

Original Study

## BASELINE KNOWLEDGE, ATTITUDE, PRACTICE AND BARRIERS (KAPB) REGARDING LIFESTYLE RISK FACTORS FOR NON COMMUNICABLE DISEASES IN BA PROVINCE, FIJI

Naidu S L<sup>1</sup>, Heller G<sup>2</sup>, Deakin L<sup>3</sup>, Naidu J<sup>4</sup>, Tukana I<sup>5</sup>, Nakalevu S<sup>6</sup>, Baseisei M<sup>7</sup>, Daivalu A<sup>8</sup>, Gyaneshwar R<sup>9</sup>

1. Adjunct Associate Professor in Obstetrics & Gynaecology, College of Medicine, Nursing & Health Sciences, Fiji National University; Medical Director, Project Co-ordinator Viseisei Sai Health Centre (VSHC). Correspondence email: swaran.naidu108@gmail.com
2. Professor, Department of Statistics, Macquarie University, Sydney
3. Public Health Nurse, Viseisei Sai Health Centre
4. Research Officer, Viseisei Sai Health Centre
5. Doctor, National NCD Advisor, Ministry of Health and Medical Services
6. Doctor, Divisional Medical Officer (DMO) Western, Ministry of Health and Medical Services
7. Project Manager, Viseisei Sai Health Centre
8. Project Nurse, Viseisei Sai Health Centre
9. Medical Director VSHC, Viseisei Sai Health Centre

### ABSTRACT

Non-communicable diseases (NCDs) are the major causes of premature death and disability in Fiji, accounting for 80% of mortality in the Fijian population [1]. This is the first community-based research in Fiji on knowledge, attitude, practice and barriers (KAPB) regarding lifestyle risk factors that contribute to NCDs and the impact of health promotion activities on their KAPB. This paper reports on baseline demographics and KAPB findings. Paper 2 will report on the impact of health promotion activities on KAPB.

**Methods:** This is a prospective questionnaire based survey in 30 randomly selected communities located in Ba Province, Fiji, conducted between May 2016 and April 2018.

**Results:** There were 952 participants with mean age was 43.2years (SD=15.4) range 18 to 83; 63.4% were iTaukei, 35.8% were Fijians of Indian Descent (FID) and 0.7% 'Others' and 70% were females. There was high awareness that smoking (94.3%), alcohol abuse (82.8%), kava abuse (72.6%), high salt intake (94.3%) and physical inactivity (97.9%) were not good for health. However, in-depth **knowledge** of effects of these risk factors was low, with only around 20% having a good knowledge. For **attitude**, 52.6% disagreed and 41.4% were neutral to smoking, 89.9% disagreed with alcohol abuse, 79% disagreed with Kava abuse, 84% agreed with low salt intake, and 84.6% agreed with being physically active. As for **practice**, 20.7% of participants were current smokers, 20.6% drank alcohol, 37.9% drank kava, 30.5% added extra salt to food, and 30.1% were physically inactive. Having good knowledge did not significantly decrease practice of smoking, alcohol or kava use. Addiction was the major reported **barrier** to cessation of smoking (60.2%), alcohol abuse (46%) and kava abuse (34.2%) whereas, 'unwilling to change' for good nutrition (51.6%) and 'laziness' for physical activity (43%).

**Conclusion:** The awareness of the various NCD lifestyle risk factors is high with poor in-depth knowledge of their impact on NCDs. Unfortunately having good knowledge and appropriate attitude did not translate to decreases in risky lifestyle practices.

**Keywords:** *Non communicable diseases, smoking, alcohol, kava, nutrition, physical activity knowledge, attitude, practice and barriers*

### INTRODUCTION

Of the 15 provinces in Fiji, Ba Province is the most populous province with its 247,708 residents accounting for 28.0% of Fiji's population [2]. It comprises of the districts of Nadi, Lautoka, Ba, and Tavua, where this study was conducted. Fiji's population comprises of 56.8% iTaukei (indigenous to Fiji), 37.5% Fijian of Indian

Descent (FID) and 5.7% Others [3]. Overall in Fiji about 44.1% of the population live in rural areas<sup>2</sup>.

Non communicable diseases (NCDs) are the major causes of premature death and disability in Fiji, accounting for 80% or more of mortality [1,4]. NCDs in Fiji are thought to be contributing to a significant plateau in life

expectancy since the early 1990s [5]. The Fiji Ministry of Health and Medical Services, alongside its developmental partners, World Health Organization (WHO) and the Secretariat of the Pacific Community (SPC), have ongoing health promotion interventions in response to this trend. However recent data indicates that the prevalence of NCDs and their impact on the well-being of Fijians is at crisis level [6]. The steady transition from indigenous community lifestyle traditions towards a more urban and western orientated environment continues to take its toll on this lifestyle diseases burden of NCDs [7]. The recognised lifestyle risk factors for NCDs in Fiji are smoking, alcohol abuse, kava abuse, poor nutrition and physical inactivity [1].

The Fiji national STEPs surveys in 2002 [8] and 2011 [9] indicated Diabetes Mellitus increased from 16% to 29.6% and Hypertension from 19.1% to 31% during that period. Diabetes levels increased with age and were higher amongst FID (21.2%) than iTaukei (11.5%). Overweight and obesity increased from 29.9% to 34.9% and 18% to 32% respectively. However, it is noted that the age range for 2002 survey was 15 to 64 years (with 30% of the sample in the 15 to 24 years age group) whereas for the 2011 survey the age range was 25 to 64 years, which would have affected prevalence rates. The worsening NCD trends can be reversed by lifestyle modification and targeted health interventions as shown in many neighbouring developed countries [10]. The health indicators are determined by several factors known as 'social determinants of health' [11], which include poverty, education, environment, socio economic status, gender equality and employment status. The Ba Province has some of the poorest households in Fiji with low disposable family income [12].

This research was conducted from a primary health care facility (Viseisei Sai Health Centre), in 30 randomly selected communities in the Province of Ba, from May 2016 to April 2018, as part of a community empowerment project entitled the 'Collective Community Ownership of Health and Social Issues' (CCOHSI) [13] which was funded by the European Union in the Pacific. The project was designed to enhance the capacity of these 30 communities to support sustainable improvements in defined modifiable lifestyle risk factors in health and social indicators. As part of this project a baseline survey was conducted to assess knowledge, attitude, practice and barriers (KAPB), regarding lifestyle risk factors for NCDs in the 30 randomly selected communities of Ba Province Fiji. A follow up survey was conducted after intervention which is to be reported separately.

## AIM

To assess the impact of health promotional activities on KAPB regarding lifestyle risk factors for NCDs in 30 randomly selected communities in the Ba Province, Fiji Islands.

## OBJECTIVES

- i. To determine the baseline KAPB regarding lifestyle risk factors for NCDs from the 30 communities in Ba Province. (Results reported in this paper 1)
- ii. To assess the short-term impact of health promotion activities on KAPB regarding lifestyle risk factors for NCDs. (Results reported in paper 2)

## METHODOLOGY

Thirty communities from all 227 villages and settlements of Ba province were randomly selected using online software [14]. Information sessions were held in the communities and individuals were invited to participate in the survey. Informed consent was obtained for participation and trained staff administered questionnaires using standardized pre-tested questionnaires.

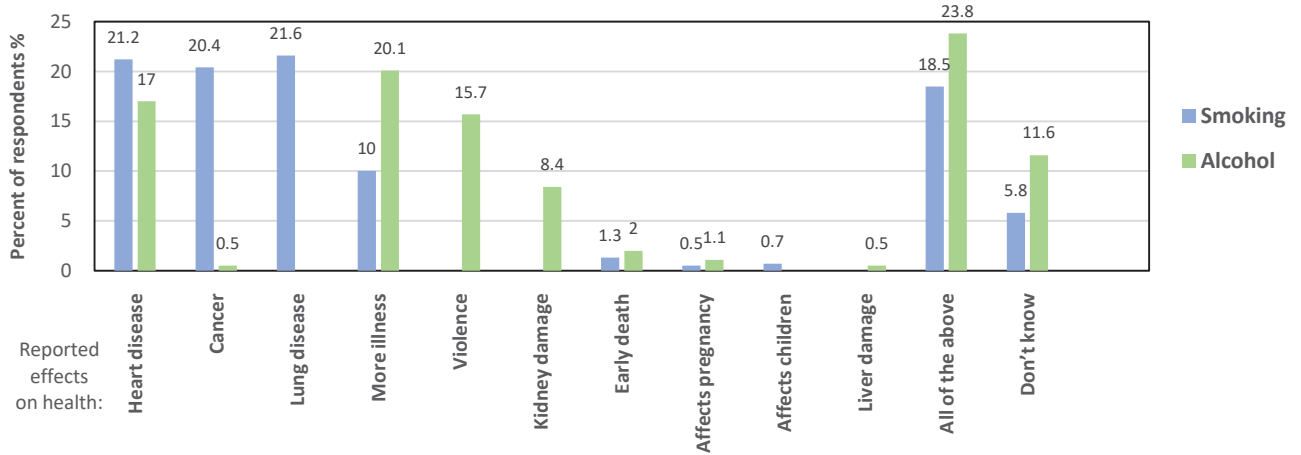
The questionnaires included demographics and KAPB questions pertaining to NCDs and its lifestyle factors of smoking, alcohol abuse, kava abuse, poor nutrition and physical inactivity. To gauge attitude participants were asked how they felt about a particular lifestyle practice. Likert scale was used for all attitude questions where responses were in five categories of 'strongly agree', 'agree', 'neutral', 'disagree', or 'strongly disagree' to the lifestyle practice.

The data was then captured in an excel spreadsheet; cleaned, coded and transported to SPSS version 24 statistical software for analysis. Univariate and bivariate analyses were performed; univariate analysis for frequency computations and bivariate analysis in computing associations between variables. The Chi-square test was used to test associations between categorical variables. A 5% significance level was used throughout.

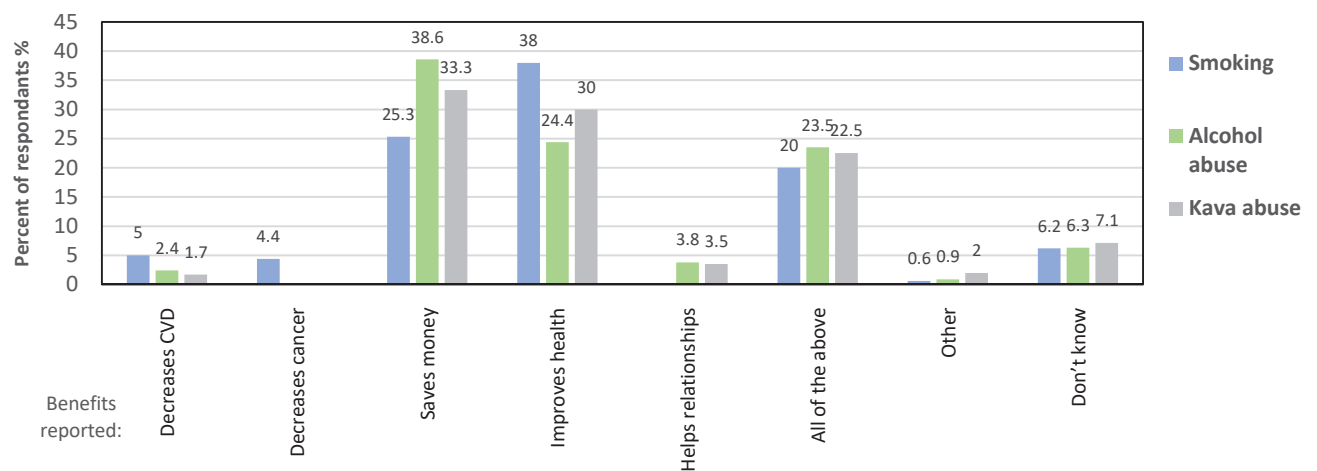
Ethical approval was obtained from the College Health Research Ethics Committee of the College of Medicine, Nursing and Health Sciences, Fiji National University and the Ministry of Health Fiji.



**Figure 1: Knowledge of the effect of smoking and alcohol abuse on health**



**Figure 2: Knowledge of benefits of cessation of smoking, alcohol and kava**



**Practice:** There were 20.7% current smokers (Figure 3) with significantly more males (46.3%) than females (9.6%) ( $p < 0.001$ ). Smoking was more prevalent amongst iTaukeis, with 25.7% current smokers and 11.3% in FIDs. Almost 70% of participants said someone in their family/household smoked. There was a significant difference in smoking practices by profession: skilled (47.2%) and non-skilled workers (37%) are more likely to be current smokers, compared to professionals (14.6%) and students (30.8%) ( $p < 0.001$ ). The reason for smoking given by smokers was 'peer acceptance' (50%) and 'relaxation/stress' (30.7%), 'like it' (12.2%), 'all the above' (3.5%), and 1.6% 'don't know'. The majority of smokers (60.4%) reported smoking at 'grog sessions' (groups of people sitting drinking kava often for prolonged periods of time) and 5.5% at 'alcohol sessions'; 6.3% at 'parties', 6.7% at 'work', 7.1% 'when stressed', 4.7% 'no pattern', 3.1% 'all the time' and 6.3% 'don't know' or were vague about times they smoke. When stratified by ethnicity, 64% of iTaukeis and 45.5% of FIDs smoked during grog sessions. Almost 65% reported that they commenced smoking aged 19 or

above; 29.8% started between the ages of 14-18 and 5.2% started below 13.

Of those who had ever smoked, 85% had attempted to stop smoking at some stage and 39% of these said they had quit. Of those who had ever tried to stop smoking, 33.2% was due to 'sickness', 'cultural/religious reasons' (12.4%), 'family' (18.8%), 'financial' (13%) and 18% were 'self-motivated to stop' and 5% 'did not know'. There was no significant difference in the age categories of those who had ever tried to stop smoking.

The majority (84.6%) of participants agreed that their community should be tobacco free and 90% thought that people should be asked to stop smoking in public places. When asked whose responsibility it was to bring about changes towards tobacco control, 55% said it was an individual's responsibility, 18% said government's responsibility and 23% said community leaders' responsibility.

**Barriers:** There was a significant difference in the perceived barriers to cessation of smoking amongst non-

smokers and smokers ( $p < 0.001$ ). The reported barriers to cessation of smoking by non-smokers versus smokers were 'addicted' (66.2% versus 60.2%); 'stress' (7.2% versus 17.6%); 'peer pressure' (1.2% versus 2.9%); 'other reasons' (3.5% versus 8.2%) and 'don't know' (21.9% versus 10.6%).

The reasons for failing in their attempts at cessation of smoking were; 'influence of grog and alcohol sessions' (26.7%), 'peer influence' (13.3%), 'after giving birth or family reasons' (15%), 'relaxation' (13.3%), 'cultural restriction lifted' (7.5%), and 'recovered from illness' (6.7%). Another 17.5% were from several other smaller categories of reason.

### **ALCOHOL KAPB**

**Knowledge:** The majority of participants (82.8%) reported alcohol abuse was 'bad for them', while 10.6% reported 'small amounts was okay'. Twenty four percent had good knowledge of effect of alcohol abuse (Figure 1) and benefits of stopping alcohol abuse (Figure 2). A third (33.4%) was aware that 1 to 2 alcoholic drinks per day were acceptable, whereas 47% said no alcoholic drinks were acceptable.

**Attitude:** When participants were asked how they felt about alcohol abuse, 37.3% strongly disagreed with the practice, 52.6% disagreed, 4.3% were neutral, 2.5% agreed and 3.4% strongly agreed.

**Practice:** Figure 3 shows 20.6% were current alcohol drinkers of which significantly more were males (43.5%) than female (10.8%) ( $p < 0.001$ ). More iTaukei (25.7%) reported consuming alcohol than 11% FIDs ( $p < 0.0001$ ). However, there was no significant difference in alcohol consumption practices between iTaukei men (44%) and FID men (40.3%). Significantly more iTaukei women (15.9%) reported being current alcohol drinkers than FID women (3%) ( $p < 0.001$ ). There is a significant trend ( $p = 0.003$ ) of a decrease in alcohol drinking with increasing age category with 31.8% in 18-19 years, 32.8% in 20-29 years, 17.6% in 30-39 years, 20.7% in 40-49 years, 12.3% in 50-59 years and 7.8% current drinkers in the over 60 years age groups. The majority drink alcohol at 'parties/functions' (42%), 'grog sessions' (14%), 'at home' (13.6%) and 'with neighbours' (13.3%). Sixty percent drank less than once per week, 13.5% on weekends only, 17.6% 3 days a week, 3.7% everyday, 4.5% on 'pay day' and 0.8% did not know. Forty percent reported drinking for 'peer acceptance' and 29.5% for 'relaxation'.

Seventy percent commenced drinking alcohol at age 19 years or above, 23.4% between 14 to 18 years, 3% aged 14 years or below. Seventy-seven percent of participants

had tried to stop drinking alcohol. The main reason for trying to stop drinking alcohol was family and relationships (28.4%), health reasons (20.2%), religious or cultural reasons (15.4%) and financial reasons (14%).

**Barriers:** There was a significant difference in perception of barriers to cessation of alcohol abuse between non-drinkers and current drinkers ( $p < 0.001$ ). Barriers include 'addicted' (63.6% versus 46%); 'socially accepted' (4.9% versus 18.2%); 'stress' (8.2% versus 12.5%); 'don't know' (20.2% versus 18.8%); 'other' (31.1% versus 4.5%) as reported by non-drinkers and current drinkers respectively.

### **KAVA KAPB**

**Knowledge:** The majority of participants (72.6%) said kava drinking was 'bad for them' whereas 12.3% said it was 'good for them', 10.7% were 'neutral', 0.5% said 'small amounts was good' and 3.8% reported 'don't know' (Figure 3). No specific questions were asked on the direct impact of kava abuse on NCDs as there is no known direct documented evidence of it.

When asked how many bowls of kava was good to take per day; 31.9% said none; 28.7% said 1 to 2 bowls, 19.7% said 2 to 5 bowls, 8.5% said 6 to 10 bowls, 3.4% said 11 to 15 bowls, 4.7% said 16+ bowls per day. Figure 2 shows that 33.3% said that cessation 'saves money' and 30% reported it 'improves health'.

**Attitude:** When asked how they felt about kava abuse 30% strongly disagreed with the practice, 49% disagreed, 14.8% were neutral and 6.1% either agreed or strongly agreed.

**Practice:** Thirty-eight percent were current kava drinkers (Figure 3). There was a highly significant difference by gender where 66.3% of males and 25.8% of females were kava drinkers ( $p < 0.001$ ). More iTaukeis (50.8%) than FIDs (15%) reported consuming kava ( $p < 0.001$ ).

Thirty-one percent consumed more than 21 bowls of kava per session, 26.4% said 11-20 bowls, 6% said 6 to 10 bowls and 26.4% said less than 5 bowls.

Females consumed significantly less ( $p < 0.001$ ) Most reported consuming kava at traditional functions (58%), 35.6% said occasionally and 6.2% everyday.

The number of hours reported spent sitting per grog session was less than 30 minutes for 14%, 1 to 2 hours for 37.2%, 3 to 5 hours for 36.3% and more than 5 hours for 12.4% of kava drinkers.



Fifty-four percent commenced drinking kava between ages 19 to 29 years, 14.1% started at 30 years or above and 13.7% at 18 or younger.

**Barriers:** There was a significant difference in perception of barriers to cessation of kava abuse ( $p < 0.001$ ) between those that do not drink kava and those that drink kava. Perceived barriers include 'addicted' (61.5% versus 34.2%); 'stressed' (4.8% versus 4.5%), 'cultural/tradition' (10.4% versus 21.1%), 'other' (10.4% versus 28.3%) and 'don't know' (13% versus 11.9%) respectively for kava non-drinkers and drinkers.

**NUTRITION KAPB**

**Knowledge:** Most participants (94.3%) knew that adding extra salt was bad for them. Similarly, 97.6% of participants were aware that oily and fatty food was not good for them

**Attitude:** When asked how they felt about salt restriction, 48.6% strongly agreed with this practice, 35.4% agreed, 3.6% were neutral, 4.7% disagreed and 6.9% strongly disagreed.

Similarly, with the attitude towards daily intake of vegetables, 47.9% strongly agreed, 46.2% agreed, 2.7% were neutral and 3.1% strongly disagreed or disagreed. Again an overwhelming 98% agreed or strongly agreed to the need to eat fruits daily.

**Practice:** Thirty percent reported adding extra salt to their food while eating, and of these 39.7% were iTaukei and 14.5% were FID (Figure 3).Forty-two percent reported they consumed fruit 1 to 2 days a week, 29.4% 3 to 5 days a week, 25.7% more than 5 days; 2.8% said they never eat fruit. Fifty-four percent reported they consumed 1 to 2 serves of vegetables per day, 22.6% had 3 to 5 serves and 22% had more than 5 serves while 1.1% reported none per day.

**Barriers:** 'People unwilling to change' was the most common (51.6%) barrier reported, followed by 'lack of knowledge' (19.7%), 'poverty' (14.4%), 'too hard' (3.2%), 'lack of access' (1.8%) and 'don't know' (9.3%).

**PHYSICAL ACTIVITY KAPB**

**Knowledge:** Ninety-eight percent said being physically active was good for them (Figure 3).Benefits of physical activity reported 'improved fitness' (67.7%), 'lowers BP' (4%), 'improves blood sugar' (1.5%). Around 22.4% had good knowledge and 4.4% 'don't know'. Sixty-two percent of participants said at least 30 minutes of exercise per session was required, 27% said 1 hour 3 to 4 days a week, and 11.2% did not know.

**Attitude:** Forty-eight percent strongly agreed that being physically active was good for them, 36.4% agreed, 0.8% were neutral and 14.5% either disagreed or strongly disagreed.

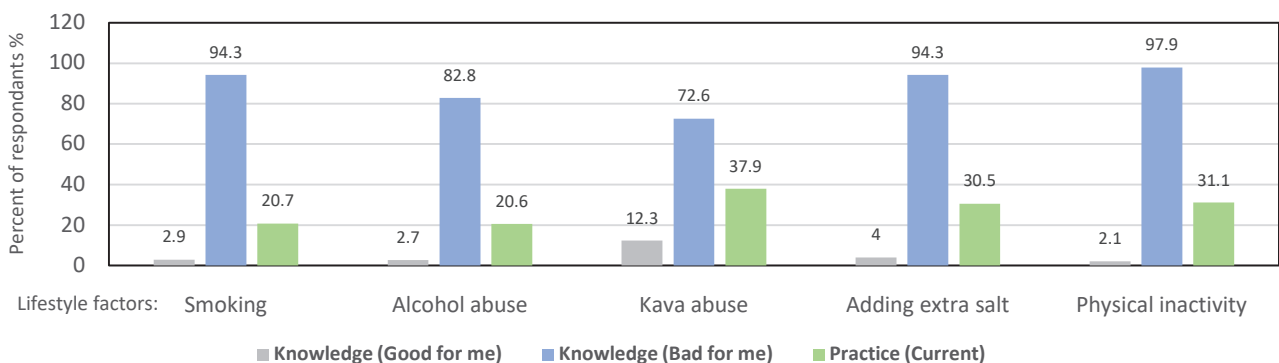
**Practice:** Overall 68.9% said they exercise 3 days or more per week and 31.1% were physically inactive (no exercise or less than 3 days a week) (Figure 3). Fifty-four percent reported that their daily work involved vigorous activity where they felt their heart rate increase. Exercise included walking to and from work, working in farms/gardens as well as doing some household duties that were vigorous and sustained for 30 minutes or more. Sitting and watching television was the commonest way to spend spare time during the day for 54% of participants. Over half (54.7%) of the participants reported that they had physical activity sessions for youth in their community.

**Barriers:** The barriers to adequate physical activity practices reported were 'laziness' (43%), 'no time' (23.8%), 'too busy with family' (13.5%), 'other' (12.5%) and 'don't know' (7.2%).

From the above KAPB information there is a consistent pattern of high levels of superficial knowledge (awareness) where the participants are aware that certain lifestyle risk factors are not good for them whereas around 20% have good knowledge of effects of the risk factor.

Table 2 above shows no significant difference in the practice of the risk factors of smoking, alcohol or kava use between those participants with good knowledge and those with less knowledge. However, there was a significant improvement in physical activity practice with

**Figure 3: Basic knowledge (awareness) vs practice of lifestyle risk factors**



good knowledge of the benefits of physical activity (p=0.004).

**Table 2: Practice among those with good knowledge of effects of lifestyle risk factor**

PRACTICE	GOOD KNOWLEDGE*		Total	P value
	No	Yes		
<b>1. Smoking</b>				
Non smoker	71.9% (539)	72.9% (137)	100% (938)	P= 0.503
Current smoker	20.4% (153)	21.8% (41)		
Previous	7.7% (58)	5.3% (10)		
<b>2. Alcohol</b>				
Non Drinker	70.2% (506)	74.0% (162)	100% (940)	P=0.132
Current	20.5% (148)	21.0% (46)		
Previous	9.3% (67)	5.0% (11)		
<b>3. Kava</b>				
Non Drinker	39.3% (289)	33.3% (71)	100% (948)	P=0.066
Current drinker	60.7% (446)	66.7% (142)		
<b>4. Physical Activity</b>				
Do not exercise at least 3 days per week	33.2% (245)	23.5% (50)	100% (950)	P= 0.004
Exercises at least 3 days per week	66.8% (492)	76.5% (163)		

\*Good knowledge: Participants who had chosen the 'all of the above' option were aware of several effects of the lifestyle risk factor on health.

**DISCUSSION**

The awareness of the various NCD lifestyle risk factors being harmful is high but with variable in depth knowledge of their impact on NCDs as well as benefits of cessation. Approximately 20% had good knowledge of the benefits of cessation of smoking, alcohol abuse and kava abuse. When asked about the benefits of cessation of smoking and alcohol or kava abuse 23% to 38% percent of individuals said 'improves health' or 'saves money'. Although a substantial number had awareness that health will improve however detailed understanding was lacking in many. World Bank data shows that 'the poverty rate is significantly higher in rural areas of Fiji than urban areas (38.3% relative to 29.9% in the 2013-14 survey) [16]. For the study population, in which over 65% had a household cash income below \$500 a month, the benefit of saving money was important and this was verbalized in their answers. What is interesting is that those with good knowledge did not have a significantly lower practice of smoking, alcohol abuse or kava abuse (Table 2). This is consistent with the observation of Lantz et al [17] and Lindsay [18] who noted that less improvement was expected in behaviour change with provision of knowledge in unfavourable socio-economic

population groups. Peoples' ability to respond to health promotion messages and improve their own health and risk factor status as a result of the messages vary significantly [19].

As far as the benefits of adequate physical activity were concerned a similar percent had good knowledge (22.4%) and once again 'improves fitness' was the stand out answer (66.7%). However, there was very poor understanding of the impact of physical activity on lowering blood pressure, risk of diabetes and lowering blood sugar levels. Despite the attitude towards lifestyle risk being promising, it did not appear to translate into a lower level of practice of risk factors.

There is an overall decreasing trend in the number of current smokers in Fiji [5,8,9,20] from 36.6% in STEPS 2002, 30.8% in STEPS 2011 and 22% in WHO's in country profile 2016 and this current study 20.7% confirms the decreasing trend. All major surveys in Fiji show that more males than females smoke as evidenced by 53% males smoked compared to 18% females (STEPS 2002) [8] and 47% males compared to 14.3% females (STEPS 2011) [9]. The WHO [4] showed prevalence of 35% amongst males and 10% in females (2016). In this study, 46.3% males and 9.6% females were reported as being current smokers. This study confirms the previously reported [8, 9] higher rates of smoking and Kava abuse amongst iTaukei men and women compared to FIDs. Unlike smoking there was not a significant difference in alcohol consumption rates in males of both the ethnicities.

The current alcohol consumers in this study was 20.6%, which is similar to the 2002 STEPS [8] survey of 23.8% but a reduction from 2011 STEPS survey [9] of 30.8%. As more males drank alcohol than females the higher representation of females (70%) in this study would likely impact on this decrease in the overall alcohol consumption rate. A much higher percent of individuals drink kava (37.9%) compared to those who drink alcohol (20.6%) or smoked (20.7%). The overall prevalence of kava consumption in STEPS 2011 was 59%. The lower percentage in the current study would likely be due to the higher proportion of females, as 66.3% males drank compared with 25.8% females. In addition, the communities studied were predominantly rural.

There have been no studies demonstrating the effect of kava abuse on NCDs. However the influence of kava abuse on other NCD lifestyle risk factors is profound. Majority of the smokers (60.4%) in this study reported smoking at 'grog sessions' and most smokers reported the main reason for re-starting smoking was the

influence of kava and alcohol sessions. Macdonald et al [21] reported an association between kava, alcohol and tobacco was also seen in Vanuatu where most sessions of kava drinking concluded with consumption of beer and people almost always seemed to be smoking while drinking kava. Similar association was also seen in the STEPS surveys in Fiji. Kava sessions can be prolonged going on for several hours (36.3% for 3-5 hours and 12.4% for more than 5 hours) into early hours of the morning impacting on other lifestyle risk factors, such as physical inactivity due to prolonged sitting at 'grog sessions', inadequate sleep and poor nutrition. It likely promotes poor nutrition as it causes numbness of the tongue, possibly promoting addition of extra salt. Kava has been reported to be a drug with a pattern of psychoactive substance abuse that causes damage to health<sup>21</sup> and impacts on relationships<sup>22</sup>. It is also noted that kava drinking was more common amongst women (25.8%) than smoking (9.6%) or alcohol consumption (10.8%). The Fiji MOHMS recommendations for drinking kava include 'no more than 3-5 mid size bowls per occasion and at least 2 kava free nights per week' [22]. Recent report by the Food and Agriculture Organisation of the United Nations and the WHO [23] suggests that there is little documented evidence of direct adverse health effects with moderate kava consumption, and that if adverse health effects have occurred, its incidence is likely to be low. Unfortunately in this study 31% of kava drinkers consumed more than 21 bowls per session, 26.4% consumed 11-20 bowls, 6% consumed 6 to 10 bowls and only 26.4% consumed less than 5 bowls. Further studies are needed to define the parameters necessary to ensure safe use of kava.

As far as knowledge of salt, fruit and vegetables, and fatty food intake was concerned there was high awareness but this was not reflected in eating habits. Interestingly, the majority of participants reported 'people unwilling to change' as the most significant barrier. FIDs generally use more salt in their cooking whereas iTaukeis tend to add extra salt after cooking.

Physical inactivity rate was higher in this study (30.1%) than the 2011 STEPS survey [9] where overall 20.8% were inactive which may be due to the higher representation of females in the cohort. More women (28.7%) than men (12.8%) were physically inactive. The WHO [4] reports similar findings of inactivity where 23% females and 10% of males were inactive. WHO 'Studies in Polynesians and Micronesians' showed that diabetes was associated with physical inactivity [24], and urban dwellers were less physically active than their rural counterparts [25]. In the current study 54% of participants reported sitting and watching television as common activity to spend leisure time.

Interestingly 'addiction' was considered to be the major barrier to harmful lifestyle risk factors of smoking, alcohol and kava abuse, more so by the overall participants than by those who practice the risk factor. Yet when smokers who had tried to stop smoking and failed were asked about barriers to cessation, they did not see addiction as an issue but the 'influence of grog and alcohol sessions' as well as 'peer influence' as the main barriers. It also appears that some women stopped smoking during pregnancy but re-started after delivery. Others stopped because they were unwell or there was a traditional or cultural restriction for a period of time. Once they recovered from their illness or the restriction was lifted they went back to smoking.

### LIMITATIONS OF STUDY

1. The majority of the participants in this study were from rural areas with a smaller representation from urban/peri-urban communities, which has resulted in a similar study population distribution to that of rural Fiji (64% iTaukei, 33% FID, 3% others).
2. There were more females in the sample (70%), which is likely due to the fact that females generally are better responders to health related outreach activities and also that there is a significant gender differential in the Labour Force Participation Rates i.e. 76.4% for males and 37.4% for females [2]. The survey was mostly conducted during the daytime when many males may have been at work.

### CONCLUSION

There is overall awareness that lifestyle risk factors for NCDs are not good for one's health but in-depth knowledge of effects and benefits of cessation of risk behaviour is low in the 30 communities of Ba Province. This awareness however translates into appropriate negative attitude towards smoking, alcohol and kava abuse, physical inactivity and poor nutrition practices. Interestingly good knowledge and appropriate attitude did not appear to impact on practice of the risk factors. This study shows that kava drinking (grog sessions) adversely impacts on other lifestyle risk factors such as smoking, alcohol abuse, poor nutrition and physical inactivity. More research is required to gauge the harmful effects of abuse of kava in our communities. There is a need for greater health promotional activities designed for the local communities taking into consideration their specific social determinants of health.



## REFERENCES

- 68249704606/pdf/638420ESW0P1150isclosed0100310110 FJ.pdf
1. Fiji Ministry of Health and Medical Services (MOHMS). Health Status Report. Suva. Fiji Government. 2016. Available from: <http://www.health.gov.fj/wp-content/uploads/2018/03/Health-Status-Report-2016.pdf>
  2. Fiji Bureau of Statistics. Population and Housing Census. Suva. Fiji Government. 2017. Available from: <https://www.statsfiji.gov.fj/index.php/census-2017/census-2017-release-1>.
  3. Fiji Bureau of Statistics. Population and Housing Census. Suva. Fiji Government. 2007. Available from: <https://www.statsfiji.gov.fj/index.php/statistics/2007-census-of-population-and-housing>.
  4. World Health Organisation (WHO). Non-communicable Diseases (NCD) Country Profiles Fiji. Geneva. WHO. 2018. Available from: [https://www.who.int/nmh/countries/2018/fji\\_en.pdf?ua=1](https://www.who.int/nmh/countries/2018/fji_en.pdf?ua=1).
  5. Carter K, Cornelius M, Taylor R, Ali S, Rao C, Lopez A, Lewai V, Goundar R, Mowry C. Mortality trends in Fiji. Australian and New Zealand Journal of Public Health. 2011; 35(5):412-420.
  6. Fiji MOHMS. National Strategic Plan 2016-2020. Suva. Fiji Government. 2016. Available from: <http://www.health.gov.fj/PDFs/Corporate%20Plan/Strategic%20Plan%202016-2020%20Executive%20Version.pdf>
  7. Morgan, J. Country in Focus: Turning the tide of diabetes in Fiji. The Lancet Diabetes and Endocrinology. 2015; 3(1):16-17. [https://doi.org/10.1016/S2213-8587\(14\)70240-2](https://doi.org/10.1016/S2213-8587(14)70240-2).
  8. Fiji MOHMS. Fiji Non-Communicable Diseases (NCD) STEPS Survey 2002. Suva. Fiji Government. Available from: <https://www.health.gov.fj/fijindr/index.php/catalog/1>
  9. Fiji MOHMS. Fiji Non-Communicable Diseases (NCD) Risk Factors STEPS Report 2011. Suva. Fiji Government. DATE. Available from: <https://www.health.gov.fj/wp-content/uploads/2018/11/Fiji-STEPS-Report-2011.pdf>
  10. Taylor R, Dobson A, Mirzaei M. Contribution of changes in risk factors to the decline of coronary heart disease mortality in Australia over three decades. Eur J CardiovascPrevRehabil. 2006; 13(5):760-8.
  11. WHO. Commission on Social Determinants of Health: Closing the gap in a generation final report. Geneva. WHO. 2008. Available from: [https://apps.who.int/iris/bitstream/handle/10665/43943/9789241563703\\_eng.pdf;jsessionid=877F82BEA2A2887D01A1324AF20E9C70?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/43943/9789241563703_eng.pdf;jsessionid=877F82BEA2A2887D01A1324AF20E9C70?sequence=1)
  12. World Bank Group. Poverty Trends, Profiles and Small Area Estimation (Poverty Maps) in Republic of Fiji (2003 - 2009). Washington, DC. World Bank Group. Available from: [http://documents.worldbank.org/curated/en/5415114](http://documents.worldbank.org/curated/en/541511468249704606/pdf/638420ESW0P1150isclosed0100310110 FJ.pdf)
  13. Viseisei Sai Health Center, Empower Pacific. Collective Community Ownership of Health and Social Issues (CCOHSI) Project Report. Lautoka, Fiji Islands, Viseisei Sai Health Center. 2018. ISBN: 978-982-98106-5-6.
  14. Haahr M. List Randomizer [Internet]. 2016. Available from: <https://www.random.org/lists/>
  15. IBM Corporation. IBM SPSS Statistics for Windows, Version 24. Armonk, NY: IBM Corp. 2013. Available from: <http://www-01.ibm.com/software/analytics/spss/>.
  16. World Bank Group. Fiji Poverty and Equity Brief. Washington, DC. World Bank Group. 2018. Available from: <http://documents.worldbank.org/curated/en/531821528202548810/pdf/Fiji-PEB-Spring-2018.pdf>
  17. Lantz P, Lichtenstein R, Pollack HA. Health Policy Approaches To Population Health: The Limits Of Medicalization. Health Affairs. 2007; 26(5):1253-1257.
  18. Lindsay J. Healthy living guidelines and the disconnect with everyday life. Critical Public Health. 2010; 20(4):475-487.
  19. Link B, Phelan J. Fundamental Sources of Health Inequalities. In: Mechanic D, Rogut L, Colby D, Knickman J, editors. Policy Challenges in Modern Healthcare. 3rd edition. New Brunswick, New Jersey and London. Rutgers University Press. 2006. p. 71-84.
  20. Linhart C, Tukana I, Lin S, Taylor R, Morrell S, Vatucaawaqa P, et al. Declines and Plateaux in Smoking Prevalence Over Three Decades in Fiji. Nicotine Tob Res. 2017; 19(11):1315-1321.
  21. MacDonald D, Jowitt A. Kava in the Pacific Islands: A contemporary drug of abuse? Drug and Alcohol Review. 2000; 19(2):217-227.
  22. Fiji MOHMS. Kava. Suva, Fiji Islands. 2019. Available from: [http://www.health.gov.fj/?page\\_id=3783](http://www.health.gov.fj/?page_id=3783).
  23. Food and Agriculture Organisation of the United States, World Health Organisation. Kava: a review of the safety of traditional and recreational beverage consumption technical report. Rome. 2016.
  24. Collins V, Dowse GK, Toelue P, Imo T, Aloaina F, Spark R, Zimmet P. Increasing prevalence of NIDDM in the Pacific island population of Western Samoa over a 13-year period. Diabetes Care 1994; 17(4):288-96. <https://doi.org/10.2337/diacare.17.4.288>
  25. Taylor R, Badcock J, King H, Pargeter K, Zimmet P, Fred T, Lund M, Ringrose H, Back F, Wang RL. Dietary intake, exercise, obesity and noncommunicable disease in rural and urban populations of three pacific island countries. Journal of the American College of Nutrition. 1992; 11(3):283-93.