type="text"/> |
| 13 | Address                | <input type="text"/> |
|    |                        | <input type="text"/> |
|    |                        | <input type="text"/> |
| 14 | Father's Family Name   | <input type="text"/> |
| 15 | Father's First Name(s) | <input type="text"/> |

|    |  |  |
|----|--|--|
|    |  | <b>Subject ID:</b>   |
| Q1 | Centre   | <input type="text"/> <input type="text"/> _____  |
| Q2 | Interviewer  | <input type="text"/> <input type="text"/> <input type="text"/>   |
| Q3 | Date of Interview                                      | <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/><br><small>Day / Month / Year</small> |
| Q4 | Time of Interview                                      | <input type="text"/> <input type="text"/> : <input type="text"/> <input type="text"/> <small>(use 24 hour time)</small>  |
| Q5 | Main interview language<br><small>(select one)</small> | Fijian <input type="radio"/> <sup>1</sup><br>Hindi <input type="radio"/> <sup>2</sup><br>English <input type="radio"/> <sup>3</sup>  |

## STEP 1: QUESTIONNAIRE-BASED ASSESSMENT

### Demographic Information

|    |  |  |
|----|--|--|
| D1 | Sex  | Male <input type="radio"/> <sup>1</sup><br>Female <input type="radio"/> <sup>2</sup>   |
| D2 | How old are you?   | <input type="text"/> <input type="text"/> years  |
| D3 | What is your date of birth?  | <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/><br><small>Day / Month / Year</small>   |
| D4 | With which ethnicity do you identify yourself? <small>(select one)</small>             | Fijian <input type="radio"/> <sup>1</sup><br>Indian <input type="radio"/> <sup>2</sup><br>Other <input type="radio"/> <sup>3</sup>   |
| D5 | In total, how many years have you spent at school or full-time study?                  | <input type="text"/> <input type="text"/> years  |
| D6 | What is the highest level of education you have completed? <small>(select one)</small> | Never attended school ..... <input type="radio"/> <sup>1</sup><br>Primary school ..... <input type="radio"/> <sup>2</sup><br>Some secondary school ..... <input type="radio"/> <sup>3</sup><br>Secondary school (Form 6 or equivalent) <input type="radio"/> <sup>4</sup><br>Technical training (or equivalent) ..... <input type="radio"/> <sup>5</sup><br>University or tertiary degree ..... <input type="radio"/> <sup>6</sup> |

## Smoking / Tobacco Use

S1 Do you **currently** smoke any tobacco products such as cigarettes, cigars or rolled tobacco?

Yes, daily (every day) ☐ <sup>1</sup>

Yes, but not every day ☐ <sup>2</sup> Go to A1

No, not at all ☐ <sup>3</sup> Go to A1

S2 If you smoke daily, when did you first **start** smoking daily (every day)?

a **Either**     year

b **or**   weeks ago

c **or**   months ago

d **or**   years ago

e **or**   years old

S3 On average, how many of the following items do you smoke each day?  
(for current daily smokers)

a Manufactured cigarettes

b Hand-rolled cigarettes

c Pipes full of tobacco .....

d Cigars/cheroots .....

e Other .....

## Alcohol Consumption

- A1 Have you **ever** consumed any type of alcoholic drink (such as beer, coolers, wine, spirits, home brew or fermented cider)?

Yes ..... ☐ <sup>1</sup>

Yes, but not in the last 12 months ☐ <sup>2</sup> Go to K1

No, never ..... ☐ <sup>3</sup> Go to K1

- A2 In the **past 12 months**, how frequently have you had at least one alcoholic drink?  
(select one)

5 or more days a week ☐ <sup>1</sup>

1-4 days per week ☐ <sup>2</sup>

1-3 days per month ☐ <sup>3</sup>

less than monthly ☐ <sup>4</sup>

- A3 When you drink alcohol, on average how many glasses do you have?  
(on a typical day within the last 12 months)

|  |  |
|--|--|
|  |  |
|--|--|

**For men only:**

- A4a In the past 12 months, how many times did you have **5** or more alcoholic drinks in a single day?

|  |  |
|--|--|
|  |  |
|--|--|

**For women only:**

- A4b In the past 12 months, how many times did you have **4** or more alcoholic drinks in a single day?

|  |  |
|--|--|
|  |  |
|--|--|

**For everyone:**

- A5 In the past 12 months, what was the largest number of drinks you had on a single occasion counting all types of alcoholic beverages combined?

|  |  |
|--|--|
|  |  |
|--|--|

- A6 During the past 7 days, how many standard drinks of any alcoholic beverage did you have each day?

**1 standard drink** = 10g of alcohol (ethanol) content, e.g.

1 glass/can/bottle (330ml) of regular beer (5%)

1 measure (40 ml) of spirits

1 glass (120 ml) of wine

*Number of  
standard drinks*

- |   |           |   |  |  |
|---|-----------|---|--|--|
| a | Monday    | <table border="1" style="width: 50px; height: 25px; text-align: center;"> <tr> <td style="width: 25px; height: 25px;"></td> <td style="width: 25px; height: 25px;"></td> </tr> </table> |  |  |
|   |           |   |  |  |
| b | Tuesday   | <table border="1" style="width: 50px; height: 25px; text-align: center;"> <tr> <td style="width: 25px; height: 25px;"></td> <td style="width: 25px; height: 25px;"></td> </tr> </table> |  |  |
|   |           |   |  |  |
| c | Wednesday | <table border="1" style="width: 50px; height: 25px; text-align: center;"> <tr> <td style="width: 25px; height: 25px;"></td> <td style="width: 25px; height: 25px;"></td> </tr> </table> |  |  |
|   |           |   |  |  |
| d | Thursday  | <table border="1" style="width: 50px; height: 25px; text-align: center;"> <tr> <td style="width: 25px; height: 25px;"></td> <td style="width: 25px; height: 25px;"></td> </tr> </table> |  |  |
|   |           |   |  |  |
| e | Friday    | <table border="1" style="width: 50px; height: 25px; text-align: center;"> <tr> <td style="width: 25px; height: 25px;"></td> <td style="width: 25px; height: 25px;"></td> </tr> </table> |  |  |
|   |           |   |  |  |
| f | Saturday  | <table border="1" style="width: 50px; height: 25px; text-align: center;"> <tr> <td style="width: 25px; height: 25px;"></td> <td style="width: 25px; height: 25px;"></td> </tr> </table> |  |  |
|   |           |   |  |  |
| g | Sunday    | <table border="1" style="width: 50px; height: 25px; text-align: center;"> <tr> <td style="width: 25px; height: 25px;"></td> <td style="width: 25px; height: 25px;"></td> </tr> </table> |  |  |
|   |           |   |  |  |



## Kava/Yaqona Consumption

- K1 Have you **ever** tried or drunk kava or yaqona, even one or two bowls?
- Yes ☐ <sup>1</sup>  
No, never ☐ <sup>2</sup> Go to N1
- K2 If "Yes", how old were you when you first tried or experimented with kava?
- years old
- K3 During the last 30 days, on how many days did you drink kava? *(select one)*
- 0 days ☐ <sup>1</sup>  
1 - 9 days ☐ <sup>2</sup>  
10 - 19 days ☐ <sup>3</sup>  
20 - 29 days ☐ <sup>4</sup>  
Everyday ☐ <sup>5</sup>
- K4 Are you likely to smoke tobacco during or after drinking kava or yaqona?
- Yes ☐ <sup>1</sup>  
No ☐ <sup>2</sup>
- K5 Are you likely to drink alcohol during or after drinking kava or yaqona?
- Yes ☐ <sup>1</sup>  
No ☐ <sup>2</sup>
- K6 Which of the following are you likely to consume during or after drinking kava or yaqona? *(select all that apply)*
- |   | Yes                                | No                                 |
|---|------------------------------------|------------------------------------|
| a Lollies (eg. Chinese lollies, etc.) ..... | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> |
| b Biscuits .....                            | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> |
| c Bread .....                               | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> |
| d Soft drinks .....                         | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> |
| e Sweet snacks .....                        | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> |
| f Cooked food .....                         | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> |
| g Nothing at all .....                      | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> |
| h Others (specify) _____                    | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> |

## Nutrition

N1 How many servings of **fruit** do you usually eat each day? *(select one)*

**Serving size for fruit**  
(fresh, canned, frozen, excludes fruit juice)  
eaten as meals or snacks:  
- 1 cup diced  
- 1 medium piece  
- 2 small pieces

- Don't eat fruit at all ☐ <sup>1</sup>  
 Don't eat fruit every day ☐ <sup>2</sup>  
 1 serving a day ☐ <sup>3</sup>  
 2 - 4 servings a day ☐ <sup>4</sup>  
 5 servings or more a day ☐ <sup>5</sup>

**For the purpose of this question, "Vegetables" are considered to be:**

**Dark green leaves:** Taro leaves, bele, ota, pumpkin leaves, cassava leaves, kumala leaves, siajan, chauraiya, karamua, etc.  
**Yellow/red/orange vegetables:** Tomatoes, carrots, pumpkin, corn, etc.  
**Other vegetables:** Chinese cabbage, capsicum, cucumber, fresh beans, eggplant, onion, okra, lettuce, etc.

N2 How many servings of **vegetables** do you usually eat each day? *(select one)*

**Serving size for vegetables**  
(raw, cooked, canned, frozen) eaten as meals or snacks:  
- ? cup cooked  
- 1 cup salad vegetables

- Don't eat vegetables at all ☐ <sup>1</sup>  
 Don't eat vegetables every day ☐ <sup>2</sup>  
 1 serving a day ☐ <sup>3</sup>  
 2 - 4 servings a day ☐ <sup>4</sup>  
 5 servings or more a day ☐ <sup>5</sup>

N3 What types of oil or fat do you use most often for food preparation at home?  
*(select one)*

- Vegetable oil ..... ☐ <sup>1</sup>  
 Lard or drippings ..... ☐ <sup>2</sup>  
 Butter or ghee ..... ☐ <sup>3</sup>  
 Margarine ..... ☐ <sup>4</sup>  
 Other ..... ☐ <sup>5</sup>  
 Nothing in particular ..... ☐ <sup>6</sup>  
 I don't use any oil or fat when preparing food ☐ <sup>7</sup>  
 I don't usually prepare food ..... ☐ <sup>8</sup>

## Physical Activity

- PAa If you work mostly in the household please fill here: ..... Yes ☐<sup>1</sup> No ☐<sup>2</sup>
- PAb If you are unemployed or looking for work please fill here: ..... ☐<sup>1</sup> ☐<sup>2</sup>

### Section A: Occupational Physical Activity (paid or unpaid work)

*I would like to ask you about activities related to your main occupation on a typical day.*

PAc Firstly, how long is your typical work day (hours)?    hours

*During these hours how frequently does your work involve you in the following:*

- |   | Almost<br>Always                   | Usually                            | Sometimes                          | Almost<br>Never                    |
|---|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| PA1 • Sitting or standing with only a little walking                                      | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> | <input type="radio"/> <sup>4</sup> |
| PA2 • Activities that require the same physical effort as continuous walking, gardening   | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> | <input type="radio"/> <sup>4</sup> |
| PA3 • Activities that require the same effort as heavy lifting or heavy construction work | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> | <input type="radio"/> <sup>4</sup> |

### Section B: Travel-Related Physical Activity

*I would like to ask you about the way you travel to and from places (work, market, church, etc.) on a typical day. How often do you travel by....*

- |   | Almost<br>Always                   | Usually                            | Sometimes                          | Almost<br>Never                    |
|---|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| PA4 • Private transport such as car, bilibili or taxi ..... | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> | <input type="radio"/> <sup>4</sup> |
| PA5 • Public transport such as bus, train or boat .....     | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> | <input type="radio"/> <sup>4</sup> |
| PA6 • Motor cycle .....                                     | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> | <input type="radio"/> <sup>4</sup> |
| PA7 • Bicycle .....   | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> | <input type="radio"/> <sup>4</sup> |
| PA8 • Walking (on foot) .....                               | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> | <input type="radio"/> <sup>4</sup> |
| PA9 • Riding on a horse .....                               | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> | <input type="radio"/> <sup>4</sup> |

### Section C: Leisure-Related Physical Activity (i.e. excluding main occupation and travel activities)

*I would like to ask you about all the leisure-related activities that you do on a typical day. How frequently do you spend time on....*

- |  | Almost<br>Always   | Usually                            | Sometimes                          | Almost<br>Never                    |
|--|--|------------------------------------|------------------------------------|------------------------------------|
| PA10 • Mainly sitting (incl. in front of a TV/computer) or standing and only a little walking                | <input type="radio"/> <sup>1</sup>   | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> | <input type="radio"/> <sup>4</sup> |
| PA11 • Activities that require the same effort as continuous walking, gardening, swimming or climbing stairs | <input type="radio"/> <sup>1</sup>   | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> | <input type="radio"/> <sup>4</sup> |
| PA11a If you answered "Almost Always" or "Usually" to PA11 how much time do you spend on those?              | <div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">  </div> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">  </div> <div style="font-size: 0.8em;">hours</div> <div style="margin: 0 10px;">•</div> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">  </div> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">  </div> <div style="font-size: 0.8em;">minutes</div> </div> |                                    |                                    |                                    |
| PA12 • Activities that require the same effort as heavy lifting or strenuous sports                          | <input type="radio"/> <sup>1</sup>   | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> | <input type="radio"/> <sup>4</sup> |
| PA12a If you answered "Almost Always" or "Usually" to PA12 how much time do you spend on those?              | <div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">  </div> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">  </div> <div style="font-size: 0.8em;">hours</div> <div style="margin: 0 10px;">•</div> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">  </div> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">  </div> <div style="font-size: 0.8em;">minutes</div> </div> |                                    |                                    |                                    |

### Use of Prescription Medication

M1 In the last two weeks, have you taken any prescription medication?

Yes ☐

No      O<sup>2</sup>      Go to H1

Uncertain  $O_3$

M1a If **YES**, please specify the name(s) of the medication(s):

[illegible]

**NOTE:** Determining "Yes" or "No" will be done by the nurse or doctor at the check out station.



M2 Anti-hypertensive Yes ☒

 $\text{No } \text{O}^2$ 

M3 Anti-diabetic Yes ☐

 $\text{No O}^2$ 

## History of Blood Pressure Measurement and of Hypertension

H1 When was your blood pressure last measured by a health professional?

Within the last 12 months O<sup>1</sup>

1 - 5 years ago       $O^2$

Not within the last 5 years  $O^3$

Never  $O^4$

Uncertain O<sup>5</sup>

H2 Have you ever been told by a doctor or other health worker that you have high blood pressure?

Yes ☐

 $\text{No} \quad \text{O}^2$ 

Uncertain O<sup>3</sup>

H3 Are you currently receiving any of the following treatments for high blood pressure?

|  | Yes                                | No                                 | Uncertain                          |
|--|------------------------------------|------------------------------------|------------------------------------|
| a Drug(s) prescribed by a doctor or other health worker .... | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> |
| b Special diet prescribed by a doctor or other health worker | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> |
| c Advice or treatment to lose weight .....                   | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> |
| d Advice or treatment to stop smoking .....                  | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> |
| e Herbal or traditional remedy .....                         | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> |

## History of Diabetes

DM1 Have you had your blood sugar measured in the last 12 months?

Yes ☐<sup>1</sup>

No ☐<sup>2</sup>

Uncertain ☐<sup>3</sup>

DM2 Have you ever been told by a doctor or other health worker that you have diabetes?

Yes ☐<sup>1</sup>

No ☐<sup>2</sup>

Uncertain ☐<sup>3</sup>

DM3 Are you currently receiving any of the following treatments for diabetes?

|  | Yes                                | No                                 | Uncertain                          |
|--|------------------------------------|------------------------------------|------------------------------------|
| a Insulin .....  | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> |
| b Drug(s) prescribed by a doctor or other health worker .... | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> |
| c Special diet prescribed by a doctor or other health worker | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> |
| d Advice or treatment to lose weight .....                   | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> |
| e Advice or treatment to stop smoking .....                  | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> |
| f Herbal or traditional remedy .....                         | <input type="radio"/> <sup>1</sup> | <input type="radio"/> <sup>2</sup> | <input type="radio"/> <sup>3</sup> |



## STEP 2: PHYSICAL MEASUREMENTS

PMa Date of Measurements

|                      |   |                      |   |                      |                      |                      |                      |
|----------------------|---|----------------------|---|----------------------|----------------------|----------------------|----------------------|
| <input type="text"/> | / | <input type="text"/> | / | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Day                  |   | Month                |   | Year                 |                      |                      |                      |

PMb Time of Measurements

|                      |   |                      |
|----------------------|---|----------------------|
| <input type="text"/> | : | <input type="text"/> |
|----------------------|---|----------------------|

(use 24 hour time)

### Height and Weight

Use the following values for unusual measurements:

Low value (out of range) ..... 777.7

Missing data ..... 888.8

High value (out of range) ..... 999.9

PM1 Height

PM2 Weight

PMc Technician

|                      |                      |                      |
|----------------------|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> |
|----------------------|----------------------|----------------------|

PMd Stadiometer

|                      |
|----------------------|
| <input type="text"/> |
|----------------------|

PMe Scale

|                      |
|----------------------|
| <input type="text"/> |
|----------------------|

|   |                      |                      |                      |   |                      |    |   |                      |                      |                      |   |                      |    |
|---|----------------------|----------------------|----------------------|---|----------------------|----|---|----------------------|----------------------|----------------------|---|----------------------|----|
| a | <input type="text"/> | <input type="text"/> | <input type="text"/> | . | <input type="text"/> | cm | b | <input type="text"/> | <input type="text"/> | <input type="text"/> | . | <input type="text"/> | cm |
|   |                      |                      |                      |   |                      |    |   | <input type="text"/> | <input type="text"/> | <input type="text"/> | . | <input type="text"/> | kg |

### For women only:

PMf Are you pregnant?

Yes ☐<sup>1</sup> Go to PMi

No ☐<sup>2</sup>

Uncertain ☐<sup>3</sup>

### Waist and Hip Circumference

(Reading 3 needed if readings 1 and 2 are 2cm or more apart)

PMg Technician

|                      |                      |                      |
|----------------------|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> |
|----------------------|----------------------|----------------------|

PMh Tape

|                      |                      |
|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> |
|----------------------|----------------------|

PM3 Waist Girth

PM4 Hip Girth

| Reading 1 |                      |                      | Reading 2            |   |                      | Reading 3 |   |                      |                      |                      |   |                      |    |
|-----------|----------------------|----------------------|----------------------|---|----------------------|-----------|---|----------------------|----------------------|----------------------|---|----------------------|----|
| a         | <input type="text"/> | <input type="text"/> | <input type="text"/> | . | <input type="text"/> | cm        | b | <input type="text"/> | <input type="text"/> | <input type="text"/> | . | <input type="text"/> | cm |
|           |                      |                      |                      |   |                      |           | c | <input type="text"/> | <input type="text"/> | <input type="text"/> | . | <input type="text"/> | cm |
| a         | <input type="text"/> | <input type="text"/> | <input type="text"/> | . | <input type="text"/> | cm        | b | <input type="text"/> | <input type="text"/> | <input type="text"/> | . | <input type="text"/> | cm |
|           |                      |                      |                      |   |                      |           | c | <input type="text"/> | <input type="text"/> | <input type="text"/> | . | <input type="text"/> | cm |

### Blood Pressure and Heart Rate

(Reading 3 needed if readings 1 and 2 are 10mmHg or more apart)

Use the following values for unusual measurements:

Low value (out of range) ..... 777

Missing data ..... 888

High value (out of range) ..... 999

PMi Technician

|                      |                      |                      |
|----------------------|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> |
|----------------------|----------------------|----------------------|

PMj Omron

|                      |
|----------------------|
| <input type="text"/> |
|----------------------|

PMk Sphygmo

|                      |
|----------------------|
| <input type="text"/> |
|----------------------|

PMm Cuff Size

Small ☐<sup>1</sup> Medium ☐<sup>2</sup> Large ☐<sup>3</sup> Other ☐<sup>4</sup>

|                      |                      |                      |                      |
|----------------------|----------------------|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
|----------------------|----------------------|----------------------|----------------------|

PMn Ambient Temperature

|                      |   |                      |    |
|----------------------|---|----------------------|----|
| <input type="text"/> | . | <input type="text"/> | °C |
|----------------------|---|----------------------|----|

PM5 Systolic Blood Pressure

PM6 Diastolic Blood Pressure

PM7 Heart Rate

| Reading 1 |                      |                      | Reading 2            |       |   | Reading 3            |                      |                      |       |   |                      |                      |                      |       |
|-----------|----------------------|----------------------|----------------------|-------|---|----------------------|----------------------|----------------------|-------|---|----------------------|----------------------|----------------------|-------|
| a         | <input type="text"/> | <input type="text"/> | <input type="text"/> | mm Hg | b | <input type="text"/> | <input type="text"/> | <input type="text"/> | mm Hg | c | <input type="text"/> | <input type="text"/> | <input type="text"/> | mm Hg |
|           |                      |                      |                      |       |   |                      |                      |                      |       |   |                      |                      |                      |       |
| a         | <input type="text"/> | <input type="text"/> | <input type="text"/> | mm Hg | b | <input type="text"/> | <input type="text"/> | <input type="text"/> | mm Hg | c | <input type="text"/> | <input type="text"/> | <input type="text"/> | mm Hg |
|           |                      |                      |                      |       |   |                      |                      |                      |       |   |                      |                      |                      |       |
| a         | <input type="text"/> | <input type="text"/> | <input type="text"/> | bpm   | b | <input type="text"/> | <input type="text"/> | <input type="text"/> | bpm   | c | <input type="text"/> | <input type="text"/> | <input type="text"/> | bpm   |
|           |                      |                      |                      |       |   |                      |                      |                      |       |   |                      |                      |                      |       |

## STEP 3: BIOCHEMICAL MEASUREMENTS

Use the following values for unusual measurements:

Low value (out of range) ..... 77.7

Missing data ..... 88.8

High value (out of range) ..... 99.9

BMa Blood taken by

BMb Blood spun by

### ***Fasting Status***

BM1 Have you had anything to eat or drink in the last 12 hours? Yes ☐ <sup>1</sup>

*(other than water or unsweetened black tea or coffee)*

No ☐ <sup>2</sup>

Uncertain ☐ <sup>3</sup>

### ***Blood Glucose***

BM2 Fasting blood glucose

.  mmol/L

### **STEP 1 Comments**

### **STEPs 2 and 3 Comments**

### **Data Entry Comments**

Technician

Initials

Date   /   /

Use the following values for unusual measurements:

Low value ..... 7

Missing data ..... 8

High value ..... 9

e.g. 7.77 for HDL

## WHO STEPwise Approach to NCD Risk Factor Surveillance in Fiji

### STEP 3: BIOCHEMICAL MEASUREMENTS

| Subject ID  | Total<br>Cholesterol<br>mmol/L  | Triglycerides<br>mmol/L  | HDL<br>Cholesterol<br>mmol/L                                     |
|---|---|--|--|
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
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| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |
| 679 - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> | <input type="text"/> . <input type="text"/> <input type="text"/> |