MINISTRY of HEALTH & MEDICAL SERVICES
Shaping Fiji's Health

Australian Aid

COUNTRY REPORT

FIJI 2025 STEPS SURVEY

MEASURING THE PREVALENCE OF NONCOMMUNICABLE DISEASES RISK FACTORS AND CONDITIONS IN FIJI

The George Institute for Global Health

World Health Organization

Pacific Community
Communauté du Pacifique

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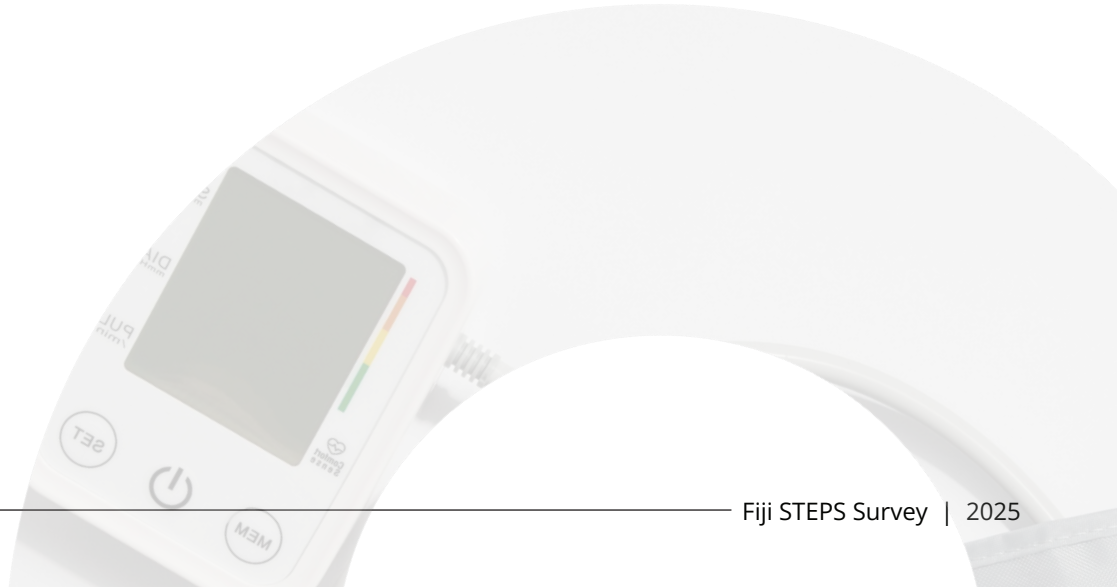

TRIBUTE

DR JEMESA TUDRAVU

With profound respect and a deep sense of responsibility, we present the findings of Fiji's Third National STEPS Survey for Non-Communicable Diseases (NCDs). This document is more than a collection of data points; it is a critical snapshot of our nation's health, a testament to the collective effort of countless individuals, and a powerful tool forged to guide our future.

This survey, and indeed the very capacity to undertake it, stands as a legacy to the visionary leadership of the late Dr. Jemesa Tudravu. As Permanent Secretary for Health and Medical Services, Dr. Tudravu was a staunch champion of evidence-based public health. He understood that to confront the silent tsunami of NCDs—responsible for so much premature loss and suffering in our communities—we must first arm ourselves with knowledge. Under his stewardship, the Ministry of Health prioritized this rigorous assessment, ensuring that our policies and programs are built not on assumptions, but on the solid foundation of current, localised data.

Dr Tudravu's leadership was characterised by a consistent, data-driven philosophy. Whether addressing immunisation coverage or the complex web of NCD risk factors, he emphasised that reliable information is the first, non-negotiable step towards effective action. This STEPS Survey embodies that principle. It provides us with unambiguous metrics on the prevalence of hypertension, diabetes, tobacco use, unhealthy diets, and physical inactivity across our adult population. It measures our progress, identifies our persistent gaps, and illuminates the path forward.

The successful implementation of this complex national survey, led by the Ministry's Wellness Unit with invaluable technical partnership, is a credit to the ecosystem of health dedication he helped nurture. The data within these pages are a direct result of that commitment.

As we delve into these results, let us do so with the purpose Dr. Tudravu championed. Let this report be a catalyst for renewed and resolute action across all sectors of society. Let it inform smarter investments, more targeted interventions, and stronger advocacy. Our challenge is clear, and the evidence is now before us.

We honor Dr. Tudravu's memory best by using this vital tool with the seriousness and urgency it demands, translating knowledge into tangible steps that will safeguard the health and wellbeing of every Fijian for generations to come.
May his dedication continue to inspire our work.

FOREWORD

Hon. Dr Ratu Atonio Rabici Lalabalavu

HONOURABLE MINISTER FOR HEALTH AND MEDICAL SERVICES

Noncommunicable diseases (NCDs) remain the single greatest threat to the health, wellbeing and prosperity of the people of Fiji. They account for the vast majority of premature deaths in our country and place immense pressure on families, communities, and our health system. Addressing this challenge requires not only strong political commitment and multisectoral action, but also reliable, high-quality evidence to guide policy and investment decisions.

It is therefore my privilege to present the Fiji STEPS Survey 2025 Results, a landmark national assessment of NCD risk factors and health conditions among adults aged 18 to 69 years. This survey provides the most comprehensive and up-to-date picture of behavioural, physical and biochemical risk factors influencing the health of our population and serves as a critical foundation for shaping Fiji's future health priorities.

The 2025 STEPS Survey demonstrates both progress and persistent challenges. While encouraging levels of physical activity are observed, the results highlight unacceptably high burdens of obesity, hypertension, diabetes, unhealthy diets and tobacco use. These findings reinforce the urgent need to strengthen prevention, early detection, effective treatment and long-term management of NCDs across the life course.

Importantly, this report supports Fiji's commitments under the National Development Plan, the MHMS Strategic Plan, the National Wellness Strategic Plan, and international frameworks including the WHO Global Action Plan for the Prevention and Control of NCDs (2013–2030) and the Sustainable Development Goals. The evidence presented here will guide legislative reform, fiscal and regulatory measures, health system redesign, and targeted community-based interventions.

I commend the National Wellness Centre, the Divisional and Sub-Divisional Field teams and all National (Fiji Bureau of Statistics), regional (the Pacific Community) and international partners (World Health Organization – Geneva) for their dedication in delivering this complex and rigorous survey. I also extend my sincere gratitude to the Civil Society Organizations and thousands of Fijians who generously gave their time to participate. Your contribution will directly inform policies and programmes that aim to improve the health and wellbeing of current and future generations.

Let this report serve not only as a record of our current challenges, but as a call to action for government, civil society, communities and individuals, to work together to reduce preventable illness, protect our people, and build a healthier, more resilient Fiji.

FOREWORD

Dr. Luisa Cikamatana

ACTING PERMANENT SECRETARY FOR HEALTH AND MEDICAL SERVICES

The Fiji STEPS Survey 2025 provides a comprehensive and timely assessment of the health risks influencing the wellbeing and future prosperity of the people of Fiji. As the most extensive national surveillance of noncommunicable disease (NCD) risk factors conducted to date, this report offers a strong evidence base to guide policy, planning and coordinated action.

I commend the survey teams and the leadership of the National Wellness Centre, Divisional Health Offices, development partners, the Fiji Bureau of Statistics, the communities and thousands of participants whose collective efforts made this national survey a success.

The findings confirm that NCDs and their underlying risk factors of unhealthy diet, physical inactivity, tobacco and alcohol use, obesity, remain widespread across all divisions and population groups. Encouragingly, the results also identify clear opportunities to strengthen prevention, early detection and effective management, particularly for conditions like hypertension and diabetes, where improved self-health awareness, acquiring accurate information to make the right decision or choice and continuity of care can deliver significant health gains.

The STEPS 2025 results reaffirm a fundamental principle that health outcomes are shaped far beyond the health sector alone. While continued strengthening of primary health care, screening, referral pathways and continuity of care remains essential, sustained progress in reducing NCDs will depend on coordinated multisectoral action. Policies relating to food systems, from how food is produced and distributed to how it is sold and consumed, together with taxation, education, transport, housing, urban planning, climate resilience and workplace safety, can significantly reduce avoidable health risks and support healthier choices throughout life.

This report reinforces Fiji's commitment to combat NCDs, as articulated in the National Development Plan and the Ministry of Health and Medical Services Strategic Plan. The evidence in this report provides a clear mandate for stronger regulatory and fiscal measures, safer and more active communities, smoke-free and alcohol-harm-reduction policies, and integrated school and workplace wellness systems. It also highlights the importance of digital health and interoperable information systems to strengthen surveillance, improve service delivery, and enhance accountability and performance management.

The findings in the report point to a strategic opportunity to rebalance investment toward prevention and early intervention, while continuing to improve the quality and effectiveness of care for those already living with chronic conditions. Strengthening the health workforce, supply chains, referral mechanisms, and data-driven decision-making will be essential to achieving sustained impact.

The Fiji STEPS Survey 2025 is not an endpoint but a foundation for action. This evidence informs decision-making and helps align efforts across sectors. Fiji can continue to protect its people, strengthen its health system, and build a healthier, more resilient future.

PREFACE

Dr. Devina Nand

HEAD OF WELLNESS, MINISTRY OF HEALTH AND MEDICAL SERVICES

The Fiji STEPS Survey 2025 represents a significant milestone in Fiji's journey towards evidence-informed prevention and control of noncommunicable diseases. Conducted over an extended period from 2024 to 2025, this third national STEPS Survey provides robust, nationally representative data on the behavioural, physical and biochemical risk factors shaping the health of our adult population.

As Head of Wellness, I am particularly proud that this survey was led by the National Wellness Centre in close collaboration with divisional health services, technical partners and communities across all divisions, including remote and maritime settings. The scale, geographic reach and methodological rigor of this survey reflect Fiji's strong commitment to strengthening surveillance systems as a core pillar of public health and universal health coverage.

The findings of the 2025 STEPS Survey paint a clear and compelling picture. They confirm that NCD risk factors remain widespread and deeply embedded within social, environmental and economic contexts. The coexistence of multiple risk factors among individuals underscores the need for integrated, person-centred and community-driven responses that extend beyond the health sector alone.

This report intentionally goes beyond presenting statistics. It provides a roadmap for action, linking evidence to practical recommendations that span policy reform, health system strengthening, workforce development, digital health innovation, community engagement, and multisectoral governance.

Emphasis is placed on strengthening primary health care, improving screening and referral pathways, enhancing treatment and control outcomes, and investing in prevention across schools, workplaces and communities.

The successful completion of this survey would not have been possible without the extraordinary dedication of our field teams, supervisors, divisional leadership, data managers and technical experts. I acknowledge with deep appreciation the support of the World Health Organization, The George Institute for Global Health, The Pacific Community, Australian Aid, the Fiji Bureau of Statistics, and all partners who contributed their expertise and resources.

Most importantly, I thank the people of Fiji who participated in the survey. Your voices and experiences form the foundation of this report. It is our collective responsibility to ensure that the evidence generated is translated into meaningful action that improves lives, reduces inequities, and secures a healthier future for our nation.

The Fiji STEPS Survey 2025 stands as a cornerstone for the next phase of national wellness and NCD action. May it guide bold decisions, sustained investment and united action in advancing the health and wellbeing of all Fijians.

ACKNOWLEDGEMENTS

The 2025 STEPS Survey would not have been possible without the extensive and collaborative efforts of so many individuals and organisations.

We extend our deepest gratitude to the field data collectors and their supervisors for their hard work and commitment in gathering accurate and reliable data, often under challenging circumstances. The data collectors' tireless commitment, day and night, and through the weekends, to achieve the successful response rate of 75% was truly commendable. In particular, we express our appreciation to the Ministry of Health and Medical Services data collectors and their representative supervisors. By Division, we thank you.

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Acknowledgements are duly made to the Head of Wellness, Dr Devina Nand, of the Ministry of Health and Medical Services, whose leadership saw the implementation and finalization of the 2025 STEPS Survey, and acknowledgements to her team, Dr Jack Fong (Project Manager) and Nomeeta Ram (Data Manager), for their continuous and immense work in planning, administering logistics, executing and completing the STEPS Survey. We also acknowledge the preliminary work done by Mrs Taina Gucake under Dr Devina Nand. In addition, we thank our technical partners, the World Health Organization, the Pacific Community and The George Institute for Global Health. We acknowledge Dr Leanne Riley, Dr Patricia Rarau, Dr Stefan Savin and Melanie Cowan from the World Health Organization; Dr Ilisapeci Kubuabola-Samisoni from the NCD Division of the Pacific Community, Dr Bindu Patel and Dr Anna Campain from The George Institute for Global Health; and Dr Rohina Joshi from UNSW, who provided continuous support to the Ministry of Health and Medical Services STEPS team.

The survey would not have been possible without the financial support from the National Wellness Centre, the Australian Aid program, the World Health Organization and The Pacific Community.

We would like to acknowledge the continuous and collaborative support from all our stakeholders, including the STEPS Coordinating Committee for its technical support and which commenced planning in 2022, as well as Philip Hulcome and Dr Gyanendra Prasad from the Fiji Program Support Platform, and Dr Ilisapeci Kubuabola from The Pacific Community for their technical and financial support.

We thank the Honourable Minister for Health and Medical Services, Dr Ratu Atonio and Permanent Secretary of Health Dr Jemesa Tudravu for supporting the Ministry of Health and Medical Services National Wellness Centre in completing the STEPS Survey. Finally, and most importantly, we thank the survey population participants for their willingness to participate in this important survey that will be invaluable for understanding the risk factors and conditions to address Fiji's increasing noncommunicable diseases outcomes.

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This report was developed and produced by Bindu Patel and Anna Campain, in collaboration with Sana Shan, Alexandra Kerr from the George Institute for Global Health, Rohina Joshi from the University of New South Wales and J. Jaime Miranda from The University of Sydney.

VALUABLE CONTRIBUTION TO THIS REPORT WAS PROVIDED BY

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World Health Organization, Headquarters: Leanne Riley, Patricia Rarau and Melanie Cowan.

ABBREVIATIONS

BMI	Body mass index
CI	Confidence interval
CVD	Cardiovascular disease
DBP	Diastolic blood pressure
FBG	Fasting blood glucose
FBoS	Fiji Bureau of Statistics
HC	Hip circumference
HTN	Hypertension
MANA	Pacific Monitoring Alliance for Noncommunicable Diseases Action
MHMS	Fiji Ministry of Health and Medical Services
n	Number of respondents
NCD	Noncommunicable disease
STEPS	STEPwise Approach to Surveillance
SBP	Systolic blood pressure
TGI	The George Institute for Global Health
WHO	World Health Organization
WHR	Waist to hip ratio

EXECUTIVE SUMMARY

Background: Noncommunicable diseases are the leading cause of premature mortality in Fiji. Approximately 80% of deaths in Fiji are caused by noncommunicable diseases, and those numbers continue to grow. The previous Fiji STEPS Survey (2011) showed that approximately 62% of the adult population had one to two noncommunicable disease-related risk factors and that approximately 35 to 36% had three to five risk factors. To update national data on noncommunicable disease risk factors and conditions, guide Fiji's health sector strategy and monitor progress since the 2011 survey, the Ministry of Health and Medical Services conducted the 2025 STEPS Survey.

Methods: The World Health Organization 2025 STEPwise Survey provided nationally representative data on key modifiable risk factors and conditions (tobacco use, alcohol consumption, kava consumption, physical activity, unhealthy diet) and biological risk factors (raised blood pressure, obesity, elevated blood glucose levels). A cross-sectional national survey was conducted from April 2024 and June 2025 to obtain representative data of the adult population in Fiji aged between 18 and 69 years. This executive summary highlights the key findings on major risk factors and conditions. Additional modules and detailed results are provided in the main report's results section.

KEY FINDINGS

- **Tobacco use (smoked and smokeless):** Approximately 36% of the population are current smokers, either daily (19.5%) or less than daily (16.8%). Smoking is more prevalent for men (50.8%) than for women (20.6%).

- **Alcohol consumption**: Approximately 51% of the population abstain from alcohol, either as lifetime abstainers (34.7%) or as individuals who have abstained for the past 12 months (16.4%). Abstaining from alcohol was nearly twice as common among women (lifetime abstainers 46.9%) as among men (lifetime abstainers 23.4%).

- **Kava consumption:** Overall, 56.0% of the people reported consuming kava or yaqona in the past 30 days. By sex, participation in kava sessions is markedly higher among men (71.3%) than among women (39.5%).

- **Unhealthy diets**: A total of 20.7% of the population reported consuming three to four servings of fruit and vegetables; 52.0%, one to two servings of fruit and vegetables; and 15.9%, no fruit or vegetables on a typical day. There is very little difference between men and women; 51.4% of men and 52.7% of women eat one to two servings a day.

- **Physical activity**: Overall, 74.4% of the population meet the World Health Organization's recommendations for physical activity. Men (84.5%) met the recommendation more frequently than women (63.7%).

- **Overweight/obesity**: Nearly 40% of the population are obese (body mass index ≥ 30), 30.4% of men and 48.3% of women. A total of 29.2% of adults are overweight (body mass index 25.0 to 29.9), 30.3% of men and 28.0% of women.

- **Hypertension (raised blood pressure)**: Overall, 36.6% of the population has hypertension, and 47.7% were previously aware of their condition. Of the 47.7% hypertension-aware participants, 22.3% took medication to modify their blood pressure, and 6.8% had managed blood pressure control.

- **Diabetes (raised blood glucose)**: A total of 16.5% of the population has diabetes, and 46.5% were previously aware of their condition. Medication for diabetes, including insulin, are used by 71.0% of the 46.5% of people aware of their diabetes status. In addition, 21.5% had their blood glucose levels under control.

IMPLICATIONS FOR POLICY AND PRACTICE

The findings highlight the need for targeted action in Fiji to address upstream determinants of non-communicable diseases and to strengthen primary health care approach that will better support effective prevention, early detection and improved control of these noncommunicable disease risk factors and conditions.

Key recommendations include:

- enhancing integration of noncommunicable disease screening and management into primary health care services, emphasising community-level delivery to improve access and continuity of care.
- strengthening referral pathways and enhancing secondary and tertiary care services to better manage noncommunicable disease-related complications
- maintaining strong hypertension. screening efforts while placing greater emphasis on effective treatment and blood pressure control among those diagnosed.
- expanding screening and early detection programs for diabetes and improving referral, treatment and follow-up systems.
- promoting healthy behaviours through community-based interventions, including nutrition, physical activity and behavioural change initiatives.
- implementing and strengthening financial and regulatory measures, such as health taxes on unhealthy products.
- scaling up health communication and education initiatives focused on prevention of noncommunicable disease risk factors and conditions.
- developing and enforcing policies that address upstream determinants of noncommunicable diseases, including food and tobacco policies and incentives to promote physical activity across the lifespan.
- advancing multisectoral action on prevention of noncommunicable diseases through school, workplace and community-based programs (e.g. wellness programs, community gardens).

CONCLUSION

The 2025 STEPS Survey provides critical insights into Fiji's noncommunicable disease risk factors and health conditions landscape, offering an evidence base to guide the next phase of national health planning. Sustained investment in noncommunicable disease surveillance, policy response and program monitoring is essential to reduce preventable deaths and improve population health, alongside other key synergies across several related Sustainable Development Goals.

Fiji STEPS Survey 2025
Fact Sheet

The STEPS Survey of noncommunicable disease risk factors and conditions in Fiji was conducted from May 2024 to June 2025. Fiji carried out Step 1, Step 2 and Step 3. Sociodemographic and behavioural information was collected in Step 1. Physical measurements, such as height, weight and blood pressure, were collected in Step 2. Biochemical measurements were collected to assess fasting blood glucose and cholesterol levels in Step 3. The survey is a population-based survey of adults aged 18 to 69 years. A multistage cluster sample design was used to produce representative data for that age range in Fiji. A total of 5,026 adults participated in the survey. The overall response rate was 76%.

Results for adults aged 18–69 years (incl. 95% CI)	Both sexes	Males	Females
Tobacco use			
Percentage who currently smoke tobacco (such as cigarettes, cigars, pipes, suki or shisha)	36.3% (34.3–38.3)	50.8% (47.9–53.6)	20.6% (18.6–22.8)
Percentage who currently smoke tobacco daily	19.5% (17.9–21.1)	29.2% (26.6–32.0)	8.9% (7.6–10.5)
Percentage of daily smokers smoking manufactured cigarettes	80.6% (76.5–84.2)	78.6% (73.8–82.8)	87.7% (81.2–92.2)
Mean number of manufactured cigarettes smoked per day among daily smokers	4.6 (4.1–5.1)	4.7 (4.1–5.2)	4.2 (3.5–4.8)
Percentage who currently use smokeless tobacco (such as snuff, snus, chewing tobacco, betel with tobacco or suki)	9.5% (8.1–11.2)	15.3% (12.8–18.2)	3.3% (2.5–4.3)
Percentage who currently use electronic cigarettes	4.5% (3.5–5.7)	6.5% (4.8–8.8)	2.2% (1.5–3.3)
Alcohol consumption			
Percentage who are lifetime abstainers	34.7% (32.6–36.9)	23.4% (20.8–26.3)	46.9% (44.1–49.7)
Percentage who have abstained in the past 12 months	16.4% (14.9–17.9)	15.7% (13.8–17.8)	17.1% (15.1–19.3)
Percentage who currently drink (drank alcohol in the past 30 days)	31.1% (29.1–33.3)	43.6% (40.5–46.8)	17.7% (15.6–20.0)
Percentage who engage in heavy episodic drinking (6 or more drinks on any occasion in the past 30 days)	14.9% (13.3–16.8)	23.6% (20.9 – 26.5)	5.8% (4.4–7.5)
Kava consumption			
Percentage who have consumed kava in the past 30 days	56.0% (54.0 – 58.0)	71.3% (68.7–73.8)	39.5% (36.7–42.4)
Diet			
Percentage who ate fewer than five servings of fruit and/or vegetables on average per day	88.7% (87.2–90.1)	87.5% (85.1–89.5)	90.0% (88.2–91.6)
Percentage who always or often add salt or salty sauce to their food before eating or as they are eating	21.9% (19.8–24.2)	21.2% (18.4–24.3)	22.7% (20.2–25.4)
Percentage who always or often eat processed foods high in salt	28.9% (26.8–31.2)	29.3% (26.2–32.6)	28.6% (26.2–31.1)
Mean intake of salt per day (in grams)—INTERSALT	9.7 (9.6–9.8)	10.8 (10.7–11.0)	8.4 (8.3–8.5)
Mean intake of salt per day (in grams)—Kawasaki	15.1 (14.9–15.3)	16.6 (16.3–16.9)	13.3 (13.2–13.5)
Mean number of days per week on which sugar-sweetened beverages are consumed	2.9 (2.8–3.0)	3.0 (2.9–3.2)	2.8 (2.6–2.9)
Mean number of sugar-sweetened beverages consumed on average per day	1.1 (1.0 – 1.1)	1.2 (1.1 – 1.3)	0.9 (0.9 – 1.0)
Mean number of days per week on which carbohydrates are consumed	6.6 (6.5 – 6.7)	6.6 (6.5–6.7)	6.6 (6.5–6.7)
Mean number of times carbohydrates consumed on average per day	2.7 (2.6 – 2.7)	2.7 (2.6 – 2.8)	2.6 (2.6 – 2.7)

Results for adults aged 18–69 years (incl. 95% CI)	Both sexes	Males	Females
Physical activity			
Percentage with insufficient physical activity (defined as < 150 minutes of moderate intensity activity per week, or equivalent)*	25.6% (23.6–27.7)	15.5% (13.2–18.0)	36.3% (33.4–39.3)
Percentage not doing any leisure activities (sports, fitness or recreational activities)	44.7% (42.2–47.2)	35.6% (32.4–38.8)	54.3% (51.4–57.2)
Percentage not engaging in vigorous physical activity**	56.4% (53.9–58.9)	38.5% (35.1–42.0)	75.3% (72.4–78.0)
Cervical and breast cancer screening			
Percentage of women aged 30–49 years who have had a screening test for cervical cancer	54.6% (50.8–58.2)		54.6% (50.8–58.2)
Percentage of women who have had a screening test for breast cancer	18.9% (17.1 – 20.9)		18.9% (17.1 – 20.9)
Overweight and obesity			
Percentage who are overweight (body mass index ≥ 25 kg/m^2)	68.2% (66.1–70.2)	60.8% (57.8–63.8)	76.4% (74.0–78.6)
Percentage who are obese (body mass index ≥ 30 kg/m^2)	38.9% (36.7–41.2)	30.4% (27.5–33.5)	48.3% (45.5–51.2)
Hypertension			
Percentage with hypertension (systolic blood pressure ≥ 140 and/or diastolic blood pressure ≥ 90 mmHg or currently on hypertension medication)	37.0% (35.1–39.0)	39.0% (36.3–41.8)	34.9% (32.6–37.2)
Percentage previously diagnosed among those with hypertension	47.6% (44.7–50.6)	39.9% (36.1–43.7)	57.0% (53.0–60.8)
Percentage who are currently on treatment for raised blood pressure among those with hypertension	22.2% (20.0–24.6)	16.5% (13.9–19.5)	29.2% (25.8–32.7)
Percentage with controlled blood pressure among those with hypertension	6.6% (5.4–8.1)	4.5% (2.9–6.8)	9.2% (7.4–11.5)
Diabetes and raised cholesterol			
Percentage with pre-diabetes (plasma venous value ≥ 5.6 mmol/L (100 mg/dl) and <7.0 mmol/L (126 mg/dl))	28.6% (26.8–30.5)	31.0% (28.4–33.7)	26.1% (23.8–28.4)
Percentage with diabetes (plasma venous value ≥ 7.0 mmol/L (126 mg/dl) or currently on medication for diabetes)	16.5% (15.1–18.1)	14.5% (12.8–16.4)	18.7% (16.5–21.1)
Percentage previously diagnosed among those with diabetes	45.0% (40.5–49.7)	44.2% (37.8–50.7)	45.8% (39.7–52.0)
Percentage who are currently on treatment for raised blood glucose among those with diabetes	30.5% (26.7–34.6)	27.1% (22.0–32.9)	33.4% (28.2–39.1)
Percentage with controlled blood glucose level among those with diabetes	6.5% (5.0–8.4)	5.4% (3.6–8.1)	7.4% (5.2–10.4)
Percentage with controlled blood pressure (systolic blood pressure < 140 mmHg) among those with diabetes	58.8% (54.5–62.9)	58.3% (51.7–64.6)	59.2% (53.5–64.7)
Percentage with raised total cholesterol (≥ 5.0 mmol/L or ≥ 190 mg/dl or currently on medication for raised cholesterol)	35.9% (34.0–37.9)	36.4% (33.8–39.1)	35.4% (32.8–38.1)
Cardiovascular disease risk			
Percentage aged 40–69 years with a 10-year cardiovascular disease risk ≥ 20%, or with existing cardiovascular disease***	12.4% (11.1–13.9)	14.0% (12.0–16.4)	10.8% (9.1–12.7)
Oral health			
Percentage of the population with at least one oral health issue	24.8% (22.9 – 26.8)	24.2% (21.5 – 27.0)	25.5% (23.1 – 28.0)
Percentage who did not use health care services among those who experienced oral health issues	44.1% (40.2 – 48.1)	48.7% 42.8 – 54.6)	39.5% (34.5 – 44.8)

Results for adults aged 18–69 years (incl. 95% CI)	Both sexes	Males	Females
Percentage of the population with fewer than 20 teeth	18.4% (16.5–20.5)	18.1% (15.8–20.6)	18.7% (16.5–21.1)
Percentage of the population with untreated dental caries	20.9% (18.5 – 23.6)	21.9% (18.7 – 25.5)	19.8% (17.3 – 22.6)
Percentage of the population with severe dental caries	6.1% (5.0 – 7.5)	6.8% (5.2 – 8.7)	5.5% (4.4 – 6.7)
Mental health: depression			
Percentage of the population with symptomatic depression****	11.6% (10.2 – 13.2)	9.3% (7.6 – 11.4)	14.1% (12.3 – 16.1)
Percentage who are on antidepressant medication among those with depression	12.3% (9.3 – 16.2)	14.7% (9.8 – 21.5)	10.6% (7.1 – 15.5)
Percentage who received psychological therapy/counselling for at least 30 minutes among those with depression	11.2% (8.3–14.9)	9.8% (5.7–16.4)	12.1% (8.4–17.2)
Disability			
Percentage of population with severe disability*****	3.1% (2.5 – 3.8)	3.6% (2.7 – 4.6)	2.5% (1.9 – 3.4)

* For complete definitions of insufficient physical activity, refer to the Global Physical Activity Questionnaire Analysis Guide (https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/physical-activity-surveillance) or to the World Health Organization global recommendations on physical activity for health (https://www.who.int/news-room/fact-sheets/detail/physical-activity).

** Vigorous physical activity are activities that require hard physical effort and cause large increases in breathing or heart rate.

*** A 10-year cardiovascular disease risk of ≥ 20% is defined according to age, sex, blood pressure, smoking status (current smokers), total cholesterol and previously diagnosed diabetes.

**** Symptomatic depression is defined as showing symptoms for a period of at least 2 weeks in the last 12 months.

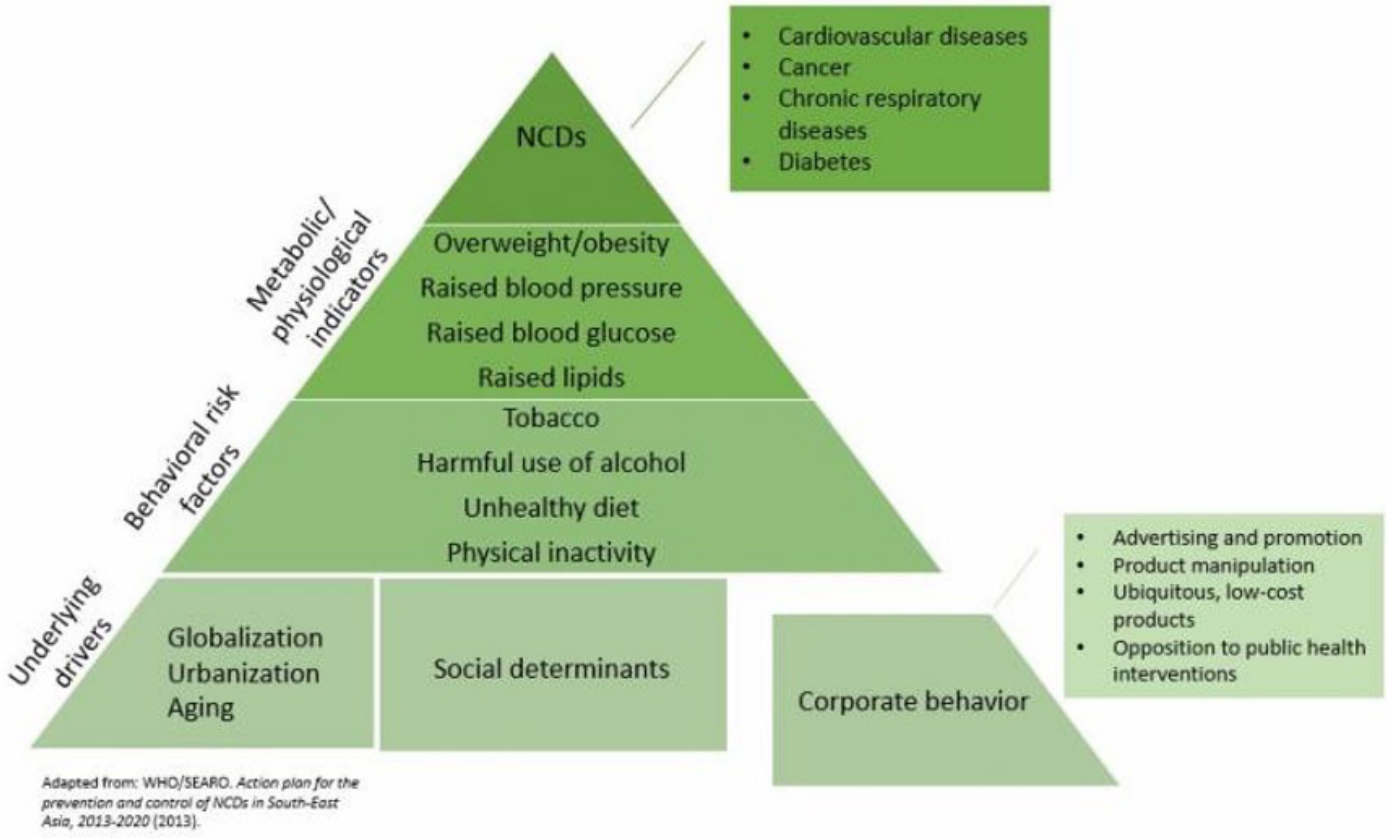
***** Disability is defined as having any physical or mental health conditions or illnesses lasting or expected to last 12 months or more that reduce your ability to carry out day-to-day activities. Respondents with 'severe disability' reported having 'a lot' of reduction in their ability to carry out day-to-day activities.

1. INTRODUCTION

1.1 NONCOMMUNICABLE DISEASES WORLDWIDE

Noncommunicable diseases (NCDs) are the leading cause of death and a major public health challenge in many countries. The four major NCDs are cardiovascular diseases (CVDs), diabetes, cancer and chronic respiratory diseases that contribute significantly to premature mortality and disability.[1] The risk factors for these NCDs are major modifiable behavioural risk factors, such as tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol, that lead to intermediate metabolic risk factors, such as raised blood pressure, obesity, diabetes and high cholesterol.[2] Non-modifiable factors, such as age, sex and genetics, along with environmental and socioeconomic factors, contribute to disparity in prevalence in risk factors (Figure 1.1).[3]

Figure 1.1: Risk factors for noncommunicable diseases



1.2 BURDEN OF NONCOMMUNICABLE DISEASES AND RISK FACTORS IN FIJI

NCDs are the leading cause of death, accounting for over 80% of all deaths in the western Pacific region and 50% of premature deaths for those aged under 70 years.[4] In Fiji, the second most populous of the Pacific Island countries, which had a population of 884,877 in 2017,[5] approximately 84% of deaths are attributed to NCDs, and 31% of these deaths occur before age 70.[6] Behavioural and metabolic risk factors—such as tobacco use, low levels of physical activity, raised blood pressure and obesity—are increasing and are strongly associated with rapid urbanisation, changing health behaviours, worsening socioeconomic inequalities, climate change and ageing population trends. Addressing these risk factors that drive the NCD epidemic is critical to improving population health and achieving the Sustainable Development Goals.[7]

2. WORLD HEALTH ORGANIZATION STEPS SURVEY

Public health surveillance is the systematic collection, analysis and interpretation of data that allows an estimation of the health status and behaviour of the population.[8] The STEPwise (STEPS) approach to surveillance of the risk factors for NCDs, developed by the World Health Organization (WHO) in 2002, was designed to help countries build and strengthen their surveillance capacity for NCD prevention and control by focusing on the primary prevention of the most common risk factors.[9]

Recognising the importance of reliable data to inform national policies, Fiji conducted its 3rd national STEPS Survey in 2025.

This was led by the Ministry of Health and Medical Services (MHMS) Wellness Centre with technical and financial support from the WHO, The George Institute for Global Health (TGI), The Fiji Program Support Facility/The Fiji Program Support Platform (Australian AID), The Pacific Community and The Fiji Bureau of Statistics (FBoS). The results were intended to guide the development and implementation of strategies aligned with national and global commitments to NCD prevention and control, including the WHO's Global Action Plan and the Sustainable Development Goals, and the Pacific Monitoring Alliance for Noncommunicable Disease Action Dashboard.[10] In 2019, the Noncommunicable Disease Global Action Plan was extended to 2030 by the 72nd World Health Assembly with updates to further reduce mortality from NCD, insufficient physical activity and harmful use of alcohol (Figure 2.1).[11, 12]

Figure 2.1: Noncommunicable diseases roadmap: Global Action Plan 2013–2030[12]

2.1 STEPS SURVEY GOAL

The STEPS methodology provides a simple, standardised method for collecting, analysing and disseminating data in three sequential steps: questionnaire-based risk factor assessment, physical measurements and biochemical assessments. This covers key behavioural risk factors; tobacco use, alcohol use, physical activity and diet; as well as key biological risk factors, overweight and obesity, raised blood pressure, raised blood glucose and abnormal blood lipids.

2.1.1 FIJI 2025 STEPS SURVEY

The 2025 STEPS Survey was conducted among adults aged **18 to 69 years,** using the three-step protocol:

- **Step 1**: questionnaire-based assessment of behavioural risk factors and conditions (core: tobacco and alcohol use, diet/lifestyle advice, physical activity, cervical cancer).
- **Step 2**: physical measurements (core: blood pressure, height, weight, waist circumference).
- **Step 3**: biochemical measurements (core: blood glucose, total cholesterol, urinary sodium and creatinine).

Fiji used the standard approach described above and expanded the questions (to about tobacco, alcohol, kava use, diet related, salt and sugar intake, sedentary behaviour, breast cancer, hip circumference (HC), heart rate). It added optional modules on oral health, mental health (with specific questions) and disability (with specific questions). This modular approach allows for consistent and comparable data collection within and across countries.

OBJECTIVES

1. to assess the distribution of lifestyle factors, such as physical activity, tobacco, alcohol and kava use, and anthropometric measurements (e.g. body mass index [BMI] and central obesity), which may affect the occurrence of diabetes, CVDs and other injuries.
2. to identify dietary practices that are risk factors for NCDs
3. to determine the prevalence of hypertension (HTN), diabetes, raised cholesterol, salt intake levels, CVD risk, mental health-depression, oral health and disability.

2.2 RATIONALE FOR 2025 STEPS SURVEY

Fiji's 1st STEPS Survey was administered in 2002 among those aged between 15 and 64 years in a target population of 6,783 households. It was also the first STEPS Survey in the Pacific Islands. The 2nd STEPS Survey was undertaken in 2011 in those aged between 25 and 64 years in a target population of 4,850. The aim was to monitor the progress and changes in the risk factors and disease prevalence since 2002. However, because of the differences in age range, methodology and instrument questions in the 1st and 2nd surveys, it was not possible to conduct a trend analysis over time. The purpose of this 3rd STEPS Survey is not to focus on longitudinal trends.

Given the rising morbidity and mortality from NCDs in Fiji and the need to monitor progress towards the target of the WHO Global Action Plan and Sustainable Development Goals, Fiji implemented its 3rd STEPS Survey, starting in 2024 to and running until 2025. The data presented in the report provide reliable and up-to-date information on NCD risk factors and conditions for planning and evaluating public health initiatives and policies, and for identifying future demands for health services in managing and treating NCDs in Fiji. This allows for forecasting medicines, supply chain and procurement at health centres, basic cost-effective equipment, governance structures for multisectoral action, and other health system requirements for efficient and effective health service delivery.

3. SURVEY METHODOLOGY

3.1 SURVEY DESIGN

A cross-sectional national survey was conducted between April 2024 and June 2025 to obtain data that are representative of the adult population in Fiji aged between 18 and 69 years. The age range was expanded to identify age trends in lifestyle risk factors, and to capture NCD rates in those of older age. The sampling took data across the four divisions of Fiji: Eastern, Northern, Western and Central, the island of Rotuma.

The WHO STEPS Survey includes three consecutive steps. Step 1 and Step 2 were conducted in the initial interview and Step 3 occurred on a subsequent day.

- **Step 1:** Questionnaire on demographic information and behavioural risk factors regarding tobacco use and alcohol and kava consumption, and diet-related questions on fruit and vegetable consumption. It included additional questions on carbohydrates, processed food, meats and oils, physical activity and dietary salt and sugar intake. Additional modules were included on cervical and breast cancer, oral health, mental health (depression) and disability.
- **Step 2:** Physical measurements included blood pressure, height and weight, waist circumference, HC and heart rate.
- **Step 3:** Biochemical measures were obtained at a later date. These included fasting blood glucose (FBG), fasting lipids (total cholesterol), and urinary sodium and creatine (non-fasting).

The survey instruments were translated and implemented either in English, i-Taukei or Hindi. Translations were conducted by a translation company in Suva, Fiji.

3.2 SAMPLE SIZE

The 2025 STEPS Survey in Fiji was designed to produce nationally representative estimates for adults aged 18 to 69 years. A multistage, cluster sampling method was used, ensuring representation by gender, age group, rurality and division.

The sample size calculation used eight groups that combined sex (male/female) with age categories: (i) 18 to 29 years, (ii) 30 to 44 years, (iii) 45 to 59 years and (iv) 60 to 69 years.
The final sample size was calculated using the following formula:

$$n = \left(Z^2 \frac{P(1-P)}{d^2}\right) D \times G \times \frac{1}{R} \qquad (3.1)$$

where

n = Sample size	
Z = 1.96	required to obtain a 95% confidence interval
P = 0.5	expected prevalence of key risk factors. This was unknown when sample size calculations were being performed; therefore, 50% was assumed to ensure that the sample size was appropriate to encompass the unknown variability in the estimate
d = 0.05	margin of error associated/recommended with a STEPS Survey
D = 1.5	design effect adjustment of a complex sampling design
G = 8	Number of age and sex groups included in the sample, to ensure appropriate representation with the sample
R = 0.7	assumed response rate of 70%

Therefore:

$$n = \left(1.96^2 \frac{0.5(1-0.5)}{0.05^2}\right) \times 1.5 \times 8 \times \frac{1}{0.7}$$

$$= 6{,}584.29$$
$$= 6{,}585 \text{ (rounded)} \qquad (3.2)$$

The final sample size was rounded to 6,600 individuals. Guidance from the FBoS indicated that 20 households should be sampled per enumeration area. For 6,600 individuals, this resulted in the selection of 330 enumeration areas. However, upon request, an enumeration area from Rotuma was included, regardless of sampling, to ensure that data were obtained from this group of people. Therefore, a total of 331 enumeration areas were used, and the final sample size was **6,620** individuals.

3.3 SAMPLING METHOD

3.3.1 SAMPLING STAGE 1: PRIMARY SAMPLING UNIT: THE ENUMERATION AREA

Fiji comprises seven geographical divisions: (i) Central East Urban, (ii) Central Rural, (iii) Eastern Rural, (iv) Northern Urban, (v) Northern Rural, (vi) Western Urban and (vii) Western Rural. There are 1,602 enumeration areas across Fiji. The 330 enumeration areas were sampled proportionally to population using these geographical divisions as stratum. Rotuma was selected a priori.

3.3.2 SAMPLING STAGE 2 SECONDARY SAMPLING UNIT: THE HOUSEHOLD

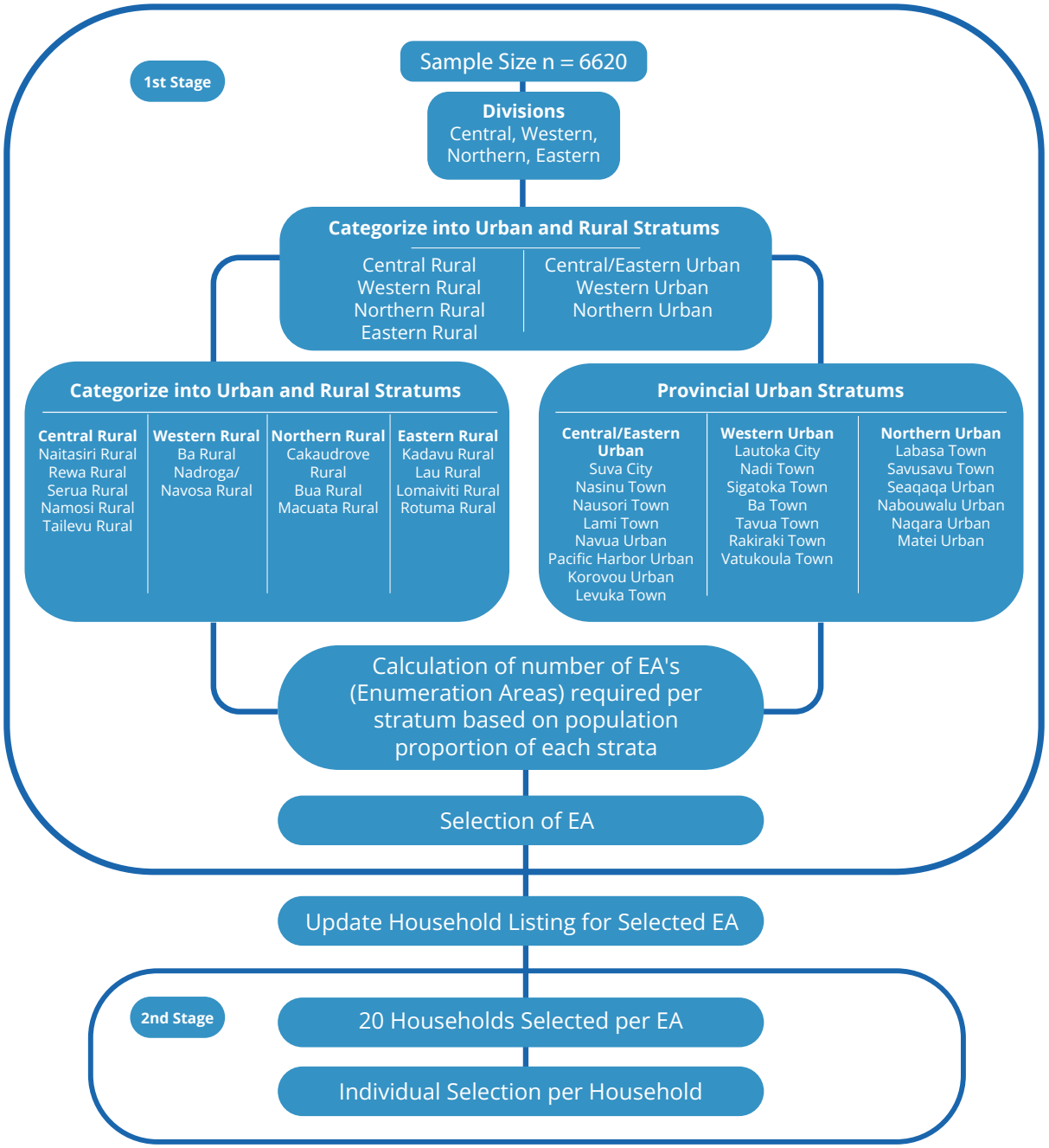
Household listings of all eligible households for each selected enumeration areas were obtained from the FBoS.[1] For each enumeration area, households were ordered roughly geographically, placing households that are physically adjacent near each other on the listing. Fixed distance systematic random sampling without replacement was used after randomly selecting a starting value. This sampling and selection of the 20 households was performed by the FBoS for the Western, Northern and Central divisions and by the MHMS healthcare workers for the Eastern Division.

3.3.3 SAMPLING STAGE 3: PARTICIPANT SELECTION

In each of the selected households, one eligible household member was randomly chosen using the STEPS application, an open-source suite of tools, which randomly selects a participant from the eligible household members programmed in Android tablets.

1 Fiji experienced a mass migration of key age groups between November 2022 and October 2023. A total of 18,059 Fiji residents were reported to have departed Fiji and were expected to be absent from the country for at least one year. In addition, the COVID-19 pandemic caused internal movements, and these movements are particularly noticeable for rural to urban, and inter-provincial migration. An updated household listing was obtained by the Fiji Bureau of Statistics enumerators for each sampled enumeration area, in accordance with its internal processes. The updated household listings was a distinct activity from the STEPS Survey data collection. Given the budget, resources and remote location, the Eastern Division's household listings were conducted by healthcare staff and were based on the 2017 household listings within the community to verify the household was occupied and to add additional households where appropriate.

Figure 3.1: Household selection process



3.4 DATA COLLECTION PROCEDURES

Data collection was conducted from April 2024 to July 2025 using standardised questionnaire, Version 3.2–World Health Organization STEPwise approach to surveillance- Q-by-Q Guide (see Appendix A, STEPS instrument) adapted to the Fiji context and translated into i-Taukei and Hindi along with country-specific show cards.

3.4.1 DATA COLLECTION TEAM AND THEIR SUPERVISORS

The data collection team performed the fieldwork for the STEPS Survey. The main data collectors were drawn from MHMS staff and included nurses, dietitians, physiotherapists, dental therapist and NCD project officers who were supported in some of the enumeration areas by enumerators from the FBoS. We present the data collection by each division, adapted as required by geography, transport and workforce. The following organisations contributed to collecting the data.

Table 3.1: Data collection by organisations

Organisation	% of data collection
Ministry of Health and Medical Services	77
Fiji Bureau of Statistics	18
National Employment Centre	5
Total	100

STEPS data collectors underwent intensive training for five days on STEPS protocols, interview techniques and ethical standards at two separate workshops held in Suva, Fiji, in March and October 2024. The key items for the training were understanding the rationale for the STEPS Survey in Fiji, identifying the enumeration areas, selecting individual households per enumeration area, using the Android device, understanding the consent process, developing interview skills, obtaining hands-on training in administering the STEPS instrument and piloting in communities (Appendix B, Training agenda).

EASTERN DIVISION

For the 16 enumeration areas across 11 islands, data collection was conducted by 36 MHMS data collectors and two supervisors. They formed teams of two data collectors for islands with one enumeration area. The two large islands, which had three enumeration areas each, had three teams, with one supervisor each. The teams travelled by boat and foot in many of the remote locations, always with one team and a supervisor to ensure safety. Data collection took 13 weeks for 16 enumeration areas because of maritime location and funding gaps, because it was the end of the financial year.

WESTERN DIVISION

Data were collected in 131 enumeration areas across six subdivisions from November 2024 to June 2025. There were 30 data collectors (24 MHMS and six FBoS enumerators). Three MHMS supervisors coordinated the various subdivisions, along with one FBoS supervisor. The MHMS supervisors based at the Western MHMS headquarters office were critical to the logistics and planning (transport, drivers, allowances, equipment and coordination). They were supported by their senior divisional medical officers. Data were collected by teams of two data collectors supported by a vehicle and driver. When there was a limitation in dedicated transport for teams, supervisors coordinated the drop-off and pick-up or used MHMS vehicles when available.

NORTHERN DIVISION

Data were collected in 49 enumeration areas across four subdivisions from October 2024 to May 2025. There were 40 data collectors (21 MHMS and 19 FBoS enumerators). Two MHMS supervisors coordinated the MHMS personnel and logistics, and the implementation plan. One FBoS supervisor coordinated the FBoS personnel and transport. Data collection was coordinated by divisional supervisors and was conducted sequentially because of constrained transport across all four subdivisions. The Northern Division MHMS supervisor at Northern MHMS headquarters was critical to logistics and planning (transport, drivers, allowances, equipment and coordination) and was supported by the senior divisional medical officers. Data were collected by teams of at least two interviewers. The teams were supported by a vehicle and a driver. When a survey team could not be assigned a dedicated survey vehicle, supervisors coordinated drop-off and pick-up or used MHMS transport capacity.

CENTRAL DIVISION

Data were collected in 135 enumeration areas across six subdivisions from October 2024 to July 2025. There were 39 data collectors (35 MHMS/National Employment Centre and four FBoS enumerators). Two MHMS supervisors coordinated ministry personnel and logistics and implemented the survey plan. They worked with two FBoS supervisors to coordinate the FBoS' personnel and transport. Data collection was coordinated by divisional supervisors to occur sequentially, because transport and personnel constraints prevented parallel initiation from occurring across all six subdivisions. The Central Division MHMS supervisors were critical to the logistics and planning (transport, drivers, allowances, equipment and coordination) and the implementation of the survey. They were supported by their senior divisional medical officers. Given the loss of the FBoS' surveyor capacity in 2025, additional personnel were added from the MHMS and National Employment Centre. Data were collected by teams of at least two, supported by a vehicle and a driver. When a team could not be assigned a dedicated survey vehicle, supervisors would plan and coordinate drop-off and pick-up or use MHMS transport capacity.

3.4.2 FIELD (ENUMERATION AREA) DATA COLLECTION PROCESS

A team of two data collectors visited selected households within an enumeration area each week. If no one was home, a card was left notifying the household of their visit and providing contact information and return date. If the selected person was not home, they would ask for consent from a household member to phone them to arrange a time for the interview. After three visits for selected households or individuals from household with no response, they were considered a non-responder.

All information of the household family members, selection of individuals from the households and data entry for each of the STEPS Survey was stored on the Android device.

Step 1 and Step 2 were performed consecutively within the same visit. The data collectors returned the next day or later in the week for Step 3, providing the participants with instructions on urine collection before fasting for eight hours to collect their blood glucose and blood lipids (total cholesterol). The data collectors would phone the evening before to remind the participants.

The following were used for each Step 1, 2 and 3 by the interviewers (for additional details see Appendix C):

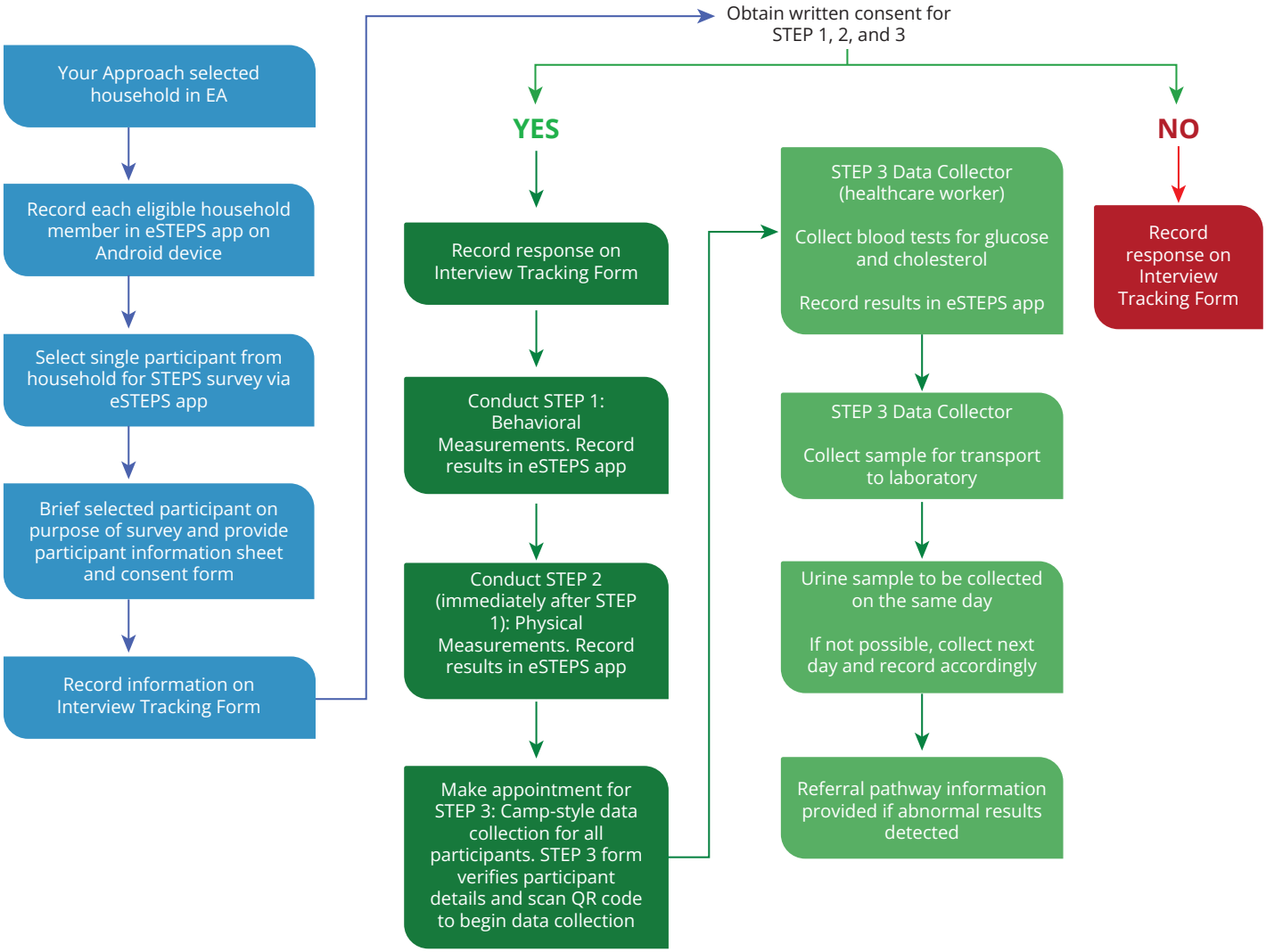
- **Step 1**: Structured questionnaire administered via Android device
- **Step 2**: Physical measurements taken using calibrated equipment:
    - blood pressure and heart rate.

      Measured using OMRON-Digital HEM 712.

      Three readings were taken at three-minute intervals
    - height was measured with CAMRY ultrasonic height-measuring device/ stadiometer
    - weight was measured using a SECA digital weight scale, a battery-operated floor scale
    - waist and hip circumferences were measured with figure tape measure
    - oral health short clinic examination by a dentist
- **Step 3**: Biochemical samples collected from fasting participants (minimum eight hours):
    - blood glucose was measured using Accu-Chek
    - blood cholesterol was measured using Accutrend Plus GCT Meter
    - urine (spot sample) was collected in a Technoplas urine container before commencing fasting and analysed centrally at HealthPlus Diagnostics in Suva in the Central Division.

All data were collected using the ODK Collect app on Android devices and securely transmitted to a central server, the WHO online eSTEPS platform.

Figure 3.2: Data collection flow chart



3.5 DATA MANAGEMENT AND QUALITY

The survey was overseen by the project manager and data manager from the MHMS Wellness Centre with support from TGI in collaboration with the WHO headquarters team. A rigorous quality control framework was implemented, including:

- real-time field supervision
- daily data checks and validation through the WHO eSTEPS database
- systematic data quality reports by the data manager and WHO headquarters
- use of standard WHO headquarters data cleaning and analysis protocols developed through the World Health Organization eSTEPS database.

Data were weighted to account for the sampling design, non-responses and population distribution to ensure national representativeness (see methods section).

3.6 ETHICAL CONSIDERATIONS

Ethical approval for the survey was obtained from the Fiji Human Health Research Ethics Committee. Written informed consent was obtained from all participants before they completed the survey. Participation was voluntary, and confidentiality of all collected information was ensured.

The STEPS Survey recruited participants through the random selection of individuals at a household level through an Android device.

Inclusion criteria for participating in this study included:

- 18 to 69 years of age
- any gender
- all ethnic groups
- resident in HH for at least the previous six months.

Exclusion criteria included:

- under the age of 18 years
- over the age of 70 years
- had left the household for more than six months
- residents of dormitories, prisons, in-patient facilities and other similar institutions.

Initial contact did not involve real or perceived coercion or pressure to participate. The STEPS data collectors provided participant information sheets and consent forms to each selected participant. The participant information sheet was read aloud by the data collector when required.

3.7 DATA ANALYSIS

To ensure that the survey estimates were representative of the adult population of Fiji aged 18 to 69 years, **sampling weights were applied** to account for the multistage clustered survey design and population structure. The survey employed three levels of sampling: enumeration areas, households within enumeration areas and individuals within households. Final person-level weights were calculated as the inverse of the probability of selection at each stage, incorporating (i) enumeration area-level selection probability, (ii) household-level selection probability within each enumeration area and (iii) individual-level selection probability within each selected household.

Adjustments were made for non-response at the household level and for differences in age and sex distribution between the sample and the target population. Post-stratification weights were derived using population projections from the United Nations World Population Prospects 2024 to align the sample with national age–sex distributions. Separate weights were calculated for each step of the survey.

Data analysis was primarily performed using R version 4.5.1 with appropriate methods for complex sample design and survey weights.[13]

A factsheet was developed by the WHO headquarters team to highlight key survey results. Data books (primary and divisional) that contain comprehensive data relating to all the survey instruments used were generated. All data used in the report can be sourced from the two data books. In rare places, readers are directed to Appendix E for data.

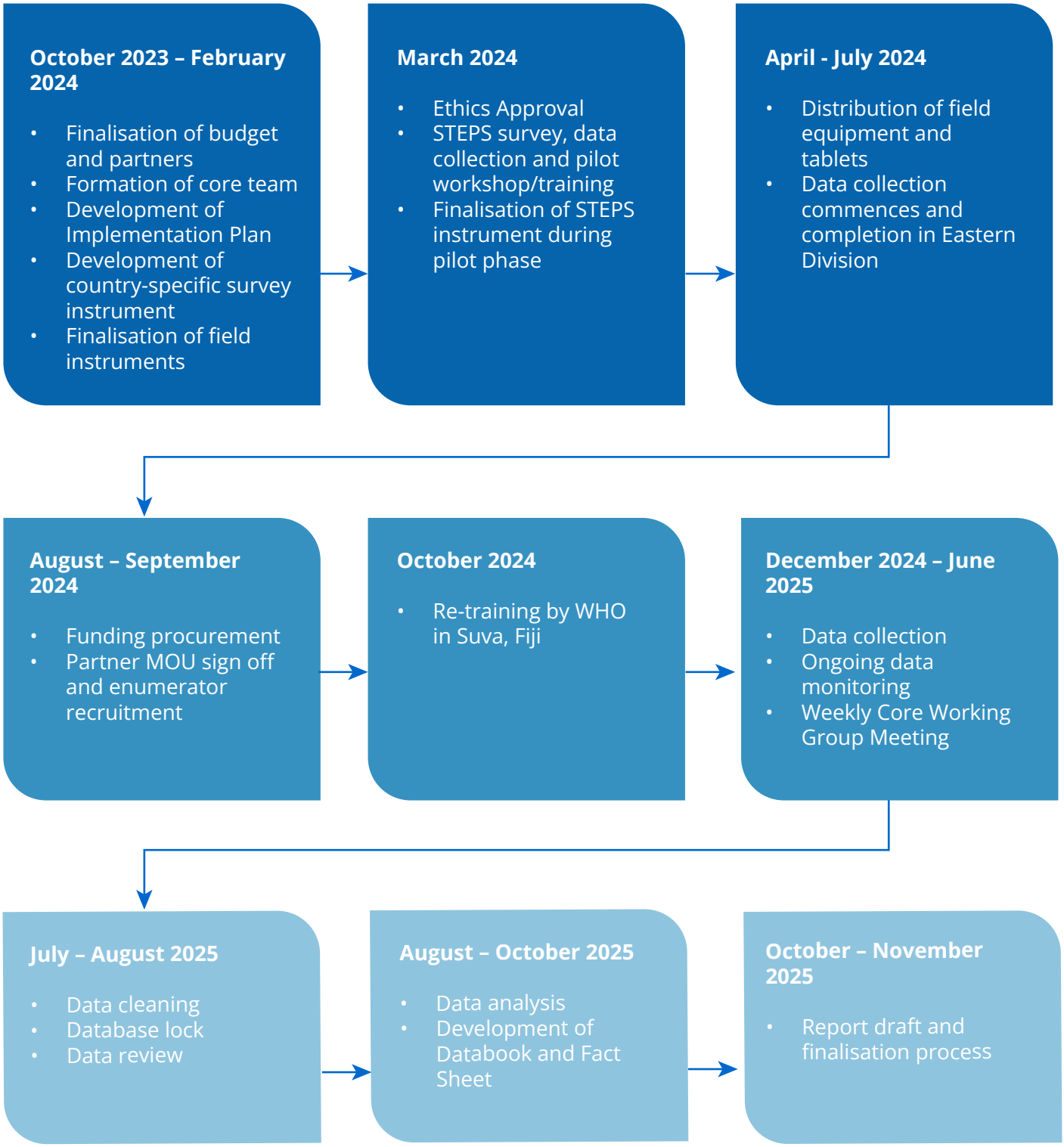
The results that follow are a selection of main indicators of NCD risk factors and conditions in Fiji and highlight areas of interest for policymakers and health advocates. The prevalence, incidence and measure of the central tendencies for the surveyed risk factors and conditions were estimated. In addition, 95% confidence intervals are produced throughout the report, unless specified otherwise. All visualised confidence intervals are 95%.

3.7.1 INTERPRETATION CONSIDERATIONS

Caution is advised when interpreting results at the divisional level, particularly for the Eastern Division, for which small sample sizes may lead to unstable estimates and limit the reliability of comparisons. In addition, care should be taken when comparing findings across STEPS Survey years (e.g. 2002, 2011 and 2025) because of variations in sample age ranges and changes in the definitions of key outcome measures, such as heavy episodic drinking (alcohol) and physical inactivity over time. These factors may affect the comparability of results and should be considered when drawing conclusions.

3.8 SURVEY TIMELINE

Figure 3.3: Key 2025 STEPS activities



3

2025 STEPS SURVEY RESULTS

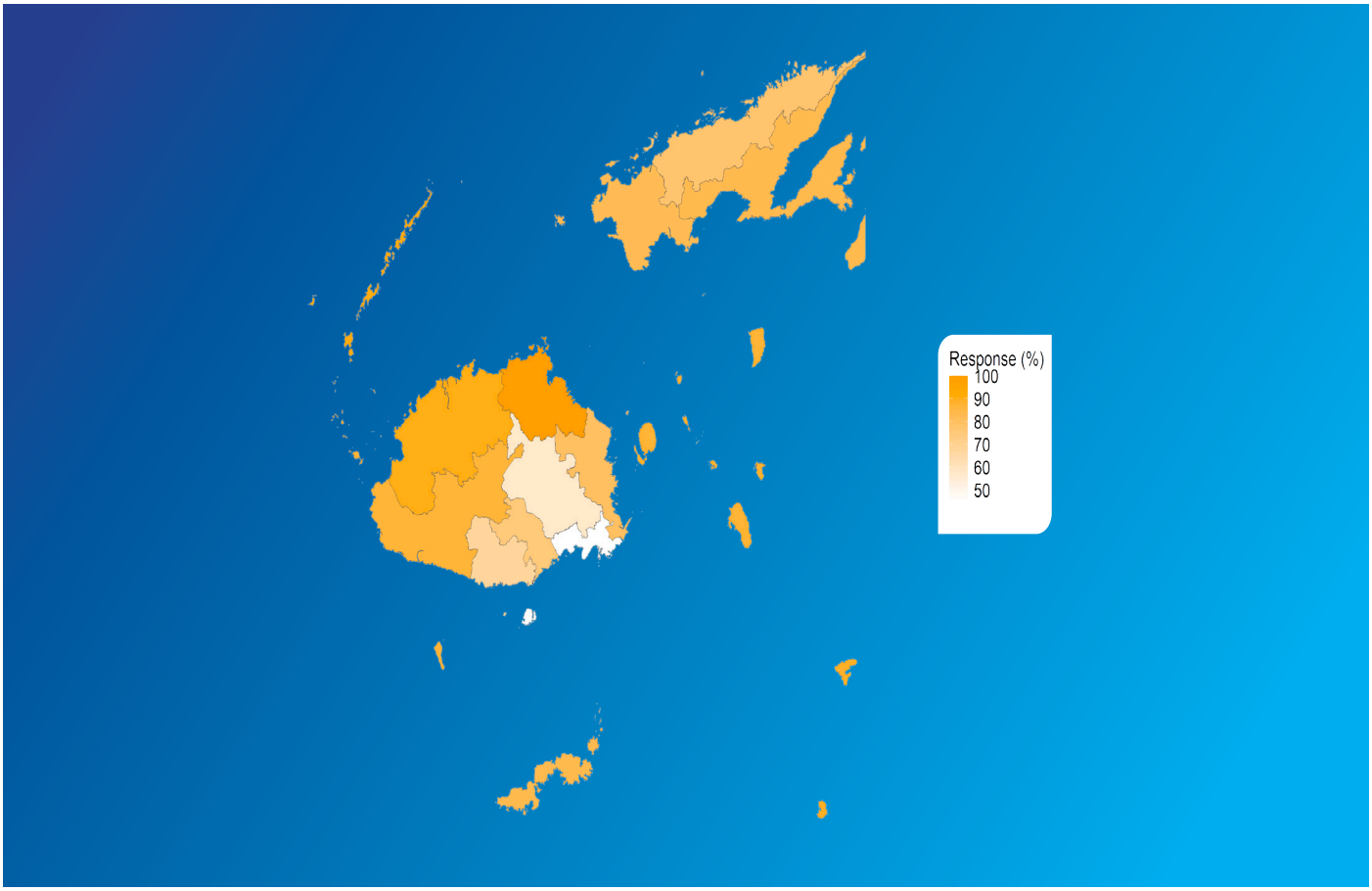
DATABOOKS OF RESULTS (PRIMARY AND DIVISIONAL) ARE LOCATED AT THE FIJI MINISTRY OF HEALTH AND MEDICAL SERVICES AS WELL AS THE WHO WESITE: https://www.who.int/teams/noncommunicable-diseases/surveillance/data/fiji

THOSE NOT IN THE DATABOOK LOCATED IN THE APPENDIX E

4. RESPONSE RATES

An overall response rate of 75.9% was obtained; 5,026 surveys were completed out of a target population of 6,620 for Step 1 and 2, and 4,800 for Step 3 (72.5%). These participants are representative of the population across Fiji. Women responded more frequently to the survey than men. The sex-specific response rate was 82.3% for women and 62.5% for men. Response rates were highest in the Western Division, at 90.8%. These were 84.7% for Eastern, 80.2% for Northern and 58.9% for Central. Response rates proved to be most challenging in and around the major urban centres, especially in the Central Division, which had a response rate of 83.5% in rural communities and 70.1% in urban ones. Figure 4.1 shows the response rate across Fiji by province.

Figure 4.1: Response rates for the 2025 STEPS Survey by province



5. SOCIODEMOGRAPHIC DATA

Social and demographic indicators for each of the 5,026 respondents included **sex, age, urban/ rural residence, division, education, ethnicity and religion**. These indicators describe the survey respondents and were not weighted.

Of the 5,026 respondents, 43.4% were men and 56.6% were women. Over 65% of respondents were aged between 30 and 59. Figure 5.1 provides the distribution by age. A little over half (52.2%) of respondents were urban dwellers, and 47.3% resided in the Western Division (Figure 5.2). Two-thirds (67.3%) of respondents had either completed secondary school or pursued further education (Figure 5.3). Over 60% of respondents were Fijian i-Taukei, followed by 38.1% who were Fijian of Indian descent (Table 5.1). Religion is important in Fiji because there are many wellbeing programs through faith-based organisations. Christianity was the most reported religion (64.7%), followed by Hinduism (28.7%; Table 5.1).

Figure 5.1: Age distribution of 2025 STEPS Survey respondents

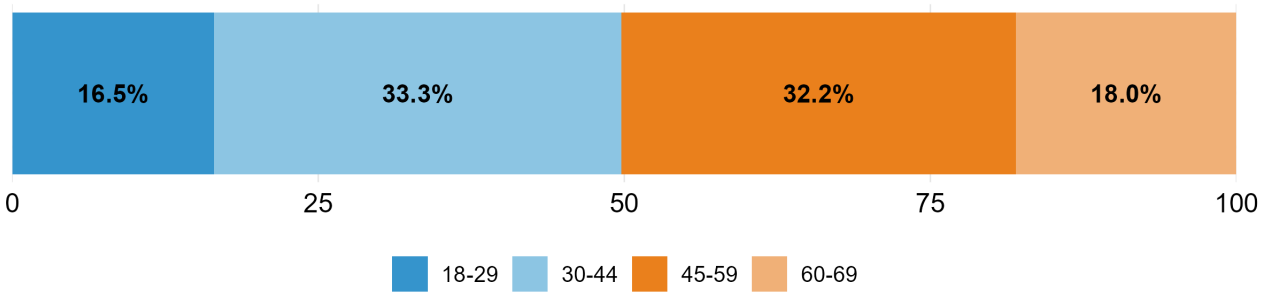


Figure 5.2: Percentage of respondents per division

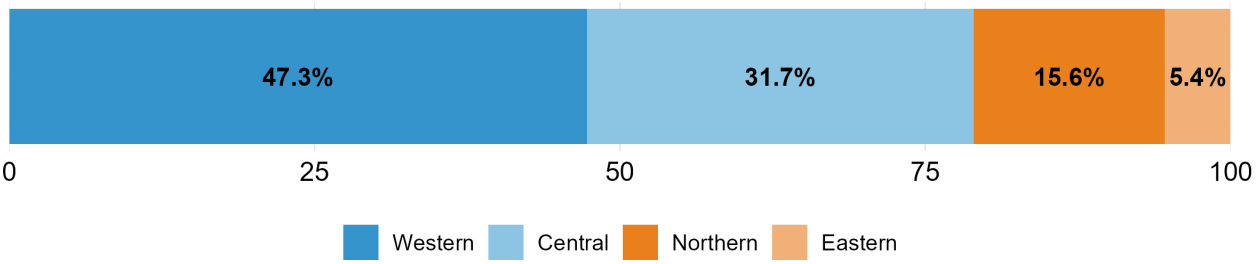


Figure 5.3: Highest education level obtained by respondents

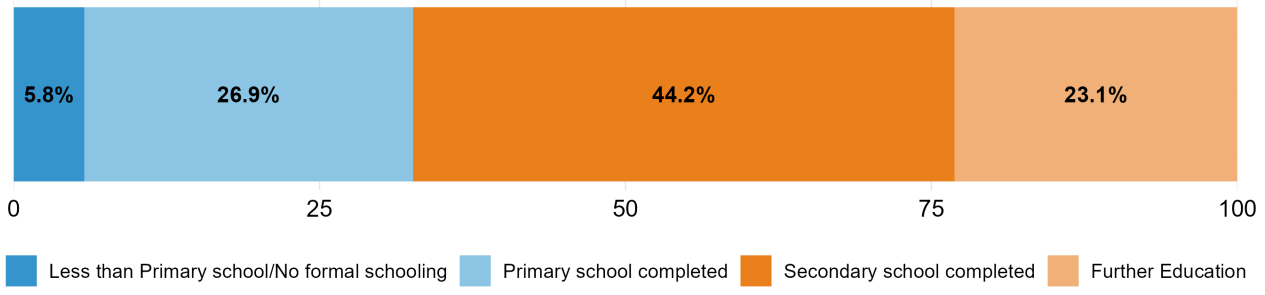


Table 5.1: Percentage of survey responses by ethnicity, religion and rural/urban breakdown

Category	Demographic group	Survey responses (*n*, %)
Ethnicity*	Fijian – i-Taukei	3,049 (60.7)
	Fijian – Indian descent	1,913 (38.1)
	Other	64 (1.3)
Religion	Christianity	3,253 (64.7)
	Hinduism	1,441 (28.7)
	Islam	310 (6.2)
	Other	12 (0.2)
	None	10 (0.2)
Rural/Urban	Rural	2,404 (47.8)
	Urban	2,622 (52.2)

* Additional disaggregated results by ethnicity can be found in the World Health Organization STEPS Databook.

6. TOBACCO USE

6.1 BACKGROUND

Tobacco use is a leading modifiable risk factor for NCDs, including CVDs, cancers, chronic respiratory diseases and diabetes.[14] Preventing tobacco initiation and promoting cessation are essential to reducing the NCD burden globally and nationally.[15]

6.1.1 STEPS SURVEY MEASURES

In Fiji, information on tobacco use was collected in **Step 1** of the 2025 STEPS Survey. This involved a standardised questionnaire capturing:

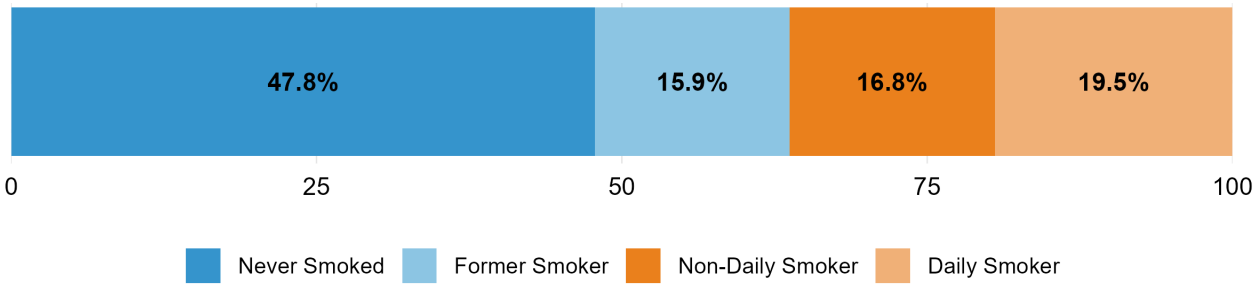
- current and former tobacco use (smoking and smokeless)
- daily and occasional use
- exposure to environmental tobacco smoke
- attempts to quit and receipt of cessation advice
- use of e-cigarettes.

Population estimates for smoking status and tobacco use (including e-cigarettes) were obtained using weighted estimates from the Step 1 survey.

6.2 CURRENT SMOKERS

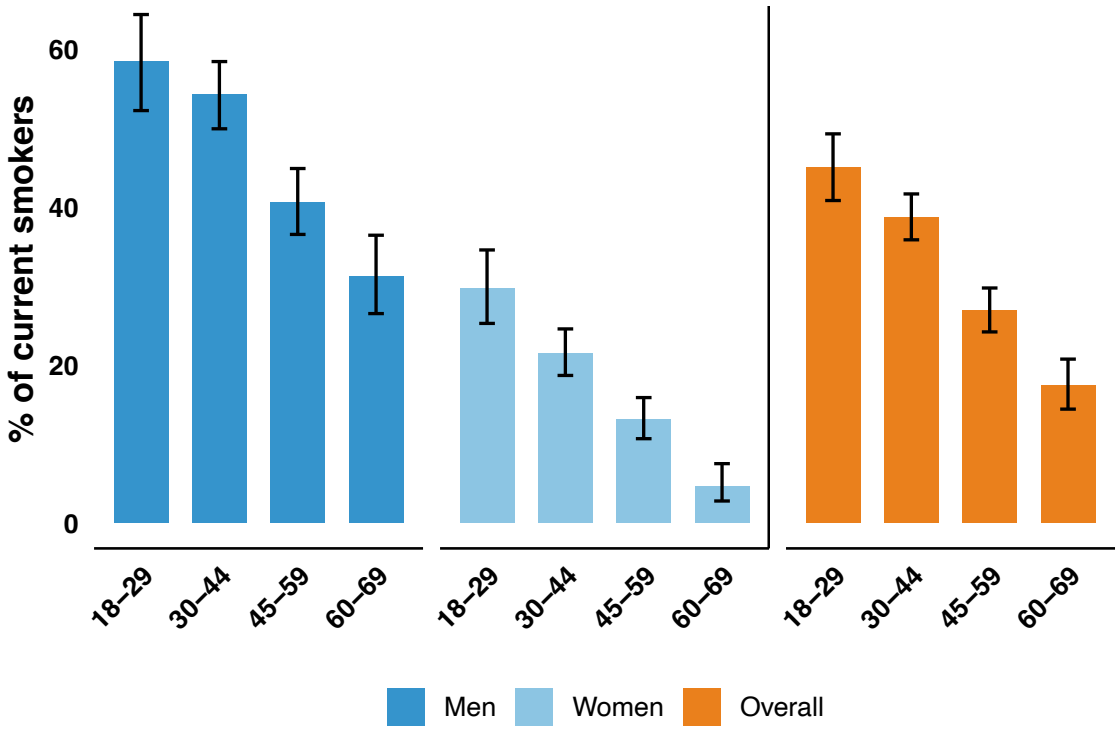
Approximately 36% (36.3%, 95% Confidence Interval [CI]: 34.3–38.3%) of the population were current smokers, either daily (19.5%, CI: 17.9–21.1%) or less than daily (16.8%, CI: 15.3–18.5%). Smoking was more prevalent for men (50.8%, CI: 47.9–53.6%) than for women (20.6%, CI: 18.6–22.8%; Figure 6.1).

Figure 6.1: Population smoking status



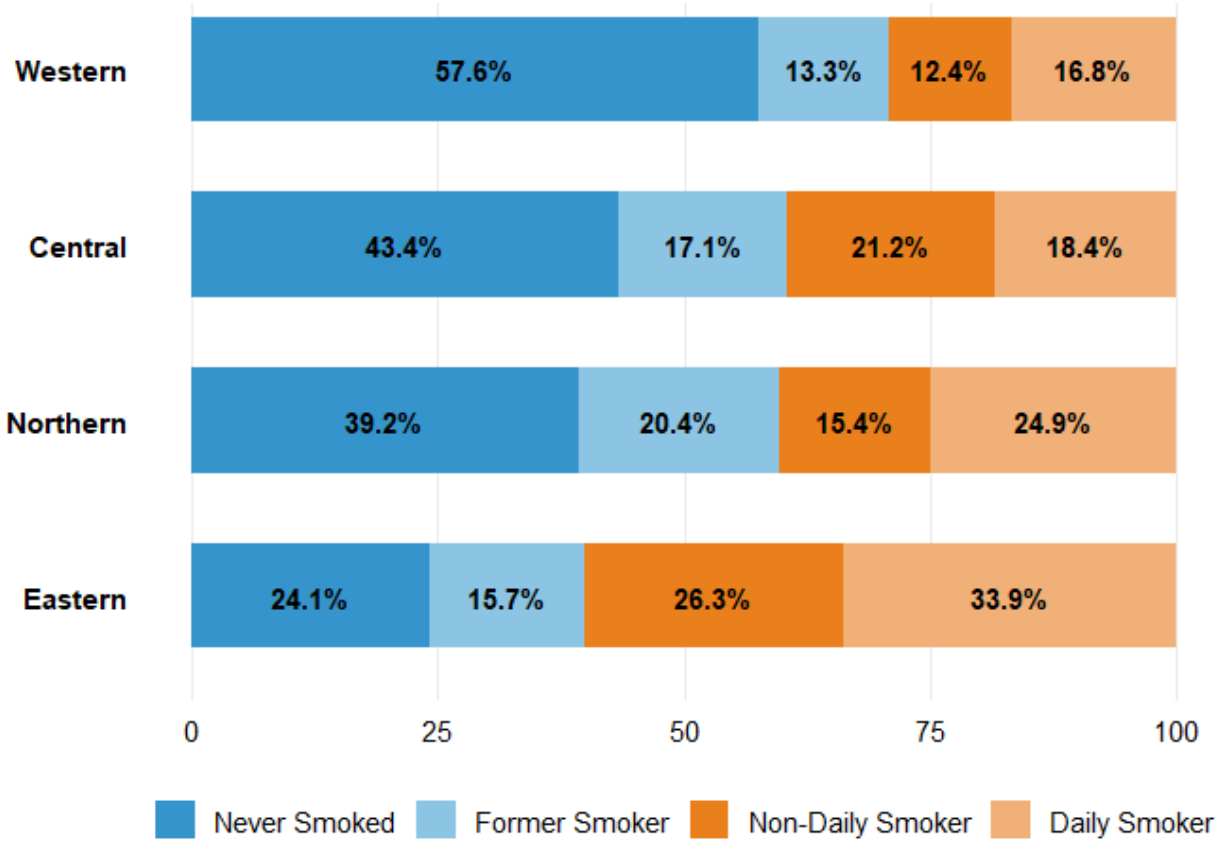
There was a distinct smoking trend by age and sex (Figure 6.2). The proportion of individuals reporting daily or non-daily smoking decreased progressively with age. Among those aged 18 to 29 years, 45.1% (CI: 40.9–49.3%) reported smoking. This figure comprised 58.5% (CI: 52.3–64.5%) of men and 29.8% (CI: 25.3–34.6%) of women. In contrast, among participants aged 60 to 69 years, smoking prevalence was markedly lower at 17.4% (CI: 14.4–20.8%); 31.3% (CI: 26.6–36.5%) of men and 4.6% (CI: 2.8–7.5%) of women reported current smoking.

Figure 6.2: Proportion of current smokers by age and sex



Smoking, either daily or non-daily, was more common in the Eastern Division than in the other three divisions. The Western Division had the greatest proportion, specifically, 57.6% (CI: 54.2–60.8%), of non-smokers (Figure 6.3).

Figure 6.3: Smoking status by division



Cigarettes, either manufactured or hand-rolled, were the predominant form of tobacco used (Table 6.1), and most smokers had nine or fewer cigarettes a day (Figure 6.4). Among those who smoked, the majority (55.1%, CI: 44.7–65.0%) of women and the largest portion of men (41.2%, CI: 35.3–47.4%) reported smoking fewer than five cigarettes per day.

Figure 6.4: Number of cigarettes smoked per day for the portion of the population who smoke, by sex

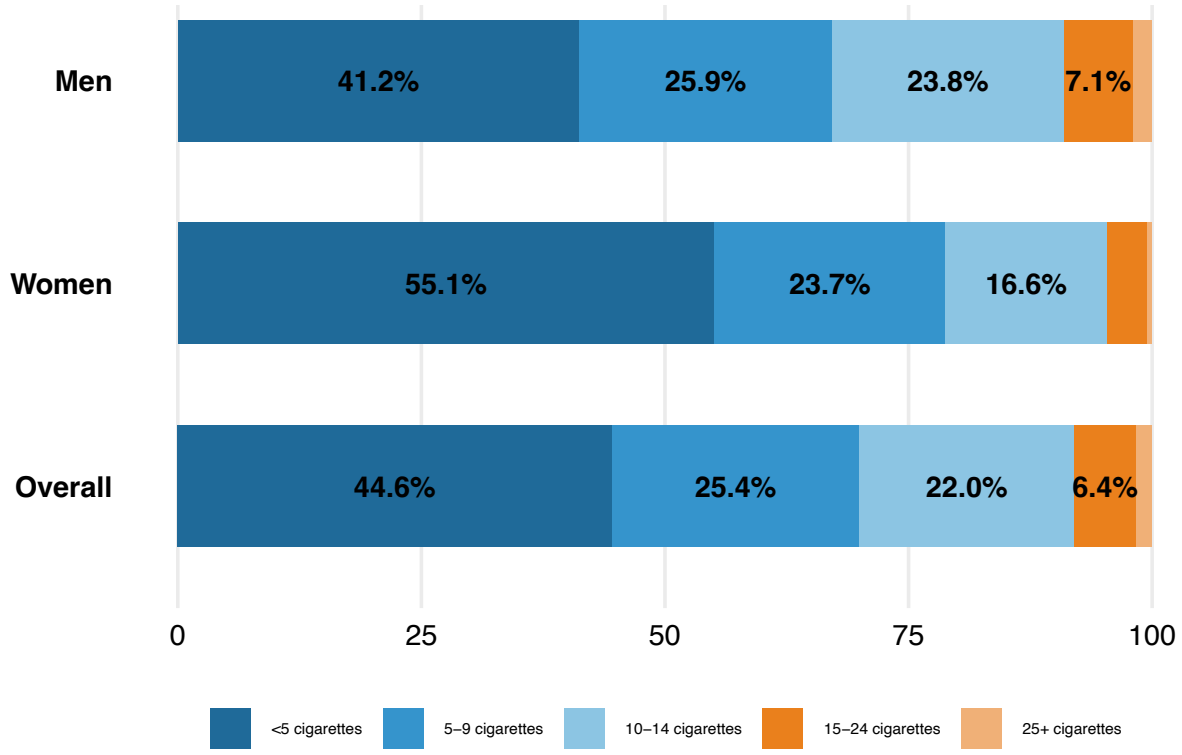


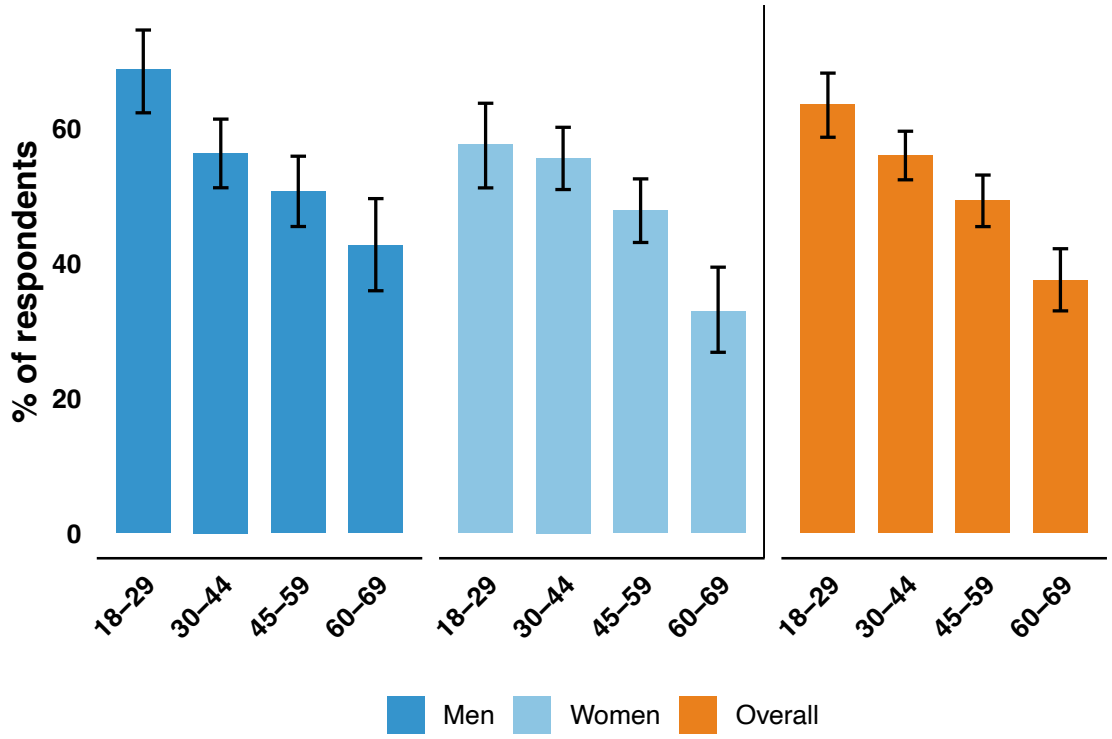
Table 6.1: Percentage of the population who smoke particular types of tobacco produce for the proportion of the population who smoke

Tobacco type	% of current smokers (with 95% CI)		
	Men	Women	Overall
Manufactured cigarettes	78.6 (74.8–82.0)	83.5 (78.8–87.3)	80.0 (76.9–82.7)
Hand-rolled cigarettes	14.8 (11.9–18.1)	14.7 (10.5–20.2)	14.8 (12.2–17.7)
Pipes of tobacco	3.2 (1.6–6.4)	1.4 (0.7–3.0)	2.7 (1.5–5.0)
Cigars, cheroots and cigarillos	2.9 (1.8–4.5)	2.5 (0.9–6.8)	2.8 (1.8–4.2)
Shisha	0.8 (0.4–1.7)	0.1 (0.0–0.7)	0.6 (0.3–1.3)
Other	2.6 (1.5–4.3)	4.5 (2.0–9.5)	3.1 (2.0–4.8)

6.3 EXPOSURE TO SECOND-HAND SMOKE

In the 30 days preceding the survey, 32.0% (CI: 29.3–34.9%) of people had been exposed to second-hand smoke at work. This was defined as someone smoking in a closed area, including a building or work area or office. More men (37.7%, CI: 34.1–41.5%) experienced this workplace hazard than women (25.7%, CI: 22.5–29.1%). Likewise, 48.2% (CI: 45.9–50.6%) of people had experienced second-hand smoke at home; men (49.4%, CI: 46.2–52.6%) were more likely to experience second-hand smoke than women (46.9%, CI: 44.0–49.8%). People in rural communities (58.3%, CI: 54.1–62.3%) were more likely to be exposed to second-hand smoke (for any reason) than those in urban communities (53.6%, CI: 49.9–57.2%).

Figure 6.5: Proportion of the population by age and sex exposed to second-hand smoke at work or at home



6.4 E-CIGARETTES AND SMOKELESS TOBACCO

E-cigarettes are becoming increasingly common in Fiji. Overall, 4.5% (CI: 3.5–5.7%) of the population reported being current e-cigarette users; however, patters of use varied markedly across age groups. A total of 9.4% (CI: 7.0–12.6%) of individuals aged 18 to 29 years reported being current users, compared with 2.9% (CI: 2.0–4.3%) among those aged 30 to 44 years, 0.7% (CI: 0.4–1.2%) among those aged 45 to 59 years and 0.3% (CI: 0.1–1.1%) among those aged 60 to 69 years. Only a small percentage of the population were current users of smokeless tobacco (9.5%, CI: 8.1–11.2%).

6.5 SMOKING CESSATION ADVICE

During the past year, nearly 40% of the Fiji population (39.2%, CI: 35.6–42.9%) had been advised by either a doctor or health worker to quit using tobacco or to abstain from starting. Over 55% (56.7%, CI: 53.1–60.1%) of the current smoking population had tried to stop smoking during the past 12 months. A larger proportion of women (61.9%, CI: 56.0–67.4%) had tried to quit than men (54.7%, CI: 50.4–58.9%). Younger people (58.9%, CI: 52.8–64.8%, of those aged 18 to 29 years) were more likely to have tried to stop smoking than the older portion of the population (54.6%, CI: 44.8–64.0%, for people aged 60 to 69 years).

6.6 IMPLICATIONS

There are no safe levels of exposure to tobacco or use of tobacco. The 2025 STEPS Survey found that 36% of Fiji's population currently smokes tobacco, placing the country among those with the highest global smoking rates (top 12), according to comparisons with World Population Review estimates.[16] Approximately 80% of current smokers reported using manufactured cigarettes.

The survey identified significant differences in smoking prevalence by age, gender and geographic location. Smoking was more common among men than women. Prevalence also varied substantially across divisions. In the Eastern Division's maritime islands, only 24% of the population abstained, compared with 57% in the Western Division. Smoking prevalence decreased with age; the oldest group (60–69 years) reported the lowest rate at 17%, compared with 45% in the youngest (18–29 years) group. The youngest group also showed a higher prevalence of e-cigarette use.

These findings highlight the importance of early intervention across the life course to support abstinence from tobacco use. Smoking often peaks among younger adults and declines with age, underscoring the need for health promotion programs targeting younger populations. The data show an incremental increase with age in smokers receiving advice from healthcare providers to quit. About 56% of smokers had attempted to quit, and there were similar quit-attempt rates across age groups.

7. ALCOHOL CONSUMPTION

7.1 BACKGROUND

Harmful use of alcohol is a major risk factor for NCDs, including liver cirrhosis, over eight types of cancers, cardiovascular diseases and mental health disorders. It contributes to injuries and violence, placing a significant burden on health systems and society.[17] Reducing harmful alcohol use is a key target in global NCD strategies and the Sustainable Development Goals.[18] There is no 'safe level of consumption' of alcohol, and deaths increase proportionately with socioeconomic status.

STEPS SURVEY MEASURES

Data on alcohol use was collected in **Step 1** of the STEPS Survey using the standard WHO questionnaire. The following indicators were measured:

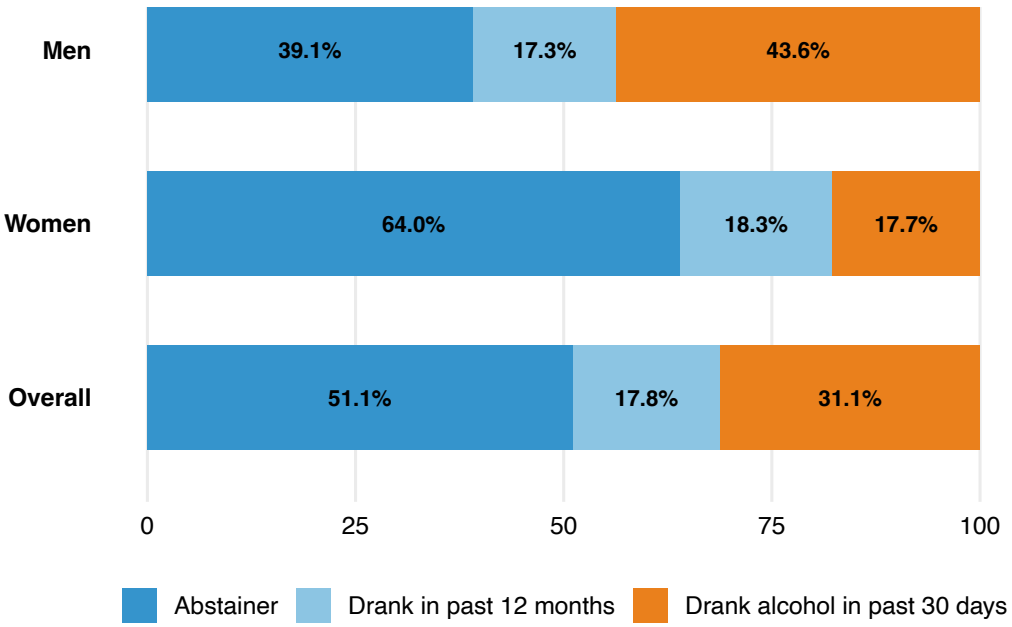
- lifetime abstinence and past 12-month abstinence
- current alcohol use (past 30 days)
- frequency and quantity of alcohol consumption
- prevalence of heavy episodic drinking (defined as consuming ≥ six standard drinks on one occasion).

Population estimates for alcohol use, frequency and engaging in heavy episodic drinking (more than six drinks on a single occasion) were obtained using weighted estimates from the Step 1 survey.

7.2 ALCOHOL USE ABSTAINERS

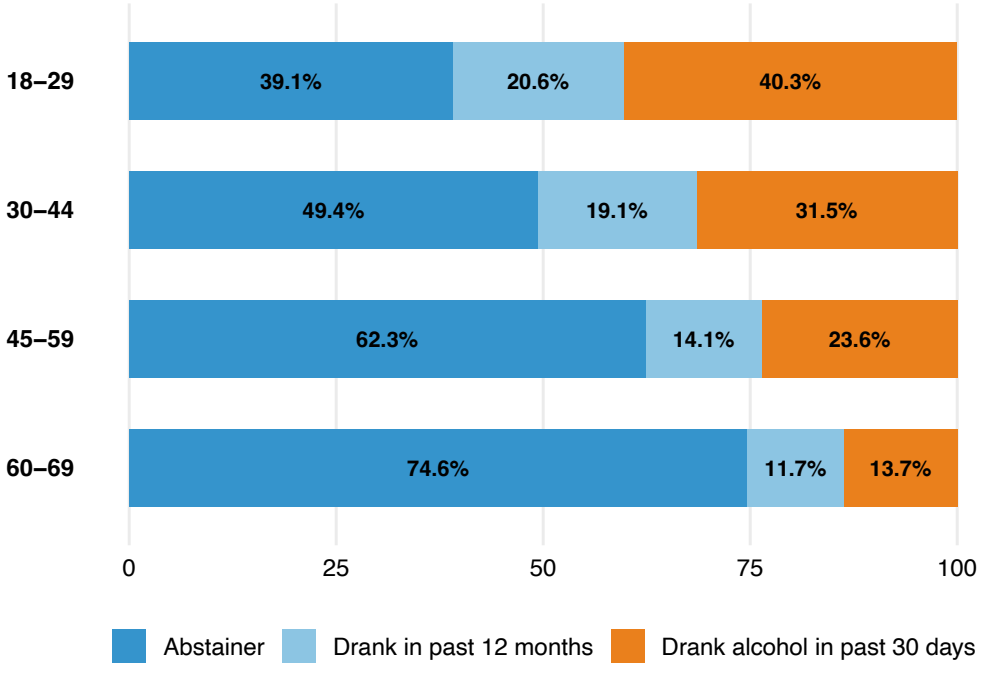
Approximately 51% of the population abstained from alcohol, either as lifetime abstainers (34.7%, CI: 32.6–36.9%) or as individuals who had abstained for the past 12 months (16.4%, CI: 14.9–17.9%). Abstaining from alcohol was nearly twice as common among women (lifetime abstainers 46.9%, CI: 44.1–49.7%, 12-month abstainers 17.1%, CI: 15.1–19.3%) than men (lifetime abstainers 23.4%, CI: 20.8–26.3%, 12-month abstainers 15.7%, CI: 13.8–17.8%; Figure 7.1).

Figure 7.1: Distribution of alcohol drinking habits by sex



Alcohol use in the past 30 days was most common among the youngest age group (40.3%, CI: 36.2–44.6%) and steadily decreased with age. Abstention increased correspondingly; for the oldest group, nearly three-quarters (74.6%, CI: 70.7–78.2%) reported abstaining (Figure 7.2).

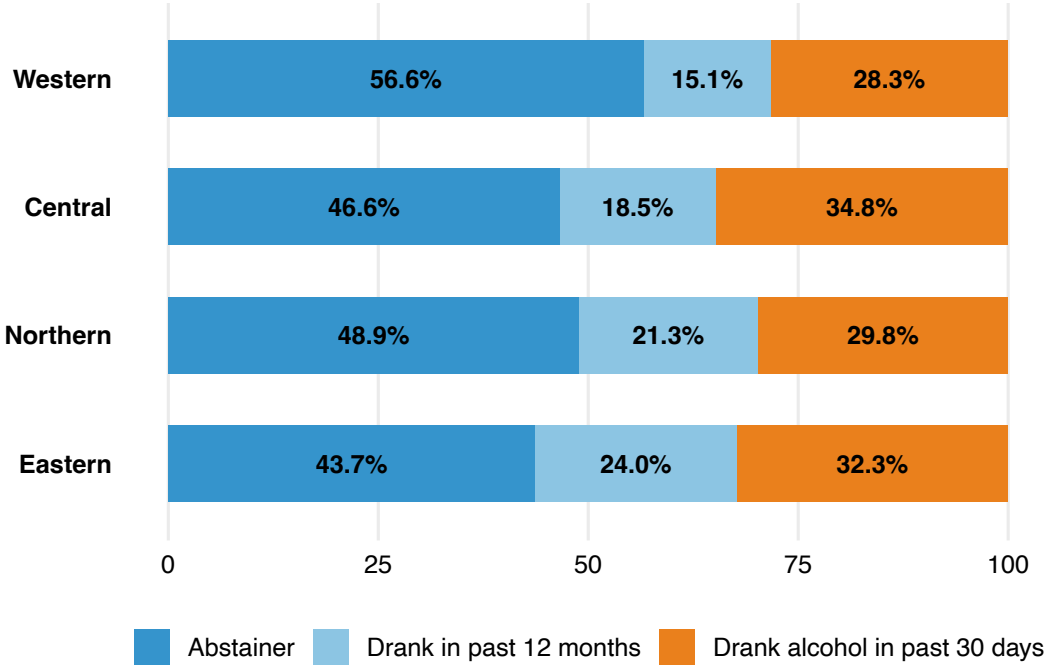
Figure 7.2: Distribution of alcohol drinking habits by age



7.3 ALCOHOL CONSUMPTION

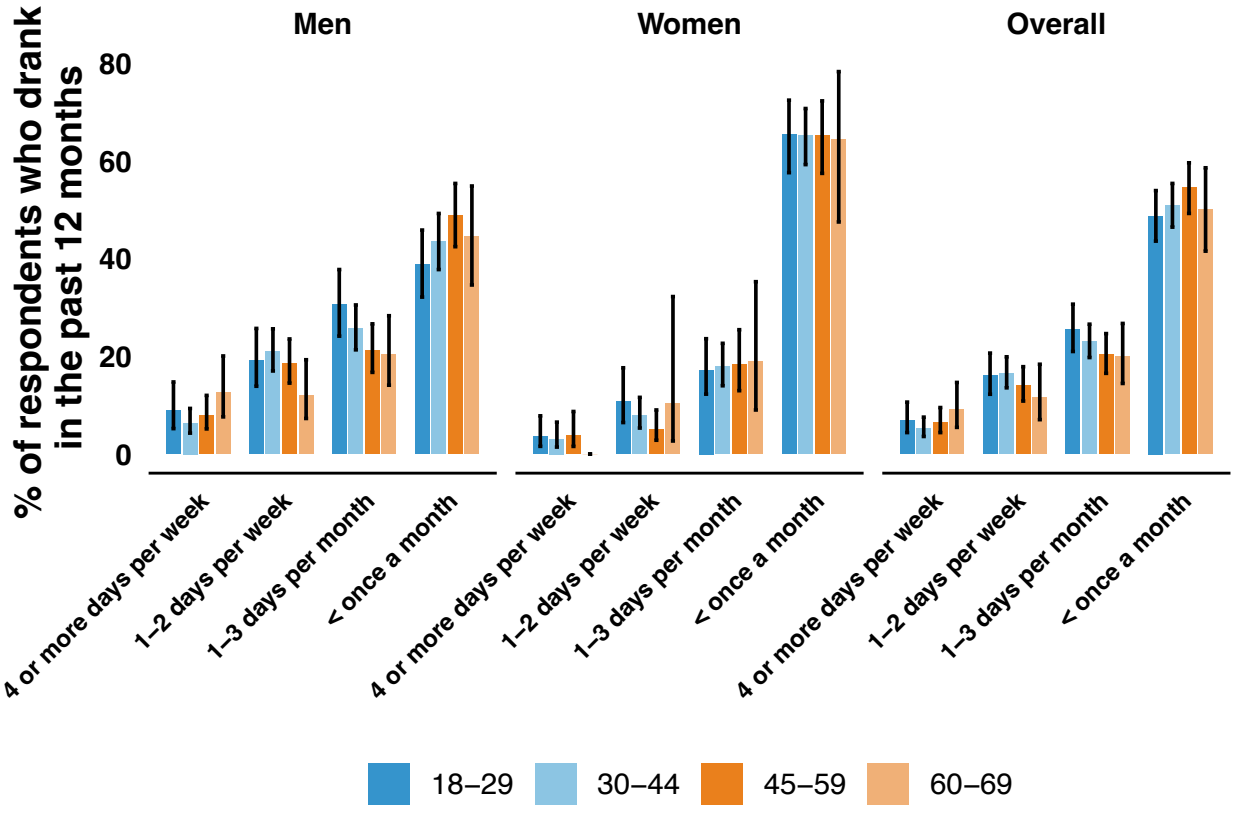
The proportion of the population who drank alcohol (either in the past 30 days or within the past 12 months) was relatively consistent across all four divisions. A greater proportion of the population in the Eastern Division drank alcohol (past 30 days: 32.3%, CI: 21.8–45.0%, past 12 months 24%, CI: 17.9–31.4%) than in the other divisions; a low proportion of drinkers was reported from the Western Division (past 30 days: 28.3%, CI: 25.3–31.4%, past 12 months 15.1%, CI: 13.2–17.2%; Figure 7.3).

Figure 7.3: Distribution of alcohol drinking habits by division



Infrequent drinking (less than once a month) was the predominant pattern across all age groups (50.6%, CI: 47.5–53.8%), particularly among women (65.3%, CI: 60.9–69.6%). Daily drinking was not done frequently and showed little variation by sex. Overall, daily or five to six days/week consumption was uncommon in every age group (Figure 7.4).

Figure 7.4: Frequency of drinking episodes for people who drank alcohol in the past 12 months by age



Heavy episodic drinking was defined as consuming six or more drinks on a single drinking occasion. Among those who currently consumed alcohol, 14.9% (CI: 13.3–16.8%) reported having had at least one heavy drinking episode in the past 30 days. These rates varied distinctly by age and sex. For the population of current drinkers aged between 18 and 29 years, 35.3% (CI: 29.2–42.0%) of men and 10.0% (CI: 6.8–14.6%) of women reported having participated in an episode of heavy drinking in the past 30 days. These figures contrast with those for the population aged between 60 and 69 years, for which 4.5% (CI: 2.8–7.4%) of men and 0.6% (CI: 0.1–2.6%) of women reported having participated in this behaviour.

7.4 IMPLICATIONS

Approximately half of the population reported consuming alcohol, and there was minimal variation across geographic locations. Men, as well as individuals aged 18–29 years, reported the highest levels of consumption. The most common pattern of heavy episodic drinking in the past 30 days was on average less than once a month. These findings suggest that casual drinking is widely practised and likely viewed as culturally acceptable.

Current evidence shows that there is no safe level of alcohol consumption, and that risk increases with a higher volume consumed. Alcohol use is causally linked to several health outcomes, including cancers, CVD and liver disease. Messaging that reflects this evidence may help correct misperceptions of 'safe' or 'low risk' drinking. Given the results from the survey, the MHMS messaging around alcohol consumption may require reframing.

The current Fiji MHMS messaging includes the following[19]:

> For those over the age of 18 who do enjoy a drink; with the right moderation, alcohol can be enjoyed as a fun and social way to relax and spend time with friends as long as you **drink responsibly**.
>
> When alcohol is enjoyed responsibly, there is low risk to your health and wellbeing, however, many problems arise when people drink too much. There are both short term and long terms risks with drinking too much alcohol.
>
> Keeping within this level of drinking means you can enjoy alcohol without the many short and long-term risks. It is important to know your limits.

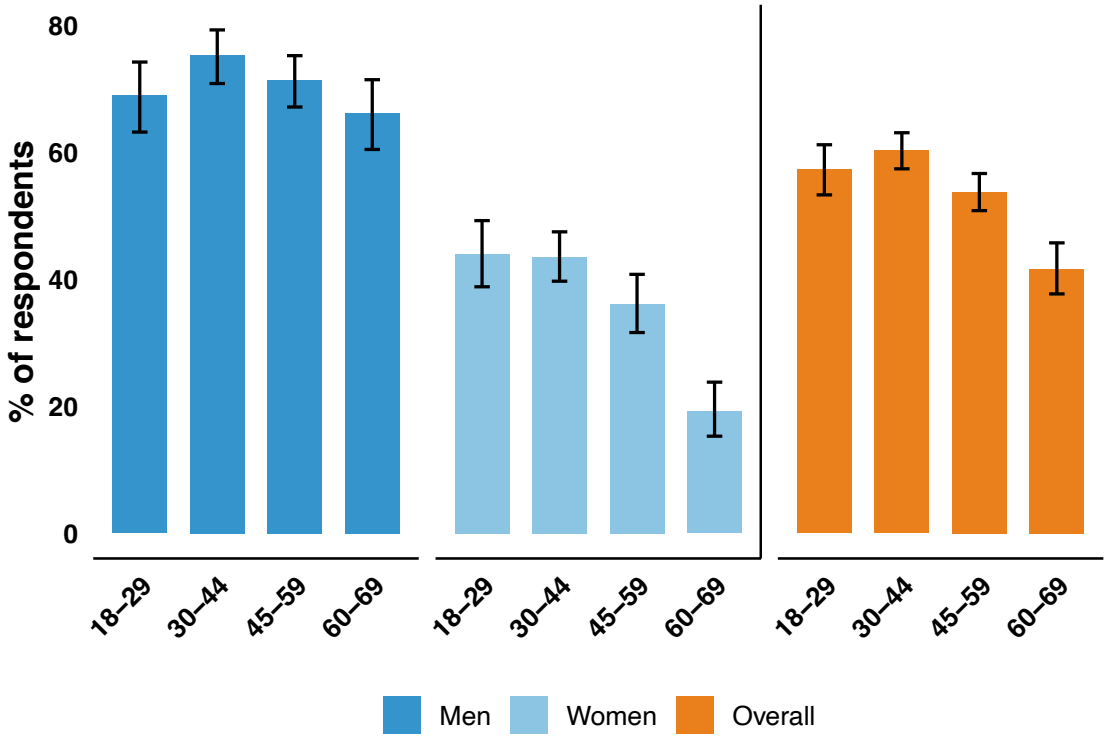
These guidelines emphasise moderation and responsible drinking but do not explicitly state that any alcohol use carries health risks. Updating this messaging to align with current evidence may better support public understanding and reduce alcohol-related harm.

8. KAVA CONSUMPTION

Kava is a perennial shrub that is native to the Pacific Islands, particularly in regions such as Fiji. Kava has psychoactive properties and has calming, anxiolytic and muscle-relaxing effects. Kava is consumed as a traditional drink in Fiji. Research has found that kava benefits mild to moderate anxiety.[20] However, kava has been linked to liver toxicity, including liver failure.[21] Kava drinking also accompanies other unhealthy behaviours, such as tobacco use and eating salty snacks.

Overall, 56.0% (CI: 54.0–58.0%) of people reported consuming kava, or yaqona, in the past 30 days. By sex, participation in kava sessions was markedly higher among men: 71.3% (CI: 68.7–73.8%), compared with 39.5% (CI: 36.7–42.4%) of women. Men were consistently more prevalent kava drinkers than women across all age groups, ranging between 65% and 75% of men, and 20% to 45% of women (Figure 8.1). In total, 80.1% (CI: 71.6–86.5%) of the Eastern Division reported having consumed kava in the past 30 days, compared with 65.0% (CI: 60.8–68.9%) of the Northern Division, 56.0% (CI: 52.7–59.3%) of the Central Division and 49.9% (CI: 46.8–53.1%) of the Western Division. Kava consumption was more common in rural communities (62.1%, CI: 59.1–65.0%) than urban communities (51.5%, CI: 48.9–54.1%).

Figure 8.1: Proportion of people who had consumed kava in the past 30 days



Consumption of kava was often accompanied by other behaviours, such as tobacco smoking and snack consumption. Of the people who consumed kava, 51.2% (CI: 48.4–54.1%) reported also smoking or using smokeless tobacco during or shortly after drinking kava. Similarly, 58.0% (CI: 55.3–60.7%) reported eating snacks (either salty or sweet) while consuming kava. An age-related trend was observed for both these behaviours. Among people aged between 18 and 29 years, 60.4% (CI: 54.5–66.1%) used tobacco and 69.6% (CI: 64.3–74.4%) reported eating snacks while consuming kava. This contrasts with 33.8% (CI: 27.9–40.3%) and 32.3% (95% CI: 26.9–38.3%), respectively, among those aged 60 to 69 years (Figure 8.2 and Figure 8.3). On average, men were more likely to smoke or use tobacco while consuming kava (57.7%, CI: 54.4–61.0%) and women were more likely to snack (71.3%, CI: 67.6–74.7%).

Figure 8.2: Proportion of kava drinkers who reported using either smoke or smokeless tobacco during or shortly after consuming kava

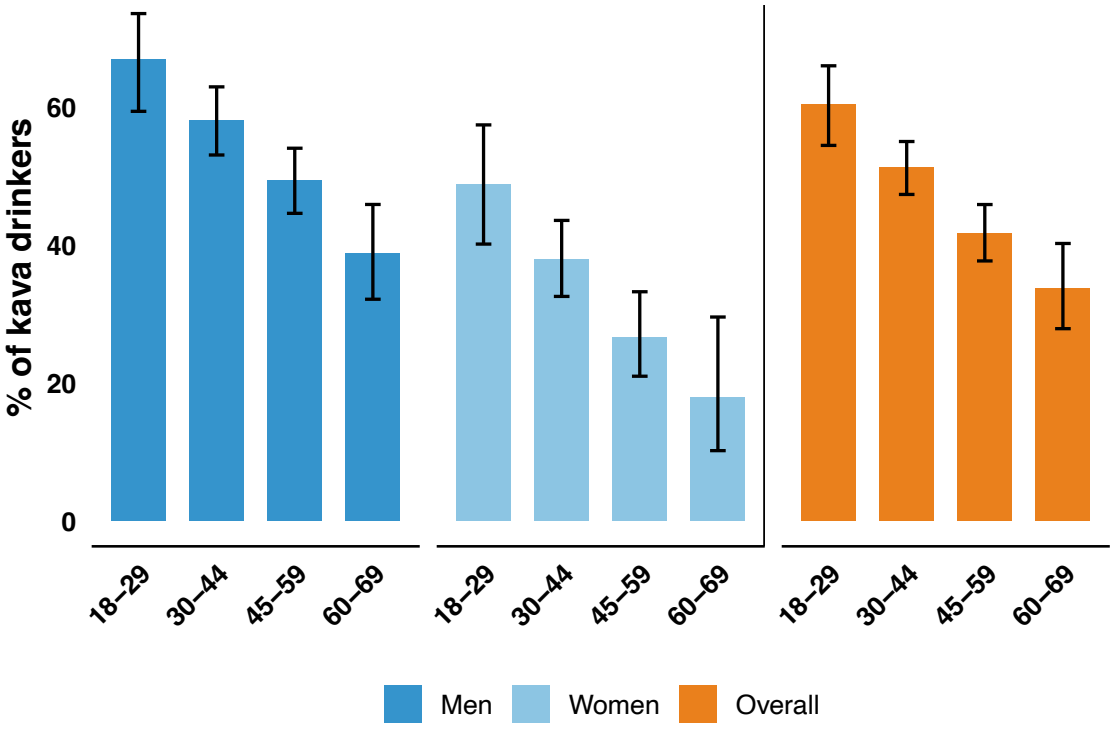
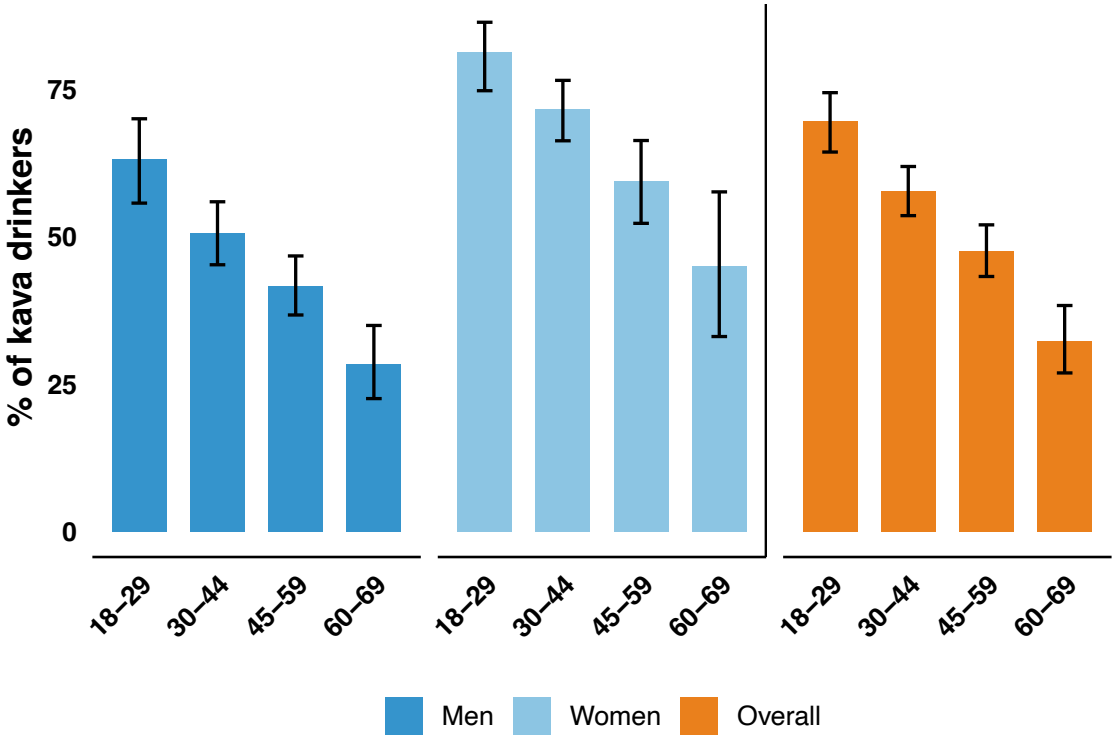


Figure 8.3: Proportion of kava drinkers who reported eating snacks (salty or sweet) while consuming kava



Overall, 25% (CI: 23.1–26.9%) of the population reported consuming alcohol and kava in the past 30 days, but not necessarily at the same time.

8.1 IMPLICATIONS

Kava drinking sessions were highly prevalent, and more than half of the population participated. Men reported significantly higher levels of participation (71%) than women did (39.5%). Although evidence on the direct health consequences of kava consumption remains limited, the key concern in the Fijian context is the clustering of unhealthy behaviours during or after kava sessions. More than half of participants reported smoking tobacco (51%) and consuming unhealthy salty or sugary foods (58%) while drinking kava.

These associated behaviours may contribute more substantially to long-term health risks than kava itself. Therefore, public health messaging should focus not only on kava consumption but also on harm-reduction strategies targeting the accompanying behaviours, particularly tobacco use, poor dietary choices and the extended sedentary periods often associated with lengthy kava sessions.

9. DIET

9.1 FRUITS AND VEGETABLES

Inadequate consumption of fruits and vegetables is a key dietary risk factor for NCDs, including CVDs, diabetes and certain cancers.[22] The WHO recommends consuming at least five servings (400 grams) of fruits and vegetables per day to improve overall health and reduce risk of NCDs and premature mortality.[23, 24]

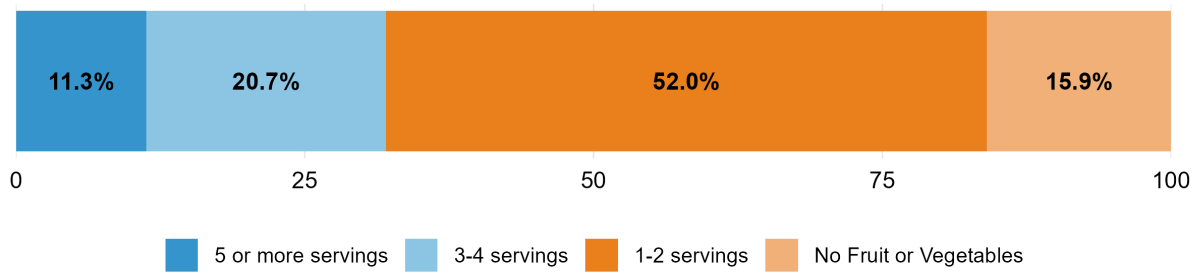
9.1.1 STEPS SURVEY MEASURES

- number of days per week fruits and vegetables are consumed
- number of servings per day for fruits and for vegetables
- combined daily intake of servings of fruits and vegetables.

For the 2025 STEPS Survey, fruits and vegetables were considered together, and respondents were asked to recall the number of days per week and the number of servings of fruits and vegetables in a typical week.

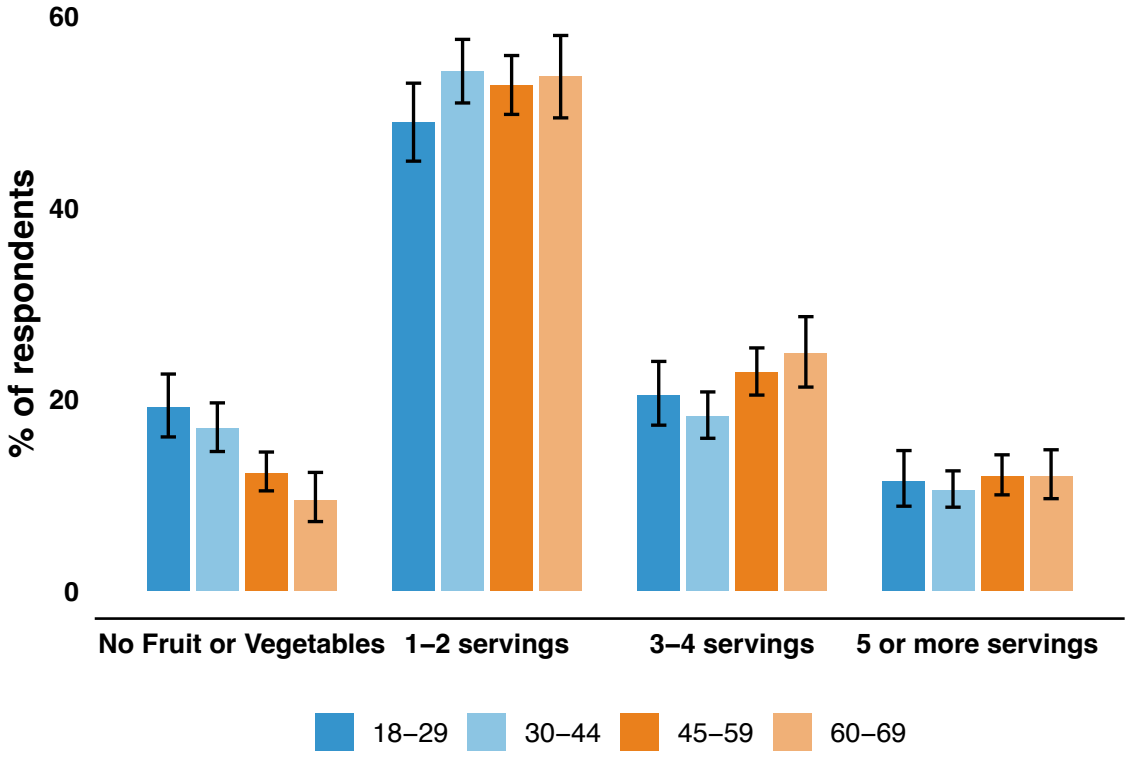
Five or more servings of fruits and vegetables were consumed on average by 11.3% (CI: 9.9–12.8%) of the population. Further, 20.7% (CI: 19.1–22.5%) consumed three to four servings, 52.0% (CI: 49.9–54.1%) consumed one to two servings and 15.9% (CI: 14.5–17.5%) consumed no fruit or vegetables on a typical day (Figure 9.1).

Figure 9.1: Number of servings of fruit and vegetables consumed in a typical week



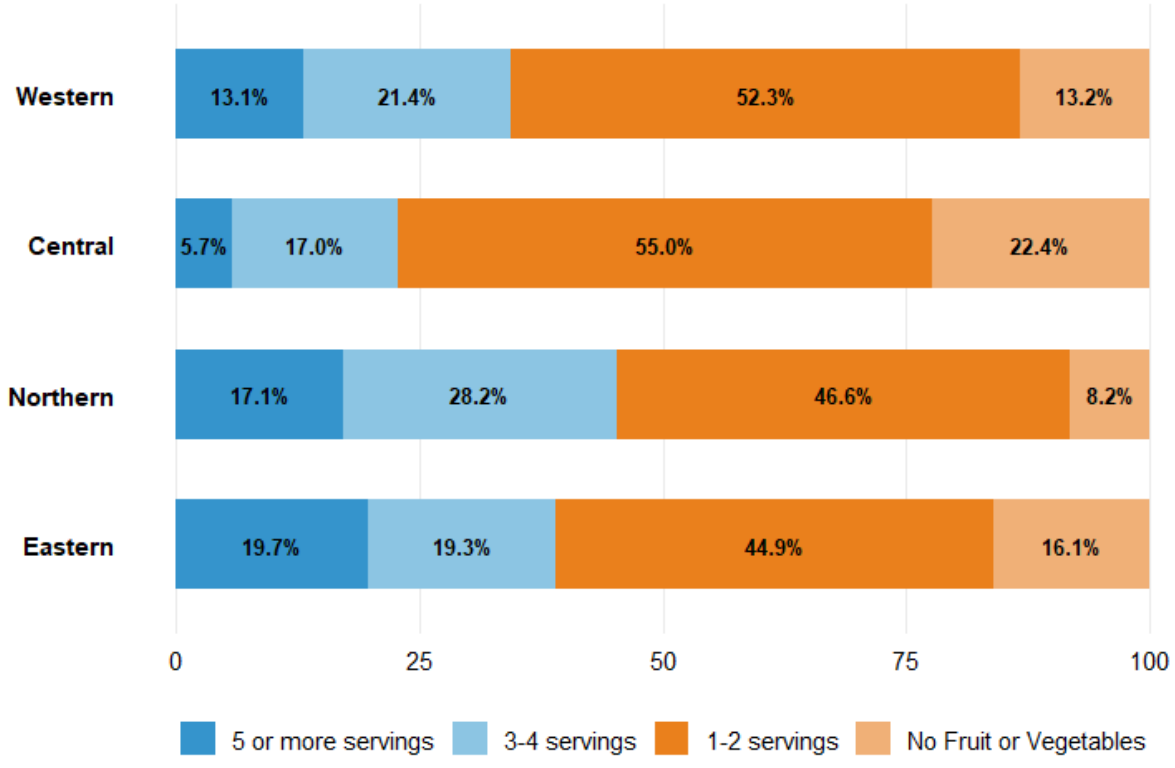
Across all age groups, fruit and vegetable intake was concentrated in the one to two servings per day category (Figure 9.2). Very little difference existed between men and women; 51.4% (CI: 48.3–54.5%) of men and 52.7% (CI: 50.2–55.2%) of women ate one to two servings a day, and 12.5% (CI: 10.5–14.9%) of men and 10.0% (CI: 8.4–11.8%) of women ate five or more servings a day.

Figure 9.2: Number of fruits and vegetables consumed on a typical day by age



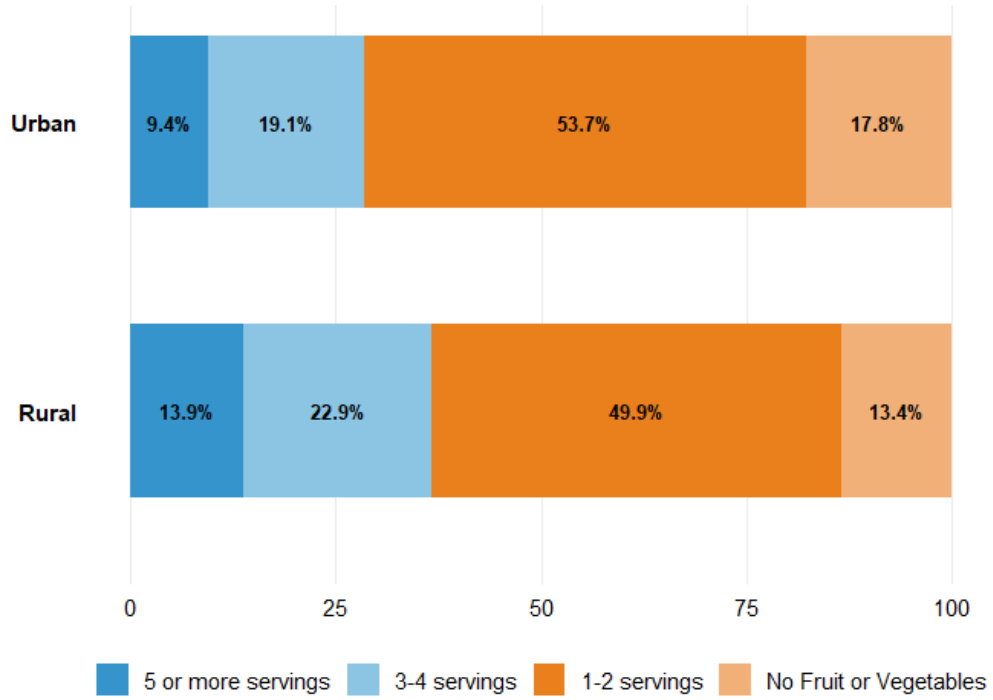
Diet differed slightly by division. The Central Division had the highest prevalence of non-consumption. Here, 22.4% (CI: 19.6–25.4%) consumed no fruit and vegetables on a typical day. The Eastern Division consumed the most. Here, 19.7% (CI: 12.7–29.4%) consumed five or more servings a day (Figure 9.3).

Figure 9.3: Number of fruit and vegetables servings consumed on a typical day by division



Slight variations in consumption rates were observed between urban and rural communities, regardless of division. The rural population consumed on average more fruit and vegetables on a typical day than its urban counterpart. For the rural community, 13.9% (CI: 11.7–16.3%) consumed five or more servings, and 22.9% (CI: 20.3–25.6%) consumed three to four servings a day. However, for the urban community, 9.4% (CI: 7.8–11.4%) consumed five or more servings, and 19.1% (CI: 17.0–21.4%) consumed three to four servings a day (Figure 9.4).

Figure 9.4: Number of fruits and vegetables consumed on a typical day by rurality



Nearly 60% of the population (59.2%, CI: 56.4–62.0%) had been advised by a doctor or health worker over the past year to consume more fruits and vegetables. For people aged 60 to 69 years, this proportion increased to 71.3% (CI: 66.3–75.8%).

9.1.2 IMPLICATIONS

Only approximately 11% of the population in Fiji meets the recommended intake of five servings of fruits and vegetables per day. This low dietary intake has important implications for the country's health, given the strong evidence linking fruit and vegetable consumption with reduced risk of NCDs.

Compared with individuals who consume only two servings per day, those who achieve five daily servings have been shown to have the following reductions in risk:[25]

- 3% lower risk of all-cause mortality
- 12% lower risk of death from heart disease or stroke
- 10% lower risk of death from cancer
- 35% lower risk of death from respiratory diseases, such as chronic obstructive pulmonary disease.

These findings highlight a significant opportunity for improving population health in Fiji. Increasing fruit and vegetable consumption could contribute meaningfully to reducing the burden of NCDs. Public health strategies may need to focus on improving access to affordable produce, promoting local agriculture and strengthening nutrition education to encourage healthier dietary habits.

10. SALT-USE BEHAVIOUR

10.1 BACKGROUND

Excess dietary salt intake is associated with raised blood pressure and increased risk of stroke and heart disease. The WHO recommends a daily salt intake of less than 5 g (or 2 g of sodium).[26]

10.1.1 STEPS SURVEY MEASURES

Data on salt consumption were collected using the standard WHO questionnaire. The following indicators were captured:

- **Step 1:** Self-reported behaviour: frequency of adding salt or salty sauces during or after cooking; consumption of processed foods high in salt
- **Step 2:** Biochemical estimation urinary sodium excretion to estimate actual salt intake
    - The estimated 24-hour urinary Na/K ratio was obtained using the International Cooperative Study on Salt, Other Factors, and Blood Pressure (INTERSALT; Appendix D for the equation) equation.[27, 28]

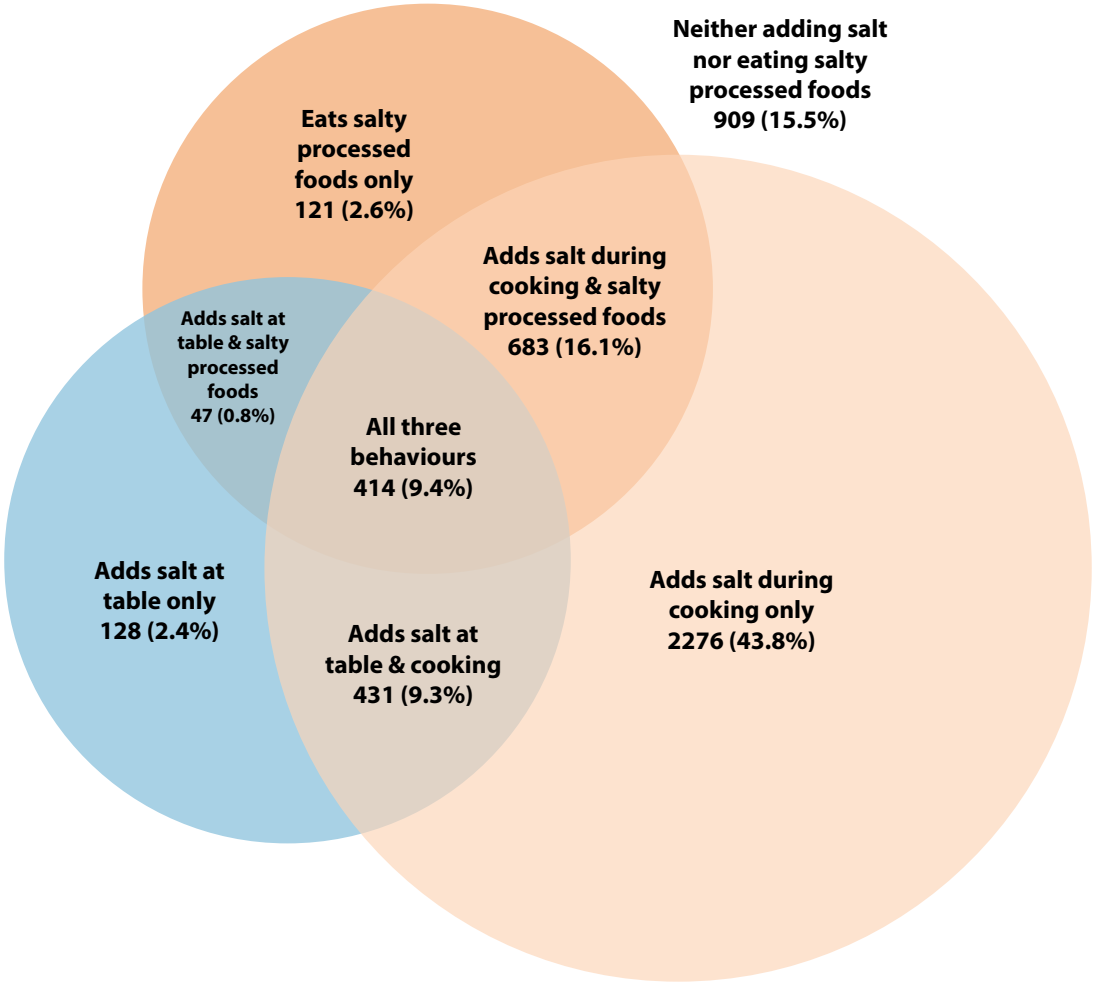
The survey questions about salt intake explored salt-use behaviours, including (i) salt added during the cooking phase, (ii) salt added during eating and (iii) eating of processed snacks high in salt. Salt was added 'always' or 'often' during cooking by 78.6% (CI: 76.0–81.0%) of the population. In addition, 21.9% (CI: 19.8–24.2%) reported adding salt before or during eating (CI: 19.8–24.2%) and 28.9% (CI: 26.8–31.2%) reported 'always' or 'often' consuming processed foods high in salt. Younger people were more likely than older people to add salt across all three avenues (Table 10.1).

Table 10.11: Proportion of the population (95% confidence interval) by age that 'always' or 'often' adds salt to their diet

Age group (years)	Add salt while cooking or preparing food	Add salt before or during eating	Often consume processed food high in salt
18–29	80.6% (76.5–84.1%)	26.0% (22.3–30.1%)	38.3% (34.2–42.5%)
30–44	79.4% (76.4–82.2%)	22.4% (19.7–25.2%)	28.7% (25.8–31.8%)
45–59	76.7% (73.1–80.0%)	18.3% (15.6–21.2%)	21.0% (18.3–24.1%)
60–69	72.5% (67.8–76.7%)	14.0% (11.3–17.2%)	14.1% (11.6–17.0%)
Overall	78.6% (76.0–81.0%)	21.9% (19.8–24.2%)	28.9% (26.8–31.2%)

Approximately one in six people (15.5%) reported not adding salt to their diet. Conversely, approximately one in 10 (9.4%) people reported consuming salt via all three avenues. Figure 10.1 highlights the overlap between these domains and shows the proportion of the population engaging in each combination of salt-use behaviours.

Figure 10.1 Euler plot of the relationship between the three salt-related methods



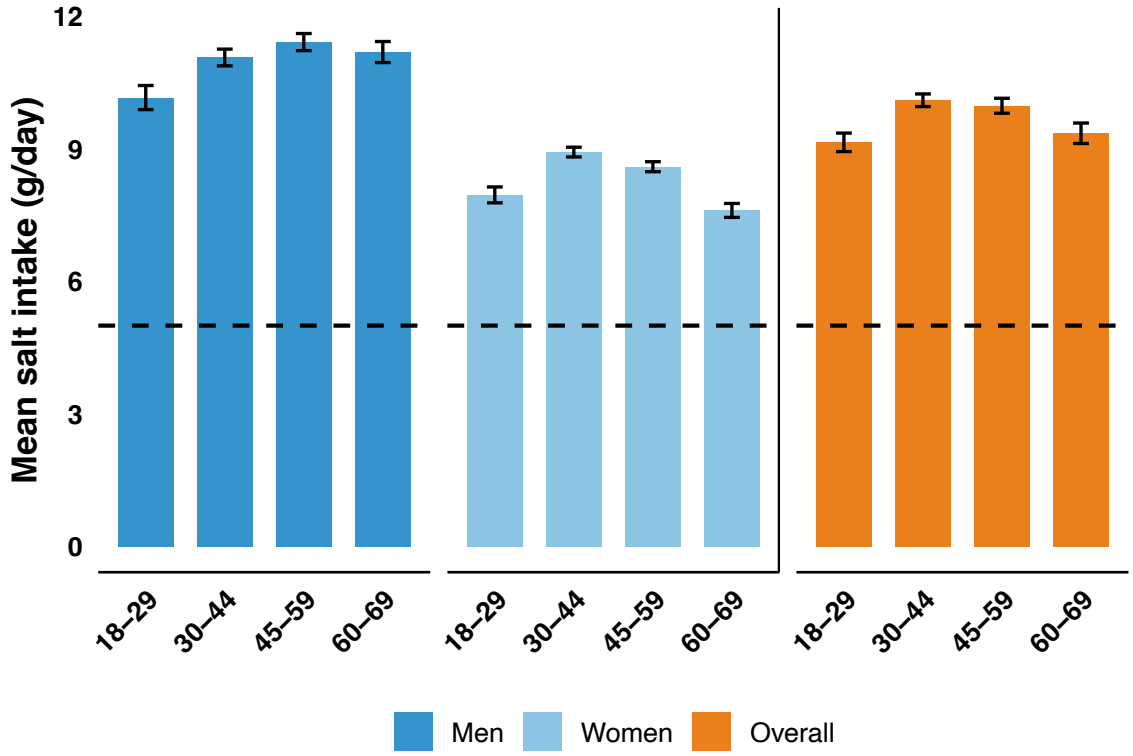
10.1.2 NUTRITION EDUCATION AND COUNSELLING FOR HEALTHY DIETS

Overall, 47.3% (CI: 44.5–50.2%) of the population reported that they had been advised by a doctor or health worker during the past 12 months to reduce their salt intake. When disaggregated by age, 32.1% (CI: 26.7–38.1%) of people aged 18 to 29 years had received this advice, compared with 62.5% (CI: 57.3–67.4%) among those aged 60 to 69 years, indicating that health professionals are more likely to counsel older adults on reducing salt. This is in line with the recommendations in Protocol 2, which focuses on health education of the WHO's Package of Essential Noncommunicable Diseases program. This program was implemented in Fiji starting in 2012.

10.1.3 BIOMEDICAL MEASUREMENT OF URINARY SALT LEVELS (STEP 3)

The average 24-hour salt intake was 9.7 g (9.6–9.8 g), according to the results from using the INTERSALT equation (Appendix C). This is almost double the WHO's recommended level of 5 g per day. Overall, less than 0.5% of the population consumed less than the recommended amount of salt. Women (8.4 g, CI: 8.3–8.5 g) had a lower average salt intake than men (10.8 g, CI: 10.7–11.0 g). People aged between 30 and 59 years reported consuming more salt than the younger (18 to 29) or older (60 to 69) age groups did (Figure 10.2).

Figure 10.2: **Mean intake of salt in grams per 24 hours, calculated via INTERSALT equation**
Horizontal line indicates World Health Organization guideline recommendations



10.1.4 IMPLICATIONS

High levels of sodium intake, particularly when combined with low consumption of fruits and vegetables, is strongly associated with increased mortality from CVDs. In Fiji, only one in six individuals reported avoiding added salt or limiting the consumption of salty processed products. Estimates of urinary sodium excretion further indicate that people across all age groups consume approximately twice the recommended daily salt intake, substantially elevating the risk of HTN and CVD-related mortality.

The high levels of sodium consumption from both processed foods and home cooking practices emphasise the need for robust, multisectoral public health interventions. This includes strong government commitment to regulatory measures, such as taxation, or reformulation requirements for processed foods containing high levels of salt. Complementary population-wide behaviour-change initiatives are also essential. These may include promoting practical strategies for reducing salt intake, such as substituting salt with sour, aromatic or other flavour-enhancing ingredients; improving nutrition literacy; and encouraging consumers to choose low salt options.

Together, such approaches could significantly reduce HTN prevalence and contribute to lowering Fiji's burden of CVD and other NCDs.

11. SUGAR

Free sugars are added to foods and beverages by manufacturers and consumers and during the cooking process. Sugar consumption is a key contributor to being overweight and obesity, and to developing tooth decay and diabetes.[29] It is recommended that individuals reduce their intake of free sugars, starting at an early age.[30, 31]

Sugar consumption was assessed using two indicators: (i) consumption of sugar-sweetened beverages and (ii) the number of teaspoons of sugar added to drinks. On average, one (1.1, CI: 1.0–1.1) sugar-sweetened beverage was consumed per person per day. Men typically consumed more servings than women (men: 1.2, CI: 1.1–1.3 per day; women: 0.9, CI: 0.9–1.0 per day). Younger people consumed more sugar-sweetened beverages per day. Our results show that 18 to 29-year-olds consumed 1.4 drinks (CI: 1.2–1.6 drinks); 30- to 44-year-olds, 1.1 drinks (CI: 1.0–1.2 drinks); 45- to 59-year-olds, 0.8 of a drink (CI: 0.7–0.9 of a drink); and 60- to 69-year-olds, half a drink (CI: 0.5–0.6 of a drink) per day.

On average, approximately five teaspoons (tsp) of sugar (4.9 tsp, CI: 4.6–5.1 tsp) were added to beverages per person per day. This included sugar added to tea, coffee, milo and chocolate (hot or cold). The total amount of added sugar decreased with age. Individuals aged 18 to 29 years consumed an average of 5.3 tsp per day (CI: 4.8–5.7 tsp), those aged 30 to 44 years consumed 5.0 tsp (CI: 4.7–5.4 tsp), those aged 45 to 59 years consumed 4.6 tsp (CI: 4.2–4.9 tsp) and those aged 60 to 69 years consumed 3.7 tsp per day (CI: 2.2–4.2 tsp). The average number of tsp added per drink was two (CI: 2.0–2.1 tsp); men added more tsp per drink (2.2, CI: 2.1–2.3 tsp) than women (1.9, CI:1.8–1.9 tsp).

Over half of the population (52.9%, CI: 50.1–55.6%) had been told by a doctor or health worker in the past 12 months to reduce the number of sugary drinks or beverages in their diet. This lifestyle advice correlated with age; only 38.2% (CI: 32.6–44.1%) of younger people aged 18 to 29 years received this advice from doctors, whereas 63.3% (CI: 57.9–68.4%) of people aged 60 to 69 years were told this.

11.1 IMPLICATIONS

Children, particularly school-aged children and young adults, have an exceptionally high intake of free sugars.[32] Similar patterns have been observed in Fiji, where young adults reported adding the greatest number of teaspoons of free sugar to beverages. Further, intake decreased steadily with age. Notably, older adults are more likely than younger adults to receive lifestyle advice on reducing sugar consumption. This may reflect the implementation of the WHO Package of Essential Noncommunicable Diseases Protocol 2, which is delivered by dieticians and nurses to provide targeted health education to individuals who may be at risk for CVD and diabetes.[33]

These findings suggest that the younger adult population, aged between 18 and 29 years, is consuming the most free sugar, and does not receive the same level of structured lifestyle advice or preventive guidance as older adults that are 60 to 69 years. Strengthening early, age-appropriate sugar-reduction initiatives in schools, tertiary institutions and youth settings may therefore be essential to preventing long-term NCD risk and conditions.

12. CARBOHYDRATES, PROCESSED FOOD AND MEATS

Carbohydrates—including dalo, cassava, Kumala, potatoes, rice, breadfruit, bread/roti or noodles—were reported to be eaten three times a day (2.8 times, CI: 2.7–2.9 times) every day (6.6 days, CI: 6.5–6.7 days). This trend was consistent for all ages, for both men and women and regardless of location of residence.

12.1 MEAT AND FAST-FOOD CONSUMPTION

Red meat—such as beef, lamb, pork or goat—was eaten approximately 1.6 times a week (CI: 1.5–1.7 times); younger people ate more red meat than older people (1.8 times a week, CI: 1.7–2.0 times a week for people aged 18 to 29 years; 1.1 times a week, CI: 1.0–1.2 times a week for people aged 60 to 69 years). On average, people went to fast food restaurants for a meal or snack 0.7 times a week, or approximately twice every three weeks (CI: 0.6–0.7 times a week). Individuals aged between 18 and 29 went to these restaurants once a week (CI: 0.9–1.1 times a week), and those aged 60 to 69 years went 0.3 times a week, or once every three weeks (CI: 0.2–0.4 times a week).

12.2 TYPE OF OIL FOR COOKING

Vegetable oil was the most commonly used fat/oil in food preparation, accounting for 90.3% (CI: 88.4–91.9%) of the population's cooking habits. Olive oil (2.5%, CI: 1.8–3.4%) and coconut oil (1.6%, CI: 1.1–2.2%) were also used. Butter or ghee, margarine, dripping or lard made up a small percentage of other fats used for meal preparation.

In the past year, over half of the population (53.8%, CI: 51.1–56.3%) had been advised to reduce the fat in their diet by a doctor or health worker. Older people were more likely to receive this advice; 66.7% (CI: 61.8–71.1%) of people between the ages of 60 and 69 years were told to reduce fats, compared with 39.6% (CI: 34.2–45.3%) of people aged 18 to 29 years.

12.3 IMPLICATIONS

Carbohydrates are a staple for all Fijians, regardless of age, gender or ethnicity. Public health messaging from the MHMS and the wider government should focus on portion control of these traditional carbohydrate-rich foods as well as balanced meals. This includes promoting a greater intake of protein, fibre and non-starchy vegetables while maintaining smaller servings of traditional staples.

Education efforts should highlight practical alternatives, including choosing wholegrain options such as brown rice instead of white rice, and encourage consumption of root crops such as sweet potatoes (Kumala) or dalo with their skins on where possible, because the skin provides valuable dietary fibre.

Reducing consumption of fast foods and processed foods among young adults requires a comprehensive, multicomponent approach. Effective strategies can include government-led restrictions on fast food advertising; the prohibition of fast-food outlets near schools, universities and colleges; and sustained public health campaigns. These should be accompanied by targeted health education that provides appealing and accessible alternatives to fast food.

13. PHYSICAL ACTIVITY

13.1 BACKGROUND

Physical activity is a **major modifiable risk factor** for NCDs, including CVD, diabetes, obesity and certain cancers.[34] The WHO recommends that adults engage in at least 150 minutes of moderate intensity aerobic physical activity (or 75 minutes of vigorous-intensity activity) per week.[35] Monitoring physical activity levels helps inform public health policies aimed at reducing sedentary behaviour and promoting active lifestyles.

13.1.1 STEPS SURVEY MEASURES

Data on physical activity were collected in **Step 1** using the WHO Global Physical Activity Questionnaire, which captures information on activity across three domains:

- work-related physical activity
- transport-related physical activity (e.g. walking or cycling)
- recreational (leisure-time) physical activity.

The survey also measured:

- total minutes per week of moderate (i.e. brisk walk, cycle, swim) and vigorous activity (i.e. run, stairs, sports)
- proportion of adults meeting the WHO's physical activity recommendations
- sedentary behaviour, including time spent sitting per day.

The WHO guidelines for physical activity are 150 adjusted minutes of moderate intensity physical activity per week. Participants in Step 1 were asked questions relating to the amount of physical activity performed on average each week. The activities included were performed as part of paid and unpaid work, study or training, household chores and transport. Scores were recorded as whole days, as well as minutes and hours in a typical day.

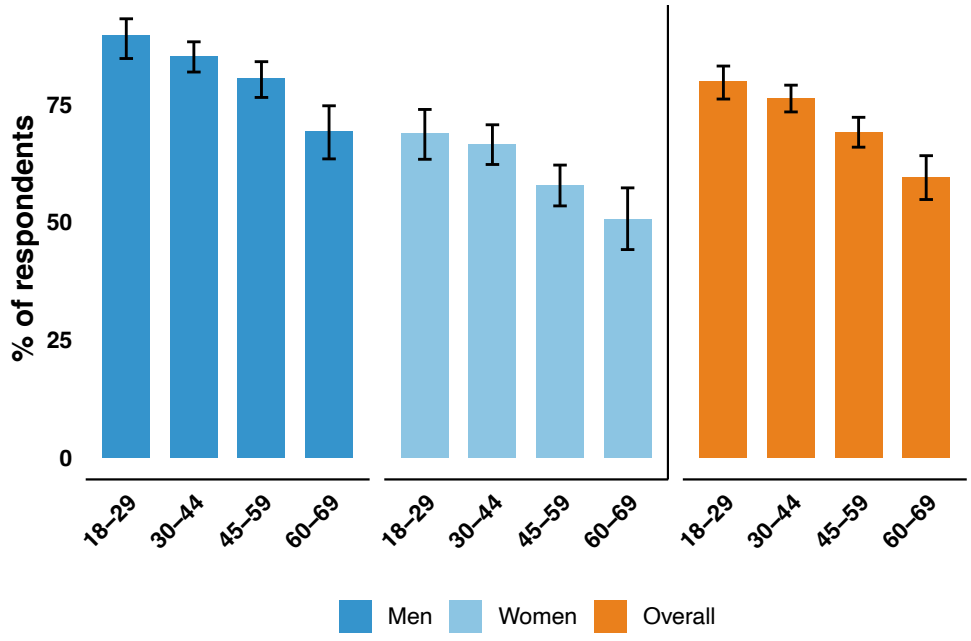
Figure 13.1: Moderate physical activity in Fiji

'Vigorous activity' was defined as activity that requires hard physical effort and causes a large increase in breathing or heart rate, whereas 'moderate intensity' was defined as activity that requires a moderate physical effort and causes a small increase in breathing or heart rate. The two forms of physical activity were recorded and then converted into the equivalent of 'moderate intensity' exercise minutes for comparison.

Figure 13.2: Vigorous physical activity in Fiji

Overall, 74.4% (CI: 72.3–76.4%) of the population met the WHO recommendations for physical activity of 150 adjusted minutes of moderate intensity physical activity per week, or the equivalent. Men (84.5%, CI: 82.0–86.8%) met the recommendation more frequently than women (63.7%, CI: 60.7–66.6%). Younger people tended to be more active than older people; 79.9% (CI: 76.2–83.2%) of people aged between 18 and 29 years met the recommendations, compared with 76.4% (CI: 73.4–79.1%) of people aged between 30 and 44 years, 69.2% (CI: 65.9–72.3%) of people between 45 and 59 years, and 59.6% (CI: 54.8–64.1%) of people aged 60 to 69 years (Figure 13.3).

Figure 13.3: Proportion of people meeting the World Health Organization activity guidelines of 150 adjusted minutes of moderate physical intensity activity per week



People living in rural communities were more likely to meet the WHO guidelines; 82.5% (CI: 79.7–85.1%) of people met the requirements, compared with 68.4% (CI: 65.2–71.4%) of people from urban communities. People in the Eastern Division tended to be the most active, compared with the other divisions. In total, 92.9% (CI: 87.9–95.9%) of people from the Eastern Division, 89.8% (CI: 86.2–92.5%) of people from the Northern Division, 74.2% (CI: 70.6–77.5%) of people from the Central Division and 66.6% (CI: 62.8–70.1%) of people from the Western Division met the guidelines.

Activity type differed by sex and location. Work-related activity accounted for a larger proportion of physical activity in the rural population (49.2%, CI: 46.8–51.5%) than in the urban population (37.2%, CI: 34.6–39.8%; Figure 13.4). Work constituted the majority (50.2%, CI: 47.8–52.6%) of activity minutes for men. Conversely, a significant amount of women's activity came from transport (37.9%, CI: 35.4–40.4%; Figure 13.5).

Figure 13.4: Proportion of total active minutes by activity type, by rurality

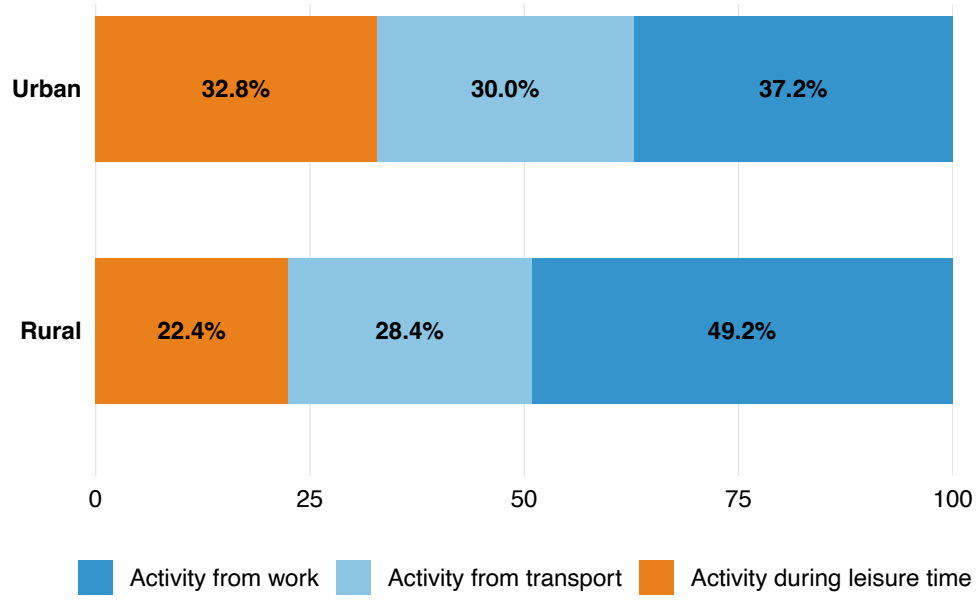
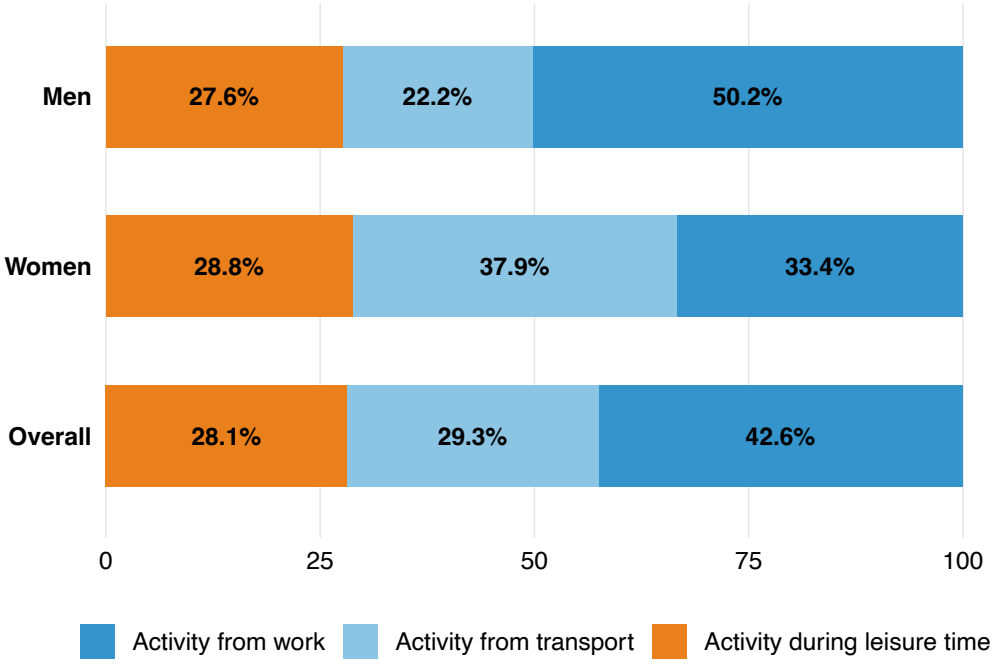


Figure 13.5: Type of activity by sex



13.2 LACK OF VIGOROUS ACTIVITY

Overall, 56.4% (CI: 53.9–58.9%) of the population did not participate in any vigorous activity. There was a large distinction in vigorous activity between men and women. For men, 38.5% (CI: 35.1–42.0%) engaged in no vigorous physical activity, compared with 75.3% (CI: 72.4–78.0%) of women. Older people were more likely to engage in no vigorous activity; 82.8% (CI: 79.4–85.6%) of people aged between 60 and 69 years reported no engagement, compared with 43.8% (CI: 39.3–48.3%) of people aged 18 to 29 years.

13.3 SEDENTARY BEHAVIOUR AND RECOMMENDATION BY HEALTHCARE WORKER

Sedentary behaviour includes activities that have a person sitting or reclining. In a typical day, an average of 226.2 minutes per person per day (CI: 217.8–234.7 minutes), or nearly four hours per person per day, was spent in sedentary activities. These values were consistent across all age groups but varied with respect to location of residence and ethnicity. Individuals living in rural communities had an average of 212.5 minutes per day (CI: 201.8–223.2 minutes) of sedentary behaviour, compared with 236.3 minutes (CI: 224.1–248.5 minutes) for those living in urban settings. Fijians of Indian descent had an average of 258.3 minutes per day (CI: 245.0–271.6 minutes) of sedentary behaviour, compared with i-Taukei Fijians, who had 205.1 minutes per day (CI: 195.4–214.8 minutes). In the past 12 months, 59.6% (CI: 56.8–62.3%) of people had been told by a doctor or health worker to start or increase their amount of physical activity.

13.4 IMPLICATIONS

Achieving guideline-recommended levels of physical activity is associated with reduced risk of NCDs and premature mortality globally.[36] Physical activity contributes to improved quality of life and mobility. Findings show that 56.4% of the population does not participate in vigorous activity, and the proportions are even higher among women (75%) and adults aged 60 to 69 years (82.8%). However, 74% participate in the recommended 150 minutes of moderate intensity activity per week that may be related to work, travel to and from places and recreational activities.

A physical activity paradox is emerging in Fiji. Features of the built environment strongly influence physical activity behaviours. While total physical activity—including work-related, transport-related and recreational—is significantly higher in rural areas than in urban areas, the types of activities differ. Rural residents accumulate far more work-related physical activity, averaging about 60 minutes per day, compared with 0 minutes for urban residents. However, vigorous activity levels are lower in rural areas than in urban settings.

These findings highlight the importance of tailoring health promotion interventions according to rurality, gender and age. Understanding the context-specific patterns of activity provides valuable guidance for designing effective strategies to support active lifestyles across Fiji.

14. ANTHROPOMETRIC MEASUREMENTS

14.1 BACKGROUND

Excess body weight, including overweight and obesity, is a major risk factor for NCDs, such as CVD, type 2 diabetes, certain cancers and musculoskeletal disorders.[37] BMI is a standardised measure used to assess weight status in adults. Monitoring BMI distribution in the population helps guide policies targeting healthy diet, physical activity and lifestyle modification.[38]

Key anthropometric measurements were taken as part of Step 2. These included the participants' heart rate, height, weight and waist to hip circumference. BMI was calculated according to height and weight for each person.

14.1.1 STEPS SURVEY MEASUREMENT APPROACH

In Fiji, BMI was assessed as part of **Step 2** of the WHO STEPS Survey. The following procedures were used:

- **Height** was measured without shoes using a stadiometer to the nearest 0.1 centimetre (cm).
- **Weight** was measured with a digital scale to the nearest 0.1 kilogram (kg). Participants wore light clothing and no shoes.
- **Waist/hip circumference** was measured using a tape measure.

Body mass index categories were defined according to World Health Organization classifications:

- underweight: BMI < 18.5 kg/m^2
- normal weight: BMI 18.5–24.9 kg/m^2
- overweight: BMI 25.0–29.9 kg/m^2
- obesity: BMI ≥ 30.0 kg/m^2

BMI was obtained as a combination of height and weight. **Six classes of BMI** were calculated for Fiji:

- underweight (BMI < 18.5 kg/m^2)
- normal weight (between 18.5 and 24.9 kg/m^2)
- overweight (25.0–29.9 kg/m^2)
- obese with three subcategories
    - Class 1 (30.0–34.9 kg/m^2)
    - Class 2 (35.0–39.9 kg/m^2)
    - Class 3 (40+ kg/m^2).

BMI was calculated for the population excluding pregnant women.

14.2 HEART RATE

Heart rate was taken three times for each person at three-minute intervals. It was obtained at the same time as the blood pressure measurements. The average heart rate for the population was 79.4 beats per minute (bpm), (CI: 78.8–79.9 bpm). Men had a slightly lower heart rate (77.9 bpm, CI:77.1–78.7 bpm) than women (80.9 bpm, CI:80.3–81.6 bpm), and people aged 60 to 69 years had lower heart rates than their younger counterparts (Table 14.1).

Table 14.1: Average resting heart rate by age and sex

Age group	Men	Women	Overall
18–29	76.4 (74.7–78.0)	83.0 (81.5–84.5)	79.5 (78.4–80.6)
30–44	79.7 (78.7–80.7)	81.2 (80.2–82.3)	80.4 (79.6–81.2)
45–59	78.4 (77.4–79.5)	79.2 (78.3–80.1)	78.8 (78.1–79.5)
60–69	76.3 (75.0–77.5)	77.0 (75.6–78.4)	76.6 (75.7–77.6)
Overall	77.9 (77.1–78.7)	80.9 (80.3–81.6)	79.4 (78.8–79.9)

14.3 WEIGHT, HIP CIRCUMFERENCE AND WAIST TO HIP RATIO

On average, men weighed more but had a smaller HC and waist to hip ratio (WHR) than women. For men, the average weight was 83.9 kg (CI: 82.5–85.3 kg) and the average HC was 101.7 cm (CI: 100.8–102.5 cm). The average WHR for men was 0.92 (CI: 0.92–0.93 WHR). Middle-aged men between 30 and 59 years weighed more than older or younger men (Table 14.2). Men aged between 45 and 59 years had the largest WHR when compared with older or younger men.

Table 14.2: Weight, hip circumference and waist-hip ratio by age for men

	Men		
Age group (years)	Weight (kg)	Hip circumference (cm)	Waist/hip ratio
18–29	80.3 (77.7–83.0)	98.9 (97.3–100.4)	0.89 (0.88–0.90)
30–44	87.3 (85.3–89.4)	102.9 (101.8–104.1)	0.93 (0.93–0.94)
45–59	86.0 (83.9–88.1)	104.3 (103.0–105.5)	0.95 (0.94–0.95)
60–69	80.1 (77.4–82.9)	101.7 (100.1–103.4)	0.97 (0.96–0.98)
Overall	83.9 (82.5–85.3)	101.7 (100.8–102.5)	0.92 (0.92–0.93)

The average weight for women was 80.8 kg (CI: 79.6–82.0 kg) and the average HC was 108.3 cm (CI: 107.4–109.3 cm). Women aged between 30 and 59 weighed more than younger or older women (Table 14.3). The average WHR was 0.90 (CI: 0.89–0.90 WHR) for women, and older women aged between 60 and 69 years had the greatest WHR when compared with the younger age groups.

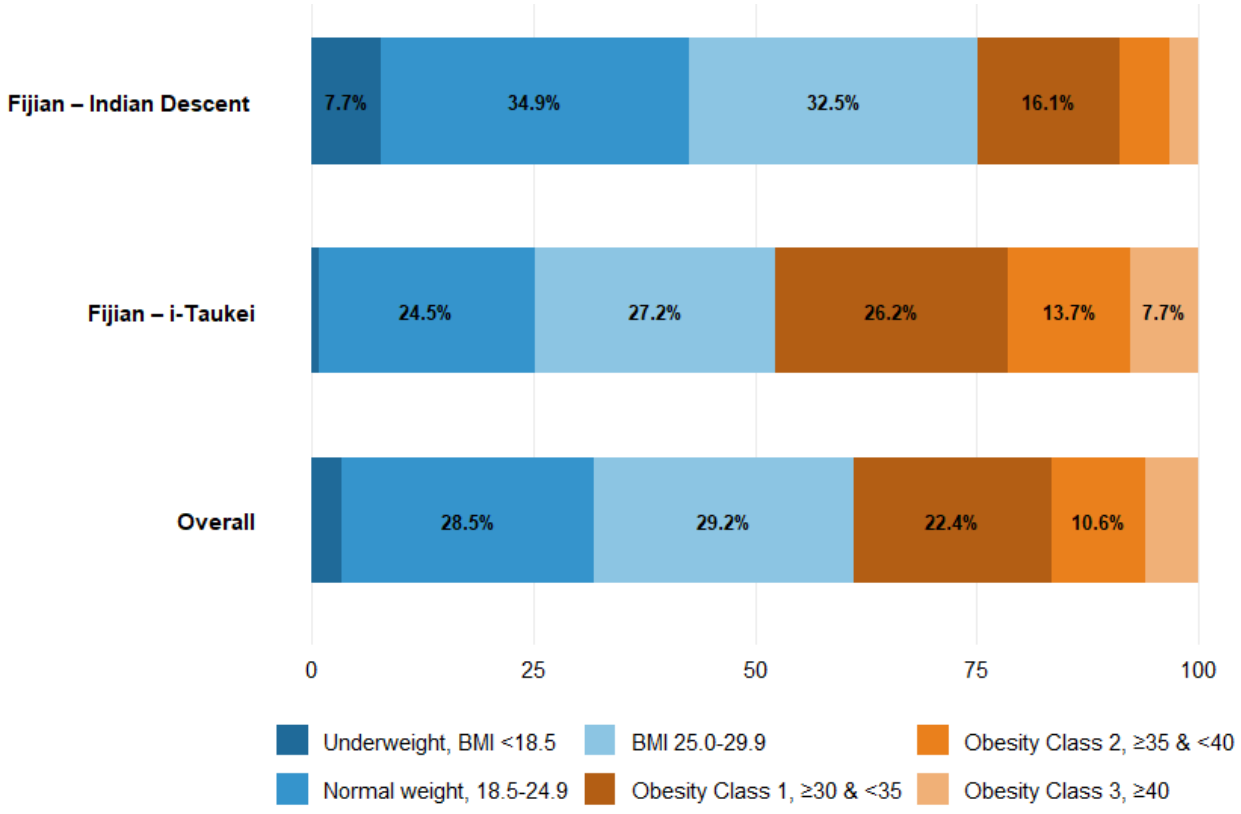
Table 14.3: Weight, hip circumference and waist to hip ratio by age for women

	Women		
Age group (years)	Weight (kg)	Hip circumference (cm)	Waist to hip ratio
18–29	75.6 (73.6–77.7)	104.0 (102.4–105.5)	0.86 (0.85–0.87)
30–44	84.9 (83.3–86.6)	110.6 (109.4–111.9)	0.90 (0.89–0.90)
45–59	84.1 (82.4–85.9)	111.3 (110.0–112.7)	0.92 (0.92–0.93)
60–69	76.9 (74.8–79.0)	108.3 (106.5–110.2)	0.94 (0.92–0.95)
Overall	80.8 (79.6–82.0)	108.3 (107.4–109.3)	0.90 (0.89–0.90)

14.4 BODY MASS INDEX

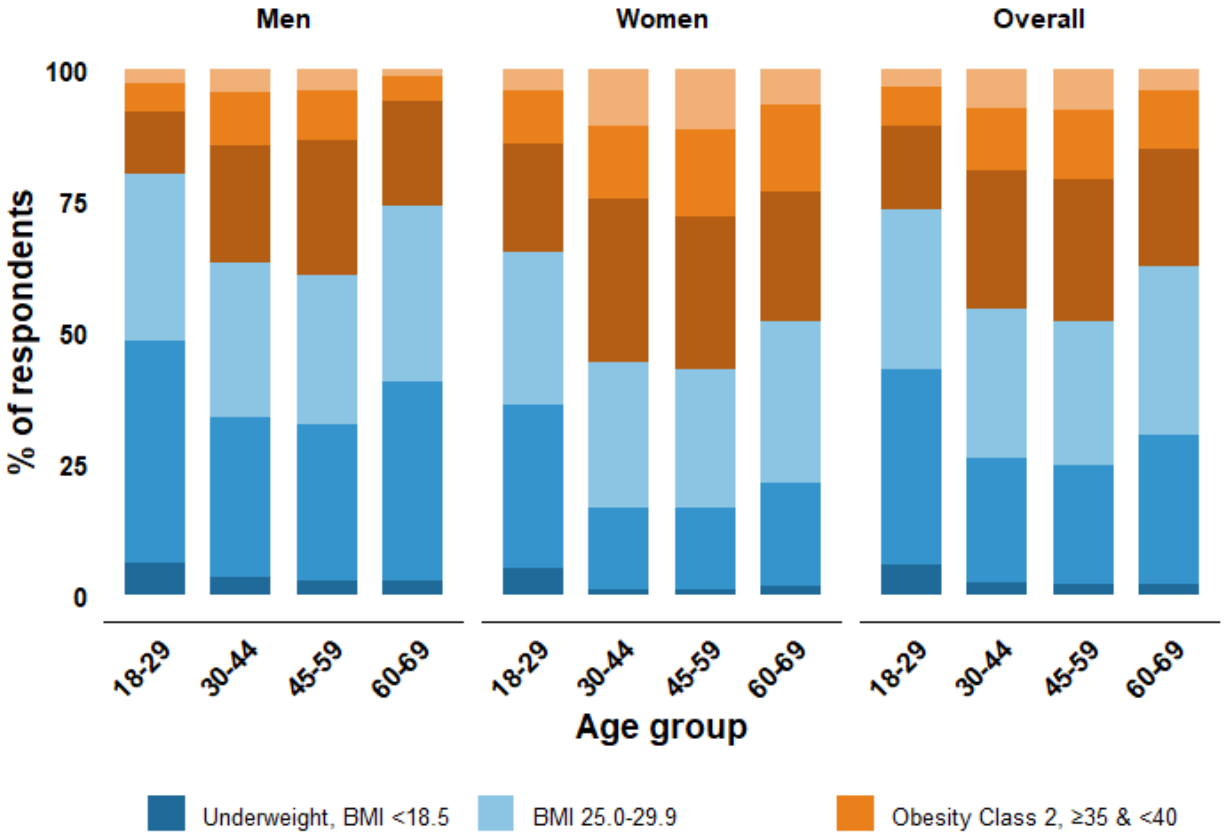
An underweight BMI was recorded for 3.4% (2.6–4.3%) of the population, 28.5% (26.6–30.5%) of the population had a normal BMI and 29.2% (27.5–31.0%) were overweight. Nearly 40% (38.9%, CI: 36.7–41.2%) of the population met the criteria for obesity; 22.4% (CI: 20.6–24.3%) were categorised as Class 1, 10.6% (CI: 9.5–11.8%) as Class 2 and 5.9% (CI: 5.2–6.8%) as Class 3 (Figure 14.1). BMI categories varied by ethnicity. For Fijians of Indian descent, 7.7% (CI: 6.0–9.8%) recorded a BMI of less than 18.5 (underweight), 34.9% (CI: 32.2–37.7%) had a normal BMI, 32.5% (CI: 29.6–35.5%) were categorised as overweight (BMI 25.0–29.9) and 24.9% (CI: 22.3–27.7%) had a BMI exceeding 30.0. The i-Taukei Fijian population reported 0.7% (CI: 0.4–1.2) as being underweight, 24.5% (CI: 22.0–27.1%) as having a BMI in the normal range, 27.2% (CI: 24.9–29.6%) as being classified as overweight and 47.7% (CI: 44.7–50.7%) as classified within one of the three obesity classes.

Figure 14.1: Body mass index categories stratified by ethnicity



When stratified by age, the 18- to 29-year-olds were less likely to be obese; 26.7% (CI: 23.2–30.6%) of this age group were obese, compared with 45.6% (CI: 42.4–48.9%) of people aged between 30 and 44 years, 48.2% (CI: 44.8–51.6%) of people aged 45 to 59 years and 37.6% (CI: 33.5–41.9%) for people aged 60 to 69 years. Women were more likely to be obese (of any class) than men; 48.3% (CI: 45.5–51.2%) of women of any age were obese, compared with 30.4% (CI: 27.5–33.5%) of men of any age. Among women, the highest rate of obesity was observed in those aged 30 to 44 years and 45 to 59 years, for which more than 50% were classified as obese (Figure 14.2).

Figure 14.2: Body mass index categories stratified by age and sex



14.5 HEALTHCARE WORKER ADVICE ON HEALTHY WEIGHT

In the past year, 55.3% (CI: 52.4–58.1%) of people had been told by a doctor or health worker to maintain a healthy body weight or to lose weight. Women were more likely than men to have been given this advice. Specifically, 57.2% (CI: 53.6–60.8%) of women and 53.4% (CI: 49.3–57.5%) of men received the guidance. People aged between 45 and 59 years were most likely to receive this advice; 66.0% (CI: 62.1–69.6%) received the instructions in the past year, compared with 40.9% (CI: 35.2–46.9%) of people aged 18 to 29 years.

14.6 IMPLICATIONS

Nearly two-thirds of the population are overweight or obese, and most are classified as having obesity. This places Fiji in the midst of an obesity epidemic. Rates have continued to rise over the past two decades because of the combined effects of globalisation and urbanisation. These pressures, coupled with a complex policy environment, have made it difficult for Fiji to implement and enforce strong multisectoral obesity-prevention policies.[39]

Policymakers across nine Fijian ministries have identified several key barriers that must be addressed: limited availability and affordability of healthy food options; cultural norms that frame obesity as acceptable; power imbalances that favour industry, particularly in the context of a weak economy; and a lack of evidence on interventions that work effectively within the Fijian cultural context.[39]

A clear 'window of opportunity' is needed to prioritise obesity on the Cabinet agenda and drive urgent, coordinated action. Obesity is a major contributor to the high burden of noncommunicable disease-related morbidity and mortality in Fiji, making decisive leadership and policy reform critical.

15. BLOOD PRESSURE

15.1 BACKGROUND

Raised blood pressure (also known as hypertension [HTN]) is one of the most significant risk factors for cardiovascular disease, stroke and kidney disease.[40] Globally, HTN accounts for an estimated 10 million deaths annually and is a leading cause of premature mortality.[41] People with high blood pressure may not feel the symptoms (it is often called the 'silent killer') and therefore need to have their blood pressure routinely monitored and managed. Uncontrolled HTN and its associated complications have 'enormous economic costs for the patients, their families, health systems and national economies'.[42] Effective prevention, early detection and management of HTN are crucial for reducing the NCD burden.[42]

Blood pressure is written as two numbers. The top (systolic) number is pressure in blood vessels when the heart contracts or beats. The bottom (diastolic) number is the pressure in the vessels when the heart rests between beats. HTN is diagnosed if, when measured on two different days, the systolic blood pressure (SBP) readings on both days is ≥ 140 mmHg, or the diastolic blood pressure (DBP) readings on both days is ≥ 90 mmHg.

15.1.1 STEPS SURVEY MEASURES

In Fiji, information about HTN and raised blood pressure was collected in **Step 1**. Questions were asked about participants' history of blood pressure measurement, diagnosis and treatment. Blood pressure measurements were then collected in **Step 2** using a standardised protocol. **Three readings were taken from each respondent using a validated automated blood pressure device. The average of the last two readings was used for analysis.**

Elevated blood pressure, as a proxy for HTN, was defined as:

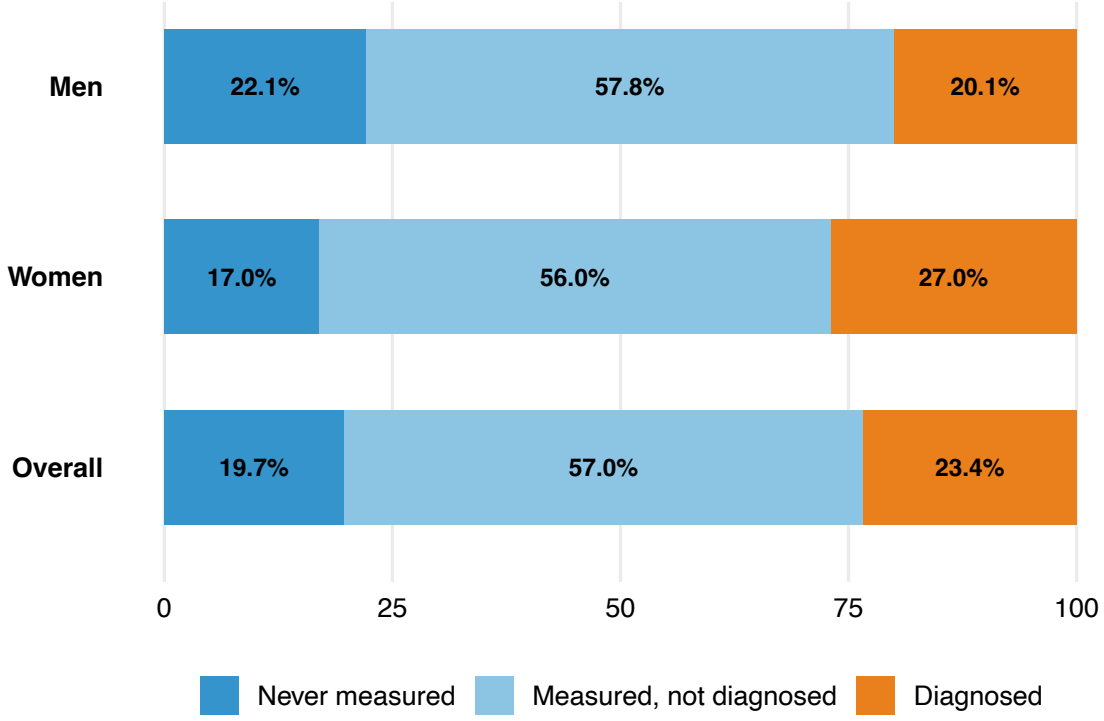
- SBP ≥ 140 millimetres of mercury (mmHg), or
- DBP ≥ 90 mmHg, or
- currently taking medications to manage blood pressure (Section 14.3).

15.2 HISTORY OF BLOOD PRESSURE MEASUREMENT AND PREVIOUS DIAGNOSES OF HYPERTENSION

Regarding previous screening, 19.7% (CI: 17.7–21.8%) had not had their blood pressure measured in the past. A greater proportion of men (22.1%, CI: 19.5–25.0%) had never had their blood pressure measured than women (17.0%, CI: 14.7–19.5%; Figure 15.1).

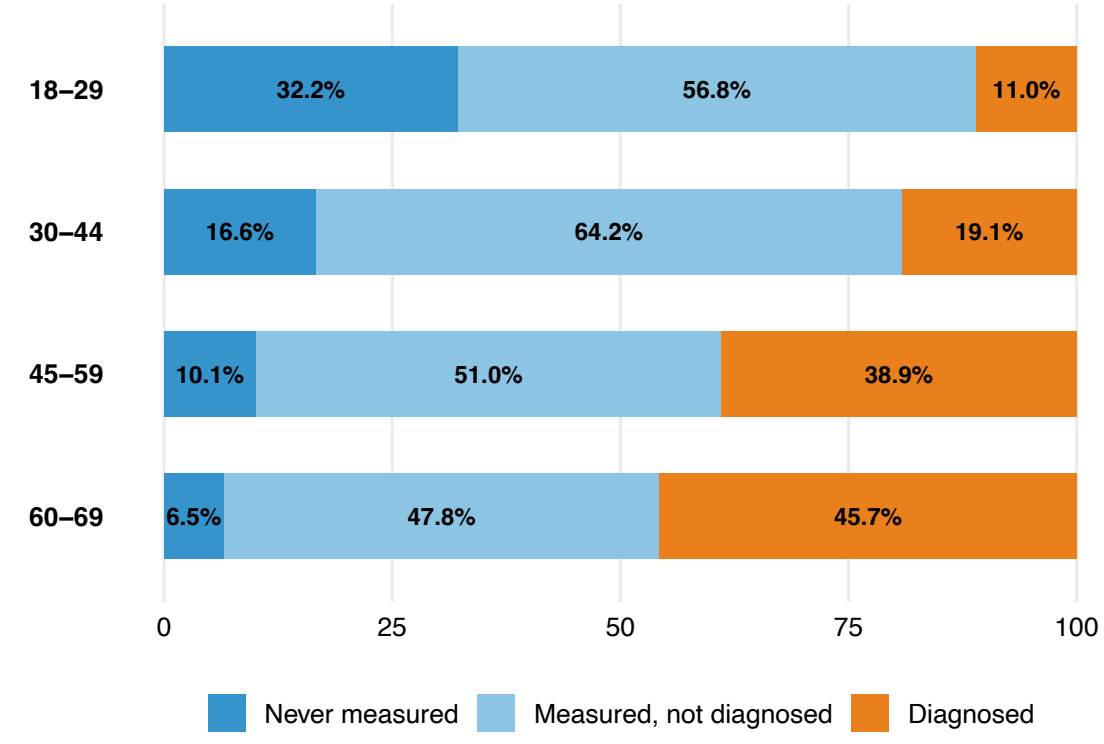
Further, 23.4% (CI: 21.8–25.0%) of people reported that they had been told by a doctor or health professional that they had high blood pressure, or HTN. More women had previously been diagnosed with HTN (27.0%, CI: 24.8–29.2%) than men (20.1%, CI: 18.0–22.3%).

Figure 15.1: Proportion of the population with a history of hypertension or who have had their blood pressure measured, by sex



Rates of previously diagnosed HTN were related to age; 45.7% (CI: 41.6–49.9%) of people aged 60 to 69 years had been diagnosed with HTN, compared with 11.0% (CI: 8.7–13.9%) of people aged 18 to 29 years (Figure 15.2).

Figure 15.2: Proportion of the population with a history of hypertension or who have had their blood pressure measured, by age



Rates for exposure to blood pressure measurement and a previous diagnosis of HTN were consistent across all four divisions.

15.3 LEVELS OF BLOOD PRESSURE

Blood pressure measurements were taken as part of Step 2 of the survey in 5,006 of the 5,026 participants.

The mean SBP was 128.9 mmHg (CI: 128.1–129.7 mmHg) and the mean DBP was 84.2 mmHg (CI: 83.7–84.7 mmHg). SBP increased with age, from 119.0 mmHg (117.9–120.1 mmHg) to 144.8 mmHg (142.9–146.7mmHg) for 18 to 29 years and 60 to 69 years, respectively. Men had higher SBP than women (Table 15.1). DBP ranged from an average of 78.3 mmHg (CI: 77.5–79.1 mmHg) for people aged 18 to 29 years to 89.3 mmHg (CI: 88.6–90.1 mmHg) for people aged 45 to 59 years. DBP was fairly similar between men and women (Table 15.2).

Table 15.1: Systolic blood pressure (mmHg) by age and sex

Age group (years)	Men (mmHg)	Women (mmHg)	Overall (mmHg)
18–29	123.6 (122.2–125.0)	113.7 (112.4–115.0)	119.0 (117.9–120.1)
30–44	130.7 (129.0–132.5)	124.7 (123.2–126.2)	127.9 (126.7–129.1)
45–59	138.8 (137.1–140.4)	138.9 (137.1–140.7)	138.8 (137.6–140.1)
60–69	145.0 (142.5–147.6)	144.6 (142.0–147.2)	144.8 (142.9–146.7)
Overall	131.2 (130.2–132.2)	126.3 (125.3–127.4)	128.9 (128.1–129.7)

Table 15.2: Diastolic blood pressure (mmHg) by age and sex

Age group (years)	Men (mmHg)	Women (mmHg)	Overall (mmHg)
18–29	78.6 (77.4–79.7)	78.1 (77.0–79.1)	78.3 (77.5–79.1)
30–44	86.3 (85.0–87.6)	84.7 (83.7–85.7)	85.5 (84.7–86.4)
45–59	89.2 (88.2–90.2)	89.4 (88.4–90.5)	89.3 (88.6–90.1)
60–69	89.3 (87.8–90.9)	87.9 (86.5–89.4)	88.6 (87.5–89.7)
Overall	84.4 (83.7–85.1)	83.9 (83.2–84.6)	84.2 (83.7–84.7)

15.4 PREVALENCE OF ELEVATED BLOOD PRESSURE

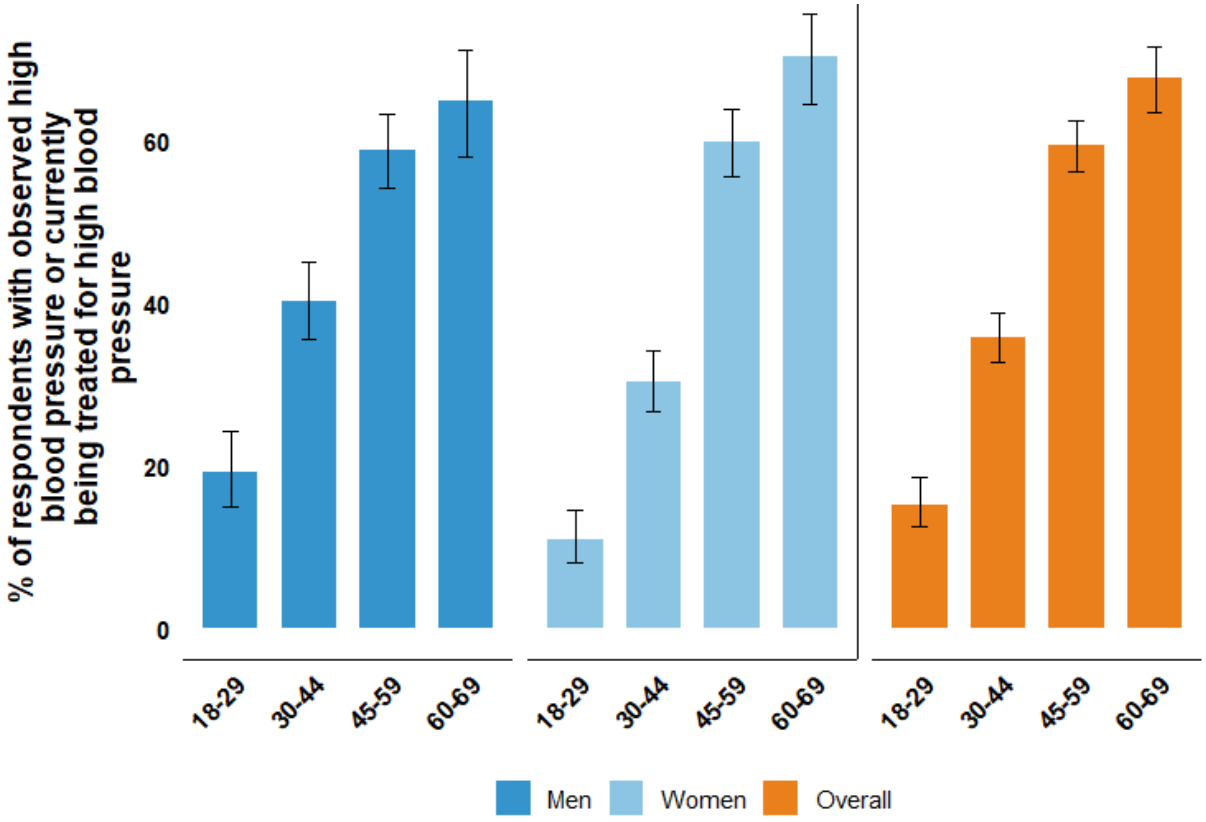
Elevated blood pressure, a proxy for HTN diagnosis, was ascertained among participants whose blood pressure was measured as part of Step 2 and those currently taking medications prescribed by a doctor for their HTN. Prevalence estimates were based on weighted calculations; hence, the number of participants is not provided.

Overall, 36.6% (CI: 34.7–38.6%) of participants recorded a reading consistent with elevated blood pressure (SBP ≥ 140 or DBP ≥ 90 mmHg) or were currently taking medication. HTN diagnosis was found in 38.7% (CI: 35.9–41.5%) of men and 34.4% (CI: 31.9–37.0%) of women.

Elevated blood pressure increased with age; 15.2% (CI: 12.5–18.5%) of people aged 18 to 29 years had this condition, compared with 67.5% (CI: 63.4–71.4%) of people aged between 60 and 69 years (Figure 15.3). The average age for people with elevated blood pressure was 47.6 years.

However, 5.76% (CI: 4.85–6.82%) of people surveyed who reported that they had been diagnosed with hypertension had a normal blood pressure reading in Step 2, despite not receiving medical management or treatment. This proportion was not included in the downstream analyses.

Figure 15.3: Proportion of the population, by age and sex, with observed high blood pressure



15.5 AWARENESS OF HYPERTENSION STATUS

15

Of the 36.6% of the population with HTN, 47.7% (CI: 44.7–50.6%) were previously aware of their condition. For this group of people, the mean SBP was 150.4 mmHg (CI: 148.8–152.0 mmHg) and the mean DBP was 96.2 mmHg (CI: 95.3–97.1 mmHg). The average age of these individuals was 48.9 years (CI: 48.4–49.5 years), and women made up 53.1% of this group (Table 15.3 and Table 15.4).

Table 15.3: Systolic blood pressure (mmHg) for people previously aware of their hypertensive condition by age and sex

Age group (years)	Men (mmHg)	Women (mmHg)	Overall (mmHg)
18–29	140.0 (134.2–145.9)	128.8 (123.2–134.5)	134.6 (129.9–139.3)
30–44	149.8 (145.2–154.4)	147.7 (142.0–153.3)	148.8 (145.0–152.6)
45–59	152.3 (149.0–155.6)	153.2 (150.4–156.0)	152.8 (150.6–154.9)
60–69	158.2 (154.1–162.4)	152.1 (148.9–155.2)	154.5 (152.0–157.1)
Overall	151.3 (149.0–153.7)	149.6 (147.4–151.8)	150.4 (148.8–152.0)

Table 15.4: Diastolic blood pressure (mmHg) for people previously aware of their hypertensive condition by age and sex

Age group (years)	Men (mmHg)	Women (mmHg)	Overall (mmHg)
18–29	90.8 (87.0–94.6)	91.2 (86.6–95.9)	91.0 (88.0–94.1)
30–44	99.9 (96.6–103.2)	101.3 (98.0–104.6)	100.6 (98.2–102.9)
45–59	96.1 (94.2–98.0)	96.9 (95.2–98.6)	96.6 (95.4–97.8)
60–69	95.6 (93.3–97.9)	91.5 (89.7–93.3)	93.1 (91.7–94.6)
Overall	96.4 (94.9–97.9)	96.0 (94.7–97.3)	96.2 (95.3–97.1)

However, 52.3% (CI: 49.4–55.3%) had no prior awareness of their HTN condition. The mean SBP for this group was 143.9 mmHg (CI: 142.8–145.0 mmHg) and the mean DBP was 95.2 mmHg (CI: 94.5–95.9 mmHg). The average age of these individuals was 42.7 years (CI: 42.2–43.3 years), and women made up 37.4% of the group (Table 15.5 and Table 15.6).

Table 15.5: Systolic blood pressure (mmHg) for people previously unaware of their hypertensive condition by age and sex

Age group (years)	Men (mmHg)	Women (mmHg)	Overall (mmHg)
18–29	138.7 (135.4–141.9)	134.1 (128.8–139.4)	137.5 (134.7–140.2)
30–44	142.7 (140.9–144.5)	140.5 (138.0–143.0)	141.9 (140.4–143.3)
45–59	146.4 (144.5–148.4)	146.4 (143.7–149.1)	146.4 (144.8–148.1)
60–69	152.4 (149.5–155.4)	156.2 (152.0–160.4)	154.1 (151.6–156.6)
Overall	143.9 (142.6–145.2)	143.9 (142.2–145.5)	143.9 (142.8–145.0)

Table 15.6: Diastolic blood pressure (mmHg) for people previously unaware of their hypertensive condition by age and sex

Age group (years)	Men (mmHg)	Women (mmHg)	Overall (mmHg)
18–29	91.5 (88.0–94.9)	97.2 (94.5–99.9)	93.0 (90.3–95.7)
30–44	96.5 (95.3–97.8)	96.1 (94.6–97.6)	96.4 (95.4–97.3)
45–59	95.4 (94.1–96.6)	95.0 (93.7–96.2)	95.2 (94.3–96.1)
60–69	94.9 (92.9–96.9)	94.7 (92.6–96.7)	94.8 (93.3–96.2)
Overall	94.9 (93.9–95.9)	95.6 (94.8–96.5)	95.2 (94.5–95.9)

15.6 TREATMENT OF HYPERTENSION

Of the 47.7% HTN-aware participants, 47% (46.9%, CI: 42.9–50.8%) were receiving pharmacological treatment in the form of Western medicine. Advice from traditional healers was sought by 14.2% (CI: 12.1–16.6%) of the HTN-aware population. In addition, 22.7% (CI: 19.6–26.1%) were taking herbal or traditional remedies for their raised blood pressure. Traditional approaches were more often sought in rural communities (Table 15.7).

Table 15.7: Strategies and practices for controlling blood pressure by people who were aware of their hypertension status

Division	Percentage taking blood pressure medication	Percentage using herbal or traditional remedies to control blood pressure	Percentage who have seen a traditional healer for raised blood pressure
Rural	40.1 (34.6–45.8)	26.2 (21.6–31.4)	20.0 (16.4–24.1)
Urban	52.3 (46.8–57.7)	19.9 (16.0–24.6)	9.5 (7.2–12.4)
Overall	46.9 (42.9–50.8)	22.7 (19.6–26.1)	14.2 (12.1–16.6)

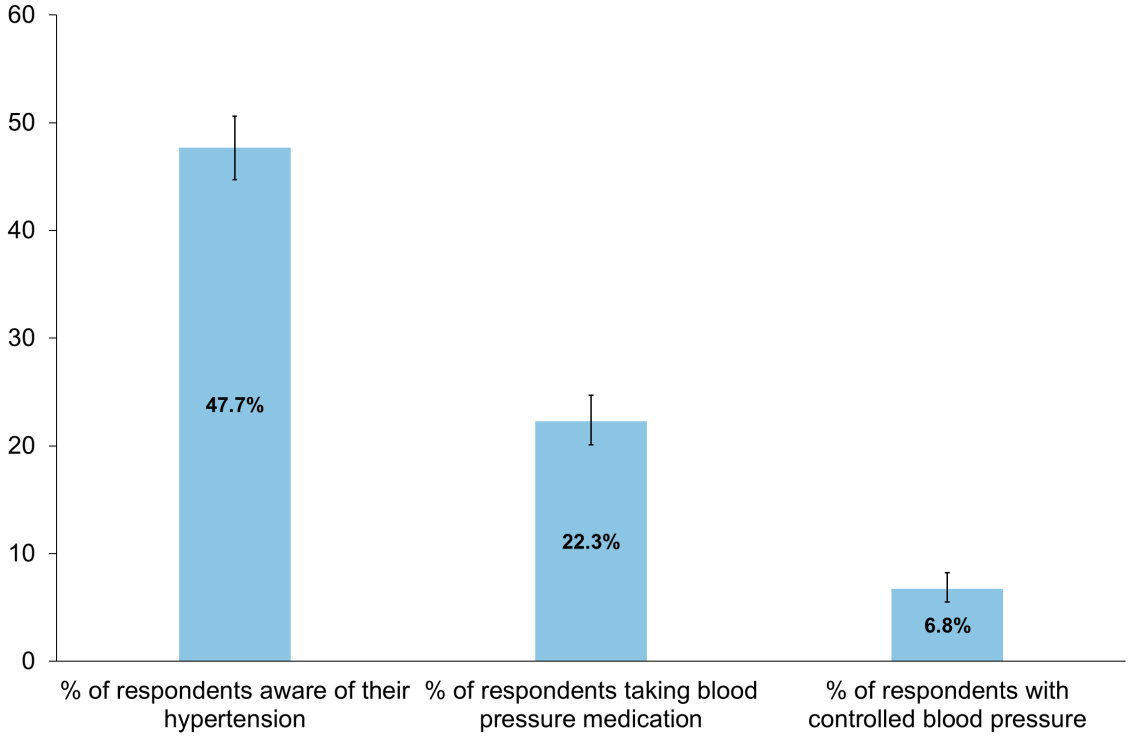
15.7 HYPERTENSION CONTROL

Of the group (46.9%) that had known HTN and were taking medication for HTN, 13.9% (CI: 11.4%–16.8%) had their blood pressure controlled at the time of measurement.

15.8 CASCADE OF CARE FOR HYPERTENSION

This cascade of care presents awareness, treatment and control. For these calculations, the denominator was all prevalent cases—specifically, the 36.6% of participants who either had an elevated blood pressure reading or were already taking antihypertensive medication. These estimates differ from those in the previous section because they used prevalent cases as the denominator. Of the prevalent hypertensive cases, 47.7% (CI: 44.7–50.6%) were aware of their HTN, 22.3% (CI: 20.1–24.7%) were taking medication to modify their blood pressure and 6.8% (CI: 5.5–8.3%) had managed blood pressure control.

Figure 15.4: Hypertension cascade of care: Among people with an observed raised blood pressure or who were taking medication for hypertension (36.6%), it shows (i) the proportion of people aware of their condition, (ii) the proportion of people taking medication and (iii) the proportion of people with controlled blood pressure



15.9 IMPLICATIONS

Screening rates of approximately 80% in Fiji indicate a large reach of the WHO Package of Essential Noncommunicable Disease interventions and wellness screening programs across primary care settings, enabling early identification of individuals at risk.[43]

The prevalence of HTN was 37% when blood pressure measurements were combined with those on blood pressure treatment. Of these individuals, about half were aware of their condition (48%), and half of those were receiving treatment (47%). Only a very small percentage achieved blood pressure control (approximately 14% of those on antihypertensive treatment). From a population perspective, half of the cases who had HTN were aware, one in five were on treatment and one out of every 14 people had their blood pressure controlled.

These findings indicate that while screening coverage is high, there are major gaps in diagnosis, communication of results, continuous care, treatment and sustained blood pressure control. A large proportion of individuals with HTN remain undiagnosed, untreated or inadequately managed, increasing the risk of preventable heart disease, stroke, kidney disease and premature mortality. Strengthening the entire HTN care cascade, from detection to long-term control, is therefore critical for reducing the NCD burden in Fiji.

16. DIABETES/RAISED BLOOD GLUCOSE

16.1 BACKGROUND

Raised blood glucose and diabetes are among the most serious NCD risk factors and conditions globally. Persistent hyperglycaemia can lead to complications including CVD, kidney failure, vision loss and lower-limb amputation.[44] Type 2 diabetes, the most common form, is largely preventable through healthy diet and physical activity. Early detection and management are critical to reducing long-term complications and health care burden.[45]

16.1.1 STEPS SURVEY MEASUREMENT APPROACH

In Fiji, information about diabetes and raised blood glucose were collected in **Step 1**. Questions were asked about participants' history of diabetes measurement, diagnosis and treatment. Then, blood glucose status was assessed during **Step 3** of the WHO STEPS Survey. The following procedures were used:

- Participants fasted for at least eight hours before testing.
- Blood samples were collected via capillary blood draw.
- Fasting blood glucose (FBG) levels were measured using Accu-Chek blood glucose monitor requiring glucose trips.
- The following levels are used in Fiji for defining raised blood glucose:
    - fasting plasma glucose ≥7.0 mmol/L (≥126 mg/dL), or
- currently on medication for diabetes (Section 15.3).

According to the Fiji MHMS Diabetes Management Guidelines, Fourth Edition,[46] the following is the diagnostic criteria for diabetes mellitus:

Table 16.1: Diabetes guidelines in Fiji

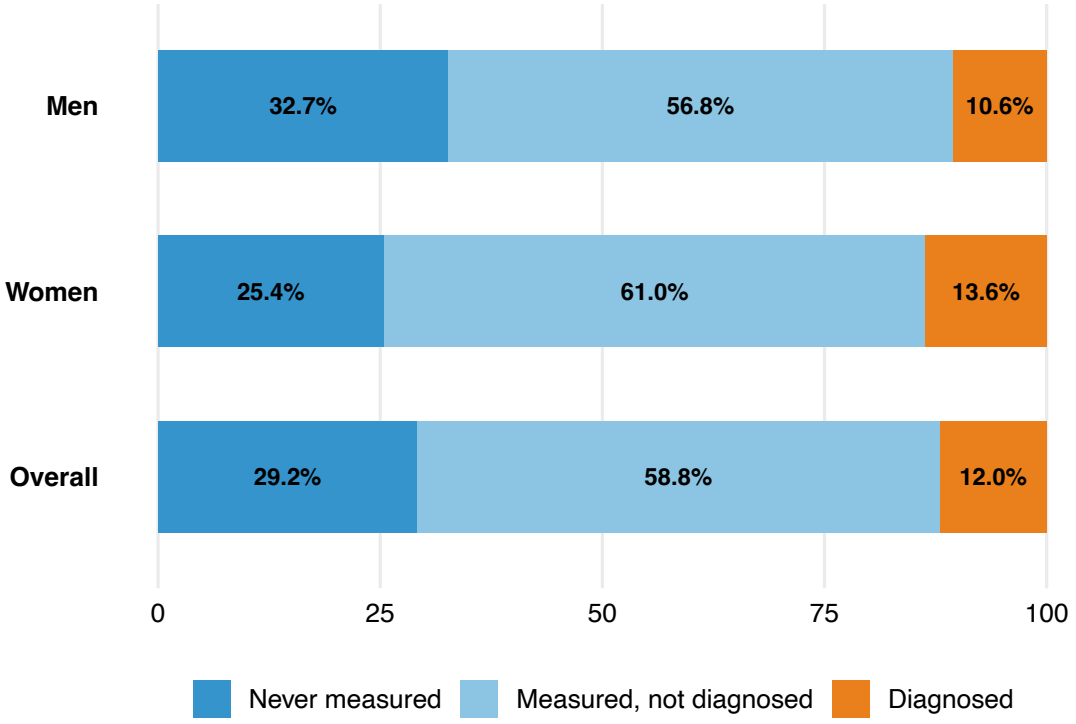
	Normal Glucose Tolerance	Hypoglycaemia	
	Normal	Pre-diabetes	Diabetes
Fasting blood sugar*	<5.6 mmol/L (100 mg/dL)	5.6–6.9 mmol/L (100–125 mg/dL)	≥7.0 mmol/L (≥126 mg/dL)
HbA1c	<5.6% (38 mmol/L)	5.7 to 6.4% (39 to 47 mmol/L)	≥6.5% (48 mmol/L)
2-hour post load venous glucose	<7.8 mmol/L (140 mg/dL)	7.8–11.0 mmol/L (140–199 mg/dL)	≥11.1 mmol/L (200 mg/dL)
Random plasma glucose (to be used only in the presence of symptoms)			≥11.1 mmol/L (200 mg/dL) With symptoms

Overnight fast of 8–14 hours.
* The values above do not apply to pregnant mothers.

16.2 HISTORY OF BLOOD GLUCOSE MEASUREMENTS AND PREVIOUS DIAGNOSES OF DIABETES

In terms of previous screening, 29.2% (CI: 27.1–31.3%) had not had their blood glucose measured in the past. A greater proportion of men (32.7%, CI: 29.8–35.6%) had never had their blood glucose measured than women (25.4%, CI: 22.9–28.0%). It can be assumed that 70.8% of the survey population had had its blood glucose measured (screened).

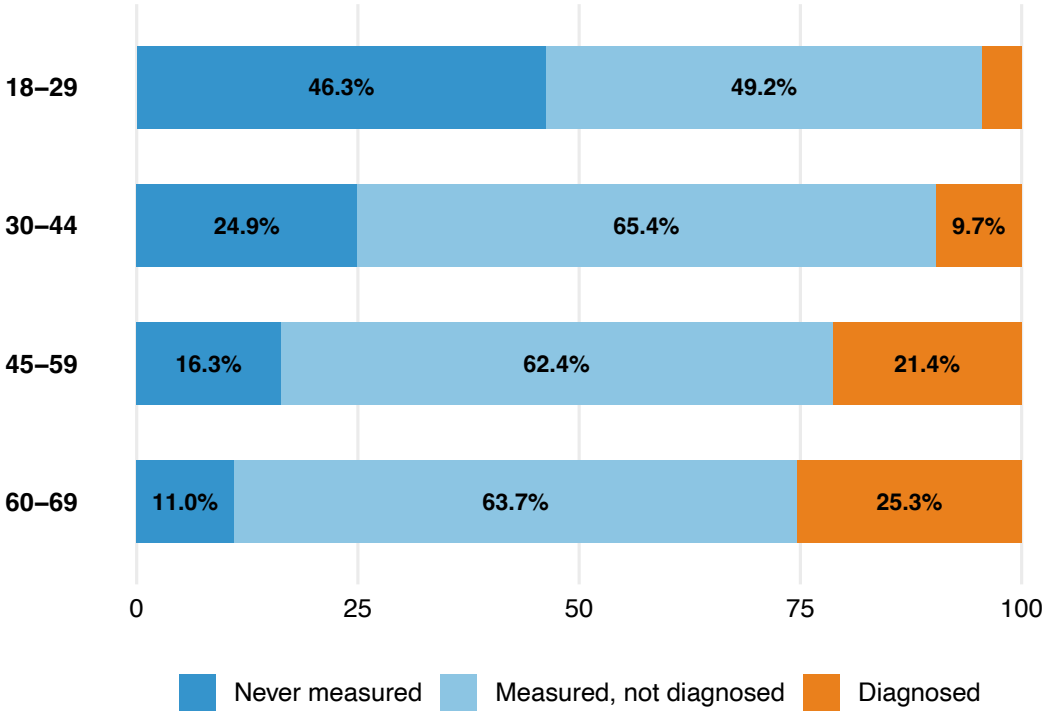
Figure 16.1: Proportion of the population with a history of previous diagnosis of diabetes or who had their blood glucose previously measured, by sex



Rates of history of blood glucose measurements varied across age groups. A total of 46.3% (CI: 42.4–50.3%) of people aged between 18 and 29 years reported never having had their blood glucose measured, compared with 11.0% (CI: 8.3–14.5%) of people aged 60 to 69 years.

The prevalence of diabetes previously diagnosed also increased with age; 4.5% (CI: 3.1–6.3%) of people aged 18 to 29 years had been diagnosed with diabetes, compared with 25.3% (CI: 21.9–29.2%) of people aged 60 to 69 years (Figure 16.2).

Figure 16.2: Proportion of the population with a history of previous diagnosis of diabetes or who had their blood glucose previously measured, by age



Rates for exposure to blood glucose measurement and a previous diagnosis of diabetes were consistent across all four divisions.

16.3. LEVELS OF BLOOD GLUCOSE

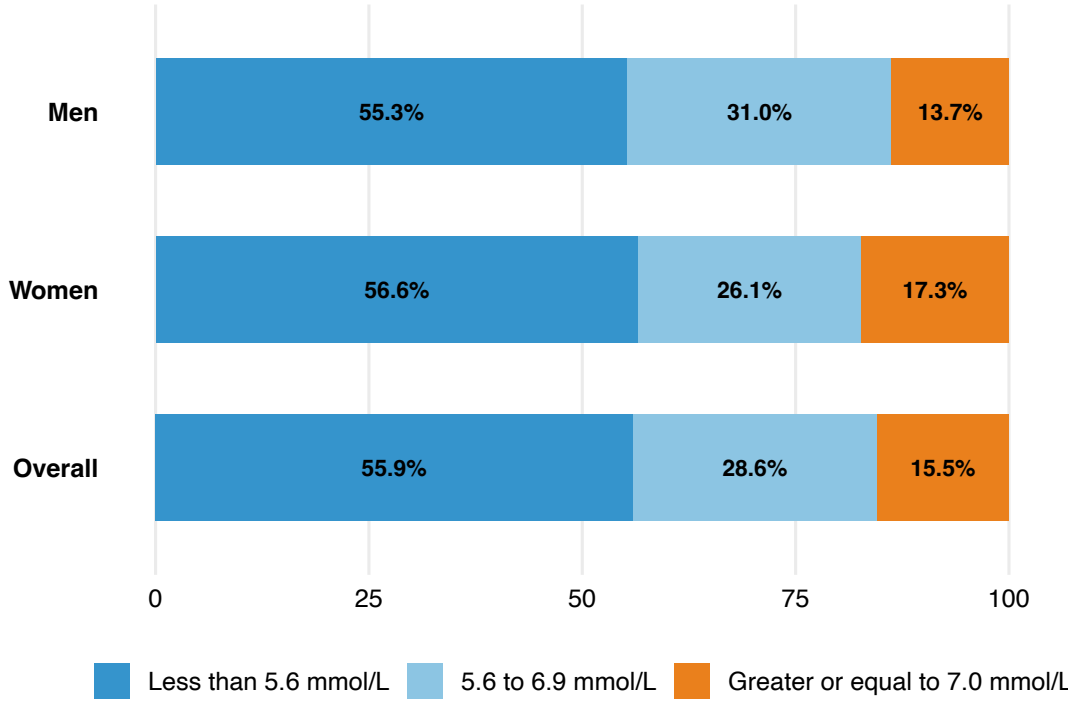
Step 3 included a FBG test, which was administered to 4,535 participants. Overall, the mean FBG level was 6.2 mmol/L (CI: 6.1–6.3 mmol/L). The mean FBG level for women (6.3 mmol/L, CI: 6.2–6.5 mmol/L) was higher than that for men (6.1 mmol/L, CI: 6.0–6.2 mmol/L). FBG also increased with age. The level was 5.3 mmol/L (CI: 5.2–5.4 mmol/L) for people aged 18 to 29 years, and it was 7.2 mmol/L (CI: 6.9–7.6 mmol/L) for people aged 60 to 69 years (Table 16.2).

Table 16.2: Fasting blood glucose levels (mmol/L) by age and sex

Age group (years)	Men	Women	Overall
18–29	5.3 (5.2–5.5)	5.3 (5.2–5.4)	5.3 (5.2–5.4)
30–44	6.2 (6.0–6.5)	6.2 (6.0–6.4)	6.2 (6.0–6.4)
45–59	6.7 (6.4–7.0)	7.4 (7.1–7.8)	7.1 (6.9–7.3)
60–69	7.1 (6.7–7.5)	7.4 (6.9–7.8)	7.2 (6.9–7.6)
Overall	6.1 (6.0–6.2)	6.3 (6.2–6.5)	6.2 (6.1–6.3)

From the observed FBG test, 15.5% (CI: 14.1–17.0%) received a value of 7.0 mmol/L or over, 28.6% (CI: 26.8–30.5) received an impaired fasting glucose reading between 5.6 and 6.9 mmol/L, and 55.9% (CI: 53.8–58.0) had a healthy fasting blood glucose of less than 5.6 mmol/L. More women than men received a reading over 7.0 mmol/L (17.3%, CI: 15.2–19.7% for women and 13.7%, CI: 12.0–15.6% for men; Figure 16.3). In addition, 55.9% (CI: 53.8–58.0%) had a healthy FBG.

Figure 16.3: Categories of observed fasting blood glucose values, by sex

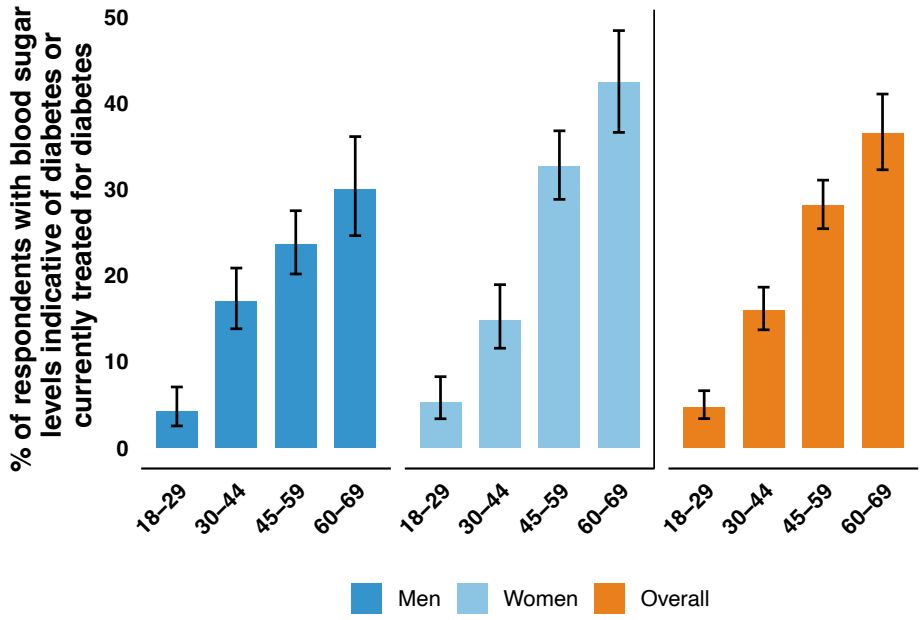


16.4. PREVALENCE OF DIABETES

A proxy for a diabetes diagnosis was ascertained among participants whose blood glucose was above 7.0 mmol/L or who were currently on medication for diabetes. Prevalence estimates were based on weighted calculations; hence, the number of participants was not provided.

Overall, 16.5% (CI: 15.1-18.1%) of people had diabetes. This proportion was highly dependent on age; 4.7% (CI: 3.4–6.6%) of people aged between 18 and 29 years had diabetes, compared with 36.5% (CI: 32.2–41.0%) of people aged between 60 and 69 years (Figure 16.4). The average age for people with diabetes was 47.6 years (CI: 47.0–48.2 years), and women made up 53.7% of this group. The proportion of people with diabetes varied by division. The Western Division had the greatest proportion (18.2%, CI:16.4–20.2%), followed by the Central Division (16.9%, CI: 14.1–20.0%).

Figure 16.4: Prevalence of diabetes, by age and sex



Note: 3.6% (3.0–4.3%) of people surveyed reported having been diagnosed with diabetes but had a fasting blood glucose level below 7.0 mmol/L in Step 3, despite not receiving medical management or treatment. This proportion was not included in the downstream analyses.

16.5. AWARENESS OF DIABETES STATUS

Of the 16.5% of the population with diabetes, 46.5% (CI: 42.0–51.1%) were previously aware of their condition. For this group of people, the average age was 51.3 years (CI: 50.6–52.0 years), and women accounted for 54.8%. The overall mean fasting blood glucose was 11.9 mmol/L (11.5–12.2.1 mmol/L), 12.1 mmol/L (CI: 11.5–12.6 mmol/L) for men and 11.7 mmol/L (CI: 11.3–12.1 mmol/L) for women.

A total of 53.5% (CI: 48.9–58.0%) had no prior awareness of their diabetes condition. The mean blood glucose level in this group was 9.4 mmol/L (CI: 9.1–9.7 mmol/L), 9.0 mmol/L (CI: 8.8–9.4 mmol/L) for men and 9.7 mmol/L (CI: 9.3–10.2 mmol/L) for women. The average age of these individuals was 44.3 years (CI: 43.5–45.1 years), and women made up 52.9% of the group.

16.6. TREATMENT OF DIABETES

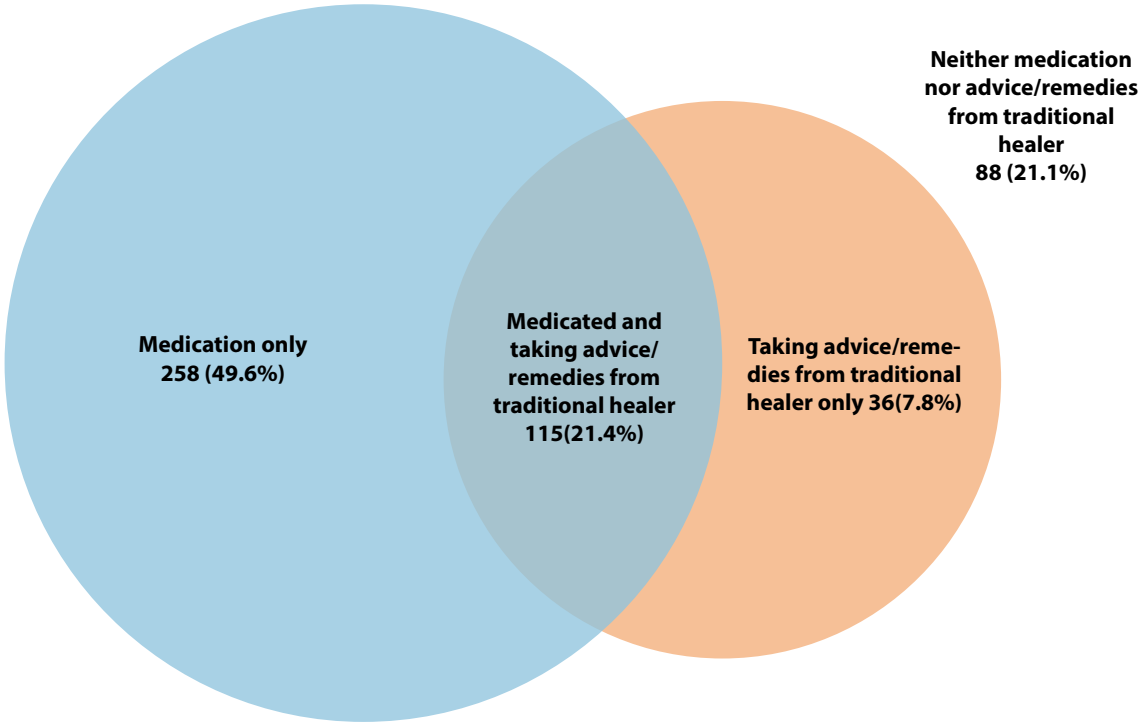
Medication for diabetes, including insulin, was being used by 71.0% (CI: 64.8–76.6%) of the people aware of their diabetes status. Further, 16.5% (CI: 10.4–19.8%) saw a traditional healer for diabetes or raised blood glucose, and 25.6% (CI: 21.5–30.1%) took some form of herbal or traditional remedies for their diabetes (Table 16.3).

Approximately 21% of the diabetic population took oral medication or insulin, as well as traditional remedies, to control blood glucose (Figure 16.5). Use of Western medicine and traditional remedies was more common in rural communities than in urban ones.

Table 16.3: Methods of blood sugar control for people who have diabetes, by division

Rurality	Proportion taking oral medication or insulin	Proportion using herbal or traditional remedies to control blood sugar	Proportion who have seen a traditional healer for diabetes or raised blood sugar
Rural	74.1 (64.8–81.6)	27.9 (20.5–36.7)	19.9 (13.7–28.0)
Urban	69.2 (60.8–76.5)	24.2 (19.6–29.5)	14.5 (10.4–19.8)
Overall	71.0 (64.8–76.6)	25.6 (21.5–30.1)	16.5 (12.9–20.8)

Figure 16.5: Intersection of people with known diabetes taking oral medications or insulins, as well as traditional remedies



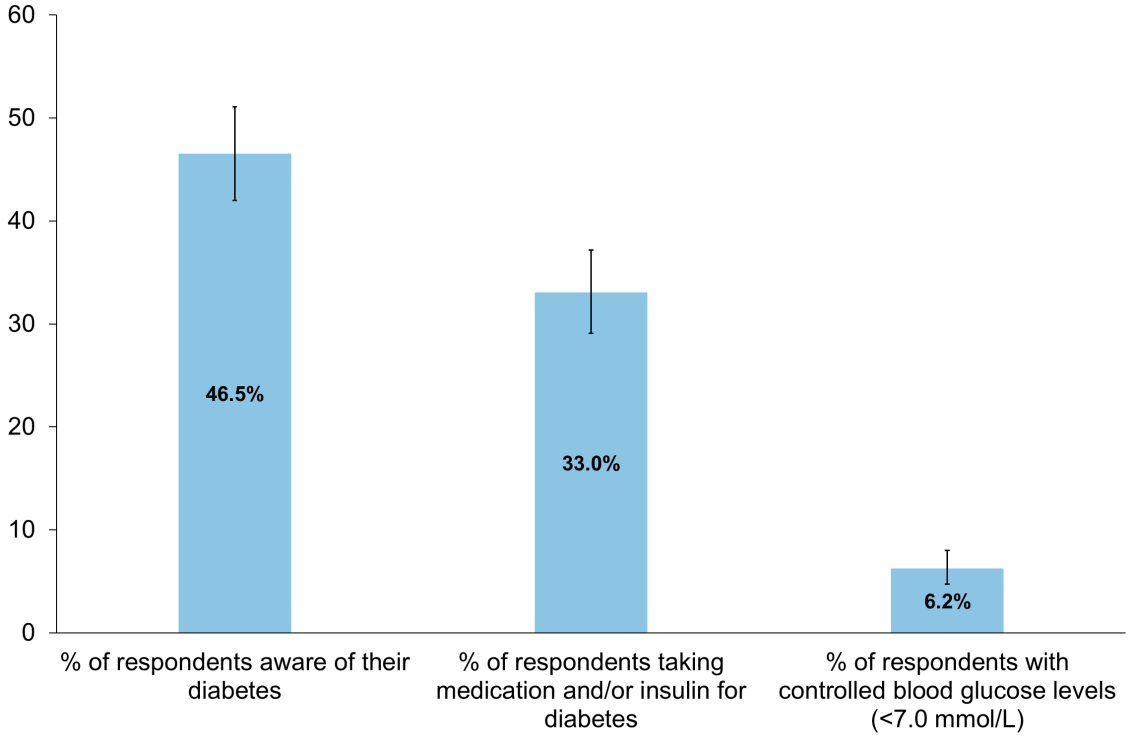
16.7. DIABETES CONTROL

Of those who had known diabetes and were taking medication, 21.5% (CI: 16.8–27.1%) had their blood glucose controlled at the time of measurement.

16.8. CASCADE OF CARE FOR DIABETES

This cascade of care presents awareness, treatment and control. For these calculations, the denominator was all prevalent cases—specifically, the 16.5% of participants who either had an elevated blood glucose test or were already taking medication for diabetes. These estimates differ from those in the previous section because they used prevalent cases as the denominator. Of the prevalent diabetes cases, 46.5% (CI: 42.0–51.1%) were aware of their diabetes, 33.0% (CI: 29.1–37.2%) took medication to modify their blood glucose and 6.2% (CI: 4.8–8.0%) had managed blood glucose control.

Figure 16.6: Diabetes cascade of care: For people with an observed raised blood glucose or currently taking medication for diabetes (16.5%), this figure shows (i) the proportion of people aware of their condition, (ii) the proportion of people taking medication and (iii) the proportion with controlled blood glucose levels



16.9. IMPLICATIONS

The prevalence of diabetes was 16.5%. Nearly half of those (46.5%) who were identified as having diabetes were previously aware of their condition. Further, 28.6% of the population had a FBG measurement that fell within the pre-diabetes range.

Although screening coverage was approximately 70%, treatment outcomes remained suboptimal, and there were low rates of medication uptake and poor glycaemic control. Contributing factors included cultural practices, such as reliance on herbal remedies or traditional healers, limited awareness of disease severity and challenges with access to treatment and lifestyle recommendations because of knowledge gaps in diabetes prevention.

Diabetes is the leading cause of death in Fiji,[47] underscoring the urgent need to strengthen prevention and management strategies. This includes clearer guidelines for preventing progression among individuals with normal or pre-diabetic blood glucose levels, culturally sensitive lifestyle education, improved patient follow-up and community engagement to support adherence to treatment and healthier behaviours. Achieving these goals requires strengthening primary care systems to deliver effective diabetes prevention and management services.

17. RAISED TOTAL CHOLESTEROL, TREATMENT AND CONTROL

17.1. BACKGROUND

Raised blood cholesterol is a major modifiable risk factor for NCDs, particularly CVD, including heart attacks and strokes.[48] Early detection, lifestyle modification and appropriate medical treatment can significantly reduce cardiovascular risk.

17.1.1. STEPS SURVEY MEASUREMENT APPROACH

Raised cholesterol was assessed during **Step 3** of the WHO STEPS Survey. The following procedures were used:

- Participants were required to fast for at least eight hours before sample collection.
- Blood samples to measure lipid levels were taken via capillary blood draw (small amount of blood from prick on finger).
- Total cholesterol was measured using an enzymatic assay performed on a point-of-care testing device.
- Raised total cholesterol was defined as:
    - total cholesterol ≥ 190 mg/dL (5.0 mmol/L), or
    - currently on medication to lower cholesterol.

Low screening and diagnosis rates within Fiji precludes an exploration of the treatment and physical measurements of people aware and unaware of their levels of raised cholesterol.

17.2. HISTORY OF RAISED CHOLESTEROL AND ACCESS TO SCREENING

Within the population, just under 10% (9.5%, CI: 8.5–10.6%) had been told by a doctor or health worker that they had high cholesterol. Overall, 21.9% (CI: 20.2–23.6%) of the population had been measured at some stage but were not diagnosed, and 68.6% (CI: 66.6–70.6%) of the population had never had their cholesterol measured (Figure 17.1). Rates of access to cholesterol screening were consistent for both sexes.

Access to cholesterol screening varied by both age and location. Cholesterol screening increased with age; 82.2% (CI: 78.8–85.2%) of the population aged between 18 and 29 years had never had its cholesterol measured. This figure was similar for the other age groups: 69.4% (CI: 66.4–72.2%) of the population aged between 30 and 44 years, 56.0% (CI: 52.8–59.2%) for people aged between 45 and 59 years and 46.0% (CI: 41.8–50.2%) for people aged 60 to 69 years. The older population was more likely to have received a diagnosis of high cholesterol than the younger population (Figure 17.2). A greater proportion of people living in the Eastern Division had never had their cholesterol measured than in the other four divisions (Figure 17.3).

Figure 17.1: Percentage of the population who had been diagnosed with high cholesterol, had their cholesterol measured or never had it measured, by sex

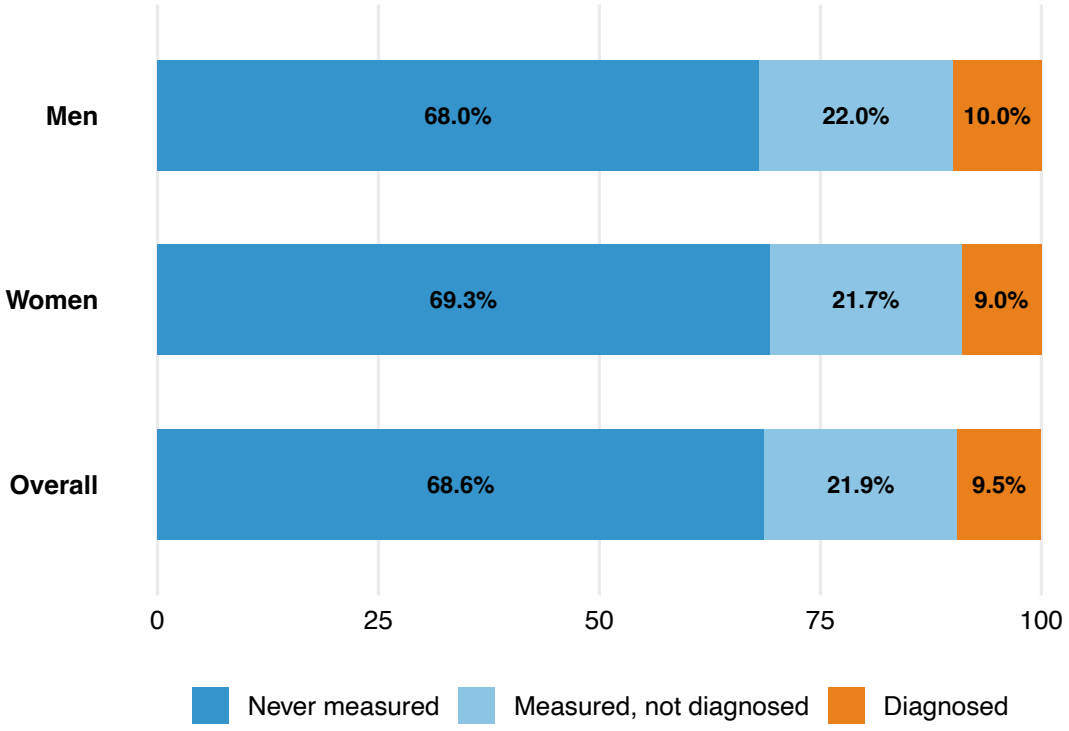


Figure 17.2: Percentage of the population who had had their total cholesterol measured, by age

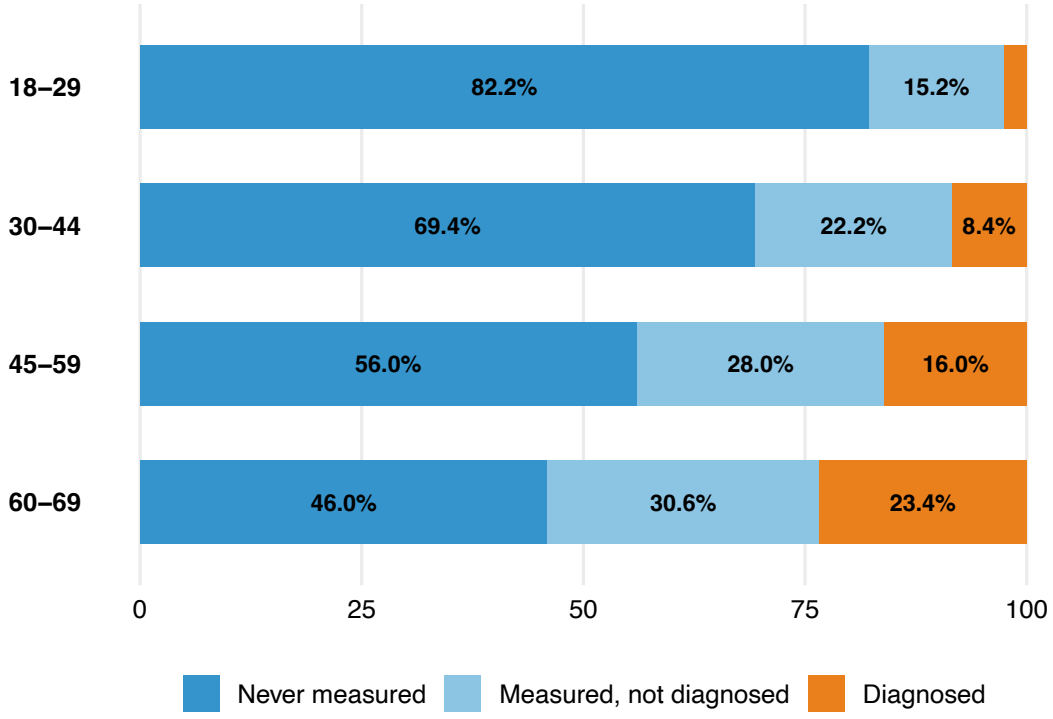
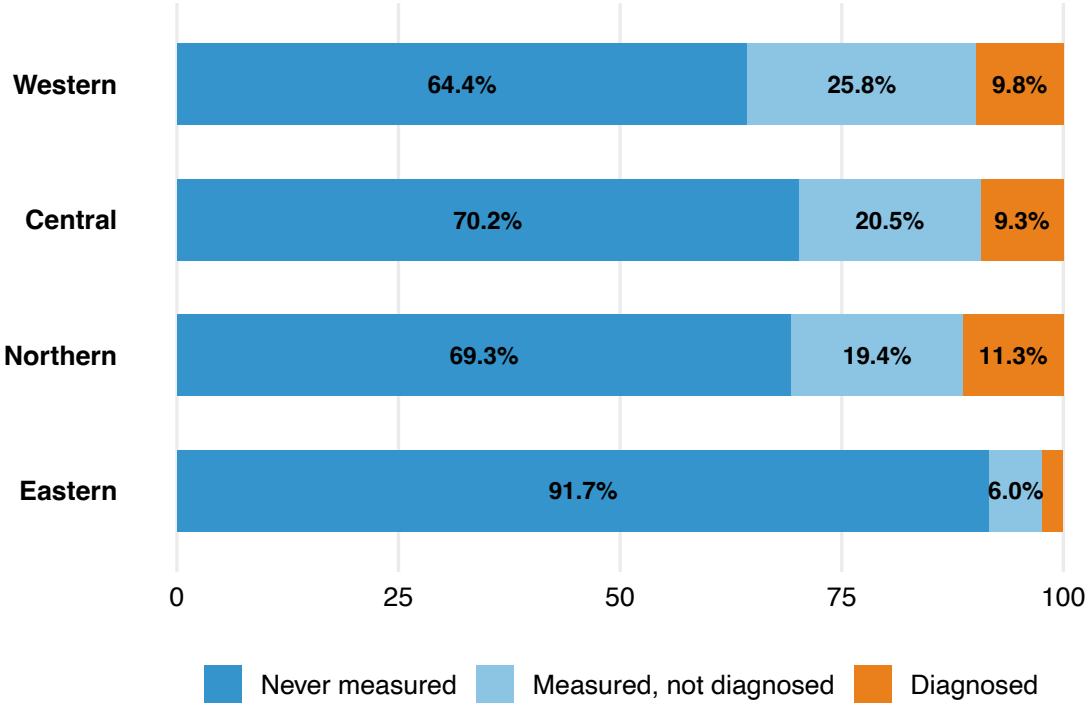


Figure 17.3: Percentage of the population who had had their cholesterol measured, by division



17.3. PHYSICAL MEASUREMENT OF CHOLESTEROL

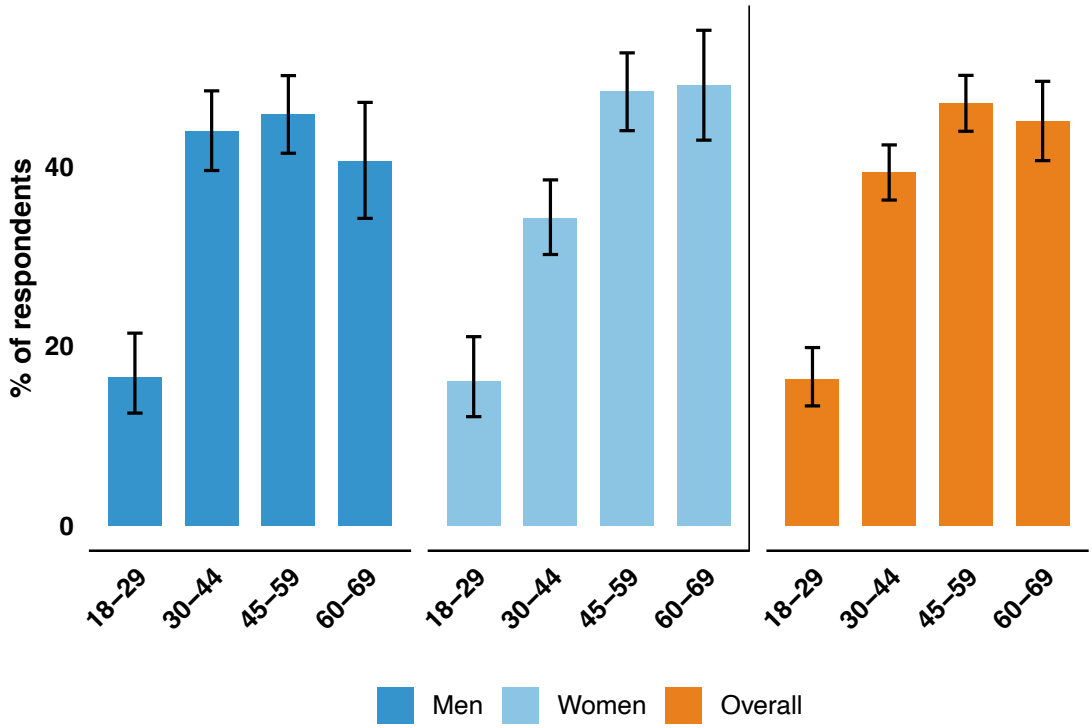
The mean observed total cholesterol for the population was 4.7 mmol/L (CI: 4.7–4.8 mmol/L). This average was consistent for both men and women; the younger population had a lower average total cholesterol than the older population (4.3 mmol/L, CI: 4.2–4.4 mmol/L for people 18 to 29 years, compared with 5.0 mmol/L, CI: 4.9–5.1 mmol/L for people 60 to 69 years; Table 17.1)

Table 17.1: Mean total cholesterol (mmol/L) by age and sex

Age group (years)	Men	Women	Overall
18–29	4.3 (4.1–4.4)	4.3 (4.2–4.4)	4.3 (4.2–4.4)
30–44	5.0 (4.9–5.1)	4.7 (4.6–4.8)	4.9 (4.8–4.9)
45–59	5.1 (5.0–5.2)	5.1 (5.0–5.1)	5.1 (5.0–5.1)
60–69	4.9 (4.7–5.0)	5.1 (4.9–5.2)	5.0 (4.9–5.1)
Overall	4.8 (4.7–4.8)	4.7 (4.7–4.8)	4.7 (4.7–4.8)

Elevated cholesterol was defined as a total cholesterol at or above 5.0 mmol/L. Using this definition, 33.7% (CI: 31.8–35.7%) of the population between the ages of 18 and 69 had high cholesterol. This proportion was closely correlated with age. High cholesterol was observed in 16.3% (CI: 13.3–19.8%) of people aged 18 to 29 years, 39.3% (CI: 36.2–42.4%) of people aged 30 to 44 years, 47.0% (CI: 43.9–50.1%) of people aged 45 to 59 years and 45.0% (CI: 40.6–49.4%) of people aged 60 to 69 years. Overall, the proportion of men and women with high cholesterol was similar; however, a greater proportion of men aged 30 to 44 years had an elevated total cholesterol reading (43.9%, CI: 39.5–48.4%) than women of the same age (34.2%, CI: 30.2–38.5%; Figure 17.4).

Figure 17.4: Proportion of the population with raised total cholesterol, by age and sex



17.4. IMPLICATIONS

In contrast to blood pressure and glucose testing, approximately 70% of the population had never had its cholesterol tested. Cholesterol screening is recommended for calculating cardiovascular disease risk, as stated in Fiji's evidence-based guidelines used in secondary outpatient departments across all health centres.[43] The lack of cholesterol testing is likely due to shortages of diagnostic equipment and testing facilities, which limits access.[33] This gap could be reduced by introducing finger-prick cholesterol tests in primary care settings. Expanding community-based testing by zone nurses and community health workers may further improve coverage but would require updates to workforce governance.

18. CARDIOVASCULAR DISEASES, CARDIOVASCULAR DISEASE RISK PREDICTION AND LIFESTYLE ADVICE

18.1. BACKGROUND

CVDs, including heart attack, angina (chest pain related to heart disease) and stroke, are major causes of death and disability globally and in Fiji.[48] Monitoring the prevalence of self-reported history of these events and assessing the current predicted risk of CVD in the population provides crucial insight into the burden of disease and helps guide preventive strategies.[49]

18.1.1. STEPS SURVEY MEASURES

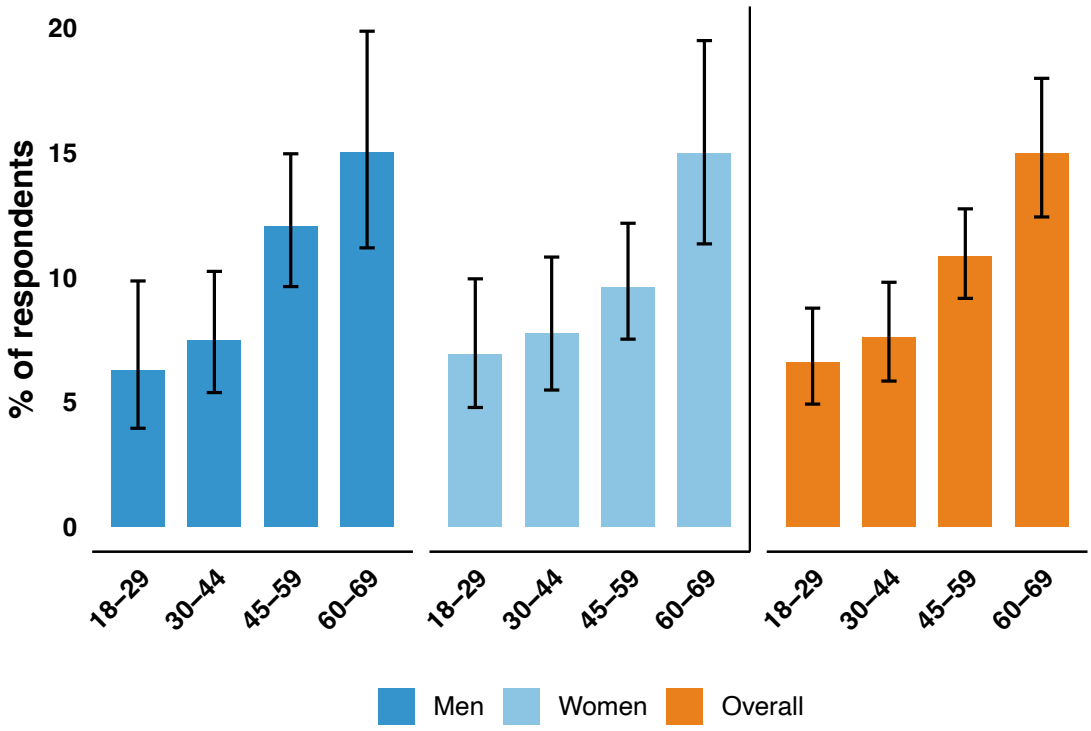
The 2025 STEPS Survey in Fiji included the following relevant measures:

- self-reported history of CVD events:
    - ever had a heart attack (myocardial infarction)
    - ever experienced chest pain related to heart disease (angina)
    - ever had a stroke
- clinical and biochemical measurements used for CVD risk prediction:
    - age, sex, smoking status
- SBP
- BMI
- FBG
    - total cholesterol.

Cardiovascular health was assessed using questions associated with a prior history of a stroke, heart attack or angina. Behaviour, such as the use of preventive medications associated with cardiovascular health, including taking statins or aspirin, was also used to assess heart health. The 10-year WHO regionally adjusted predicted risk of a fatal or nonfatal cardiovascular event was calculated according to WHO/International Society of Hypertension risk charts among the population aged 40 to 69 years. This calculation considered gender, age, smoking status, SBP measurements, history of diabetes, total cholesterol and BMI. The algorithm was adjusted for the Pacific region.[50]

Overall, 8.7% (CI: 7.6–9.8%) of the population had experienced a heart attack, chest pain because of heart disease or stroke. People aged between 45 and 69 years were much more likely to have had some type of cardiovascular related event, including 10.8% (CI: 9.2–12.7%) of people aged 45 to 59 years and 15.0% (CI: 12.4–18.0%) of people aged 60 to 69 years (Figure 18.1 and Table 18.1).

Figure 18.1: Percentage of the population who have had a heart attack or chest pain from heart disease (angina) or a stroke



Aspirin and statins are often taken to support cardiovascular health. The use of aspirin and statins was closely related to age. Almost one in 10 people aged 45 to 59 years, and over one in five people aged 60 to 69 years, reported taking either an aspirin or a statin regularly (Table 18.1).

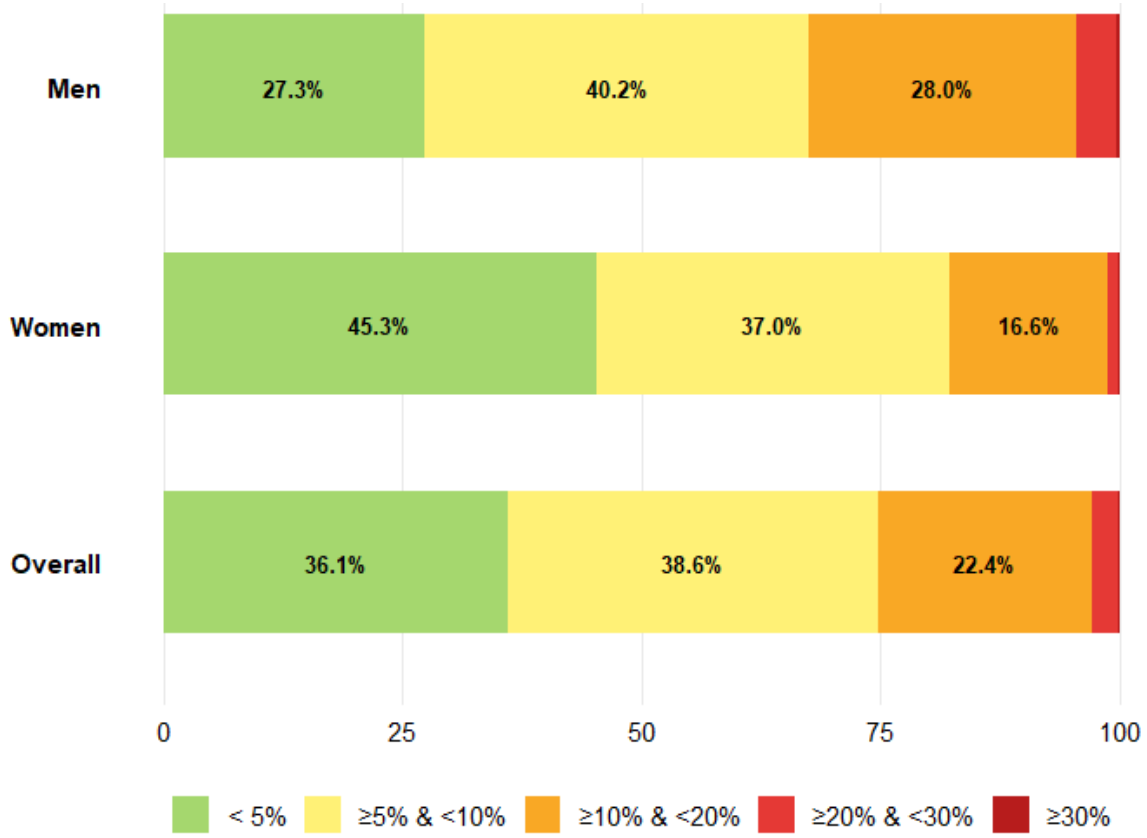
Table 18.1: History and prevention/treatment of cardiovascular disease for people aged 45 to 69 years

Age group (years)	Heart attack or stroke (%)	Takes aspirin (%)	Takes statins (%)
18–29	6.6 (4.9–8.8)	0.1 (0.0–0.4)	0.2 (0.1–1.0)
30–44	7.6 (5.8–9.8)	2.2 (1.5–3.1)	2.9 (2.1–4.1)
45–59	10.8 (9.2–12.7)	12.7 (10.8–14.9)	10.3 (8.5–12.3)
60–69	15.0 (12.4–18.0)	24.3 (21.0–28.0)	21.9 (18.7–25.5)
Overall	8.7 (7.6–9.8)	5.9 (5.3–6.6)	5.4 (4.7–6.2)

WHO CVD risk scores were calculated for people aged between 40 and 69. The risk scores were not designed for people with established CVD; therefore, the population with established CVD, that is, having previously experienced a heart attack, chest pains from angina or a stroke were excluded from the CVD risk calculations because they were already high risk. For the population aged between 40 and 69, 36.1% (34.0–38.3%) had a 10-year CVD risk of less than 5% (green). A further 38.6% (36.5–40.8%) of this population had a risk between 5 and 10% (yellow). In addition, 22.4% (20.6–24.4%) had a risk between 10 and 20% (orange), and 2.8% (2.3–3.5%) had a risk exceeding 20% (red).

On average, men had a higher CVD risk score than women. For men, 28.0% (CI: 25.0–31.3%) had a risk between 10 and 20% (orange) and 4.4% (CI: 3.4–5.7%) had a risk exceeding 20% (red). For women, 16.6% (CI: 14.5–18.9%) had a risk score between 10 and 20%, and 1.2% (CI: 0.7–1.9%) exceeded 20% (Figure 18.2). The 10-year CVD risk score was mostly consistent across rurality and division.

Figure 18.2: Ten-year cardiovascular disease risk score for people aged between 40 and 69 years, by sex



18.2. IMPLICATIONS

CVD risk prediction is guided by evidence-based recommendations aimed at preventing and managing CVD and other NCDs. It assists in identifying individuals at high risk and enables the delivery of targeted preventive interventions, including lifestyle counselling, health education and appropriate pharmacological treatment. Among adults aged 40 to 69 years, approximately 9% had an established CVD event; however, aspirin, statins and antihypertensive medications (not shown in our results)—the recommended treatments—were used suboptimally.

The STEPS survey findings support Fiji's adapted CVD risk calculator, which recommends lowering the age of routine screening to 30 years and over for individuals with no risk factors. In addition, screening for those under 30 years depend on the number of identified risk factors.[43] To enhance its effectiveness, the delivery of Fiji's cardiovascular risk assessment and management (CRAM) guidelines and program needs to be strengthened. This will require ensuring the availability of essential medicines and diagnostic equipment at health facilities, improving training for healthcare workers on the correct use of the risk calculator, promoting task-sharing within the health workforce and implementing robust digital information systems.[33]

19. CERVICAL AND BREAST CANCER SCREENING

The cervical cancer module was used to ask women about cervical and breast cancer screening. Overall, 43.7% (CI: 41.1–46.3%) of women had received a cervical cancer screening test. The percentage of screened women varied with age, from 17.8% (CI: 14.0–22.2%) of women aged 18 to 29 years, to 64.0% (CI: 59.8–67.9%) of women aged between 45 and 59 years (Table 19.1). Cervical cancer screening also varied with respect to division; 66.9% (CI: 53.0–78.3%) of women within the Eastern Division and 41.4% (CI: 37.8–45.0%) of women in the Western Division had received at least one screening (Table 19.2).

Two forms of breast cancer screening were addressed. Education associated with self-breast examinations had been received by 39.9% (CI: 37.3–42.5%) of the female population. In contrast,18.9% (CI: 17.1–20.9%) of women had received a breast cancer screening performed by a doctor (Table 19.1). Self-taught breast exams and breast cancer screening by a doctor were most prevalent in the Easten Division (self-exam: 53.9%, CI: 45.3–62.2%; doctor screening: 32.0%, CI: 20.9–45.6%; Table 19.2). Rates of screening were fairly consistent, except in the Eastern Division, where screening rates steadily increased with age.

Table 19.1: Proportion of women with cervical and breast cancer screening, by age

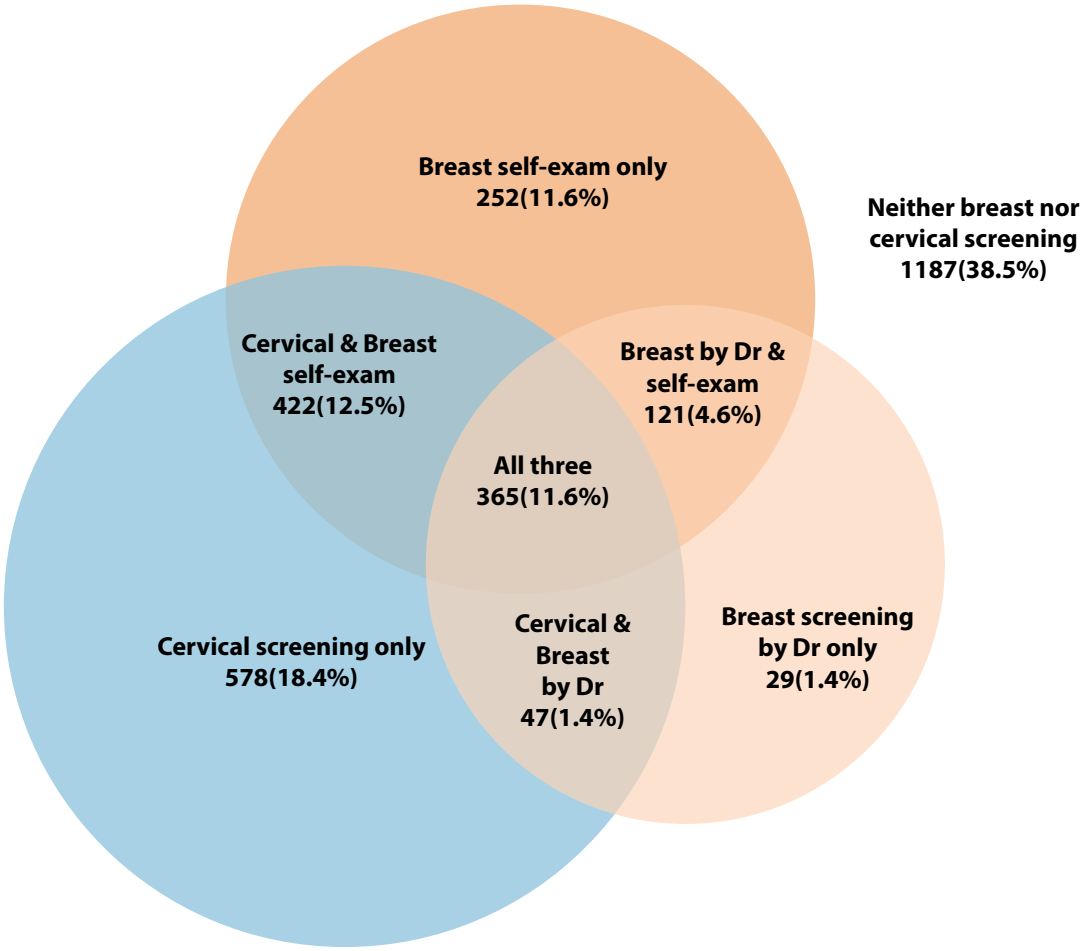
Age group (years)	Cervical cancer screening	Taught self-breast examination	Breast cancer screening by doctor
18–29	17.8 (14.0–22.2)	31.0 (26.1–36.3)	11.9 (9.1–15.4)
30–44	51.0 (46.7–55.2)	43.9 (40.1–47.7)	21.5 (18.0–25.5)
45–59	64.0 (59.8–67.9)	45.3 (40.9–49.8)	23.6 (20.2–27.4)
60–69	59.8 (53.9–65.3)	44.2 (39.1–49.5)	23.0 (18.5–28.2)
Overall	43.7 (41.1–46.3)	39.9 (37.3–42.5)	18.9 (17.1–20.9)

Table 19.2: Proportion of women with cervical and breast cancer screening, by division

Division	Cervical cancer screening	Taught self-breast examination	Breast cancer screening by doctor
Central	41.6 (37.2–46.0)	45.1 (40.3–49.9)	18.9 (15.8–22.5)
Eastern	66.9 (53.0–78.3)	53.9 (45.3–62.2)	32.0 (20.9–45.6)
Northern	50.0 (42.4–57.6)	39.6 (33.3–46.3)	20.2 (15.2–26.2)
Western	41.4 (37.8–45.0)	34.3 (30.8–37.9)	17.3 (15.0–19.8)
Overall	43.7 (41.1–46.3)	39.9 (37.3–42.5)	18.9 (17.1–20.9)

All three forms of cancer screening—cervical cancer screening, self-breast education and breast screening from a doctor—had been received by 11.6% of the interviewed women. A further 38.5% had received none of the screening approaches. Figure 19.1 illustrates the overlap of the three screening methods and the proportion of the female respondents who had received combinations.

Figure 19.1: Overlap of the three cancer screenings available and the proportion of the female respondents who had received combinations



19.1. IMPLICATIONS

In 2015, the MHMS endorsed a cervical cancer screening policy that included a comprehensive implementation plan.[51] This followed findings that only about 10% of Fijian women were being screened for cervical cancer, despite Fiji and the broader Pacific region having some of the highest cervical cancer rates globally, ranking among the top 20 countries.

In response to the lack of screening, the Pacific Island Cervical Cancer Screening Initiative was launched in 2018 to provide point-of-care cervical screening and treatment services, initially in Fiji and later expanding to other Pacific Island nations.[52]

The higher rates of cervical cancer screening observed in rural areas compared with urban areas may be partly attributed to a 2015 study conducted in three rural locations across the Eastern, Western and Nadi divisions to assess women's knowledge, attitudes and barriers to screening.[53]

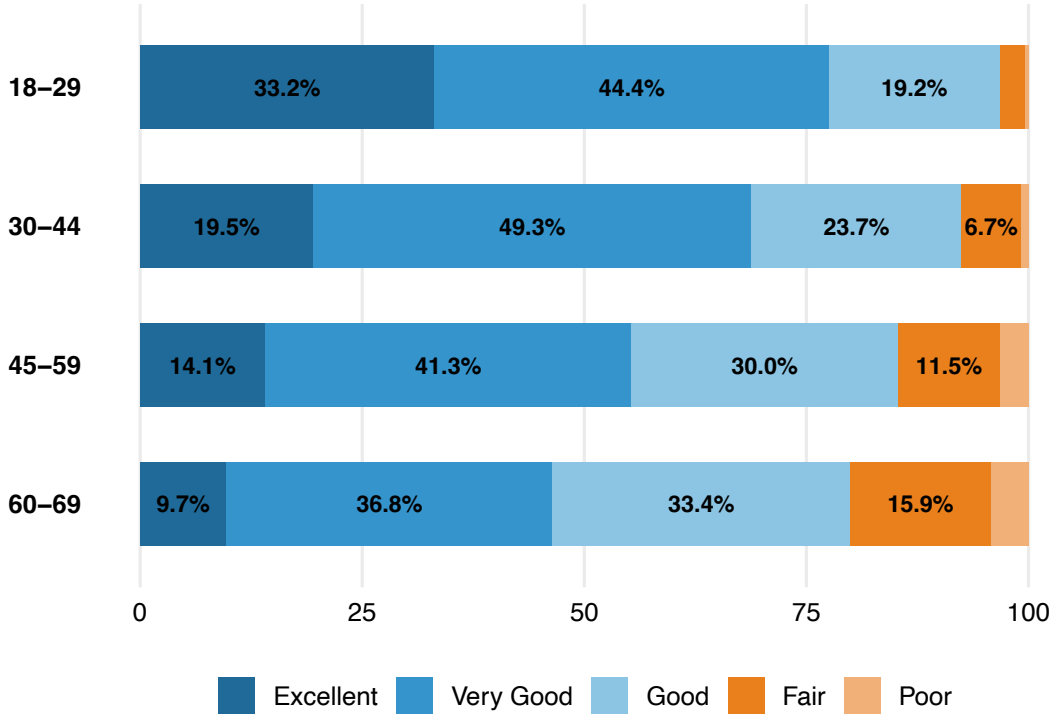
In contrast, the low uptake of breast cancer screening may be attributed to multiple factors, including the absence of a national screening policy, limited access to appropriate healthcare services, low levels of community awareness and cultural beliefs and stigma surrounding breast screening.[54]

20. ORAL HEALTH

Oral health was explored by self-assessment and reflection, as well as a physical oral examination. Questions addressed how a person felt about their oral health (5-point scale from 'Poor' to 'Excellent'); whether they had experienced any tooth, gum or mouth issues in the past 12 months, and oral hygiene. The physical examination assessed the number of teeth and overall oral health.

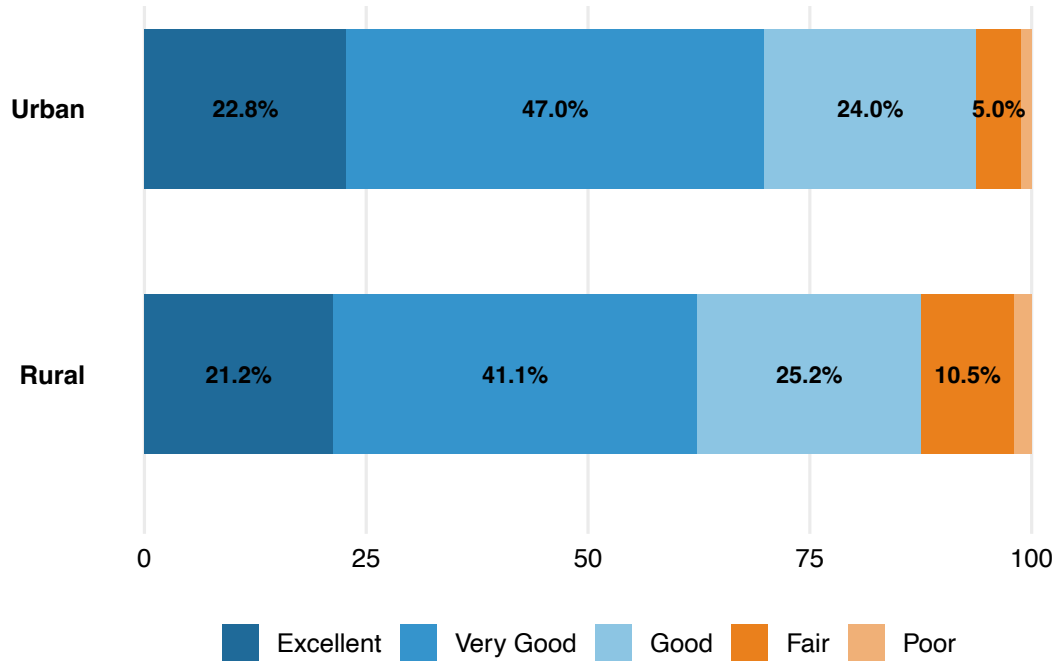
Overall, 22.1% (CI: 20.2–24.3%) self-reported 'Excellent' oral health and 69.0% (CI: 65.0–73.1%) reported 'Very good' to 'Good'. Further, 8.8% (CI: 7.5–10.3%) of people reported that their oral health was 'Fair' or 'Poor'. Oral health was highly correlated with age; 33.2% (CI: 29.0–37.6%) of people aged 18 to 29 years and 9.7% (CI: 7.6–12.4%) of people aged 60 to 69 years reported that they had 'Excellent' oral health. Conversely, 3.2% (CI: 2.0–5.5%) of people aged 18 to 29 years and 20.1% (CI: 16.1–25.0%) of people aged 60 to 69 years reported that they had 'Fair' to 'Poor' oral health (Figure 20.1).

Figure 20.1: Self-reported assessment of oral health, by age



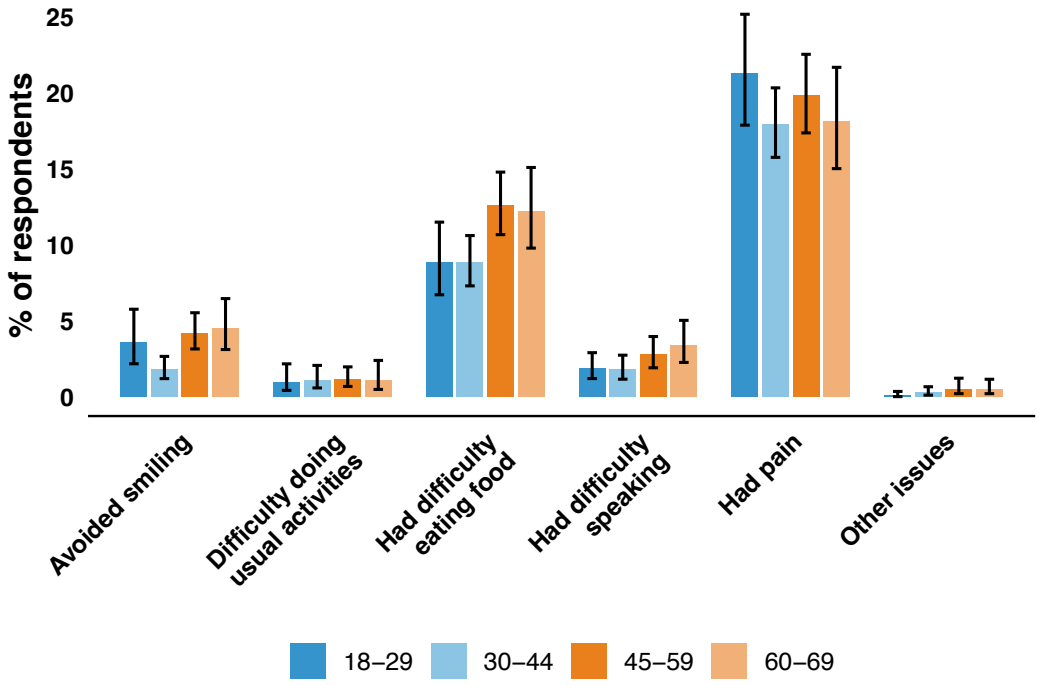
The location of residence slightly influenced oral health; people living in urban communities reported higher self-assessed oral health than those living in rural communities. Oral health was reported as 'Excellent' or 'Very good' for 69.8% (CI: 64.0–76.0%) of the urban population and 62.3% (CI: 56.5–68.6%) of the rural population (Figure 20.2).

Figure 20.2: Self-reported assessment of oral health, by rurality



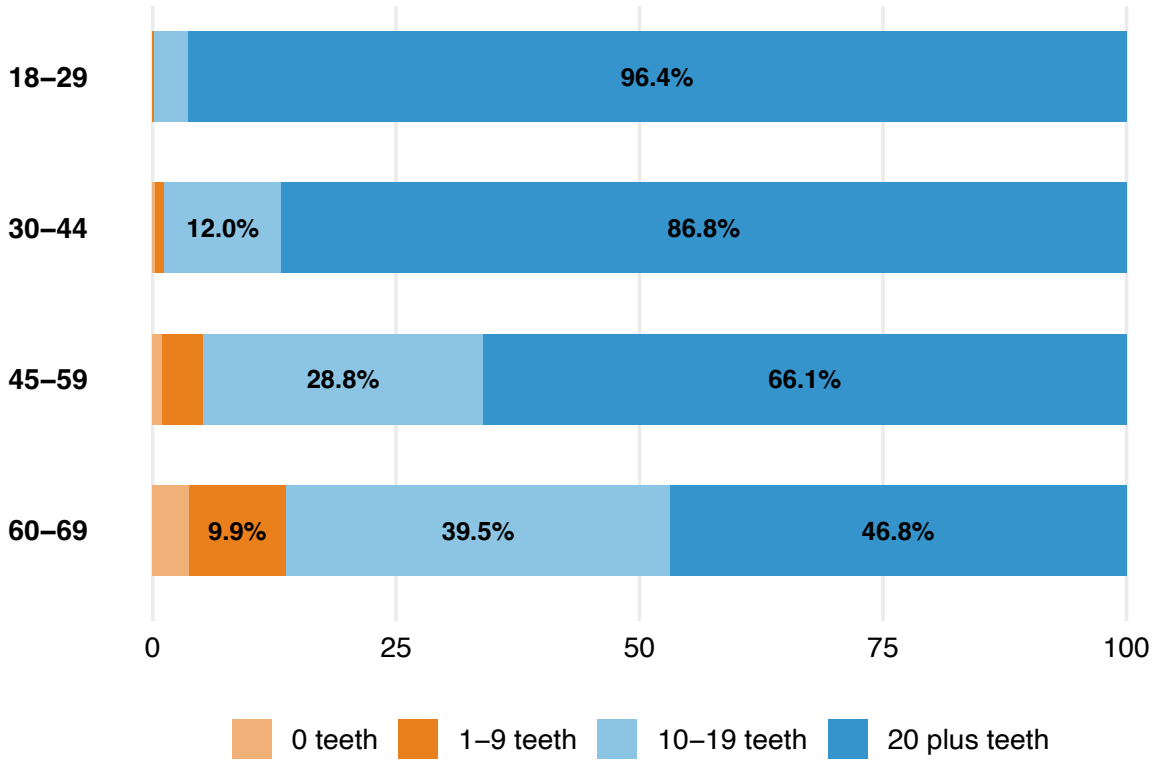
Pain was the greatest issue experienced with the teeth, mouth or gums in the past 12 months. Pain was reported by 19.6% (CI: 17.8–21.5%) of people, and difficulty eating was reported by 10.0% (CI: 8.8–11.3%). Issues were not age dependent; events were reported in similar proportions across all age categories (Figure 20.3).

Figure 20.3: Teeth, gum or mouth issues experienced in the past 12 months



Number of teeth was counted via a physical assessment. Overall, 81.6% (CI: 79.5–83.5%) of people had 20 or more teeth, 15.5% (CI: 13.8–17.3%) had between 10 and 19 teeth, 2.2% (CI: 1.8–2.8%) had between one and nine teeth, and 0.6% (CI: 0.5–0.9%) had no teeth. The number of teeth decreased with age, and older people had increasingly fewer teeth (Figure 20.4).

Figure 20.4: Number of teeth, by age



20.1. IMPLICATIONS

Oral health refers to the condition of the mouth, teeth and orofacial structures that support essential functions, such as eating, breathing and speaking. It also encompasses psychosocial dimensions, such as overall wellbeing, self-esteem and the ability to socialise and work without pain or discomfort.[55] Over the past decade, oral diseases, such as dental caries and periodontal disease, have increased significantly. There has been an estimated 50% rise in cases, which has disproportionately affected low- and middle-income countries. Emerging evidence indicates a possible bidirectional relationship between oral health and NCDs.[56]

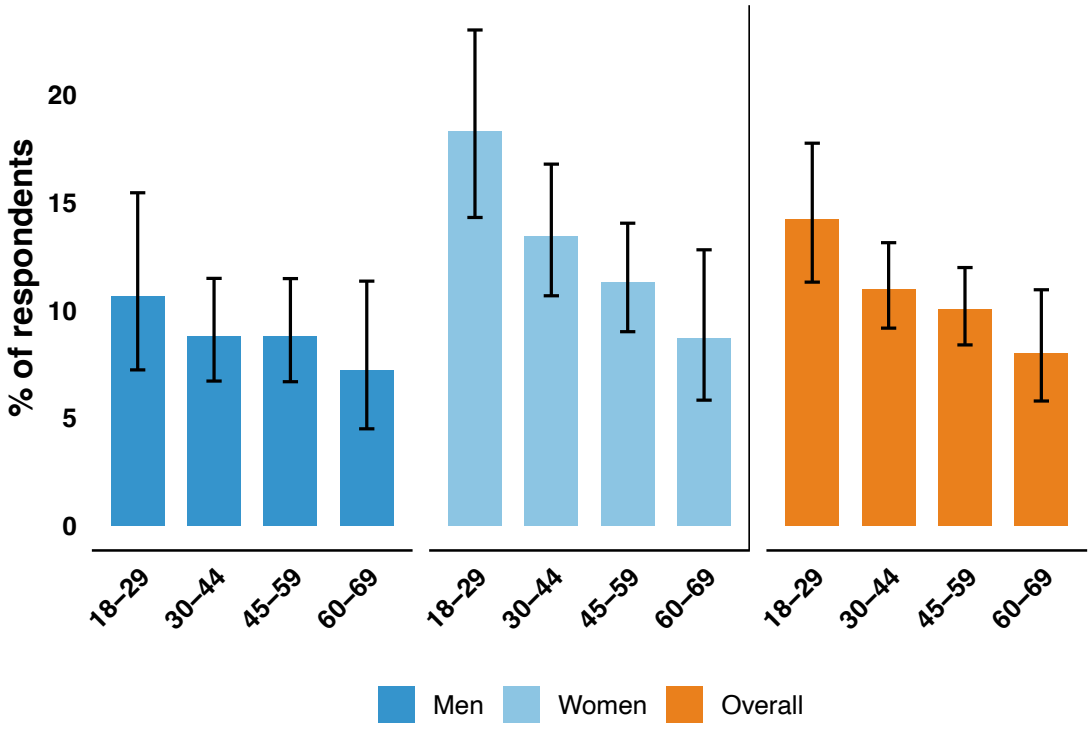
Our survey findings show that oral health problems are age dependent and that older adults experience more issues than younger adults. Individuals living in urban areas tend to have slightly better oral health outcomes than those in rural communities. Strengthening school health programs using a life course approach and linking educational initiatives with parents and the wider community is essential for improving oral health from an early age. This should be complemented by nationwide educational campaigns.

21. MENTAL HEALTH: DEPRESSION

The mental health module with questions relating to depression was used to obtain estimates of the prevalence of depressive symptoms in the community. Results pertaining to depression from this portion of the 2025 STEPS Survey should be interpreted as an **under-estimation** of the true symptomatic depression in the community because of the stigma and misconceptions related to the condition. Data collectors asking the survey questions were not instructed to ask these questions in a private location. Stigma associated with mental health conditions in Fiji raise concerns about downward biased estimates.[57]

Five or more symptoms of depression were reported by 11.6% (CI: 10.2–13.2%) of the population. Overall, younger people were more likely to report these symptoms than older people; 14.2% (CI: 11.3–17.7%) of those aged 18 to 29 years reported symptoms, compared with 8.0% (CI: 5.8–10.9%) of those aged 60 to 69 years (Figure 21.1). Women were more likely to report symptoms than men; 14.1% (CI: 12.3–16.1%) of women reported five or more symptoms, compared with 9.3% (CI: 7.6–11.4%) of men.

Figure 21.1: Presence of five or more depression symptoms, by sex



For the portion of the population that had symptomatic depression, 18.1% (CI: 14.4–22.6%) were receiving some form of formal support, including pharmacological support or counselling, to relieve symptoms. Treatment was associated with age, and treatment was more common for older people: 13.5% (CI: 7.9–22.1%) for people aged 18 to 29 years, 15.8% (CI: 10.6–22.8%) for people aged 30 to 44 years, 28.1% (CI: 19.9–38.0%) for people aged 45 to 59 years and 28.8% (CI: 17.1–44.1%) for people aged 60 to 69 years. Rates of treatment were consistent across the sexes.

Of the respondents, 3% (3.1%, CI: 2.2–4.3%) answered 'Yes' to 'During the same two-week period on most days, did you think often about death or suicide, or did you try to end your life?'

21.1. IMPLICATIONS

Mental health problems were affected significantly by the COVID-19 pandemic in Fiji.[58] Suicide rates in Fiji increased by 50% in 2022. There remains a lack of comprehensive data on the country's mental health burden, as well as notable treatment gaps.[59] These gaps contribute to misconceptions and stigma, which, in turn, discourage individuals from seeking appropriate support or lead them to pursue alternative ways of managing their mental health symptoms. This is despite treatment services for mental health conditions and Fijians being fully covered by insurance according to the WHO Mental Health Atlas 2020.[60]

Fiji needs to strengthen its collection of prevalence data on key mental health indicators, improve the implementation of its national mental health policy and increase investment in the healthcare workforce specialising in mental health. In addition, mental health and life skills programs should be integrated into all schools as part of Fiji's Health Promoting Schools framework.

22. DISABILITY

Participants were asked about physical or mental health conditions or illnesses that had lasted or were expected to last 12 or more months. For the purposes of this survey, these types of conditions were considered a form of disability. Overall, 9.6% (CI: 8.5–10.9%) of the population reported having at least one of these types of disabilities. Older people were more likely to report this type of disability than younger people, specifically, 5.9% (CI: 4.3–8.0%) of people aged 18 to 29 years, 7.3% (CI: 5.8–9.1%) of people aged 30 to 44 years, 14.2% (CI: 12.0–16.8%) of people aged 45 to 59 years and 20.6% (CI: 17.0–24.8%) of people aged 60 to 69 years. Rates were consistent across sex and rurality.

22.1. IMPLICATIONS

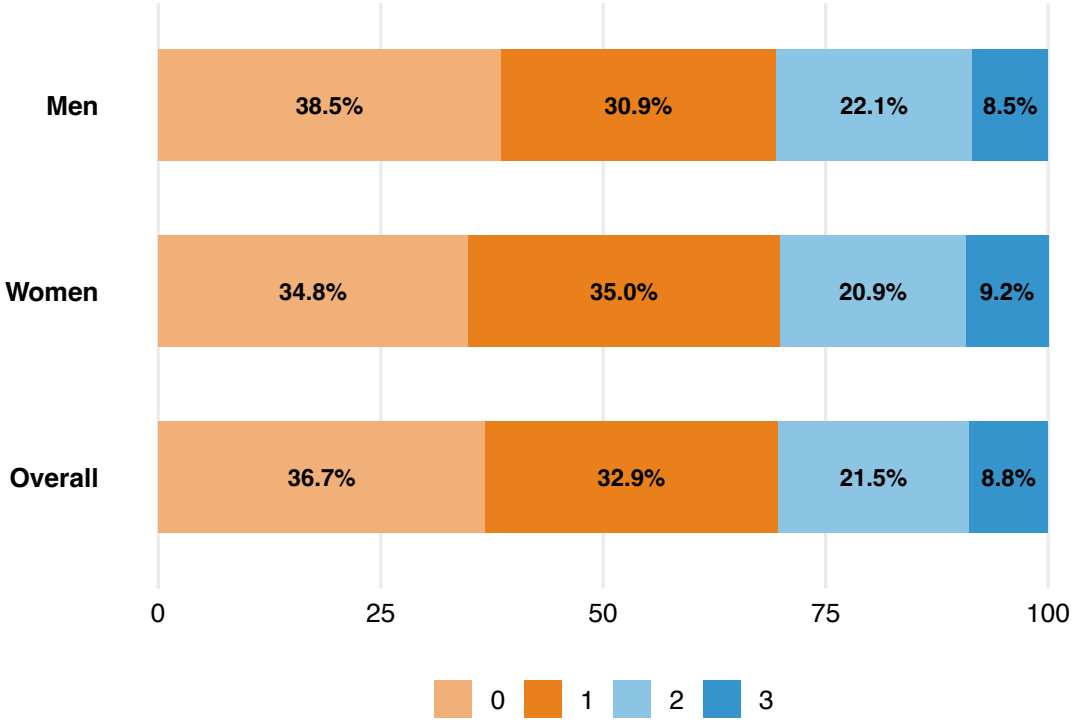
The Pacific Community, in partnership with the Fiji National Council for Persons with Disabilities and with endorsement from the Government of Fiji, launched the Fijian National Policy on the Rights of Persons with Disabilities 2025–2035. This initiative aims to remove barriers and strengthen support for persons with disabilities across Fiji, contributing to a more inclusive and equitable nation.[61]

23. MULTIPLE RISK FACTORS AND CONDITIONS

23.1. COMORBIDITY OF DIABETES, HIGH CHOLESTEROL AND HYPERTENSION

Diabetes, high cholesterol and HTN are known as comorbidities within the Fijian population. Populations experiencing these three conditions, either independently or simultaneously, have complex outcomes and additional health service needs.[62, 63] Overall, 63.3% (CI: 61.1–65.4%) of the population between the ages of 18 and 69 had at least one of these conditions (either known before the STEPS Survey or from the results of the physical and biochemical measurements), and 8.8% (CI: 7.9–9.8%) had all three. Rates of combined comorbidities were similar for men and women (Figure 23.1).

Figure 23.1: Proportion of the population with zero, one, two or three of the comorbidities diabetes, high cholesterol or hypertension

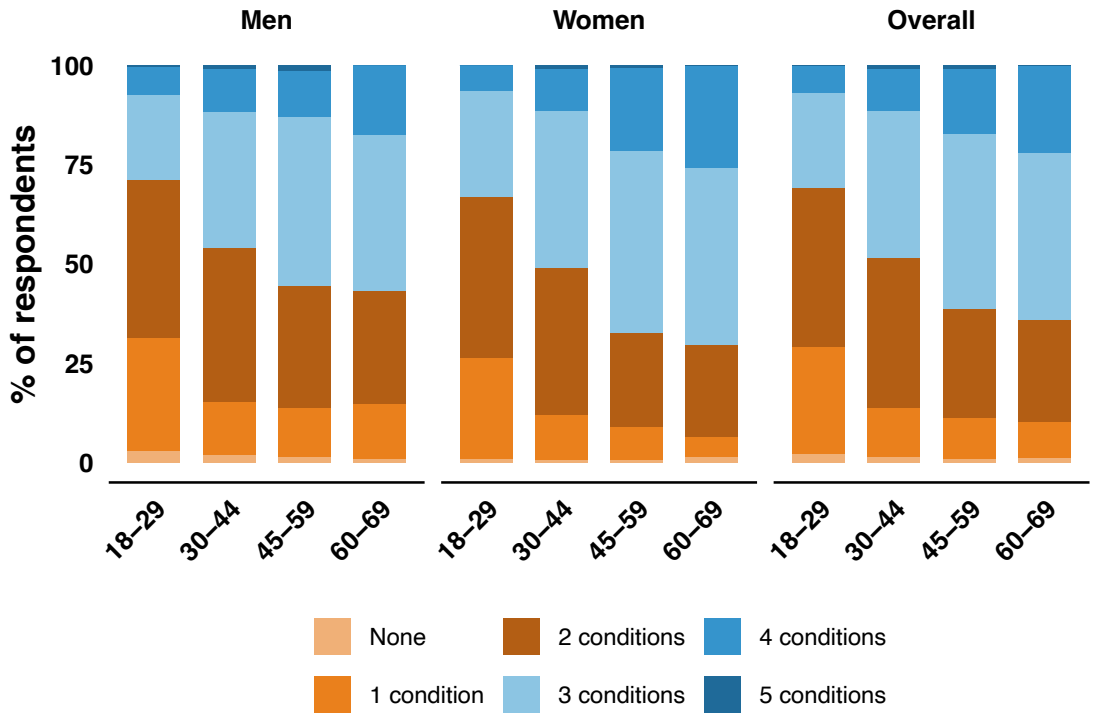


23.2. COMBINED RISK FACTORS AND CONDITIONS

Five key NCD-related factors were identified as part of the survey. These include (i) daily tobacco use, (ii) consuming fewer than five servings of fruit or vegetables per day, (iii) insufficient physical activity according to the WHO-recommended guidelines, (iv) having a BMI greater than or equal to 25 kg/m^2 and (v) elevated blood pressure.

For the Fiji population aged between 18 and 69, 1.5% (CI: 1.1–2.2%) had none of these risk factors. Conversely, 46.8% (CI: 44.6–48.9%) were identified as having three or more and 0.6% (CI: 0.4–0.9%) had all five. A greater proportion of women had three or more risk factors (51.0%, CI: 48.3–53.8%) than men (42.8%, CI: 40.1–45.6%). The number of risk factors increased with age; 39.1% (CI: 36.3–41.9%) of people aged between 18 and 44 had three or more risk factors and 62.0% (CI: 59.3–64.6%) of people aged 45 to 69 years (Figure 23.2).

Figure 23.2: Number of key noncommunicable disease risk factors, by age and sex



24. DISCUSSION

The 3rd STEPS Survey for Fiji provides comprehensive, nationally representative and internationally comparable data on NCD risk factors and conditions. It had a 75% response rate. In addition to the core survey questions, additional country-specific behavioural risk factors and conditions relating to diet, kava consumption and e-cigarettes, as well as optional modules on cancer screening, mental health, oral health and disability, were included.

The data show that an urgent response is needed to reduce modifiable risk factors and conditions that include obesity and raised levels of blood pressure, glucose and cholesterol. Approximately 63% of the population have diabetes, HTN or high cholesterol, and there are similar rates for men and women. Almost all the adults surveyed (98.5% of the population aged between 18 and 69 years) had at least one risk factor or condition, and the number of risk factors or condition increased with age. Approximately 47% had three or more risk factors and/or conditions, and women had more risk factors and/or conditions than men. These include (i) daily tobacco use, (ii) consuming fewer than five servings of fruit or vegetables per day, (iii) insufficient physical activity according to the WHO-recommended guidelines, (iv) having a BMI greater than or equal to 25 kg/m^2 and (v) elevated blood pressure.

We provide a roadmap to illustrate how Fiji can realistically reduce NCD risk factors and conditions in the next five years. The 2025 results will allow for monitoring of progress towards attaining the 2030 Sustainable Development Goals and the WHO Global Action Plan 2013-2030 (Figure 24.1), as well as progress against the NCD roadmap, and the Pacific Monitoring Alliance for NCD Action (MANA).

Figure 24.1: WHO Global Action Plan 2013-2030

The MANA Dashboard was endorsed in 2017 to monitor the implementation of NCD policies, legislation and programs. Baseline data were gathered across 21 Pacific Island countries and territories regarding the stages of development and implementation of NCD policies and legislation. By using the MANA Dashboard indicators and the Fiji Health Sector Review 2024: Investing in People Report,[64] the recommendations will be closely aligned with the progress that has been made and practical recommendations on how to address some of the challenges. In addition, the following policies and strategic plans are taken into consideration within the recommendations:

- Noncommunicable Disease Strategic Plan, 2015–2019[65]
- National Wellness Strategic Plan, 2023–2030[66]
- Ministry of Health and Medical Services National Strategic Plan, 2020–2025[67]
- Ministry of Health and Medical Services, Annual Operational Plan (2024–2025).[68]

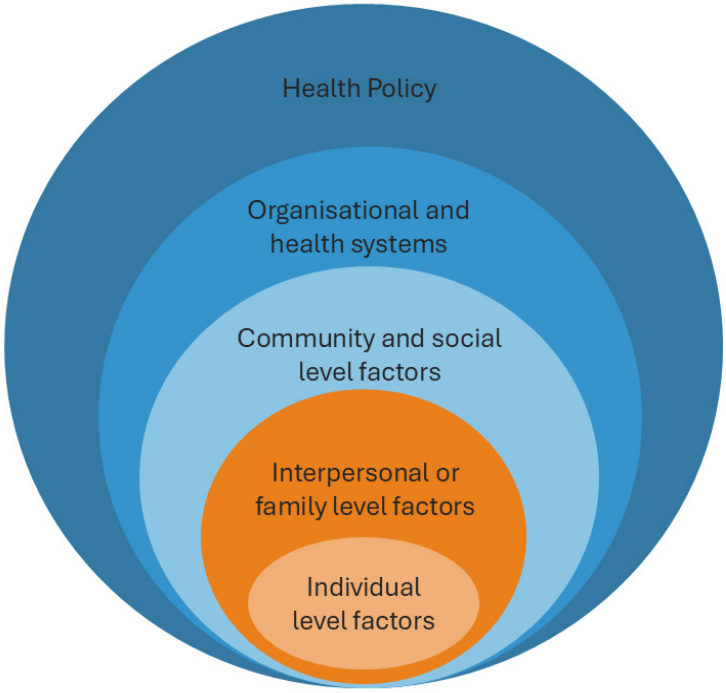
Upstream determinants, including social, economic and policy environments, play a critical role in shaping NCD risk factors and conditions by influencing individual and population-level behaviours.[69] Policies related to food systems, urban planning, taxation and marketing regulations affect access to healthy foods, opportunities for physical activity and exposure to harmful products, such as tobacco and alcohol. For example, subsidies for processed foods, inadequate urban infrastructure for active transport and permissive advertising of unhealthy products create environments that normalise unhealthy behaviours. Conversely, comprehensive policy interventions—such as fiscal measures, restrictions on marketing and urban design promoting active lifestyles—can facilitate healthier choices and reduce the prevalence of modifiable risk factors. Addressing these upstream drivers and implementing a whole-of-government approach is therefore essential for sustainable NCD prevention and control.

Transformations in the political and social environments, alongside reforms in the health system, can drive meaningful changes at the community and individual levels. Reducing tobacco use by 30% and harmful use of alcohol by 20%; improving vigorous physical activity by 15% and improving diet and nutrition (lower salt and free sugar intake and improve fruits and vegetable consumption) requires coordinated legislation, policies and practice.[70]

These policies, ideally, should be complemented by a responsive, accessible, equitable and affordable health system that uses a life course approach towards the prevention and control of NCD, along with other conditions impacting the population. The health system should engage well with the community through a strong community health system.

A socio-ecological systems approach ensures that interventions reinforce one another; that is, changes at one level support and amplify changes in others. Consequently, a healthy sociopolitical environment would positively influence individual and community behaviour. Healthy behaviour plays a central role in shaping health outcomes for families and individuals and pivotal target for public health interventions and health promotions.[71] Given the complexity inherent in behaviour change, our recommendations are grounded in the socio-ecological model that helps understand how individual health actions are shaped by multiple interacting levels of influence.[72] In this framework, individuals (intrapersonal) factors, such as knowledge, attitudes and beliefs, interact dynamically with interpersonal relationships, institutional conditions, community norms and public policy.[73, 74] A single level cannot fully account for health risks, behaviours or outcomes. Sustainable change requires interventions that are cross-cutting and operate across all five of the socio-ecological levels (Figure 24.2).[75]

Figure 24.2: A socio-ecological approach: Multiple levels of influence in healthcare behaviour[75]



To monitor progress towards these goals, we recommend conducting an interim STEPS Survey in five years using a smaller, representative sample. This survey will provide trends in behaviours such as smoking, drinking alcohol and kava, physical activity and diet, and also health service delivery factors to assess NCD health outcomes. This will enable Fiji to evaluate the effectiveness of multilevel strategies and adjust interventions as needed.

RECOMMENDATIONS: ROADMAP FOR REDUCING NONCOMMUNICABLE DISEASE RISK FACTORS AND CONDITIONS

As reported in the National Wellness Strategic Plan, Fiji has successfully developed implementation strategies at the national and subnational levels; however, the implementation processes have been challenging.[66] The following implementation roadmap is recommended for overcoming persistent barriers to saving lives from NCDs. This will place Fiji on track to achieving both NCD global action targets and sustainable development goals Targets 3.4 and 3.8 for addressing NCDs. It will also help in monitoring progress on implementing the indicators as part of the MANA Dashboard. At the Forum Economic Officials Meeting August 2022, the following was suggested to address noncommunicable disease prevention and control:[76]

> Invest additional financial resources to ensure effective prevention and control of NCD at the national level, such as increasing access to critical NCD service through implementation of decentralised actions on NCD at primary health care level;
>
> Engage government and non-government stakeholders to take decisive and committed action to address the root causes of NCD in a coordinated whole-of-government, whole-of-society, and health-in-all policies approach;
>
> Further raise taxes on tobacco, alcohol, and unhealthy food and sugary drinks, in line with global recommendations, and reduce taxes on healthy alternatives such as fruits and vegetables; and
>
> Enact legislation, and ensure implementation and monitoring, of NCD preventive policies, legislations and regulations, particularly in controlling marketing of unhealthy foods and non-alcoholic beverages to children, restricting marketing of breastmilk substitutes, eliminating trans-fat in the food supply, and prohibiting tobacco and alcohol marketing, and industry interference.

We outline evidence-based recommendations for why, what and how to implement actions across Fiji.

24.1. PRIORITY 1: POLICIES AND STRATEGIES TO ACTION

The 2025 STEPS Survey data provide Fiji with an understanding of NCD epidemiology and its associated risk factors and conditions. This requires government coming together to invest and prioritise effective implementation of cost-effective strategies and feasible interventions at the national level. The root causes and consequences of NCDs lie outside the traditional health sector and in the areas of social welfare, food and agriculture, education, transport, housing, employment and taxation (underlying drivers from Figure 1.1). This requires collaborative governance structures across sectors and policy processes.[77]

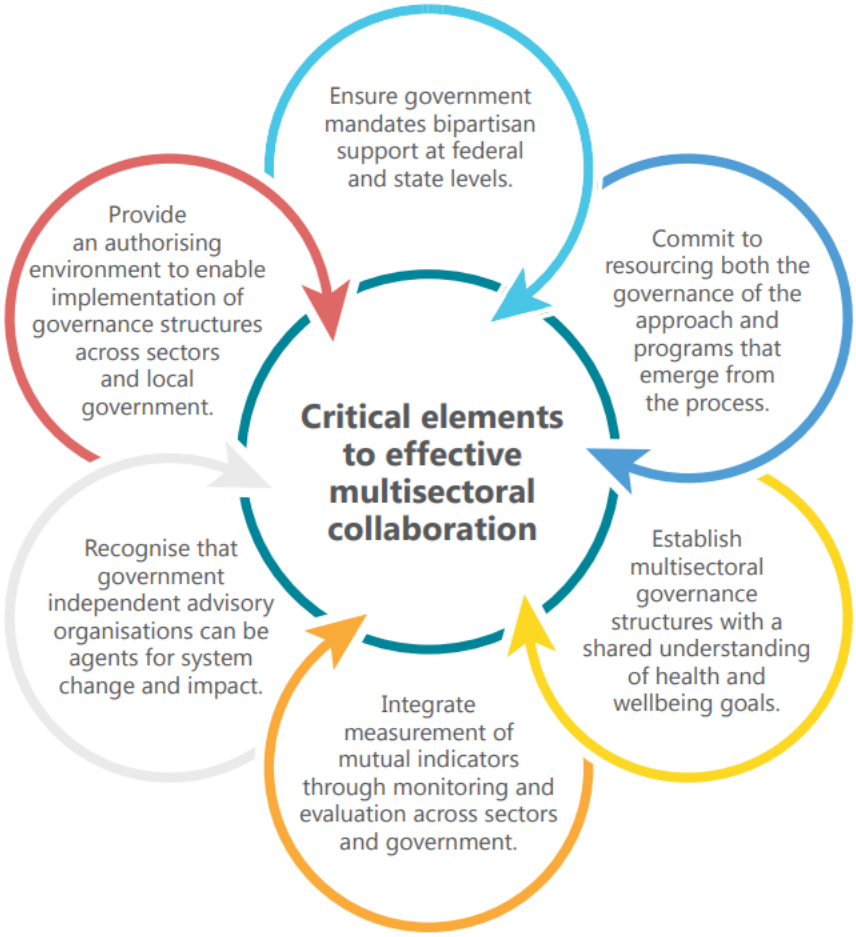
24.1.1 RECOMMENDATION 1: INSTITUTIONALISATION OF MULTISECTORAL COLLABORATION AND ACTION

Institutionalising multisectoral action has been challenging because of the siloed way in which most sectors operate. This has been compounded by 'a lack of high-level political commitment, divergent and occasionally conflicting mandates of stakeholder ministries, insufficient involvement of civil society, and industry interference'.[78] These challenges are further exacerbated by 'a health system that is not appropriately structured nor equipped to prevent and manage its alarming disease burden', alongside significant financial and resource constraints.[64]

The term 'multisectoral' denotes partnerships across ministries, government agencies, nongovernmental actors and stakeholders with shared goals. Such collaboration can occur horizontally (between health and non-health actors at the same level of government) and vertically (between levels of government and stakeholders). These partnerships are essential for addressing the economic, social and environmental determinants of health, and for strengthening health promotion and primary prevention strategies, particularly as Fiji increases health expenditure to resource primary health care.[64]

Effective multisectoral action requires shared and co-beneficial goals, strong coordination mechanisms, appropriate monitoring and evaluation, policy development, financial management system and effective implementation.[79] Figure 25.1 provides practical guidance from a case study evaluating the Premier's Health and Wellbeing Advisory Council in Tasmania, in Australia, which advises the premier and government on identifying, prioritising and coordinating whole-of-government programs to promote health and wellbeing. Its approach aligns closely with the WHO Health in All Policies framework (Figure 25.1).[80]

Figure 25.1: Elements to effective multisectoral collaboration



24.1.2. RECOMMENDATION 2: STRENGTHEN INVESTMENT AND EVIDENCE-BASED FINANCIAL MODELLING FOR NONCOMMUNICABLE DISEASES

In Fiji, NCDs disproportionately affect people during their most economically productive years, reducing human capital and lowering national productivity.[81] At the same time, the associated costs of serious illness, disability and premature death place substantial financial burdens on families, communities and the broader economy.

Findings from this survey indicate that core modifiable behavioural risk factors—such as tobacco use, harmful alcohol consumption, unhealthy diets, physical inactivity, obesity and inadequate management of cardiovascular disease and diabetes—require urgent and coordinated action. Addressing these challenges requires strong multisectoral mechanisms and effective public–private partnerships to reduce these risk factors and improve prevention and management of the conditions.

Sustained government commitment and long-term investment are essential to scaling up prevention policies and programs. Priority should be given to implementing the WHO's NCD 'Best Buys', which include:[82]

- increasing taxes on unhealthy products
- restricting the marketing and sale of harmful products
- delivering evidence-based information and education campaigns
- expanding early detection, screening and treatment services.

While Fiji has endorsed and invested in the WHO's NCD 'Best Buys', further strengthening is needed. This includes building a more climate-resilient primary health care system that prioritises NCD prevention and management across the life course.

According to the WHO report *Saving Lives, Spending Less: The Case for Investing in Noncommunicable Diseases*,[83] investing a little less than US$1 per person per year in NCD Best Buys through 2030 can generate significant long-term health and economic returns. This evidence underscores the importance of increased national investment and the development of sustainable financing models, alongside stronger accountability mechanisms across government sectors.

This necessitates an increase in Fiji's national health budget, and a focus on strengthening primary health care services and advancing NCD prevention policies. Achieving this requires the endorsement of new funding models and mechanisms to ensure accountability and pooled resources across government, development partners and private sectors.[64]

24.1.3. RECOMMENDATION 3: EFFECTIVE TOBACCO CONTROL - KEY REQUIREMENTS

Fiji has implemented several tobacco-control programs and laws, but the impact of implementing these interventions is unknown. There is a critical need to understand why, how, for whom and in what context these programs and policies are effective.[84] Collecting and analysing implementation data will guide decision-makers and donor agencies in improving tobacco-control efforts. The 2025 STEPS Survey provides a starting point to evaluate tobacco-control strategies in the Eastern and Western divisions, assessing communities, retailers and government practices, including how cigarettes are obtained, reasons for abstention, advice provided by healthcare workers and the effectiveness of existing legislation and programs.

Current key tobacco-control strategies in Fiji include:

- **WHO Framework Convention on Tobacco Control:** signed into legislation in 2003; commits to safeguard Fijians from the harmful effects of tobacco products
- **Tobacco Control Act (2010):** provides legal framework for tobacco regulation
- **Tobacco Regulations (2012):** introduced measures include:
    - graphic health warnings on all tobacco packaging
    - annual registration of wholesalers and distributors
    - annual licensing for manufacturers and importers
    - smoking restrictions in public places, including workplaces, restaurants, bars and nightclubs
- **Tobacco taxation:** incremental increases since 2013; however, Fiji has not yet reached the recommended 70% retail price target, in accordance with the MANA Dashboard reporting.
- **Tobacco cessation services:** provided by the Fiji MHMS, the WHO and the Government of New Zealand at five subnational hubs in the Central, Western and Northern divisions. Services

include counselling and nicotine replacement therapy. Hubs are located at the National Diabetes Centre in Suva (Central Division), Labasa Diabetes Hub Centre (Northern Division) and other adolescent health centres.

To design and implement multisectoral national interventions, it is critical to assess what advice is being provided and how it varies by age, gender, ethnicity and division. This assessment of the implementation processes will allow the program to be adapted to the local context. The adaptation requires government endorsement and action driven by evidence.

In addition, tobacco-control campaigns need to be graphic, personalised and culturally relevant and to incorporate stories from victims. Political commitment is essential to implement these drastic measures to improve tobacco control in Fiji.[85]

24.1.4 RECOMMENDATION 4: ENDORSE AND IMPLEMENT THE 'WORLD HEALTH ORGANIZATION GLOBAL ALCOHOL ACTION PLAN (2022–2030)'

The Government of Fiji should formally endorse and accelerate implementation of the WHO Global Alcohol Action Plan 2022–2030, prioritising measures to reduce heavy episodic drinking among youth and young adults. Implementation must be supported by clear accountability mechanisms across all relevant government sectors to ensure transparency and prevent any form of alcohol-industry influence in policy formulation or execution.

Strengthen regulation of alcohol marketing

The MANA Dashboard indicates that Fiji has no regulations on alcohol advertising. As an immediate priority, the Government of Fiji should introduce comprehensive restrictions on alcohol advertising, sponsorship and promotion across all platforms. This includes digital and social media, broadcast media, print media, outdoor advertising (including billboards) and any marketing strategies that directly or indirectly target young people.

Improve alcohol taxation and reduce affordability

Excise taxes should be increased and structured according to ethanol content to ensure that higher-strength beverages are taxed at proportionally higher rates. This measure is essential to reducing affordability and consumption, particularly among youth and young adults.

Expand community and school-based prevention and awareness

Public awareness initiatives should be strengthened to highlight the harms associated with alcohol use and the benefits of delaying initiation or abstaining. These initiatives can be delivered through existing platforms, such as the Health Promoting Schools program, faith-based organisations, workplaces, village leadership structures and coordinated national campaigns using traditional and digital media.

Enhance multisectoral coordination

Implementation of this recommendation requires a whole-of-government approach. Key sectors that should be engaged in a formal multisectoral coordination mechanism include:

- health
- education
- police, transport and law enforcement
- manufacturing
- wholesale and retail trade
- tourism and hospitality.

24.1.5. RECOMMENDATION 5: STRENGTHEN POLICIES TO PROMOTE HEALTHY EATING AND REDUCE IMPORTED, PROCESSED AND UNHEALTHY FOODS

Overweight and obesity are major public health challenge in Fiji, contributing significantly to diabetes and cardiovascular, kidney and other diseases.[95] The survey found that approximately seven in 10 Fijians were overweight or obese, and that women were disproportionately affected. The survey findings provide essential insights into dietary patterns by gender, ethnicity and rurality, enabling the development of targeted, evidence-based policies and interventions.

Over the past 20 years, dietary patterns across the Pacific Island countries have shifted from traditional staples, such as taro, yams and fresh fish, towards imported and processed foods, such as rice, bread and instant noodles. In addition, meat is increasingly substituting for fish, and sugary snacks and drinks are replacing local fruits.

To reverse these trends, governments must improve their monitoring of food supply chains, marketing practices and the nutrient content of commonly consumed foods in Fiji. These data are critical for designing effective policies and interventions.

Increasing fruit and vegetable consumption and decreasing unhealthy products

Global guidelines recommend a minimum intake of 400 grams (equivalent to five servings) of fruits and vegetables per day to reduce the risk of NCDs. Fruits and vegetables provide essential vitamins, minerals, phytochemicals and dietary fibre that enhance immunity, support growth and cognitive development in children and adolescents, and protect against NCDs, such as CVD, diabetes and certain cancers.[87, 88]

In Fiji, approximately 11% of the population meets the recommended intake. Approximately 70% of Fijians consume only one to two servings of fruits and vegetables, or none at all, on a typical day, despite existing national food and health guidelines.[89] This poses a significant risk for NCDs and highlights the need for stronger policy measures that address economic barriers to improve physical access to healthy foods, and increase knowledge through education and awareness campaigns across the life course.

Prior research has reinforced the need for coordinated action across individual, community, environmental and policy levels.[90] Evidence demonstrates that several strategies have the potential to be effective, including[91]:

- traditional locally grown fruits and vegetables: agricultural interventions such as Fiji's school gardening programs can be strengthened through links with families, communities and small- to mid-scale farmers. These are most effective when paired with gardening education and nutrition communication[92]
- food marketing: ban advertisements of fast-food options, junk foods and processed foods and replace them with marketing for healthier options
- labelling requirements: front of package warning labels
- trade and fiscal policies: increase taxes on imported and processed foods, and those high in sugar and salt, making it difficult for consumers to purchase items. This needs to be implemented in combination with financial support (subsidies) for healthier options to be more accessible and affordable
- food environment: restructuring this, combined with nutrition communication, such as social media or digital platforms, mass media approaches, including replacing unhealthy food advertising with healthy alternatives, and restrictions on promotion of unhealthy products.

All strategies must be tailored to the specific context and demographic characteristics (age, gender and ethnicity) of the target population.[93] In addition, multicomponent approaches have greater potential for a positive impact than stand-alone strategies. Creating environments in which healthy choices are affordable, accessible and culturally relevant is critical in reducing NCD risk factors and conditions.

Salt intake

Governments are encouraged to accelerate the implementation of comprehensive salt-reduction strategies, guided by the WHO's SHAKE technical package.[94] This requires strengthening existing policies, ensuring rigorous monitoring and enforcement, and integrating emerging innovations, such as potassium-enriched salt. Priority actions include enhancing surveillance of the population's sodium intake and fruit and vegetable consumption; mandating and enforcing sodium limits in processed foods and food service; improving labelling and procurement standards; and increasing consumer awareness of healthier salt alternatives.

Creating supportive food environments, particularly in public institutions, together with clear rules for stakeholder engagement and strong conflict-of-interest safeguards, is essential to protect policy integrity and prevent undue commercial influence.[96] By fully implementing and enforcing the SHAKE framework, while adopting evidence-based innovations, governments can more rapidly reduce population sodium intake and advance national NCD and HTN goals.

Sugar-sweetened beverage consumption

Globally the consumption of sugar-sweetened beverages, such as sodas, energy drinks, sweetened tea and fruit drinks, has risen dramatically since the 1990s and has become a major public health challenge.[97] Research shows that sugar-sweetened beverage intake contributes substantially to the burden of NCD, including diabetes, CVD, kidney and oral diseases.[98] Free sugars, including monosaccharides and disaccharides, added to foods and beverages by the manufacturers, cooks or consumers, and sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates, are of particular concern. Studies in adults and children have found that reducing free sugars is associated with reductions in body weight, while increasing intake correlates with comparable weight gain and increased dental caries.[99]

With a significantly high prevalence of obesity in Fiji, there is an urgent need to implement strong polices and strategies to reduce sugar-sweetened beverage and free sugar consumption, such as the following:

- implement strong guidelines for no sugar-sweetened beverages to be given to children, in combination with public health awareness campaigns in communities and health centres, and nutrition education on free sugars at schools
- restrictions on marketing of sugar-sweetened beverages
- reformulation of sugar-sweetened beverages and food to lower sugar content
- increased taxes on all sugar-sweetened beverages.

All recommendations need to be implemented in combination with education campaigns across communities, schools, health centres, faith-based organisations and workplace.

24.1.6. RECOMMENDATION 6: IMPLEMENT AND ENHANCE PHYSICAL ACTIVITY INTERVENTIONS

The Fiji MHMS recommends that adults engage in at least 30 minutes of moderate physical activity, and that children participate in 60 minutes of active play, on five or more days per week.[100]

Incorporating physical activity into a daily routine can be simple, accessible and low cost or free. Fiji MHMS guidelines clearly outlines the benefits of physical activity, and the risks associated with a sedentary lifestyle. It provides age-specific recommendations for increasing physical activity among children, adults and older adults (65+ years). In addition, the Pacific Guideline, adapted from the WHO Global Guidelines for Physical Activity and Sedentary Behaviours, offers further evidence-based recommendations adapted for the Pacific region and intended for use by healthcare workers and policymakers.[101]

These guidelines can be integrated into the school curriculum aligned to updated Fiji Health Promoting Schools and School Health Policy 2024-2029 to strengthen physical education programs across the nation. Multisectoral government commitment is essential to implementing these low-cost strategies and improving the health and wellbeing of all Fijians. Achieving these requires system-level changes that translate policy into practice, particularly within schools, primary healthcare centres and community organisations (i.e. faith based). Additional effective strategies include:[102, 103, 104]

- community-wide and mass media campaign that provide clear information on how to meet recommended activity levels and reduce sedentary lifestyle
- targeted physical activity messages tailored to various demographic groups
- gender-specific, free physical activity programs delivered through the community, health centres and nursing stations with strong links to schools
- integrated physical activity interventions within primary healthcare settings (health centres, nursing stations and outreach programs) delivered by physiotherapist.

24.1.7. RECOMMENDATION 7: STRENGTHEN AND EXPAND HEALTH PROMOTING SCHOOLS AND IMPLEMENT SCHOOL HEALTH POLICIES

A life course approach using population-based strategies in school settings for health promotion activities, life skills counselling for childhood/adolescent development and psychosocial disturbances integrated within existing systems can prevent NCDs, reduce global health inequalities and strengthen health systems.[105] Fijian adolescents experience an excess burden of chronic physical illnesses and mental disorders that worsen over time. Risk factors common across all these conditions include smoking, excessive alcohol drinking and physical inactivity.[106]

WHO Health Promoting Schools adopt a whole-school approach for healthy living and learning.[107] The goal of Health Promoting Schools is to move the focus away from individual behaviour to structural and environmental change that extends the delivery of health education to encompass the whole-school curriculum, considering the broader school environment and engagement with parents/guardians and the wider community.[107, 108] An effective WHO Health Promoting Schools model is characterised as having six key components implemented and integrated within the school system and individual schools:

1. school health policies, plans and governance structure
2. school physical environment
3. school social environment
4. healthy skills and education: curriculum (formal and informal)
5. links with parents and community
6. access to school health services.

Health Promoting Schools aim to improve health literacy, lifestyle habits and living conditions and to improve the health outcomes of the student population, school personnel and families within the school communities. Key Health Promoting Schools activities include (1) establishing school health departments or units within the curriculum, (2) establishing policies in schools, such as healthy food options in canteens, good hygiene, such as handwashing and toothbrushing, and participation in physical exercise, (3) professional development for teachers (as core change agents) on health topics and how to implement health promotion programs through guidelines, online or printed educational materials, (4) student participation in sports activities, school and community gardening and hygiene competitions (5) provision of primary care medical check-ups and counselling at school, (6) improvements in school environments, such as smoke-free zones, waste management and adequate play areas, and (7) parents and community participation through cultural and religious festivals.

In 2016, Health Promoting Schools, under the Fiji School Health Policy, was formally launched as a joint program by the Ministry of Health and Medical Services and the Ministry of Education. This policy was updated and endorsed by the ministers in 2024.[109] This endeavour is a 'whole-of-school' approach to improving the health and wellbeing of Fiji's children and youth by incorporating into the school curriculum resources to improve awareness and competency in promoting healthy behaviours. It includes parental and community involvement and has three key areas of focus: (1) diet and physical activity; (2) water, sanitation and hygiene (WASH); and (3) mental health and wellbeing.

Although the program initially reached 285 primary and secondary schools and demonstrated early successes, its long-term impact remains unknown. As of 2023, the sustainability of Health Promoting Schools in Fiji has been challenged by disruptions to key implementation roles, the end of program funding and weakened governance structures, compounded by the effects of COVID-19. Evidence on the program's overall effectiveness is limited, and several critical questions remain unanswered, including how Health Promoting Schools is currently being used across participating schools; whether implementation has aligned with the Health Promoting Schools framework; how teachers, students and families are using or applying the program components; to what extent has the program influenced behavioural, structural and environmental changes; and, ultimately, whether the program is achieving the intended health and wellbeing outcomes. A comprehensive, system-level evaluation is being planned in partnership with the Fiji Government and academic institutions; however, government-related barriers to approving donor funds have resulted in significant delays.[110]

Fiji has a strong foundation for strengthening the Health Promoting Schools system. The following governance structures should be re-established, alongside efforts to address system-level barriers:

- multisectoral Health Promoting Schools national steering committee
- divisional advisory groups
- school working groups
- national coordinator
- review of school health policies and curriculum, and the development of a staged implementation plan
    - including development of training modules that build on existing materials and integrate successful approaches from other models
- costing of resources required for implementing key curriculum components and programs related to diet and nutrition, physical activity, mental health and life skills across all schools in Fiji
- development and integration of monitoring and evaluation systems, including core indicators for implementation, adoption, sustainability and effectiveness
- re-establish Health Promoting Schools governance structures and leadership, along with system-level evaluation, is essential for the effective implementation and adoption of the updated Fiji Health Promoting Schools and School Health Policy, 2024-2029.

24.1.8. RECOMMENDATION 8: DISASTER PREPAREDNESS

Given that Fiji is exposed to many natural hazards, and the probability of damage and loss of life from these has been assessed as very high, steps should be taken towards continuity of NCD care during disasters. These can be embedded in the country's cluster response to disasters. Some recommendations include:

7. Integrate NCD care into disaster preparedness plans: Ensure continuity of essential medicines (e.g. insulin, blood pressure lowering medicines) through stockpiling and emergency supply chains. Develop NCD-specific protocols in national disaster response frameworks.
8. Strengthen community-based support: Train community health workers to provide basic NCD screening and medication refills during emergencies. While this has been incorporated into the recent community health worker training resources, we recommend monitoring the implementation of the revised program. Using mobile clinics and telehealth are potential options to reach displaced or isolated populations.
9. Maintain access to healthy food: During early warnings for disasters, disaster plans for communities should include nutritious, low salt, low sugar foods in emergency food packages. This can be done in partnership with local farmers and vendors to ensure fresh produce availability post-disaster.
10. Provide risk communication and education: Disseminate simple messages on managing NCDs during crises (e.g. medication adherence, stress management). Radio, SMS and social media can be used for rapid outreach in multiple languages.
11. Promote wellbeing: Integrate psychosocial support into disaster responses, because stress can worsen NCD outcomes.
12. Support financing: Allocate funds for NCD management in disaster budgets and include NCD indicators in disaster impact assessments to inform recovery planning.

24.2. PRIORITY 2: STRENGTHEN HEALTH SYSTEM CAPACITY AND RESILIENCE

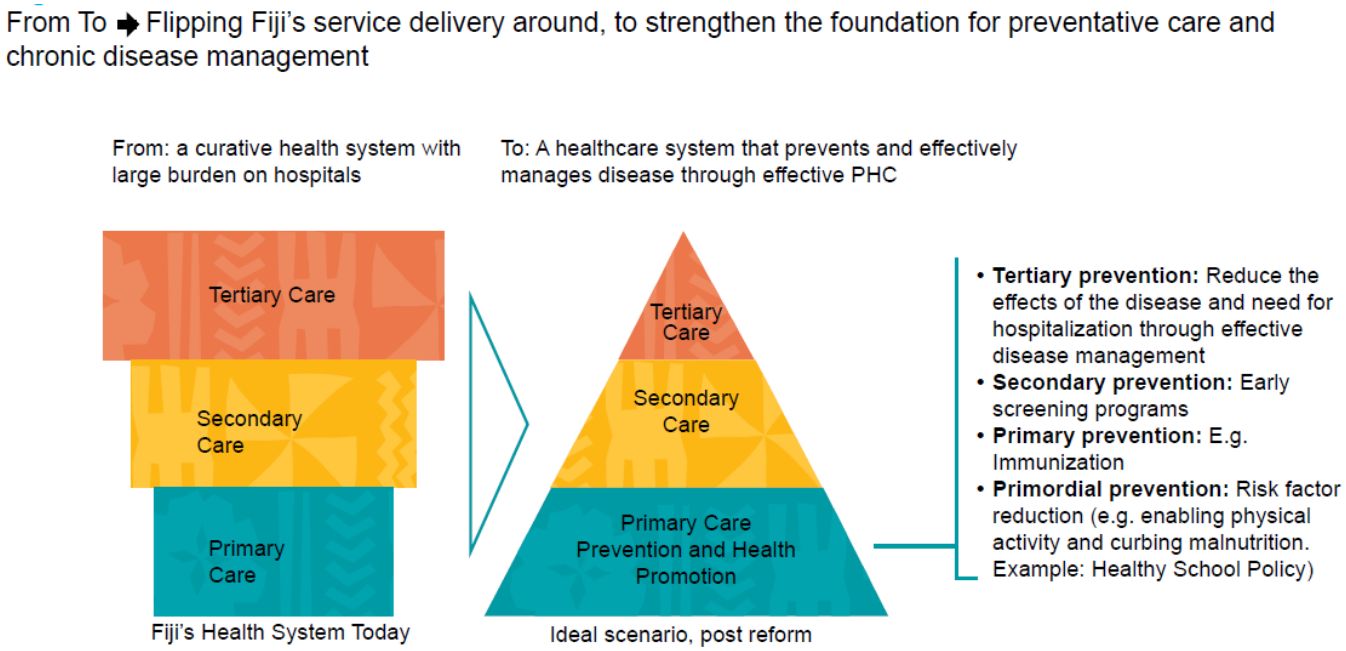
Fiji has implemented the WHO Package of Essential Noncommunicable Diseases Interventions (referred to in Fiji as the CRAM PEN program). It was adapted for the country in 2016 at the secondary levels at health centres across Fiji for those that were high risk for CVD and/or diabetes.[43] A recent comprehensive evaluation provided detailed evidence on what is required for efficient and effective implementation and adoption of the CRAM PEN at the primary health care level to focus on primary prevention and treatment for all individuals.[33] The 2025 STEPS Survey revealed substantial gaps in access to care and treatment. Among individuals with hypertension, 48% were aware of their condition and only 22% were receiving treatment. For diabetes, 47% were aware of their diagnosis, and 33% were receiving treatment. In addition, advice from healthcare workers for healthy lifestyle behaviour was inadequate, reaching about half of the respondents (this figure ranged from 35% for tobacco cessation and 47% for salt reduction to 60% for increasing fruit and vegetables and physical activity, and 55% for losing weight).

Implementing integrated cardiovascular disease, hypertension and diabetes prevention and control programs at the primary health care level requires strengthening of the health system. This was supported by *Fiji's Health Sector Review 2024 Report*, which recommends a combination of 'policy reforms, actions, programmatic investments and service delivery shifts'.[64] This will allow Fiji to achieve the Sustainable Development Goals and the WHO Global Action Plan and to progress the MANA Dashboard indicators.

24.2.1. RECOMMENDATION 9: REDESIGN GOVERNANCE AND LEADERSHIP TO PRIORITISE PREVENTIVE CARE SERVICE DELIVERY

Redesigning health service delivery to focus on preventive care and noncommunicable disease management requires governance structures to be 'flipped' from a system focused on hospital-based, curative care to one that prioritises preventive care and disease management at the primary level (Figure 25.2).[64]

Figure 25.2: Redesigning health service delivery to focus on primary health care[64]



24.2.2. RECOMMENDATION 10: ENSURE CONTINUOUS AVAILABILITY OF ESSENTIAL NONCOMMUNICABLE DISEASE COMMODITIES THROUGH STRENGTHENED SUPPLY CHAIN MONITORING, OPTIMISED MSUPPLY USE AND UPDATED GOVERNANCE AND TRAINING SYSTEM

A recent evaluation of the WHO CRAM PEN implementation at health centres identified limited availability of essential NCD medicines and equipment, primarily because of frequent stockouts as a key barrier to effective service delivery. In addition, many facilities lacked functional or sufficient low-cost diagnostic equipment, including blood pressure monitors, glucose meters and strips, and cholesterol testing capabilities. Ensuring continuous access to these commodities is essential for primary prevention and management of HTN and diabetes, and will contribute to improved health outcomes and long-term cost savings for Fiji's health system.[33]

In December 2023, the MHMS, in partnership with Beyond Essential Systems, rolled out the national digital health supply chain system, mSupply, across all health facilities. mSupply is a pharmaceutical stock-management system used to track, order and dispense stock at facility and warehouse levels. The accompanying platform, Tupaia, provides data aggregation, analysis and visualisation to support monitoring of essential medicines and health products.

To ensure consistent availability of NCD medicines and equipment, two core components are required:

13. real-time monitoring of NCD medicines and equipment
14. effective and consistent use of mSupply at health-facility level.

This can be achieved through the following actions:

- **develop a web-based portal within Tupaia** dedicated to monitoring essential NCD medicines and equipment (including cervical cancer screening commodities) that is accessible to divisional MHMS offices, health centres and MHMS headquarters
- **review and update the essential equipment and medicines list** through a consultative process involving the MHMS Wellness Centre, Package of Essential Noncommunicable Diseases core working group, senior divisional medical officers, senior divisional nursing managers and the Fiji Pharmaceutical and Biomedical Services, ensuring cost-effective and regionally appropriate treatment options
- **integrate mSupply data into a noncommunicable disease commodities dashboard**, recognising that this requires adequate staffing and the consistent use of mSupply at the health centre level
- **deliver refresher training for key health centre staff** on mSupply use, emphasising NCD commodity management:
- a **train-the-trainer model** should be adopted, enabling system developers to train the MHMS implementation team, which will then support wider facility-level training
- **strengthen mSupply governance**, including the development and rollout of improved standard operating procedures and training modules delivered by the MHMS implementation team.

Improved availability of NCD commodities will enhance access, affordability and patient adherence to treatment, ultimately strengthening NCD management across Fiji.

24.2.3. RECOMMENDATION 11: STRENGTHEN HEALTH WORKFORCE THROUGH EFFICIENT TEAM-BASED CARE MODELS WITH TASK-SHARING

To improve access to care and equity for NCD prevention and management, Fiji should adopt a team-based care approach that leverages task-sharing among health professionals. This model ensures continuity of care, addresses health worker shortages by optimising workforce capacity and enhances patient outcomes.[111] Key actions include:

- defining roles and responsibilities across doctors, nurses, community health workers and allied professionals to avoid duplication and maximise efficiency
- training, retraining and empowering community health workers to perform routine tasks, such as blood pressure checks, lifestyle counselling and medication refills under clear protocols at the community level
- integrating multidisciplinary teams at the primary care level, supported by digital tools for communication and patient tracking
- developing supportive policies and guidelines to formalise task-sharing and ensure quality assurance
- monitoring and evaluating performance to refine workflows and maintain patient safety.[112]

This approach reduces bottlenecks, improves access in rural areas and builds resilience during emergencies, not just for NCDs. It also improves access to care and health outcomes for all conditions.

24.2.4. RECOMMENDATION 12: IMPLEMENT AN INTEGRATED DIGITAL HEALTH INFORMATION SYSTEM

To strengthen NCD prevention and control, Fiji should establish an integrated digital health information system that enables real-time data collection, analysis and decision-making across the health sector. Key actions include:

- develop a centralised platform linking primary care, hospitals and community health services for seamless patient data-sharing
- ensure interoperability with existing health systems and compliance with national eHealth/ digital health standards
- incorporate mobile and offline functionality to support rural and remote areas and areas with limited internet functionality
    - easy to use by healthcare workers across cadre
- focused on NCDs care and treatment to not overwhelm users
- an example of an effective simple Android digital app that is user centred for HTN and diabetes care based on WHO HEARTS indicators - District Health Information System 2 (DHIS2) .[113]
- enable dashboards and analytics for monitoring key patient level indicators that are pre-programmed, and for observing NCD trends, medication adherence and service delivery performance
    - assists in tailoring care for patients
- train health workers on digital tools and data security protocols
- implement strong cybersecurity and privacy measures to protect patient information
- use data for proactive planning, medicine and commodities planning, resource allocation and targeted interventions.

This system will improve continuity of care, enhance surveillance and support evidence-based policy decisions. Care must be taken to implement digital information systems that can be scaled up and sustained by the government.

24.3. PRIORITY 3: COMMUNITY-TO-INDIVIDUAL STRATEGIES

While community- and individual-level programs should be embedded within the overarching strategies described above, additional community-based initiatives may be required. These supplementary strategies can provide tailored support to individuals and ensure that interventions remain context specific across Fijian settings. This approach will help ensure that strategies are culturally relevant and sensitive to gender and age differences.

24.3.1. RECOMMENDATION 13: STRENGTHEN COMMUNITY HEALTH WORKERS TO BETTER SUPPORT INDIVIDUALS IN THEIR COMMUNITIES

Community health workers play a vital role in Fijian villages/communities, serving as an essential link between the health system through nurses and individuals within their own communities. Historically, their responsibilities centred on first aid, basic treatment and maternal and child healthcare support. However, as the health workforce has become increasingly strained, the scope of community health workers' duties has expanded, often without adequate training, resources or incentives.[114]

In response, the community health worker training program was recently revised by the MHMS, Division of Nursing and is currently in its pilot implementation phase. Given the significant out-migration of nurses, community health workers have become even more critical in supporting NCD prevention and management at the community level.

According to the revised community health worker training handbook, key areas in which community health workers will be trained to contribute to NCD prevention and control include:

15. **undertaking health education and health promotion activities**: educate the community on NCD prevention and risk factors; encourage behavioural changes; and improve wellness using the WHO Package of Essential Noncommunicable/ Smoking, Nutrition, Alcohol, and Physical activity (SNAP) messages
16. **identifying people at risk**: recognise individuals at risk of developing NCD. You can use the community profile book for this
17. **referring people at risk:** refer people at risk to health services in their area
18. **supporting noncommunicable disease screening:** collaborate with the healthcare team to screen individuals for high blood pressure and blood glucose levels
19. **supporting access to care**: assist community members with NCDs in accessing appropriate care
20. **providing first aid**: administer first aid to people with NCDs when necessary
21. **following up and supporting treatment adherence**: help healthcare workers ensure treatment adherence according to the Package of Essential Noncommunicable Diseases program guide
22. **recording and reporting**: register and report cases of NCDs in the community, as per the reporting guidelines

Task-sharing with community health workers, who have a strong understanding of the circumstances and needs of their communities, will help ensure that strategies are appropriately adapted and context specific. Community health workers can play a vital role in supporting noncommunicable disease outreach programs across healthcare cadres.

24.3.2. RECOMMENDATION 14: WORKPLACE HEALTH PROMOTION STRATEGIES

The Japan International Cooperation Agency, in partnership with the Fiji MHMS, are implementing a Health Promoting Workplace initiative. The initiative identifies at-risk individuals through a structured screening program combined with behaviour-change communication approaches, including motivational interviewing. This multifaceted program enables employees to be screened for common NCDs. A key component is the introduction of a digital data management system that monitors organisation-level and individual-level data to ensure that those at high risk receive appropriate follow-up and treatment.

This strategy can be further strengthened by establishing a clear referral system that links individuals to their local health centres for continued care. In addition, providing educational pamphlets can help increase awareness and understanding of noncommunicable disease prevention and management, empowering individuals and their families to take proactive steps towards healthier living.

24.3.3. RECOMMENDATION 15: PEER-LED COMMUNITY OUTREACH STRATEGIES

Fiji can draw lessons from successful models, such as the Kerala Diabetes Prevention Program, a community-based, peer-led initiative that delivers small group sessions facilitated by trained peer leaders on healthy eating, physical activity, and tobacco and alcohol cessation.[115, 116] Linking a similar strategy to workplace health initiatives and involving community health workers could help ensure continuity of care and sustained support for individuals at risk.

25. OUTLINE OF PRIORITY AREAS FOR STRENGTHENING NONCOMMUNICABLE DISEASE PREVENTION AND CONTROL IN FIJI

Priority One: Policies and Strategies to Action

1. Institutionalisation of multisectoral collaboration and action
2. Investment and evidence-based financial modelling for NCDs
3. Effective tobacco control – key requirements
4. Endorse and implement the WHO Global Alcohol Action Plan 2022–2030
5. Improve policies to promote healthy eating & reduce unhealthy foods
6. Implement and enhance physical activity interventions
7. Strengthen and expand Health Promoting Schools & School Health Policy implementation
8. Strengthen disaster preparedness

Priority Two: Strengthen Health System Capacity and Resilience

9. Redesign governance structure & leadership to prioritise preventive care service delivery
10. Ensure continuous availability of essential NCD commodities
11. Strengthen health workforce through efficient team-based care models
12. Implement an integrated digital health information system

Priority Three: Community to Individual Strategies

13. Strengthen roles of Community Health Workers
14. Develop workplace-based setting strategies
15. Peer-led community outreach strategies

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APPENDICES
APPENDIX A: STEPS QUESTIONNAIRE (INSTRUMENT)

FIJI 3rd STEPS INSTRUMENT

(21 March 2024)

The WHO STEPwise approach to noncommunicable disease risk factor surveillance (STEPS)

Fiji Ministry of Health:
For further information:
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FIJI STEPS INSTRUMENT

For Noncommunicable Disease Risk Factor Surveillance

Fiji Islands (21 March 2024)

Survey Information

Location and Date	Response	Code
Cluster/Centre/Village ID	⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌋	I1
Cluster/Centre/Village name		I2
Interviewer ID	⌊_⌊_⌊_⌋	I3
Date of completion of the instrument	⌊_⌊_ ⌊_⌊_ ⌊_⌊_⌊_⌊_⌋ dd mm yy	I4

Consent, Interview Language and Name	Response	Code
Consent has been read and obtained	Yes 1 No 2 **If NO, END**	I5
Interview Language	English 1 Fijian 2 Hindi 3	I6
Time of interview (24 hour clock)	⌊_⌊_ : ⌊_⌊_ hrs mins	I7
Family Surname		I8
First Name		I9
Additional Information that may be helpful		
Contact phone number where possible		I10

Sex (*Record Male / Female as observed*)	Male Female	1 2	C1
What is your date of birth? Don't Know: 77 77 7777 or enter the year if known (e.g 77 77 1966) *If known, Go to C4*	⌊_⌊_ ⌊_⌊_ ⌊_⌊_⌊_⌊_⌋ dd mm yy		C2
How old are you?	Years ⌊_⌊_⌋		C3

What is the **highest level of education** you have completed?	No formal schooling	1	C5
	Less than primary school	2	
	Primary school completed	3	
	Secondary school completed	4	
	College/University completed	5	
	Postgraduate degree	6	
	Refused	88	
What is your **ethnic background**?	i-Taukei Fijian of Indian Descent Fijian-of-Other-Descent Other Refused	1 2 3 4 88	C6
What is your **marital status**?	Never married	1	C7
	Married	2	
	Separated	3	
	Divorced	4	
	Widowed	5	
	Cohabitating	6	
	Refused	88	
Which of the following best describes your **main work** status over the past 12 months?	Government employee	1	C8
	Non-government employee	2	
	Self-employed	3	
	Non-paid	4	
	Student	5	
	Homemaker	6	
	Retired	7	
	Unemployed (able to work)	8	
	Unemployed (unable to work)	9	
	Refused	88	
What religion do you belong to?	Christianity	1	X1
	Hinduism	2	
	Islam	3	
	Other	4 Go to X1other	
	None	5	
	Refused	88	
	Please specify other		X1other

How many people 18 years or older, including yourself, live in your household?	Number of people	If Not Known, Go to C11	C9
Can you give an **estimate** of the annual household income if I read some options to you? Is it (READ OPTIONS)	0 - $14,999 $15,000 – 29,999 $30,000 – $49,999 $50,000 – 59,999 More than equal $60,000 Don't know Refused	1 2 3 4 5 6 88	C11

Now I am going to ask you some questions about tobacco use.

Question	Response		Code
Do you **currently** smoke any **tobacco** products, such as cigarettes, cigars, pipes, suki or shisha? *(USE SHOWCARD).*	Yes No	1 2 *If No, go to T8*	T1
Do you currently smoke tobacco products **daily**?	Yes No	1 2	T2
How old were you when you **first started** smoking?	Age (years) Don't know 77	⌊_⌊_⌋ *If Known, go to T5a/T5aw*	T3
Do you remember how long ago it was? *(RECORD ONLY 1, NOT ALL 3)* *Don't know 77* .	In Years	⌊_⌊_⌋ *If Known, go to T5a/T5aw*	T4a
	OR in Months	⌊_⌊_⌋ *If Known, go to T5a/T5aw*	T4b
	OR in Weeks	⌊_⌊_⌋	T4c
On average, **how many** of the following products do you smoke **each day/week?** *(IF LESS THAN DAILY, RECORD WEEKLY)* *(RECORD FOR EACH TYPE, USE SHOWCARD)* *Don't Know 7,777*		DAILY↓ WEEKLY ↓	
	Manufactured cigarettes (rolls)	⌊_⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋	T5a/T5aw
	Rolls of suki (including moro, uma, drauna)	⌊_⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋	T5x/T5xw
	Other hand-rolled cigarettes	⌊_⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋	T5b/T5bw
	Pipes full of tobacco	⌊_⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋	T5c/T5cw
	Cigars, cheroots, cigarillos	⌊_⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋	T5d/T5dw
	Number of Shisha sessions	⌊_⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋	T5e/T5ew
	Other	⌊_⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋ *If Other, go to T5other, else go to T6*	T5f/T5fw
	Other (please specify):	⌊_⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋	T5other/ T5otherw

During the past 12 months, have you tried to **stop smoking**?	Yes No	1 2	T6
During any visit to a doctor or other health worker in the past 12 months, were you advised to quit smoking tobacco?	Yes No No visit during the past 12 months	1 If T2=Yes, go to T12; if T2=No, go to T9 2 If T2=Yes, go to T12; if T2=No, go to T9 3 If T2=Yes, go to T12; if T2=No, go to T9	T7
In the past, did you **ever smoke** any tobacco products?	Yes No	1 2 *If No, go to T12*	T8
In the past, did you **ever** smoke **daily**?	Yes No	1 *If T1=Yes, go to T12* 2 *If T1=Yes, go to T12*	T9

Do you **currently use** any **smokeless tobacco** products such as *snuff, snus, chewing tobacco, betel with tobacco or suki?*	Yes No	1 2 *If No, go to T15*	T12
Do you **currently use smokeless tobacco** products **daily?** .	Yes No	1 2 *If No, go to T14aw*	T13
On average, how many **times a day/week** do you use …. *(IF LESS THAN DAILY, RECORD WEEKLY)* *(RECORD FOR EACH TYPE, USE SHOWCARD)* *Don't Know 7,777*		DAILY↓ WEEKLY↓	
	Snus/Snuff, by mouth	⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋	T14a/ T14aw
	Snus/Snuff, by nose	⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋	T14b/ T14bw
	Chewing tobacco	⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋	T14c/ T14cw
	Betel, nut with tobacco	⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋	T14d/ T14dw
	Smokeless suki (including moro, umo, drauna)		T14xd/T14xw
	Other	⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋ *If Other, go to T14other, if T13=No, go to T16, else go to T17*	T14e/ T14ew
	Other (please specify):	⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *If T13=No, go to T16, else go to T17*	T14other/ T14otherw
In the **past**, did you **ever use** smokeless tobacco products such as snuff, snus, chewing tobacco, betel nut with tobacco?	Yes No	1 2 *If No, go to T17*	T15
During the past 30 days, did someone smoke **in your home**?	Yes No	1 2	T17
During the past 30 days, did someone smoke in closed areas **in your workplace** (in the building, in a work area or a specific office)?	Yes No Don't work in a closed area	1 2 3	T18

The next questions ask about the use of E-cigarettes			
Have you ever used e-cigarettes? (USE SHOWCARD)	Yes No	1 2 *If No, go to A1*	X2
Do you currently use e-cigarettes daily, less than daily or not at all?	Yes, daily Yes, less than daily No	1 2 3 *If No, go to A1*	X3

The next questions ask about the consumption of alcohol.			
Question	**Response**		**Code**
Have you **ever** consumed any alcohol such as beer, wine, spirits or homebrew?	Yes	1	A1
	No	2 *If No, go to A16*	
Have you consumed any alcohol within the **past 12 months**?	Yes	1 *If Yes, go to A4*	A2
	No	2	
During the past 12 months, **how frequently** have you had at least one **standard alcoholic drink**? *(READ RESPONSES, USE SHOWCARD)*	Daily	1	A4
	5–6 days per week	2	
	3–4 days per week	3	
	1–2 days per week	4	
	1–3 days per month	5	
	Less than once a month	6	
	Never	7	
Have you consumed any alcohol within the **past 30 days**?	Yes	1	A5
	No	2 *If No, go to A13*	
During the past 30 days, on how many **occasions** did you have at least one standard alcoholic drink?	Number Don't know 77	⌊_⌋⌊_⌋ *If Zero, go to A13*	A6
During the past 30 days, when you drank alcohol, how many **standard drinks on average** did you have during one drinking occasion?	Number Don't know 77	⌊_⌋⌊_⌋	A7

During the past 30 days, what was the **largest number** of standard drinks you had on a single occasion, counting all types of alcoholic drinks together?	Largest number Don't Know 77	⌊_⌋⌊_⌋	A8
During the past 30 days, how many times did you have **six or more** standard drinks in a single drinking occasion?	Number of times Don't Know 77	⌊_⌋⌊_⌋	A9

CORE: Alcohol Consumption, continued

Question	Response		Code
During each of the **past 7 days**, how many standard drinks did you have each day? *(USE SHOWCARD)* *Don't Know 77*	Monday	⌊_⌋⌊_⌋	A10a
	Tuesday	⌊_⌋⌊_⌋	A10b
	Wednesday	⌊_⌋⌊_⌋	A10c
	Thursday	⌊_⌋⌊_⌋	A10d
	Friday	⌊_⌋⌊_⌋	A10e
	Saturday	⌊_⌋⌊_⌋	A10f
	Sunday	⌊_⌋⌊_⌋	A10g

I have just asked you about your consumption of alcohol during the past 7 days. The questions were about alcohol in general, while the next questions refer to your consumption of homebrewed alcohol, duty free alcohol, any alcohol not intended for drinking or other untaxed alcohol. Please only think about these types of alcohol when answering the next questions.

During the **past 7 days**, did you consume any **homebrewed** alcohol, duty free alcohol, any alcohol **not intended for drinking** or other **untaxed** alcohol? *(USE SHOWCARD)*	Yes	1	A11
	No	2 *If No, go to A13*	
On average, **how many standard drinks** of the following did you consume **during the past 7 days**? *(USE SHOWCARD)*	Homebrewed spirits	⌊_⌋⌊_⌋	A12a
	Homebrewed beer or wine, e.g. beer, palm or fruit wine	⌊_⌋⌊_⌋	A12b
	Duty free alcohol	⌊_⌋⌊_⌋	A12c
	Alcohol not intended for drinking, e.g. alcohol-based medicines, perfumes, after shaves	⌊_⌋⌊_⌋	A12d
	Other untaxed alcohol in the country	⌊_⌋⌊_⌋	A12e

During the **past 12 months,** how often have you found that you were not able to stop drinking once you had started?	Daily or almost daily	1	A13
	Weekly	2	
	Monthly	3	
	Less than monthly	4	
	Never	5	

During the **past 12 months,** how often have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Daily or almost daily	1	A15
	Weekly	2	
	Monthly	3	
	Less than monthly	4	
	Never	5	
During the **past 12 months**, have you had family problems or problems with your partner due to **someone else's** drinking?	Yes, more than monthly	1	A16
	Yes, monthly	2	
	Yes, several times but less than monthly	3	
	Yes, once or twice	4	
	No	5	

The next questions ask about the consumption of kava

Question	Response		Code
Have you consumed kava or yaqona in the past 30 days?		Yes 1 No 2 *If No, go to D1*	X4
During the past 30 days, on how many days did you consume kava or yaqona?			X5
		Number of days Don't Know 77 ⌊_⌋⌊_⌋	
In a typical day, on average, how many hours do you spend drinking kava or yaqona?		Number of hours: ____ Hrs	X6
Do you typically smoke or use smokeless tobacco while consuming kava or shortly after drinking kava?	Yes	1 No 2	X7
Do you typically eat snacks while consuming kava?	I eat salty snacks during the kava session	1	X8
	I eat sweet snacks during the kava session	2	
	I eat both salty and sweet snacks during a kava session	3	
	I do not eat or snack during a kava session.	4	

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

In a typical week, on how many days do you **eat fruit**?	Number of days Don't Know 77	⌊_⌋⌊_⌋ If Zero days, go to D3	D1
How many **servings** of fruit do you eat on **one** of those days?	Number of servings Don't Know 77	⌊_⌋⌊_⌋	D2
In a typical week, on how many days do you **eat vegetables**?	Number of days Don't Know 77	⌊_⌋⌊_⌋ If Zero days, go to D5	D3
How many **servings** of vegetables do you eat on one of those days?	Number of servings Don't know 77	⌊_⌋⌊_⌋	D4

With the next questions, we would like to learn more about salt in your diet. Dietary salt includes ordinary table salt, unrefined salt such as sea salt, iodised salt, salty stock cubes and powders, and salty sauces such as soy sauce or fish sauce (see showcard). The following questions are on adding salt to the food right before you eat it, on how food is prepared in your home, on eating processed foods that are high in salt such as vetsin, soya sauce and all other soya sauce favoured, tinned fish, and flavoured noodles and questions on controlling your salt intake. Please answer the questions even if you consider yourself to eat a diet low in salt.

How often do you **add salt or a salty sauce such as soy sauce** to your food right before you eat it or as you are eating it?		Always	1	D5
		2		
		3		
		4		
		5		
		77		
How often is **salt, salty seasoning or a salty sauce added** in cooking or preparing foods in your household?		Always	1	D6
		2		
		3		
		4		
		5		
		77		

How often do you eat **processed food high in salt**? By processed food high in salt, I mean foods such as packaged salty snacks, chips, salty peas or peanuts, canned salty food including pickles and preserves, salty food prepared at a fast food restaurant, and processed meatsuch as sausages, ham, bacon and corned beef.		Always	1	D7
		2		
		3		
		4		
		5		
		77		
		77		
How important to you is **lowering the salt** in your diet?	Very important	1		D9
	2			
	3			
	77			

Are you doing any of the following on a regular basis to **control your salt intake**?
(RECORD FOR EACH)

Limit consumption of processed foods	Yes	1		D11a
No	2			
Look at the salt or sodium content on food labels	Yes	1		D11b
No	2			
Buy low salt/sodium alternatives	Yes	1		D11c
No	2			
Use spices other than salt when cooking	Yes	1		D11d
No	2			
Avoid eating foods prepared outside of a home	Yes	1		D11e
No	2			
Do other things specifically to control your salt intake	Yes	1 *If Yes, go to D11other*		D11f
No	2			
Other (please specify)	⌊ ⌋			D11other

The next questions ask about the sweet and sugary beverages

Question		Response	Code
In a typical week, on how many days do you have a drink containing sugar including fizzy drinks, juice drinks cordials/ drink mixes, and homemade drinks with added sugar (use Showcard) (Excluding pure unsweetened fruit juice),	Number of days Don't Know 77	⌊_⌋⌊_⌋ If Zero days, go to X10	X9
How many servings of those drinks containing sugar did you have on one of those days? (use Showcard One serve being one can of drink, one large glass)	Number of servings Don't Know 77	⌊_⌋⌊_⌋	X10
In a typical day, how many times do you have a drink to which you added sugar, like milo, tea or coffee, hot or cold chocolate? (use Showcard	Number of times Don't Know 77	⌊_⌋⌊_⌋ If Zero days, go to X12 …	X11
How many teaspoons of sugar do you add, on average, to one of those drinks?		**Number of teaspoons** **Don't Know 77** ⌊_⌋⌊_⌋	X12

The next questions ask about carbohydrates you consume,

In a typical week, on how many days do you eat **carbohydrates such dalo, cassava, kumala, potatoes, rice, breadfruit, bread/ roti, or noodles?** (USE SHOWCARD)	Number of days ⌊_⌋⌊_⌋ Don't Know 77 If Zero days, go to X14	X13
How many **servings** of carbohydrates did you eat on **one** of those days? (*USE SHOWCARD)*	Number of servings ⌊_⌋⌊_⌋ Don't Know 77	X14

The next questions ask about eating meat, oils and fast food.

In a typical week, on how many days do you eat red meat, such as beef, lamb, pork or goat?	Number of days Don't Know 77 └─┴─┘	X15
What type of fat or oil **is most often** used for meal preparation in your household?	Vegetable oil (e.g, canola, sunflower) 1 Olive oil 2 Butter or Ghee 3 Margarine 4 Coconut oil 5 Dripping or Lard (pork fat) 6 Other 7 If other, go to X15other None in particular 8 None used 9 Don't know 77	X16
	Other please specify _____	X16o-ther
In a typical week, on how many days do you eat at least one meal or snack from a fast food restaurant such as McDonald's, DMC, Chicken Express, Lunch Box or pizza places?	Number of days Don't Know 77 └─┴─┘	X17

Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person.
Think first about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment. In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate (are activities that cause you to be drenched in sweat and your heart to be pounding), 'moderate intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate (are activities that cause you to break a sweat and lose your breath a bit).

Work

Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like carrying or lifting heavy loads, digging or construction work?	Yes	1	P1
	No	2 *If No, go to P 4*	
In a typical week, on how many days do you do vigorous-intensity activities as part of your work?	Number of days	⌊__⌋	P2
How much time do you spend doing vigorous-intensity activities at work on a typical day?	Hours : minutes	⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P3 (a-b)
Does your work involve moderate intensity activity, that causes small increases in breathing or heart rate such as brisk walking or carrying light loads?	Yes	1	P4
	No	2 *If No, go to P 7*	
In a typical week, on how many days do you do moderate intensity activities as part of your work?	Number of days	⌊__⌋	P5
How much time do you spend doing moderate intensity activities at work on a typical day?	Hours : minutes	⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P6 (a-b)

Travel to and from places

The next questions exclude the physical activities at work that you have already mentioned.
Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship.

Do you walk or use a bicycle *(pedal cycle)* to get to and from places?	Yes	1	P7
	No	2 *If No, go to P 10*	
In a typical week, on how many days do you walk or bicycle to get to and from places?	Number of days	⌊__⌋	P8

How much time do you spend walking or bicycling for travel on a typical day?	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P9 (a-b)

Recreational activities

The next questions exclude the work and transport activities that you have already mentioned.
Now I would like to ask you about sports, fitness and recreational activities].

Do you do any vigorous-intensity sports, fitness or recreational activities that cause large increases in breathing or heart rate like running, soccer or rugby?	Yes 1 No 2 *If No, go to P 13*	P10
In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational activities?	Number of days ⌊_⌋	P11
How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P12 (a-b)
Do you do any moderate intensity sports, fitness or recreational activities that cause a small increase in breathing or heart rate such as brisk walking, cycling, swimming or volleyball.	Yes 1 No 2 *If No, go to P16*	P13
In a typical week, on how many days do you do moderate intensity sports, fitness or recreational activities?	Number of days ⌊_⌋	P14
How much time do you spend doing moderate intensity sports, fitness or recreational activities on a typical day?	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P15 (a-b)

The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent sitting at a desk, sitting with friends, travelling in car or bus, reading, playing cards or watching television, but do not include time spent sleeping.
(USE SHOWCARD)

How much time do you usually spend sitting or reclining on a typical day?	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P16 (a-b)

Question	Response		Code
Have you ever had your blood pressure measured by a doctor or other health worker?	Yes	1	H1
	No	2 *If No, go to H6*	
Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension?	Yes	1	H2a
	No	2 *If No, go to H6*	
Were you first told in the past 12 months?	Yes	1	H2b
	No	2	
In the past two weeks, have you taken any drugs (medication) for raised blood pressure prescribed by a doctor or other health worker?	Yes	1	H3
	No	2	

Have you ever seen a traditional healer for raised blood pressure or hypertension?	Yes	1	H4
	No	2	
Are you currently taking any herbal or traditional remedy for your raised blood pressure?	Yes	1	H5
	No	2	

Have you ever had your blood sugar measured by a doctor or other health worker?	Yes	1	H6
	No	2 *If No, go to H12*	
Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes?	Yes	1	H7a
	No	2 *If No, go to H12*	
Were you first told in the past 12 months?	Yes	1	H7b
	No	2	
In the past two weeks, have you taken any drugs (medication) for diabetes prescribed by a doctor or other health worker?	Yes	1	H8
	No	2	
Are you currently taking insulin for diabetes prescribed by a doctor or other health worker?	Yes	1	H9
	No	2	
Have you ever seen a traditional healer for diabetes or raised blood sugar?	Yes	1	H10
	No	2	
Are you currently taking any herbal or traditional remedy for your diabetes?	Yes	1	H11
	No	2	

Have you ever had your cholesterol (fat levels in your blood) measured by a doctor or other health worker?	Yes	1	H12
	No	2 *If No, go to H17*	
Have you ever been told by a doctor or other health worker that you have raised cholesterol?	Yes	1	H13a
	No	2 *If No, go to H17*	
Were you first told in the past 12 months?	Yes	1	H13b
	No	2	
In the past two weeks, have you taken any oral treatment (medication) for raised total cholesterol prescribed by a doctor or other health worker?	Yes	1	H14
	No	2	
Have you ever seen a traditional healer for raised cholesterol?	Yes	1	H15
	No	2	
Are you currently taking any herbal or traditional remedy for your raised cholesterol?	Yes	1	H16
	No	2	

Have you ever had a heart attack or chest pain from heart disease (angina) or a stroke (cerebrovascular accident or incident)?	Yes	1	H17
	No	2	
Are you currently taking aspirin regularly to prevent or treat heart disease?	Yes	1	H18
	No	2	

Are you currently taking statins such as Simvastatinregularly to prevent or treat heart disease?	Yes	1	H19
	No	2	

During the past 12 months, have you visited a doctor or other health worker?	Yes	1	H20
	No	2 *If No and C1=1, go to M1* *If No and C1=2, go to CX1*	
During any of your visits to a doctor or other health worker in the past 12 months, were you advised to do any of the following? *(RECORD FOR EACH)*			
Quit using tobacco or don't start	Yes	1	H20a
	No	2	
Reduce salt in your diet	Yes	1	H20b
	No	2	
Eat at least five servings of fruit and/or vegetables each day	Yes	1	H20c
	No	2	
Reduce fat in your diet	Yes	1	H20d
	No	2	
Start or do more physical activity	Yes	1	H20e
	No	2	
Maintain a healthy body weight or lose weight	Yes	1	H20f
	No	2	
Reduce sugary beverages in your diet	Yes	1 *If C1=1 go to M1*	H20g
	No	2 *If C1=1 go to M1*	

The next question asks about cervical cancer prevention. Screening tests for cervical cancer prevention can be done in different ways, including Visual Inspection with Acetic Acid/vinegar (VIA), pap smear and Human Papillomavirus (HPV) test.		
Have you ever had a screening test for cervical cancer, using any of these methods described above?	Yes 1 No 2 (*If No/Don't know go to X18* Don't know 77	CX1
Have you been advised on your results?	Yes 1 No 2 Don't know 77	X18

Country-Specific Questions: Breast Cancer Screening Awareness and Practices

The next question is asked about breast cancer prevention. Screening tests for breast cancer diagnosis include clinical breast exam, mammogram. Clinical breast exam is an examination by a doctor or nurse, who uses his or her hands to feel for lumps or other changes. Mammogram is an X-ray picture of the breast.

Have you been shown how to examine your breasts?	Yes 1 No 2	X19
Have you ever had breast cancer screening tests?	Yes 1 No 2 *If No, skip to DM1* Don't know 77 Refused 88	X20

When did you last have a clinical breast exam?	In the last 12 months 1 More than 1, less than 2 years ago 2 More than 2, less than 5 years ago 3 More than 5 years ago 4 Never 5 Don't know 77 Refused 88	X21
When did you last have a mammogram?.	In the last 12 months 1 More than 1, less than 2 years ago 2 More than 2, less than 5 years ago 3 More than 5 years ago 4 Never 5 Don't know 77 Refused 88	X22

Disability

The next questions ask about your health, any long-lasting conditions or illnesses that may restrict your day-to-day activities.

Do you have any physical or mental health conditions or illnesses lasting or expected to last 12 months or more?	Yes No	1 2 *If No, go to MH1*	DM1
Do any of your conditions or illnesses reduce your ability to carry out day-to-day activities?	Yes, a lot Yes, a little Not at all	1 2 3	DM2

The next questions ask about your t feelings of sadness, depression and loss of interest and pleasure.		
Question	**Response**	**Code**
In the last 12 months, have you, for a period of at least 2 weeks, felt **sad or depressed** for **most of the day**, **nearly every day**? *If a participant is not sure, ask for their best estimate.*	Yes 1 No 2 Refused 88	MH1
In the last 12 months, have you, for a period of at least 2 weeks, been **a lot less interested** in, or experienced a lot **less pleasure** from, doing the things you normally enjoy? *usually enjoys.*	Yes 1 No 2 *If No and MH1=2, go to next module* Refused 88	MH2
Please tell me when in the last 12 months you experienced the worst period of these feelings that lasted for at least 2 weeks?	Period (e.g., month): _____	MH3
The next questions I am going to ask you will all refer specifically to this time]. Try to remember as best you can what you were experiencing **during that time**, rather than what you might have experienced at other times.		
During this time in which these feelings were attheir worst did you have more **trouble concentrating** and **staying focused** on things than usual **OR** did you struggle more than usual to make **decisions most of the day, nearly every day for at least 2 weeks**?	Yes 1 No 2 Refused 88	MH4
During that same 2-week period,,did you feel **less valuable** as a person or even **worthless most of the day, nearly every day**?	Yes 1 *Go to MH7* No 2 Refused 88	MH5
During that same 2-week period, did you feel **overly guilty** about things you did or neglected to do most of the day, nearly every day?	Yes 1 No 2 Refused 88	MH6

During that same 2-week period, did you feel more **hopeless** about the future, like things would never turn out well for you most of the day, nearly every day?	Yes 1 No 2 Refused 88	MH7
The next question can be a sensitive question. During the same 2-week period on most days, did you think often about **death** or suicide, or did you try to end your life?	Yes 1 No 2 Refused 88	MH8
On most days during that same 2-week period, did you have more **trouble sleeping** than usual (for example falling or staying asleep), or did you sleep a lot more than you usually do? *earlier)?*	Yes 1 No 2 Refused 88	MH9
On most days during that same 2-week period, did you **not want to eat** even when food was available, **OR** did you **eat more** than before those feelings] started?	Yes 1 No 2 Refused 88	MH10
On most days during that same 2-week period, did you have **less energy** than before those feelings started **OR** were you much more tired than usual even when doing some small task?	Yes 1 No 2 Refused 88	MH11
On most days during that same 2-week period, did other notice you were moving or speaking **more slowly** than is normal for you, **OR** the opposite — did others notice you were **fidgeting or pacing around** a lot?	Yes 1 No 2 Refused 88	MH12

During this time when you experienced the things that you just described, did these difficulties affect your ability to function in daily life (for example your work or school, your social life, your relationships) **OR** did these difficulties bother you a lot? .	Yes, some difficulty in daily life	1	MH13
	Yes, considerable difficulty in multiple aspects of daily life	2	
	Yes, serious difficulty continuing to function in most aspects of daily life	3	
	No	4 *If No, go to next module*	
	Refused	88	
In the past 12 months, have you taken **medications** prescribed by a doctor or other health worker for the difficulties we've just talked about?	Yes, for less than 3 months	1	MH14
	Yes, for 3 months or more	2	
	No	3	
	Refused	88	
In the past 12 months, have you received **psychological therapy/counselling sessions for at least 30 minutes by a doctor or other health worker** for the difficulties we've just talked about?	Yes: 1 to 3 sessions	1	MH15
	Yes, 4 sessions or more	2	
	No	3	
	Refused	88	

The next questions ask about your oral health status and related behaviours.		
How do you rate your oral health (conditions of teeth, gums and mouth) right now?	Very Good 1 Good 2 Average 3 Poor 4 Very poor 5	O1
During the past 12 months, did you experience one or more of the following issues because of your teeth, gums or mouth? Please mark all that apply.	Pain 1 Difficulty eating food 2 Difficulty speaking 3 Avoided smiling 4 Difficulty doing usual activities 5 None 6 *If None, go to O5* Other 7 *If Other, go to O2other* Don't Know 77	O2
	Other (please specify) ⌊_____⌋	O2other
During the past 12 months, have you used health care services because of a problem with your teeth, gums or mouth?	Yes 1 *If Yes, go to O5* No 2	O3
What were the reasons for not using a health care services? Please mark all that apply.	No service available 1 Too expensive 2 Service too far away 3 Poor service quality 4 Fear (afraid of dental care) 5 No appointment available 6 Relief from self-medication 7 Other 8 *If Other, go to O4other*	O4
	Other (please specify) ⌊_____⌋	O4 other
Please indicate which of the toothpastes shown do you use to clean your teeth?	Image 1 1 Image 2 2 Image 3 3 Image 4 4 Image 5 5 None of the above 6	O5

Question	Response	Code
Tooth count.	0 1 *If 0, end assessment* 1–9 2 10 – 19 3 ≥ 20 4 Refused 88 *If 88, end assessment*	OA1
Presence of untreated dental caries	Yes 1 No 2	OA2
Presence of severe dental caries	Yes 1 *If Yes and OA2=1 go to OA4* No 2 *If No and OA2=2 go to end of section*	OA3
Need for immediate oral health care / referral	Yes 1 *If OA2=1 or OA3=1* No 2 If OA2=2 and OA3=2	OA4

Interviewer ID		⌊_⌊_⌊_⌋	M1
Device ID for blood pressure		⌊_⌊_⌋	M2
Cuff size used	Small	1	M3
	Medium	2	
	Large	3	
Reading 1 .	Systolic (mmHg)	⌊_⌊_⌊_⌋	M4a
	Diastolic (mmHg)	⌊_⌊_⌊_⌋	M4b
Reading 2	Systolic (mmHg)	⌊_⌊_⌊_⌋	M5a
	Diastolic (mmHg)	⌊_⌊_⌊_⌋	M5b
Reading 3	Systolic (mmHg)	⌊_⌊_⌊_⌋	M6a
	Diastolic (mmHg)	⌊_⌊_⌊_⌋	M6b
During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker?	Yes	1	M7
	No	2	

CORE: Height and Weight

Question	Response		Code
For women: Are you pregnant?	Yes	1 *If Yes, go to M16*	M8
	No	2	
Interviewer ID		⌊_⌊_⌊_⌋	M9

Device IDs for height and weight	Height	⌊_⌊_⌋	M10a
	Weight	⌊_⌊_⌋	M10b
Height	in Centimetres (cm)	⌊_⌊_⌊_⌋ . ⌊_⌋	M11
Weight *If too large for scale 666.6*	in Kilograms (kg)	⌊_⌊_⌊_⌋ . ⌊_⌋	M12
CORE: Waist			
Device ID for waist		⌊_⌊_⌋	M13
Waist circumference	in Centimetres (cm)	⌊_⌊_⌊_⌋ . ⌊_⌋	M14

Hip circumference	in Centimetres (cm)	⌊_⌊_⌊_⌋ . ⌊_⌊_⌊_⌋	M15	
Heart Rate .				
Reading 1	Beats per minute	⌊_⌊_⌊_⌋	M16a	
Reading 2	Beats per minute	⌊_⌊_⌊_⌋	M16b	
Reading 3	Beats per minute	⌊_⌊_⌊_⌋	M16c	

During the past 12 hours have you had anything to eat or drink, other than water?	Yes	1	B1
	No	2	
Technician ID		⌊_⌊_⌊_⌋	B2
Device ID		⌊_⌊_⌋	B3
Time of day blood specimen taken (24 hour clock)	Hours : minutes	⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	B4
Fasting blood glucose	mmol/l	⌊_⌊_⌋ . ⌊_⌊_⌋	B5
Today, have you taken insulin or other drugs (medication) that have been prescribed by a doctor or other health worker for raised blood glucose?	Yes	1	B6
	No	2	
Device ID		⌊_⌊_⌋	B7
Total cholesterol	mmol/l	⌊_⌊_⌋ . ⌊_⌊_⌋	B8
		⌊_⌊_⌊_⌋ . ⌊_⌋	
During the past two weeks, have you been treated for raised cholesterol with drugs (medication) prescribed by a doctor or other health worker?	Yes	1	B9
	No	2	
Had you been fasting prior to the urine collection?	Yes	1	B10
	No	2	
Technician ID		⌊_⌊_⌊_⌋	B11
Device ID		⌊_⌊_⌋	B12
Time of day urine sample taken (24 hour clock)	Hours : minutes	⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	B13
Urinary sodium	mmol/l	⌊_⌊_⌊_⌋ . ⌊_⌋	B14
Urinary creatinine	mmol/l	⌊_⌊_⌋ . ⌊_⌊_⌋	B15

APPENDIX B : TRAINING AGENDA

Noncommunicable Disease (NCD) Risk Factor Surveillance in Fiji

Workshop for data collectors for the STEPS Survey

AGENDA

Day One

8:30 – 8:50	Welcome & Prayer–**(Div. Dietitian North / Div. Nursing Manager West)**
8:50 – 9:00	Opening Remarks **(WHO)**
9:00 – 9:45	Introduction, objectives of the workshop, and overview and rationale of the WHO STEPwise approach to NCD risk factor surveillance **(WHO)**
9:45 –10:00	Introduction to the STEPS Survey in Fiji **(Head of Wellness)**
10.00 –10.15	Sample size and Distribution.and Identifying EAs.-**FBOS**
10:15 – 10:30	STEPS Implementation plan. Roles of Survey Teams – **DrJack Fong**
10:30 –11:00	**Break**
11:00 –11:30	Interview Tracking, Reaching, and approaching selected households (WHO)
11:30 –12:00	Introduction to Android-based data collection (WHO)
12:00 –13:00	**Lunch**
13:00 –14:30	Selecting an individual within selected households on the Android device (presentation and practice) (WHO)
14:30 –15:00	**Break**
15:00 –15:30	Informing participants and obtaining consent (WHO)
15:30 – 16:00	Interviewer skills (WHO)

Day Two

9:00 – 9:15	Review Day 1 (/WHO)
9:15 –10:00	The STEPS instrument, Q-by-Q guide and Show Cards (WHO)
10:00 –10:30	**Break**
10:30 –12:00	The STEPS instrument, Q-by-Q guide and Show Cards, *cont*. (WHO)
12:00 –13:00	**Lunch**
13:00 –14:30	The STEPS instrument, Q-by-Q guide and Show Cards, *cont*. (WHO)
14:30 – 15:00	The STEPS instrument, Q-by-Q guide and Show Cards, *cont*. (WHO)
15:00 – 15:15	**Break**
15:15 – 16:15	Recording and checking information on the Androids (WHO)
16:15 – 17:00	Collecting demographic and behavioural risk factor information (STEP 1) (practice) (WHO/MOH)

Day Three

9:00 –9:15	Review Day 2 (MHMS)
9:15 – 9.45	Procedures for taking physical measures (STEP 2) (WHO)
9:45 – 10:10	Taking and recording physical measures on tablets (STEP 2) (WHO)
10:00–10:30	**Break**
10:30–12:00	Procedures for biochemical measures (STEP 3) (WHO)
12:00–13:00	**Lunch**
13:00–14:00	Taking and recording biochemical measures (STEP 3) (WHO)
14:00 – 15:00	Practice STEPS 1, STEP 2 & STEP 3 using Android tablets and devices. (/WHO)
15:00 – 15:15	**Break**
15:15 – 16:15	Practice STEPS 1, STEP 2 & STEP 3 using Android tablets and devices, cont
16:15 – 17:00	Check list for equipment and supplies (MHMS/WHO) Discuss pilot plans for the next day. Care and use of the Androids. Other logistics

Day Four

9:00 – 9:15	Review of Day 3 (MHMS/WHO)
9:15 – 15:00	PSEAH

Day Five

10.00 – 12.00	Pilot Test (MoHMS)
1.00pm – 2.30pm	Feedback for Pilot test.

APPENDIX C: EQUIPMENT REQUIRED

List of Equipment	Comments
QR Code Stickers	Provided by World Health Organization HQ
Stickers labels	To number and label all equipments that will be used for the survey. Country to purchase labels prior to training
STEP 1 (Interview)	
Tablets and Tablet cover, Chargers, and power board	Provided by World Health Organization
Data Plan and SIM Card	Provided by Ministry of Health and Medical Services
STEP 2	
Blood Pressure measuring device with AA batteries	OMROM-Digital HEM 712 – provided by World Health Organization. Battery operated
Stadiometer with Bag	Body Height Measuring device – SECA 213 -provided by World Health Organization
Electronic Floor Scale	Body weight measuring device – SECA -200 kg/100 g. Battery operated. Provided by World Health Organization
Figure tape measure	Waist/Hip circumference -provided by World Health Organization
STEP 3*	
Blood Cholesterol /Blood lips measuring meter including Lactate and AAA batteries	Accutrend Plus GCT Meter -Battery Operated–provide by World Health Organization
Cholesterol test Strips	Accutrend -provide by World Health Organization
Accutrend Control Cholesterol 1 × 1.5 ml	
Blood Glucose Meter & lancing device	Accu-Chek -provided by World Health Organization
RD Accu -Chek Guide test box of 100	By World Health Organization
Accu-Chek Guide control solution	By World Health Organization
Mediscope Gloves	Powder free Large, medium 100/pkt- provided by World Health Organization
Reynard Alcohol prep pads	200/pkt -provided by World Health Organization
Pressure activated Lancets	(26 G) -1.88 mm.100/pkt – provided by World Health Organization
BD Sharps container next generation	5.1 L – provided by World Health Organization
Bag Biohazard Yellow	990x530x50mu (PKT50) – provided by World Health Organization
Essence Hand Sanitizer clear ice 62%	500 ml -Provided by World Health Organization
Urine sodium and creatinine measurement (spot sample)	
Technoplas urine container	70 ml (550/box) -provided by World Health Organization
Ziplock plastic bag	for participants to bring the sample to the collection point – provided by World Health Organization
Poly box	To transport sample to the laboratory
Cool box	To ship /transport samples to the laboratory –

*Fiji uses two different devices for glucose and cholesterol testing. And only available SECA Stadiometer for measuring height.

APPENDIX D: INTERSALT EQUATION

na_cln = ifelse((b15<1.8 | (b15>28.3 & c1==2) | (b15>32.7 & c1==1),2,na_cln)

APPENDIX E: STATISTICAL TABLES
Physical Measurement – Body Mass Index

body mass index	% of respondents (with 95% CI)*
Underweight, body mass index <18.5	3.4 (2.6–4.3)
Normal weight, 18.5–24.9	28.5 (26.6–30.5)
body mass index 25.0–29.9	29.2 (27.5–31.0)
Obesity Class 1, ≥30 & <35	22.4 (20.6–24.3)
Obesity Class 2, ≥35 & <40	10.6 (9.5–11.8)
Obesity Class 3, ≥40	5.9 (5.2–6.8)

Appendix E Table 1 body mass index (6 categories) overall – excluding pregnant women

Age group (years)	Men	Women	Overall
Underweight, body mass index <18.5			
18–29	6.0% (3.6–9.8)	5.1% (3.2–8.0)	5.6% (4.0–7.8)
30–44	3.3% (2.1–5.3)	1.1% (0.5–2.1)	2.3% (1.5–3.4)
45–59	2.9% (1.7–4.6)	1.0% (0.5–2.0)	1.9% (1.3–2.9)
60–69	2.8% (1.5–5.2)	1.6% (0.7–3.6)	2.2% (1.3–3.5)
Overall	4.2% (3.0–5.7)	2.5% (1.7–3.5)	3.4% (2.6–4.3)
Normal weight, 18.5–24.9			
18–29	42.2% (36.2–48.6)	31.0% (26.2–36.3)	37.2% (33.1–41.4)
30–44	30.5% (26.6–34.7)	15.5% (13.0–18.4)	23.6% (21.0–26.3)
45–59	29.5% (25.8–33.6)	15.6% (13.0–18.7)	22.6% (20.2–25.3)
60–69	37.5% (32.1–43.3)	19.8% (16.0–24.2)	28.2% (25.0–31.7)
Overall	35.1% (32.3–38.0)	21.2% (19.1–23.4)	28.5% (26.6–30.5)
body mass index 25.0–29.9			
18–29	31.8% (26.3–37.9)	29.0% (23.8–34.7)	30.5% (26.7–34.6)
30–44	29.4% (25.6–33.5)	27.5% (24.2–31.1)	28.5% (26.0–31.2)
45–59	28.2% (25.0–31.6)	26.4% (23.0–30.1)	27.3% (24.9–29.7)
60–69	33.4% (28.2–39.2)	30.6% (25.8–35.9)	32.0% (28.4–35.8)
Overall	30.3% (27.6–33.1)	28.0% (25.8–30.4)	29.2% (27.5–31.0)
Obesity Class 1, ≥30 & <35			
18–29	11.8% (7.9–17.1)	20.4% (16.4–25.2)	15.7% (12.7–19.2)
30–44	22.0% (18.3–26.2)	31.0% (27.6–34.7)	26.2% (23.5–29.1)
45–59	25.7% (22.0–29.7)	28.8% (25.3–32.6)	27.2% (24.6–30.1)
60–69	19.8% (15.6–24.9)	24.5% (20.4–29.1)	22.3% (19.1–25.9)
Overall	19.0% (16.5–21.6)	26.3% (24.0–28.6)	22.4% (20.6–24.3)
Obesity Class 2, ≥35 & <40			
18–29	5.4% (2.9–9.6)	10.4% (7.7–13.9)	7.6% (5.7–10.2)
30–44	10.1% (7.9–12.9)	13.7% (11.5–16.3)	11.8% (10.2–13.6)

Age group (years)	Men	Women	Overall
45–59	9.7% (7.3–12.8)	16.4% (13.5–19.8)	13.0% (11.1–15.2)
60–69	4.9% (3.0–7.7)	16.7% (12.0–22.6)	11.1% (8.3–14.6)
Overall	7.9% (6.4–9.6)	13.6% (12.0–15.3)	10.6% (9.5–11.8)
Obesity Class 3, ≥40			
18–29	2.8% (1.4–5.5)	4.1% (2.6–6.4)	3.4% (2.3–5.0)
30–44	4.7% (3.3–6.6)	11.1% (9.0–13.6)	7.7% (6.3–9.2)
45–59	4.1% (2.6–6.3)	11.8% (9.4–14.7)	7.9% (6.4–9.7)
60–69	1.5% (0.7–3.1)	6.8% (4.9–9.5)	4.3% (3.2–5.8)
Overall	3.6% (2.7–4.7)	8.5% (7.3–9.8)	5.9% (5.2–6.8)

Appendix E Table 2 body mass index (6 categories) by sex and age–excluding pregnant women

Hypertension / Raised Blood Pressure

Age group	% with no history of raised BP (95% CI)		
	Men	Women	Overall
18–29	15.4% (11.5–20.3)	6.5% (4.4–9.4)	11.3% (8.9–14.2)
30–44	33.8% (29.1–38.9)	23.4% (20.0–27.2)	29.1% (26.0–32.4)
45–59	44.7% (39.6–50.0)	37.8% (32.5–43.4)	41.5% (37.6–45.5)
60–69	48.4% (40.3–56.6)	43.5% (35.4–51.9)	46.1% (40.5–51.9)
Overall	29.3% (26.5–32.2)	20.5% (18.3–22.9)	25.2% (23.3–27.2)

Appendix E Table 3 Percentage with raised blood pressure among people with no prior diagnosis of hypertension by age and sex

Division	% of respondents (with 95% CI)
Western	28.2 (25.1–31.5)
Central	20.1 (17.1–23.4)
Northern	28.4 (24.5–32.8)
Eastern	27.7 (22.6–33.4)
Overall	25.2 (23.3–27.2)

Appendix E Table 4 Percentage with raised blood pressure among people with no prior diagnosis of hypertension by Division

Age group	% with a history of raised BP (95% CI)		
	Men	Women	Overall
18–29	41.3% (24.0–61.0)	34.1% (22.1–48.6)	37.5% (26.6–50.0)
30–44	70.7% (61.2–78.7)	50.6% (41.2–59.9)	59.6% (52.4–66.3)
45–59	75.4% (68.3–81.3)	74.2% (68.1–79.4)	74.7% (70.1–78.8)
60–69	79.2% (70.6–85.8)	72.7% (65.1–79.1)	75.3% (69.8–80.1)
Overall	68.7% (62.3–74.4)	61.5% (57.0–65.9)	64.7% (60.8–68.4)

Appendix E Table 5 Percentage with raised blood pressure among people with a previous diagnosis of hypertension by age and sex

Diabetes and Raised Blood Glucose

Age group (years)	Men	Women	Overall
Greater or equal to 7.0 mmol/L			
18–29	2.5% (1.2–5.1)	4.6% (2.7–7.7)	3.5% (2.2–5.3)
30–44	13.1% (10.1–16.8)	10.6% (7.1–15.6)	11.9% (9.6–14.8)
45–59	13.0% (10.1–16.6)	18.8% (15.3–22.8)	15.9% (13.5–18.6)
60–69	15.0% (10.3–21.5)	28.8% (21.9–36.8)	22.2% (17.8–27.3)
Overall	9.0% (7.5–10.8)	11.6% (9.5–14.2)	10.3% (9.0–11.7)
Less than 5.6 mmol/L			
18–29	73.1% (66.8–78.6)	78.2% (73.3–82.4)	75.5% (71.3–79.1)
30–44	52.9% (48.1–57.6)	59.1% (54.5–63.6)	55.8% (52.5–59.0)
45–59	49.1% (43.9–54.4)	43.1% (38.5–47.8)	46.2% (42.3–50.0)
60–69	47.3% (40.6–54.0)	41.8% (33.8–50.3)	44.4% (39.1–49.9)
Overall	59.7% (56.4–62.8)	61.2% (58.2–64.2)	60.4% (58.2–62.6)
5.6 to 6.9 mmol/L			
18–29	24.4% (19.0–30.7)	17.3% (13.5–21.9)	21.1% (17.5–25.2)
30–44	34.0% (29.6–38.8)	30.2% (26.3–34.5)	32.3% (29.3–35.4)
45–59	37.9% (33.3–42.7)	38.1% (33.5–42.9)	38.0% (34.6–41.5)
60–69	37.7% (31.1–44.7)	29.4% (23.7–35.9)	33.4% (28.9–38.2)
Overall	31.3% (28.5–34.3)	27.1% (24.6–29.7)	29.3% (27.3–31.4)

Appendix E Table 6 Percentage of people with ranges of fasting blood glucose among people with no previous diagnosis of diabetes by age and sex

Blood glucose status	Western	Central	Northern	Eastern
Greater or equal to 7.0 mmol/L	10.0% (8.4–11.9)	11.2% (8.6–14.5)	9.4% (7.4–11.8)	8.5% (3.8–17.6)
5.6 to 6.9 mmol/L	32.1% (29.0–35.2)	28.7% (25.1–32.6)	26.2% (22.6–30.1)	19.3% (13.0–27.7)
Less than 5.6 mmol/L	57.9% (54.6–61.1)	60.1% (55.8–64.2)	64.4% (60.1–68.5)	72.2% (61.8–80.7)

Appendix E Table 7 Percentage of people with ranges of fasting blood glucose among people with no previous diagnosis of diabetes by Division

Age group (years) Less than 5.6 mmol/L	Men	Women	Overall
18–29	30.6% (10.4–62.6)	79.7% (58.8–91.5)	57.2% (37.1–75.3)
30–44	20.1% (9.7–37.1)	23.1% (15.7–32.8)	21.7% (14.6–31.0)
45–59	11.8% (7.2–18.8)	12.7% (7.5–20.7)	12.3% (8.6–17.4)
60–69	17.7% (9.8–29.9)	14.1% (7.3–25.2)	15.9% (10.4–23.5)
Overall	17.7% (12.2–25.0)	24.8% (19.4–31.2)	21.5% (17.3–26.5)
5.6 to 6.9 mmol/L			
18–29	44.7% (16.9–76.3)	6.1% (1.3–24.9)	23.7% (9.5–48.1)
30–44	28.7% (16.4–45.2)	30.0% (20.1–42.3)	29.4% (21.1–39.3)
45–59	26.1% (18.5–35.5)	16.5% (10.4–25.2)	20.8% (15.8–26.9)
60–69	20.5% (12.8–31.1)	20.5% (13.4–30.1)	20.5% (15.0–27.3)
Overall	28.2% (21.5–35.9)	19.1% (14.7–24.3)	23.3% (19.2–28.0)
Greater or equal to 7.0 mmol/L			
18–29	24.8% (7.5–57.0)	14.2% (5.0–34.4)	19.0% (8.6–37.0)
30–44	51.2% (35.3–66.8)	46.9% (35.8–58.2)	49.0% (39.4–58.7)
45–59	62.0% (51.8–71.3)	70.8% (61.4–78.7)	66.9% (60.2–73.0)
60–69	61.8% (49.3–72.9)	65.4% (54.7–74.8)	63.7% (55.6–71.0)
Overall	54.1% (46.3–61.7)	56.1% (49.3–62.6)	55.2% (49.8–60.4)

Appendix E Table 8 Percentage of the population within key blood glucose categories among people with a prior history of diabetes by age and sex

Division	Less than 5.6 mmol/L	5.6 to 6.9 mmol/L	Greater or equal to 7.0 mmol/L
Western	17.2% (11.9–24.1)	22.1% (17.3–27.9)	60.7% (53.5–67.4)
Central	23.2% (16.4–31.8)	27.0% (19.2–36.5)	49.7% (40.4–59.1)
Northern	25.1% (14.7–39.5)	23.0% (14.1–35.1)	51.9% (38.0–65.6)
Eastern	42.0% (21.1–66.2)	5.6% (1.3–21.2)	52.4% (28.5–75.3)

Appendix E Table 9 Percentage of the population within key blood glucose categories among people with a prior history of diabetes by Division

Cardiovascular Risk Score

Age group (years)	Men	Women	Overall
< 5%			
40–54	43.1 (38.8–47.6)	68.4 (64.8–71.8)	55.0 (52.2–57.9)
55–69	0.6 (0.1–3.2)	12.5 (9.6–16.1)	6.7 (5.1–8.8)
≥5% & <10%			
40–54	43.7 (39.4–48.2)	25.9 (22.6–29.5)	35.3 (32.6–38.2)
55–69	34.3 (29.4–39.6)	52.7 (48.4–56.9)	43.8 (40.5–47.1)
≥10% & <20%			
40–54	12.5 (9.8–15.8)	5.3 (3.6–7.7)	9.1 (7.5–11.0)
55–69	54.2 (48.9–59.3)	32.6 (28.7–36.8)	43.1 (39.8–46.4)
≥20% & <30%			
40–54	0.6 (0.3–1.4)	0.4 (0.2–1.1)	0.5 (0.3–1.0)
55–69	10.1 (7.7–13.2)	2.0 (1.1–3.4)	5.9 (4.7–7.5)
≥30%			
40–54	0.0 (0.0–0.0)	0.0 (0.0–0.0)	0.0 (0.0–0.0)
55–69	0.7 (0.3–1.9)	0.3 (0.0–1.8)	0.5 (0.2–1.2)

Appendix E Table 10: 5 category cardiovascular disease risk

Multiple risk factors

Sex	0 conditions	1 condition	2 conditions	3 conditions
Men	38.5% (35.5–41.5)	30.9% (28.2–33.6)	22.1% (19.9–24.3)	8.5% (7.1–9.8)
Women	34.8% (32.2–37.5)	35.0% (32.6–37.4)	20.9% (19.1–22.7)	9.2% (7.8–10.7)
Overall	36.7% (34.6–38.9)	32.9% (31.1–34.7)	21.5% (20.1–23.0)	8.8% (7.9–9.8)

Appendix E Table 11 Percentage of the population with key risk factors(i) hypertension (ii) diabetes (iii) high cholesterol

Number of conditions	% of respondents (95% CI)			
	18-29	30-44	45-59	60-69
None	2.1% (1.2–3.7)	1.4% (0.8–2.4)	1.0% (0.6–1.8)	1.2% (0.5–2.9)
1 condition	27.2% (23.5–31.2)	12.4% (10.5–14.6)	10.3% (8.6–12.4)	9.1% (6.9–11.9)
2 conditions	39.9% (35.9–44.1)	37.9% (34.9–41.1)	27.3% (24.6–30.3)	25.7% (22.3–29.5)
3 conditions	24.0% (20.4–28.0)	36.8% (33.8–39.9)	44.0% (40.9–47.2)	42.1% (37.6–46.7)
4 conditions	6.6% (4.8–9.0)	10.6% (8.7–12.9)	16.3% (14.1–18.7)	21.9% (18.5–25.6)
5 conditions	0.2% (0.0–1.0)	0.8% (0.5–1.5)	1.0% (0.6–1.7)	0.0% (0.0–0.3)

Appendix E Table 12 Percentage of the population with the five combined cardiovascular disease risk factors by age

Number of conditions	% of respondents (95% CI)		
	Men	Women	Overall
None	2.2% (1.4–3.3)	0.8% (0.4–1.7)	1.5% (1.1–2.2)
1 condition	18.7% (16.5–21.1)	14.7% (12.7–17.0)	16.8% (15.2–18.4)
2 conditions	36.4% (33.5–39.3)	33.4% (31.0–35.9)	34.9% (33.0–36.9)
3 conditions	32.0% (29.4–34.7)	37.3% (35.0–39.8)	34.6% (32.7–36.5)
4 conditions	10.1% (8.5–12.0)	13.3% (11.7–15.1)	11.6% (10.4–12.9)
5 conditions	0.7% (0.4–1.3)	0.4% (0.2–0.7)	0.6% (0.4–0.9)

Appendix E Table 13Percentage of the population with the five combined cardiovascular disease risk factors by sex

APPENDIX F: ENUMERATION AREA SAMPLE CALCULATION

Stratum	Division	HH	Population	Pop 18-69 years	Proportion total households	Enumeration area Sample (based on total population)	Enumeration area Distribution by Strata
1	Central East Urban	58,477	281,017	183,374	0.30 (0.3047), these are calculated from the HH There are very small rounding differences	330	100
2	Central Rural	20,765	101,748	56,798	0.11 (0.1082)		35
3	Eastern Rural	7,741	33,167	18,207	0.04 (0.0403)		15 + ROTUMA (total of 16)
4	Northern Urban	8,816	39,304	24,303	0.05 (0.0459)		15
5	Northern Rural	19,920	92,610	53,769	0.10 (0.1038)		34
6	Western Urban	41,423	183,280	119,412	0.22 (0.2158)		71
7	Western Rural	34,768	153,761	95,929	0.18 (0.1812)		60
Total		**191,910**	**884,887**	**551,792**	**1.00**		**331**


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