The FJPH is a Fiji-based journal published for Public Health practitioners, public health researchers, clinicians and all allied health practitioners. Our goal is to provide evidence-based information and analysis they need to enable them to make the right choices and decisions concerning their health and health services provided to ensure better health for all.

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2. **Structured Abstracts** - for original research & systematic reviews of specific public health interest - between 500 and 3,000 words.
3. **Perspectives/Reviews** - Opinion pieces that analyze or discuss a recent issue or development in public health - between 250 and 2,500 words.
4. **Field Notes** - Journal-style pieces, with a more personal voice, words.

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2. The submitted manuscript has not been published nor will be published in another publication at the undergraduate, graduate or professional level.
3. The manuscript is the author’s own original work, and the authors are the sole authors of the manuscript.
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**Submission Types**

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2. **Abstracts** - structured abstracts for original research and
3. **Perspectives/Reviews** - Opinion pieces that analyze or discuss a recent issue or development in public health
4. **Field Notes** - Journal-style pieces, with a more personal voice, based on direct work in the field.

**Formatting**

- All manuscripts should be submitted as double-spaced, size 10, Times New Roman font in Microsoft Format (.doc or .docx only).
- Do not include the name of the manuscript’s authors on pages except the title page.

**Content Guidelines for Perspectives and Field Notes**

Perspectives are opinion-based pieces. Field Notes take a more personal, informal tone that addresses public health work the author has done in the field. For both Perspectives and Field Notes, we are looking for submissions that address fresh and exciting developments in public health from an interdisciplinary perspective. Perspectives and Field Notes should be grounded in the preexisting literature base. For citations and references, use APA style. If tables and figures are used, please include them at the end of the submission.

**Content Guidelines for Original Academic/Scientific Research Papers**

The appropriate structure of Academic/Scientific Research Papers varies based on the topic of the manuscript. With a few exceptions, following sections: a) Abstract; b) Introduction; c) Methods; d) Results; e) Discussion; f) Acknowledgments and References; g) Tables and Figures.

**Tables, Figures and Images**

- Tables, figures, and images should be the original work of the manuscript’s authors and should be included at the end of each manuscript.
- Captions should describe what the table/figure/image shows and the conclusion that should be drawn.
- Labels and axes should be clearly marked and readable.
- All tables, figures, and images should be submitted in high resolution please.
- References

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For the Pacific region, the millennium ushered in global changes that among other effects altered its landscape, its people, their diet and daily habits. Two decades in, and the Pacific is in a crisis due to Non-Communicable Diseases (NCDs), the leading cause of deaths in the region.

Of the four major risk factors for NCD’s (among the several scientifically-identified), poor diet appears to show the largest association, bigger than that contributed by smoking (tobacco), alcohol and physical inactivity combined, Hysen et al (2017) further found that “increased consumption of processed food containing excess amount of sugar, salt, saturated and trans-fats are compounded by low intakes of healthy foods like fruits and vegetables, whole grains, nuts, pulses and seafood”.

In the Pacific, our leaders have committed to addressing the NCD crisis and governments and communities are taking action with support from WHO in the development of “crisis response packages” (CRPs), which are action plans aligned with national NCD strategies and guided by local data and the very cost effective interventions or “best-buy” interventions. Most countries have prioritized tobacco control, salt reduction and implementation of the Package of Essential NCD Interventions (PEN) to improve and expand NCD prevention and control in primary health care facilities.

NCD’s account for 65% of deaths worldwide and make up more than half the global disease burden and some 80% of the 35 million deaths attributed to NCDs each year are in low- and middle-income countries. Furthermore, a systematic review by de Mestral et al (2017) found that individuals that come from a lower socioeconomic status (SES) are shown to consume more sodium than do people of high SES, confirming the current evidence of socioeconomic disparities in diet, which may influence the disproportionate non-communicable disease burden among disadvantaged socioeconomic groups. It is necessary therefore to focus on disadvantaged populations to achieve an equitable reduction in sodium intake to a population mean of 2 grams per day as part of WHO’s target to achieve a 25% relative reduction in NCD mortality by 2025.

Bringing the matter home, Fiji’s wellness concept slogan of “from womb to tomb” is an extremely ambitious but achievable goal that every stakeholder must try to be part of. There is a role for advocating breastfeeding in the face of this NCD crisis, as WHO reference shows that as adults, breastfed infants have lower type 2 diabetes, higher IQ, and more years of schooling and a few studies show a reduced risk of overweight and obesity in adults who were breastfed as infants. Breastfeeding mothers in addition have a reduced risk of ovarian and premenopausal breast cancers, type 2 diabetes (due to improving glucose hormones), hypertension and cardiovascular diseases and potentially also helps mothers lose weight, especially while their infants are being exclusively breastfed. Fiji has been able to address some of the important factors in the NCD picture by establishing relevant legal framework passed at the highest level - smoking has been addressed, salt reduction policies are in place, the PEN model trials have been rolled out and the Breastfeeding Initiatives continues across our health facilities. But even the most effective of all policies will not determine “what type and how much” goes into the mouth of every Fijian, because that is an individual choice. Food choice behaviours are now the challenge of the day, and it must be our national goal to arrive at scientifically-supported and locally-adapted methods to positively influence a younger generation in their food choices.

In this issue of the Fiji Journal of Public Health, as we focus on Nutrition as a vital discipline in the delivery of a holistic public health service that meets the emerging needs, it is pertinent that we ask key policy questions, and incorporate the arms of the public, private and academic sectors in an attempt to strengthen the response to the NCD crisis. Worldwide, many different “upstream” policy options have been proposed to promote healthier eating and prevent diet-related NCDs. These include targeting price, promotion, provision, composition, labelling, supply chain, trade and investment. Recent evidence is showing that “multi-component and price interventions appeared consistently powerful in improving healthy eating. Reformulation to reduce industrial trans-fat intake also seemed very effective. Evidence on food supply chain, trade and investment studies was limited and merits further research. Food labelling and restrictions on provision or marketing of unhealthy foods were generally less effective with uncertain sustainability. Increasingly strong evidence is highlighted potentially powerful policies to improve diet and thus prevent NCDs, notably multi-component interventions, taxes, subsidies, elimination and perhaps trade agreements”.

Fiji has success stories to share of its many public health challenges over the past decades and addressing this NCD crisis through a cross-cutting, innovative and cost-effective nutritional “package” may just be the last frontier that heralds the beginning of the success story of the NCD crisis for this stage in Fiji’s history.
Sociocultural influences of outside-home eating patterns of adolescents in peri-urban Fiji

Wate J.1,2, Snowden W.3,4, Kama A5, Gounder R.1,2, Swinburn B.5

Keywords: sociocultural influences, dietary patterns, adolescents, Pacific Islands

Abstract
Adolescent obesity is a problem in Fiji. Wide range of factors including obesogenic outside of home eating patterns is a key contributor. This study examined particularly the sociocultural influences on adolescents’ outside-home dietary patterns in Fiji. Semi-structured interviews were conducted with 48 iTaukei and 48 Fijian of Indian descent adolescents recruited from schools in peri-urban Suva. Trained interviewers representing each ethnic and gender group conducted the 40-50 minute interviews. Interview transcripts were subjected to thematic and constant comparative analyses. Intake of unhealthy food and drinks at recess was reported by most adolescents particularly those who skipped breakfast had more spending money and where their school canteens had more unhealthy options. Purchasing of lunch from the school canteen was reported by most iTaukei adolescents whereas a stronger tradition of home-prepared food was apparent among Fijian of Indian descent adolescents whose mothers prepared their lunches and after school snacks. Strong culture of sharing both food and money at school and on the way home highlighted the influence of peers in food choices. Sociocultural influences are significant determinants of adolescents’ outside-home eating patterns. These were reflected particularly in the home preparation of food amongst Fijian of Indian descent, sharing of food and money among peers, and amount of spending money given to adolescents. Understanding these should be helpful when developing initiatives to improve the healthiness of adolescents’ eating patterns.

Introduction
Obesity and non-communicable diseases are significant problems in Pacific Islands Countries and Territories (PICTs) and unhealthy diets are significant determinants. Evidence on unhealthy diets is well documented for some PICTs especially among adolescents. In the findings of the Obesity Prevention in Communities (OPIC) project (Utter et al., 2008) which was a multi-country (Fiji, Tonga, New Zealand and Australia) study, the weekday dietary patterns of adolescents in the baseline sample were generally poor. Overall, adolescents were frequent consumers of SSB, low consumers of fruit and vegetables, breakfast skippers and regular consumers of high-energy/salt snacks at school and after school. By ethnicity and sex, Fijian with Indian descents and males were generally more likely than iTaukei and females to have healthy dietary patterns. These findings were consistent with a subsequent study (Wate JT et al., 2013). Although there are multiple factors that contribute to obesogenic diets, sociocultural factors were the focus of this study given that they are powerful influences on dietary patterns, especially in Pacific populations (Mavoa & McCabe, 2008; Waqa G & Mavoa HM, 2006). The socioecological framework (SEF) (Caprio S et al., 2008) (see Figure 1) conceptualises the relationship between the broader social environments and individuals’ dietary behaviour, in particular, for this study, eating patterns. Individual eating patterns are influenced by those of one's culture, sex and age groups and population eating patterns, as well as the wider food environments.

Figure 1: Socioecological framework
Source: Caprio et al. 2008

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Previous studies comparing home-sourced food versus outside home food have shown that food consumed at home is healthier and lower in fat and calories than outside home (Ayala GX et al., 2008). Studies predominantly with Western adolescent populations and Cree adolescents in Quebec reported that food consumed outside home was found to be associated with poor dietary quality and higher weight status (Downs et al., 2009; Kant AK, 2004; Thompson et al., 2004). Based on these findings, health experts have emphasised the value of frequent consumption of meals prepared from home.

Other studies have suggested that consumption patterns at home differ by ethnicity, thus family or individual beliefs, values, ideas and attitudes influence home meals. For example, among Fijian with Indian descent, home preparation of meals is encouraged by parents. While there is evidence suggestive of a relationship between sociocultural influences on home meals and obesity (Ayala GX et al., 2008; Chan JC & Sobal J, 2011; Thompson et al., 2004), studies are needed to explore the sociocultural influences on outside home dietary patterns. This examination of sociocultural factors that influence outside home diets is especially important for adolescents in Fiji because of the increasing prevalence of overweight and obesity and unhealthy diets among this age group. Also, given that these adolescents are from the two main ethnic groups, it is important to identify sociocultural explanations of outside home dietary patterns.

The high prevalence of adolescents engaging in such BMI-related dietary behaviours is a health concern and raises the need to explore explanations for such unhealthy diets. Exploration of these explanatory factors is important for Fiji in order to develop culturally relevant and age-appropriate health promotion messages and to determine if sub-groups (ethnicity, sex) respond to different messages.

**Aim**

To identify the possible explanatory value, especially the sociocultural influences for adolescents’ food and drinks purchasing and consumption outside home, and whether and how this differed between ethnic and sex sub-groups in Fiji.

**Methods**

**Study design**

This qualitative study utilised data from the existing sociocultural in-depth interviews that were conducted during the “Healthy Youth Healthy Communities” (HYHC) study, the Fiji arm of the OPIC project. Semi-structured interviews were conducted with 48 iTaukei and 48 Fijian with Indian descent adolescents (24 males and 24 females per group) who were recruited from six of the seven secondary schools participating in the HYHC project in Fiji.

Approval for the study was obtained from the Fiji National Research Committee, the Fiji National Research Ethics Review Committee (FNREC) and Deakin University (Melbourne, Australia).

**Data collection**

Trained interviewers conducted the interviews, which were 40 to 50 minutes long. The interviews were semi-structured, meaning that all adolescents were asked the same questions, but not necessarily in the same order (Kreugar RA & Cassey MA, 2000; Patton, 2001) and probing questions were used to yield in-depth information when necessary. Interviewers were the same sex as the interviewees and spoke the same first language. Participants were given the choice to be interviewed in their first language or English or a combination of both.

The interview protocol included creating a relaxed environment so adolescents felt free to share and discuss their experience and ideas regarding food behaviours outside of home. As this is an existing data set, the interview comprised questions pertaining to ‘food and eating’, ‘physical activity’, body image and body change strategies. The results largely concurred with the OPIC larger behavioural surveys pre- and post-intervention and provided more in-depth information about adolescents’ perceptions of sociocultural factors that influenced the target.

<table>
<thead>
<tr>
<th>Practices and explanations around morning snacks consumption</th>
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<td>2. What do you drink for morning snacks at recess and why?</td>
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<th>Practices and explanations around lunch consumption</th>
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<td>2. What do you drink for lunch on school days and why?</td>
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<th>Practices and explanations around after school snack and drinks consumption</th>
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<tr>
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<td>2. What do you drink after school and before dinner and why?</td>
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<th>Influences on eating patterns outside the home</th>
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<td>2. Who in your family influences your eating patterns most and how?</td>
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<tr>
<td>3. Who influences your (for morning snacks, lunch and after school snacks and drinks) and how?</td>
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<td>4. When do you have most control over the food you eat?</td>
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**Analysis**

Interviews were digitally recorded, transcribed and translated into English where necessary. The researcher of the current study had access to interview transcripts. Data were entered on Excel 2007. Descriptive categories were identified and then data were organised into conceptual themes, which were analysed collaboratively and then subjected to constant comparative analyses to determine similarities and differences between sub-groups.

**Results**

**Characteristics of participants**

There were a total of 96 adolescents who participated in the sociocultural semi-structured interviews (Table 2). In general, iTaukei adolescents had a higher mean BMI compared to the Fijian with Indian descent, and females had a higher mean BMI than males.
Similarly, males’ explanations for eating junk food and drinking SSB at recess and after school were consistent with females’ accounts. The availability of ‘unmonitored’ spending money, as well as food sharing, influenced the type of food and drinks purchased both at recess and after school. The influence of ‘unmonitored’ spending money was common during recess and after school. Umm … normally recess, I spend $1 and lunch another $1. [Alright, and how much spending do you get from home?] Umm … normally for one week I get $10 and spend about $2 a day. (iTaukei male)

Another reason expressed by males for purchasing and consuming junk food especially after school was being hungry after school. An example of a response was;

[What time does school finish?] 3.20. [After that?] Sometimes we go to the Chinese shop, buy some coconut rolls, cream bun(s). [Then you go home?] Yes, because after school we are hungry again. (Fijian with Indian descent male)

Food and drink sharing at recess was common, with male participants describing how they pooled spending money to buy SSB. Examples of responses were:

[What do you eat or drink during recess?] At recess time, I drink Sprite with my friends. [And how much do you get in a day for spending?] $1. And then we put in money together to buy drinks. (iTaukei male)

Lunch food and drinks

The adolescents had explanations for the food and drinks they purchased and consumed at lunch. Overall, adolescents expressed how their lunch diets were being influenced at school. Most adolescents highlighted the influence of peers and canteen provision. There were few cultural and sex differences noted.

More iTaukei adolescents reported that peers influenced what they ate and drank for lunch. Food and drinks purchased from the school canteen were always shared and often adolescents pooled their spending money to purchase these food items. Conversely, the majority of Fijian with Indian adolescents reported sourcing their lunch from home.

By sex, more iTaukei females than Fijian with Indian descent females reported that peers were the biggest influence at school. Friends pooled their spending money for food and drinks and ate together. More females from both ethnic groups reported that friends were the main influence in money together to purchase these food items. Conversely, the availability of ‘unmonitored’ spending money, as well as food sharing, influenced the type of food and drinks purchased both at recess and after school. The influence of ‘unmonitored’ spending money was common during recess and after school. Umm … normally recess, I spend $1 and lunch another $1. [Alright, and how much spending do you get from home?] Umm … normally for one week I get $10 and spend about $2 a day. (iTaukei male)

Reports on adolescents’ outside-home eating patterns

Morning snacks and on the way home from school (after school)

Sociocultural and socioeconomic factors were highlighted by adolescents as underlying influences in their choices of food and drinks purchased and consumed outside home. Overall, recess food and drinks were influenced by access to spending money, canteen provisions and skipping of breakfast.

The availability of ‘unmonitored’ discretionary spending money emerged as a major influence on the consumption of junk food and SSB both at recess and after school for all participants. This was clearly conveyed by one of the female participants who said, ‘When I am given extra money, I buy food and drinks from the school canteen … which are only junk’s’. Many participants described sharing food and drinks by pooling spending money to buy junk food and SSB at recess and after school, thus suggesting that peer influence plays an important role in the consumption of food and drinks. Another participant explained how they shared money to buy drinks at recess: ‘When it is recess time, we go and buy beans and sweets from school canteen and, for drinks, we contribute to buy one litre of Sprite [SSB] and share’.

Females shared food and drinks among other females more than males and explained how they sat around and talked while males were more involved in playing sports or attending prayer session (in the case of Muslim boys). Apart from sharing spending money and food, another reason that females gave for eating junk food at recess was skipping breakfast before school and thus being hungry mid-morning. Previous analysis of the sociocultural questionnaire (McCabe M et al., 2008) indicated that the most common reasons for skipping breakfast were getting up too late and not feeling hungry. More Fijian with Indian descent females than iTaukei females gave explanatory comments regarding why they skipped breakfast:

I often miss breakfast … [Why is that?] I don’t like to eat that early in the morning. I would like to have my breakfast at about 10 am. (iTaukei female)

I normally don’t eat anything in the morning … [At recess] I usually have a big appetite so I buy stuff from the canteen to fill me up. (Fijian Indian descent female)

If I am rushing, sometimes I don’t have breakfast … After doing the chores; I have my shower and … rush to school. (iTaukei female)

The majority of females, especially iTaukei females, reported that feeling hungry after school encouraged them to buy either junk food and/or SSB on the way home. The most common reason for purchasing SSB such as Fanta, Coke and Sun-pop was taste preference for females in both ethnic sub-groups.

Similarly, males’ explanations for eating junk food and drinking SSB at recess and after school were consistent with females’ explanations for their eating habits. Another reason expressed by males for purchasing and consuming junk food especially after school was being hungry after school. An example of a response was;

[What does she say?] … she always tells me ‘Why you don’t want to eat?’ and I’ll say ‘No, I don’t want to eat’ and she’ll force me to eat.

The were very few males from both ethnic groups who reported that peers influenced the type and amount of food they consumed. Such influence was more expressed by females than males. More Fijian with Indian descent females than iTaukei females reported that lunch food was from home, thus the mother influenced the type and amount of food consumed for lunch.

Reported sociocultural influences on outside of home and at home food and drinks consumption

The major influences on food and drink purchase and consumption were parents and peers. Parents tended to influence the type and amount of food accessed at home, while friends were the main influence at school. However, parents influenced food outside of home indirectly by preparing lunches or not and providing spending money. Other influences reported were grandparents, aunts, siblings, religious beliefs, teachers and the media. However, the relative influence of each of these sociocultural and socioeconomic factors differed by ethnicity and

Table 2: Characteristics of participants in sociocultural interviews

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Ethnic and sex groups</th>
<th>Indigenous Fijian</th>
<th>Indo-Fijians</th>
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<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
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<tr>
<td>Number</td>
<td>24</td>
<td>24</td>
<td>24</td>
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<tr>
<td>Mean age (years)</td>
<td>16</td>
<td>16.4</td>
<td>15.5</td>
</tr>
<tr>
<td>Mean BMI (kg/m²)</td>
<td>20.2</td>
<td>23.1</td>
<td>19.5</td>
</tr>
</tbody>
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sex and location (school or home).

**Reported sociocultural influences from family members**

The adolescents, especially iTaukei reported that their father influenced food-purchasing decisions, while their mothers prepared, cooked and served food for the family members. The influence from grandparents and older siblings was frequently mentioned by iTaukei, in particular, to do with advice about the type and amount of food that should be consumed.

Interestingly, females appeared to be more influenced by friends than males. Further, more females reported that older female relatives such as mothers, grandmothers, aunts and older sisters influenced the amount of food consumed more than types of food at home. The majority of Fijian with Indian descent females explained that their mother influenced their diet, encouraging and persuading them to eat greater quantities. Examples of quotations from both ethnic groups were:

*My mother says that you eat very little and you should eat more. (Fijian with Indian descent female)*

*Does anyone influence the amount of food that you eat? I think my mum… she still says that I should eat more and get healthy. (iTaukei female)*

Grandmothers also encouraged Fijian with Indian descent females to eat more. This was expressed by a participant who explained the family influences on her diet:

*My mother and my grandmother, because we live near so when they see us eating, not eating the proper meal, so they tell us to eat. If we don’t [laughs] they get angry, they want us to eat the right amount and sometimes they are a bit strict because we are not eating enough.*

Some Fijian with Indian descent females also mentioned that their sisters encouraged them to eat better, for example:

*My sister she says that she eats more [than me]. That’s why she is healthier than me. She says that she has no sickness, she can run fast and she is younger than me. [Pause] So she tells me to eat more.*

As with Fijian with Indian descent females, iTaukei females described how the types and amount of food they consumed was influenced by family members, for example, both parents and grandparents. In addition, some participants indicated that aunts also influenced their eating behaviours, while few participants indicated that their sisters influenced their diets. Parents, especially fathers, decided on the types of food to be cooked while mothers prepared, cooked and most times served the family members. With regard to the type of influence, both parents advised or encouraged their daughters on the amount of food they should consume:

*My parents. [How do they influence you?] They say to eat the right amount of foods and not too much or a lot of fat … I feel good when they tell me because it’s for our health.*

*My parents … Every day meal … they will check on the type and amount of food that I eat … a lot of times they tell me to eat a lot … Because I’m getting smaller every day.*

Specifically, mothers informed and encouraged daughters to eat healthy foods and in the right amounts. Examples of responses were:

*Mostly my mum … [What does your mum say?] Say that umm … eating too much. Mean for a girl to eat too much has been … being fat is not good … Because probably they want me … not to grow fat, but to be slim and to be healthy.*

Fathers also influenced the amount of food that their daughters consumed through the provision of healthy foods and providing advice on a healthy amount to eat. Examples of responses were:

*Who influences you on the amount and type of food that you eat? My father … [Why do you say your father?] Umum … because like … umm … he picks on the food we eat, but sometimes he get angry, like it’s not balanced. [So what does he say?] Says it’s not healthy, not good for us, we’re still young and will grow fat … [giggles]. [He says that you’d get fat?] Yes.*

A participant expressed how her sister influenced the amount of food she consumed. For example:

*My sister. [What does she say?] She says ‘you eat too much’ [laughs], [Why does she say that?] … She says I have to lose a lot of weight.*

The majority of males reported that parents, in particular, their mothers, influenced the type and amount of food they consumed by advising them to eat a lot. This was clearly stated by a participant:

*She always advise me to eat a lot. [How do you feel about it?] I feel good.*

Brothers also influenced the type and amount of food male participants consumed especially in the case of iTaukei males. This was clearly conveyed by a participant who asked who influenced his food. ‘My brother, sometimes in joking. [In what way?] He sometimes jokes on the amount of food that I eat or he teases me that he is too big and strong and I am not. [How do you feel about it?] I feel good because he is my brother’.

**Religious beliefs and activities**

Generally, religious beliefs and practices are part of the daily life for all adolescents in Fiji, given that the vast majority of the population are active within their Faith Based Organisations. Not surprisingly, faith-based beliefs and practices provided possible explanations for some of the adolescents’ obeogenic dietary patterns. A high number of Fijian with Indian descent, especially males, indicated that religious beliefs and festivities influenced the type and amount of food that they consumed. Most Fijian with Indian descents described excluding specific food types from their diets, for example, meat. Similarly, most Fijian with Indian descents interviewees either fasted on a specific day each week or at a certain time of the year when special religious festivals were observed. Examples of comments from Fijian with Indian descent were:

*On Mondays, they [Fijian with Indian descent] don’t eat anything. In the morning they pray and come to school, they have nothing and they have fruits and drink water at day time. And in the afternoon, they go home, pray and have food … [Do you also observe fasting?] Yes. It is only one time of the year [Shiv Raatri], fasting for a day. I don’t drink anything else throughout the day, I just drink water … Six in the morning till six in the afternoon.*

*Our fasting season is like we don’t eat or drink anything … in the day time … like we do eat things before sun rises about 4:30 am and after that we don’t usually eat anything till 6:30 in the afternoon.*

There were also some iTaukei who described that they fasted, especially prior to examinations.
Other influences
A few participants indicated that teachers, sports coaches or the media influenced the type and amount of food they consumed. More Fijian with Indian descent than iTaukei adolescents mentioned that teachers and the media influenced the type and amount of food they consumed. A few Fijian with Indian descent males articulated that their teachers or coaches influenced the type of food that they ate. Examples of responses were:

Our teachers. They say eat less. [And how does it feel, your teachers encouraging you?] I feel good. Yeah, it feels good.

Normally our coach. [What does he say?] He tells us … like eat boiled foods and exercise.

Perceived control over food
In general, adolescents from both cultural groups believed that they had more control over their food choices when they were on their own, specifically when they were away from home or their parents were not at home. Generally, Fijians with Indian descent perceived that they had little control of their food choices, either at home or outside home. Even outside of home, they also had less control over food; the majority reported that they ate what was provided. This was common among Fijian with Indian descent adolescents who believed that they ate what they were given as sign of respect to their mothers who prepared the food.

Discussions and Implications
The findings of this study highlighted a number of issues that are pertinent to enhancing the understanding of the influence of sociocultural and socioeconomic factors on outside home dietary patterns of adolescents in Fiji.

The nature of the sociocultural model provided a framework for identifying the possible sociocultural and socioeconomic influences at different system levels and between and among the different layers within the model. The literature has shown an association between poor dietary outcomes and factors emerging from a variety of sections within the sociocultural model. In other words, obesogenic dietary patterns are attributed not only to an individual’s attributes such as poor lifestyle in general, but also the wider social and physical environments. For example, poor dietary patterns were associated with intra-level factors (individual choices) (Veugelers PJ, Fitzgerald AL, & Johnston E, 2005), intrapersonal factors (peers, family and culture influences) (Mavoa & McCabe, 2008) and organisational and community-level factors (affiliation with specific social groups, food environments, population eating behaviour) (Swinburn et al., 2011). The major themes that emerged from the findings of this study are shown in Table 3.

Peer influences demonstrated through the pooling of spending money and sharing of food by adolescents, especially iTaukei and females during recess, lunch and after school, reflect sociocultural influences in terms of the cultural value of sharing which was seen through peer influence The finding on the sharing of resources has been reported among students in Tonga (Cacavas K et al., 2011). Other studies from Europe (Vereecken C, Haerens L, Bourdeaudhuij ID, & Maes L, 2010) reported that, during adolescence, peer influence flourished and parental influence diminished and that peers were an important social support, especially for girls (Gruber KJ, 2008).

Importantly, this study highlighted the indirect influence of parents on adolescents’ outside home dietary patterns in Fiji through the provision of a substantial amount of spending money, which adolescents used to buy unhealthy food and drinks. This is an important finding, given that an average household income in Fiji is about FJD17,394 (Fiji Islands Bureau of Statistics, 2012). Most adolescents reported having more control (autonomy) over their choices of food and drinks choices outside of home compared to at home. A Canadian study on food choice autonomy among teenagers, reported similar findings (Cacavas K et al., 2011).

There could have been other underlying reasons for parents giving spending money. Further investigation should be conducted on parents’ perspectives on providing spending money for their children and to examine different ways for parents to monitor how this spending money is used.

While parents played an indirect role in obesogenic diets of adolescents outside of home, findings from this study also highlighted that specific family members, in particular, mothers, influenced food behaviour at home in terms of preparing and serving the foods and providing encouragement for healthy eating. This maternal influence had an indirect effect on adolescents’ ideas about healthy eating patterns. This provides a potential area for home intervention to improve diets of adolescents from home (e.g., having regular breakfast, preparing healthy food and drinks for lunch).

Given the substantial peer and parental influences on unhealthy food and drink choices outside of home that adolescents identified in this study, parents and peers need to be targeted when promoting healthy diets, particularly for iTaukei and females, the very groups with the highest prevalence of overweight and obesity.

Embedded within the organisational and community layers of the sociocultural model, the adolescents’ outside of home diets could be explained through the physical and socioeconomic environments. This study found that the source of morning snacks, lunch and afternoon snack was either from the school canteen or nearby bean carts. This suggests that school canteens and surrounding compounds should be targeted for intervention to improve diets of students in general. Schools should ensure they provide nutritious choices of snacks and lunch foods. Can- teen policies that have clear guidelines for healthy food should be enforced and monitored as canteen guidelines have already been developed in Fiji. There should be regulations to guide the healthiness of bean carts’ food items. In Singapore, the government developed and enforced regulations and standards for street hawkers to register and comply with these food regulations and standards (Thompson Reuters, 2012).

Based on the findings of this study, adolescents’ unhealthy dietary patterns outside of home are unlikely to be improved unless some underlying sociocultural influences are addressed, including targeting people and groups who adolescents see as key influences, for example, parents and peers. Also, as religious beliefs and practices play an important role in influencing adolescents’ dietary patterns, FBOs could be targeted to channel messages about healthy eating behaviour and promote effective ways that they can help to increase the healthiness of diets of adolescents in their organisation—importantly, without changing religious values.

This study provided insight into adolescents’ outside of home diets and the potential sociocultural and socioeconomic influences. Understanding these behaviours from adolescents’ perspectives is important so that health promotion can develop appropriate messages and messengers for each sub-group (ethnicity, sex) and use the medium that is most likely to convey these messages effectively. It is, however, important to identify messages and messengers that could motivate adolescents to change to healthier dietary patterns.

Strengths and limitations
There were strengths and limitations of this study. Qualitative studies are not designed to generalise findings, but rather to gain in-depth explanations. The limitations may include the use of an existing dataset that examined sociocultural factors underpinning a broad range of behaviours and, therefore, did not examine outside of home eating patterns in-depth. The use of existing data also precluded the researcher from further exploration of dietary behaviours. The strengths of this study are that it provided possible explanations for the unhealthy dietary patterns of adolescents in Fiji and identified key health-promoting messengers for different sub-groups within the study.
Conflict of Interests
The authors declare that they have no conflict of interests regarding the publication of this manuscript.

Authors’ contributions
JW developed the objectives of the study as part of her PhD research, performed statistical analysis, interpreted the findings and drafted the manuscript. WS, RG, and AK participated in the interpretation of the findings, and critically edited the manuscript. BS participated in the interpretation of the findings and critically reviewed the manuscript. All authors read and approved the final manuscript.

Acknowledgments
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References


**Perceived benefits of, barriers to and motivators for healthy diets in Fiji - What adolescents say**

**Abstract**

Introduction: Obesity among adolescents is a concern in Fiji and poor diets are a major contributor. The aim of this study was to gain a better understanding of perceived benefits, barriers and motivators for healthy dietary patterns among Fijian adolescents in peri-urban areas.

Method: Fifty-four adolescents were recruited via convenience sampling: 27 adolescents from each cultural group, comprising 13 males and 14 females. Focus groups of six to eight adolescents from the same ethnic, sex or age group (class level) were held. Recordings were transcribed and translated by moderators (where necessary) and then entered into NVivo 9 for analysis. Constant comparative analyses were used to identify the perceived benefits, barriers and motivators for healthy diets among adolescents. These findings were then analysed thematically.

Results: Participants agreed that consumption of water, fruit and vegetables, and low fat/lower salt snacks and lower sugar foods have health, cost, and/or environmental benefits. However, barriers to these dietary changes included peer pressure, TV advertisements, taste preferences and lack of school support. Salient motivators for healthy eating included peers, health workers, parents and family members, teachers, and favourite national sport icons. Parents, in particular, were identified as having scope to influence behaviour through controlling and monitoring spending money given to adolescents. Adolescents also relied on grandparents and cousins (for girls) to guide their food choices. Schools were perceived to provide an environment that could facilitate consumption of healthy foods and drinks.

Discussions and Implications: The study provided Fijian adolescents’ explanations on what might be the barriers and motivators to healthy dietary patterns. The study found that although participants understood the benefits of healthy diet, their dietary intake was still unhealthy. Given the barriers to healthier behaviours, it is critical to incorporate the identified motivators when designing health promotion interventions targeting dietary patterns and obesity in adolescents. This should be complemented by efforts to develop a supportive home and school food environment through the provision of healthy choices of food and drinks from home and in school canteens.

Introduction

Overweight and obesity are growing concern in the Pacific region. In 2010, high BMI was the second leading risk factor for global burden of disease in the Oceania region (Lim SS, Vos T et al. 2012). In Pacific Countries and Territories (PCT) that have undertaken the WHO STEPS survey, almost half of the men and women in the population studied were overweight, with more than one-third of both sexes being obese (Kessaram, McKenzie et al. 2015). In a recent study published in Lancet on the global BMI trajectories (NCD Risk Factor Collaboration 2016), the mean BMIs in 2014 for men and women in the south Asian region, including Oceania was 29.2 kg/m² (28.6–29.8) in Polynesia and Micronesia and 32.2 kg/m² (31.5–32.8) respectively. It was noted that women’s mean BMI has increased by more than 1.0kg/m² per decade in Melanesia, Polynesia and Micronesia. The same study also indicated that Pacific Islands were included as the 13 top countries globally for high BMI. High BMI is associated with increased risk of non-communicable diseases and mortality (Prospective Studies Collaboration 2009).

Overweight and obesity in adolescents is a concern in Fiji. The Global School-based student Health Survey in 2010 reported 19.2% overweight and 5.2% obese among children 13-15 years of age. Data from two Fiji National Nutrition surveys indicated an increasing rate of overweight and obesity between 1993 and 2004, and with a steep rise in obesity prevalence in the adolescent and early adult years (Saito S 1995, Schultz JT, Vatucawaqa P et al. 2005). This rise in prevalence during adolescent and early adult years indicates the importance of targeting this age group for obesity intervention programmes, including age-specific health promotion messages.

While determinants of obesity are complex (Finegood DT, Merth TDN et al. 2010), poor diet is a significant contributor. Poor diet in adolescents is evident in Fiji (Uter, Faecamani et al. 2008, Wate JT, Snowden W et al. 2013) due to the changing food environment that has enhanced the availability and accessibility of foods that are high in fats, salt, and sugar, and low in fruits and vegetables(Hope SF, Snowden W et al. 2013, Raj A, Snowden W et al. 2013, Snowden, Raj et al. 2013). Studies on sociocultural influences on dietary patterns in adolescents in Fiji have also demonstrated the importance of these factors on what and why adolescents eat or drink particular items (Schultz J, Waqa G et al. 2006, Waqa G and MAVOA HM 2006, MAVOA and McCabe 2008).

While there is some information about possible sociocultural influences on the dietary patterns of Fiji adolescents, there is a need to better understand about adolescents perspective(s) on perceived barriers and motivators to healthful diets. The findings can then inform the development of the most effective social marketing messages for this age group. It is also critical to identify culture- sex- and age-appropriate messages (sources, mode, content and language) and motivators to encourage Fiji adolescents from all of these sub-groups to change to healthier dietary patterns. This study aims to gain a better understanding on motivators that will motivate adolescents to change to healthier dietary patterns. Secondly, the study examined adolescents’ perceived benefits of and barriers to healthful diets.

Methods

Fifty-four adolescents were recruited through faith-based organisations in peri-urban Suva via convenience sampling: 27 adolescents from each cultural group, comprising 13 males and 14 females. After participants provided consent, focus groups of six to eight adolescents from the same ethnic, sex or age group (class level) were conducted for 60 to 90 minutes. A focus group guide was developed based on the objective of the study and pilot tested prior to the focus group discussions. The focus group guide also included a specific set of questions for females only to explore their attempts to lose weight and intake of high energy snacks. Focus group discussions took place between August and October 2012 and were facilitated by the principal investigator and comoderator.

Keywords: barriers, motivators, healthy dietary patterns, adolescents, Fiji

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Adolescents clearly articulated the perceived benefits of drinking water in preventing dehydration, cleaning of the digestive system and the general feeling of being strong throughout the day. Some participants focused on the concern about other beverages, when discussing benefits of drinking water, including the negative effects of SSB, which were thought to make an individual sick or lazy and contribute to obesity. Issues around high availability and convenience of less healthy choices (SSB) were frequently described by the participants.

The major barriers to drinking water at school, as perceived by the adolescents, are presented in Table 1. There was a strong theme of peer pressure being a barrier, with the majority of the adolescents from all ethnic groups, sex and class level indicating that their peers influenced them to drink SSB at school. Peer pressure was also demonstrated in the availability and pooling of unmonitored spending money among peers, providing ready access to SSB. Adolescents also indicated TV advertisements for SSB, in particular, new SSB, were a barrier to drinking water in school because they wanted to try out new products in the market.

Table 1: Most common perceived benefits of and barriers to water consumption at school

<table>
<thead>
<tr>
<th>Most common benefits</th>
<th>Typical comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhancement of health</td>
<td>‘Our body needs water so that we don’t get dehydrated easily’ [INDFM13]</td>
</tr>
<tr>
<td>Prevent dehydration</td>
<td>‘It washes you; it cleans your digestive system’ [INDFF03]</td>
</tr>
<tr>
<td>Cleans digestive system</td>
<td>‘It will make our body strong’ [IDFM04]</td>
</tr>
<tr>
<td>Feeling strong</td>
<td></td>
</tr>
<tr>
<td>Cost benefits</td>
<td>‘We can save money rather than going to the shops to buy fizzy drinks’ [IDFF09]</td>
</tr>
<tr>
<td>Save money</td>
<td>‘Water saves money because it’s free’ [INDMF02]</td>
</tr>
<tr>
<td>Healthy environment</td>
<td>‘Mass production of fizzy drinks will decrease as less gas released to the atmosphere, there will be less fizzy drinks … we are going to drink more water’ [INDFF04]</td>
</tr>
<tr>
<td>Less pollution</td>
<td></td>
</tr>
<tr>
<td>Healthy surrounding</td>
<td></td>
</tr>
<tr>
<td>Common barriers to drinking water</td>
<td></td>
</tr>
<tr>
<td>Peer pressure, TV advertising and lack of support</td>
<td>‘Friends persuade us to drink SSB’ [INDFM07]</td>
</tr>
<tr>
<td>Peer pressure</td>
<td>‘We put in some money like give 50 cents, 20 cents so we can just put in and buy a drink (SSB)’ [IDFM10]</td>
</tr>
<tr>
<td>Pooling in of spending money</td>
<td>‘Uhm, there are new drinks that arrive in Fiji and it’s advertised on TV, when our school sells that drink, we all went to buy the new drink … it’s new and everybody wants to try’ [IDFF01]</td>
</tr>
<tr>
<td>Increased TV advertisements on SSB</td>
<td>‘Because the school canteen only sells it’ [IDFM09]</td>
</tr>
<tr>
<td>Lack of school support</td>
<td></td>
</tr>
<tr>
<td>Convenience of less healthier choices (SSB)</td>
<td></td>
</tr>
<tr>
<td>Availability of SSB at school canteens</td>
<td></td>
</tr>
<tr>
<td>Taste and personal preference</td>
<td>‘SSB tastier than water’ [INDFF07]</td>
</tr>
<tr>
<td>Preferred taste for SSB</td>
<td>‘It’s (drinking SSB) a habit … because when they were small they started drinking SSB and growing up, they are used to them’ [INDMF05]</td>
</tr>
<tr>
<td>Developed habit</td>
<td>‘It’s hard to when I’m addicted to something; it’s hard to leave the drinks (SSB) so it is easy for me to stick to the Coke’ [IDFM07]</td>
</tr>
<tr>
<td>Addiction</td>
<td></td>
</tr>
</tbody>
</table>

These perceptions were common across the majority of participants from each ethnic group, sex and age sub-group.

Adolescents clearly articulated the perceived benefits of drinking water in preventing dehydration, cleaning of the digestive system and the general feeling of being strong throughout the day. Some participants focused on the concern about other beverages, when discussing benefits of drinking water, including the negative effects of SSB, which were thought to make an individual sick or lazy and contribute to obesity. Issues around high availability and convenience of less healthy choices (SSB) were frequently described by the participants.

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Another important theme that emerged from this study was taste preference. Most of the participants indicated that they had a strong preference for the taste of SSB compared to water. Participants commonly used descriptive words such as ‘sweet’, ‘tastier’, ‘refreshing’, ‘gassy (fizzy)’, ‘cooling’ and ‘flavourish’ and also that they were more thirst quenching. Adolescents also described their habit of drinking soft drinks as a barrier to changing to water. Some participants noted that they became more ‘addicted’ to drinking SSB as they grew older.

Barriers to drinking water on the way home from school were similar to those during the school day; convenience of less healthier choices of drinks, taste preference for SSB and peer pressure. A number of adolescents also indicated that hot weather increased their choice for SSB on the way home. These four themes were expressed by participants in each ethnic, sex and age (class level) group.

While all groups shared these six themes, there were some differences, especially among sex and age (class level) groups. Female adolescents indicated that they drank SSB because they wanted to be seen as part of the group, while some males drank SSB as a way to attract opposite sex. A number of younger adolescents (13–15 years) indicated that they pooled their spending money...
on the way to buy SSB, while this was not evident among older adolescents.

Adolescents were further asked: ‘Who would be the most influential people to encourage boys/girls your age to drink healthier drinks?’ The most common motivators suggested by participants were peers, parents, health workers, teachers, national sport icons/models and siblings.

### Table 2: Motivators to encourage drinking water among adolescents

<table>
<thead>
<tr>
<th>Motivators</th>
<th>Typical comments on why and how (paraphrased)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peers</td>
<td>Peers are also barriers to drinking water so it would be important to change them first.</td>
</tr>
<tr>
<td>Parents</td>
<td>Care about our health.</td>
</tr>
<tr>
<td>Health workers</td>
<td>Provide food and drinks so they should tell us to drink water.</td>
</tr>
<tr>
<td>National sport icons/models/TV advertisements</td>
<td>Give less spending money so we could not buy SSB</td>
</tr>
<tr>
<td>Siblings (older sister)</td>
<td>Tell us what is good for our body, including water and its benefits.</td>
</tr>
<tr>
<td>Social network Facebook</td>
<td>Share experiences of drinking water during training.</td>
</tr>
<tr>
<td></td>
<td>Encourages drinking water.</td>
</tr>
<tr>
<td></td>
<td>Benefits of water on Facebook wall and share with friends.</td>
</tr>
</tbody>
</table>

In addition, a number of female adolescents suggested that Facebook was an effective mode to convey messages, encouraging their friends to drink water every day.

### Fruit and vegetable consumption

All adolescents agreed that fruit and vegetables are good for them. They were then asked ‘If males/females your age are going to increase their intake of fruit and vegetables, what are some of the benefits they will get?’ The major themes and typical comments that emerged from the study are displayed in Table 3. The most common benefits for consuming fruit and vegetables as perceived by the adolescents were disease prevention, cognitive function and performance, cost and environmental benefits. These five themes were consistently described by both ethnic, sex and age (class level) sub-groups.

Fruit and vegetables were described as being a source of ‘vitamins and minerals’ and giving a ‘feeling of fresh, refresh and healthy’. Also, adolescents described the enhanced concentration and performance in school work when they ate fruit and vegetables. Further, they indicated that fruit and vegetables were cheaper than supermarket food items because they could be grown in backyard gardens and that contributed to consumption of local products, which would be a benefit for the national economy. Some adolescents also believed that planting fruit and vegetables helped to achieve a healthier environment.

The most common perceived barriers to fruit and vegetable

### Table 3: Most common perceived benefits of and barriers to fruit and vegetable consumption at school

<table>
<thead>
<tr>
<th>Common benefits</th>
<th>Typical comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health benefits</strong></td>
<td></td>
</tr>
<tr>
<td>Provide vitamins and minerals</td>
<td>‘It gives us lots of vitamins and minerals’ [IDFF03]</td>
</tr>
<tr>
<td>Prevent sicknesses</td>
<td>‘It keeps us away from sicknesses’ [IDFM11]</td>
</tr>
<tr>
<td>Physical sensation</td>
<td>‘It keeps us healthy … refresh’ [INDFF02]</td>
</tr>
<tr>
<td>Feel fresh, refresh and healthy</td>
<td>‘Good for the mind … they will feel fresh … and be able to concentrate on their school work’ [IDFF07]</td>
</tr>
<tr>
<td>Cognitive function/performances</td>
<td></td>
</tr>
<tr>
<td>Enhanced concentration and</td>
<td></td>
</tr>
<tr>
<td>performance in school (Females)</td>
<td></td>
</tr>
<tr>
<td><strong>Cost benefits</strong></td>
<td></td>
</tr>
<tr>
<td>Saves money</td>
<td>‘Eating a lot of fruit and vegetables saves money’ [INDFM05]</td>
</tr>
<tr>
<td>Encourage use of local products,</td>
<td>‘A lot of backyard gardening saves a lot of money’ [IDFM08]</td>
</tr>
<tr>
<td>builds national economy</td>
<td>‘There is this word Fiji-made … if we grow our own vegetables, it will be like these products … money will come back to our country, less imports’ [IDFF10]</td>
</tr>
<tr>
<td><strong>Environmental benefits</strong></td>
<td></td>
</tr>
<tr>
<td>Plant fruit and vegetables</td>
<td>‘Yah, it’s like farm at the backyard, plant fruit trees and vegetables, it would be helpful for the soil, prevent soil erosion and lots of oxygen for the earth’ [IDFM07]</td>
</tr>
<tr>
<td>benefits environment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Most common barriers</strong></td>
<td></td>
</tr>
<tr>
<td>Taste preference</td>
<td>‘The influence of tasty sweets that they are selling, they prefer more sweets than fruits even though they have choice’ [INDF09]</td>
</tr>
<tr>
<td>Prefer taste of SSB and junk food</td>
<td>‘Don’t prefer fruits’ [IDFM06]</td>
</tr>
<tr>
<td>than fruits and vegetables</td>
<td>‘I don’t like to eat fruit and vegetables at school’ [INDFF012]</td>
</tr>
<tr>
<td>Don’t like fruit and vegetables</td>
<td></td>
</tr>
<tr>
<td>Social preference</td>
<td>‘Females make males shy to eat fruit’ [IDFM07]</td>
</tr>
<tr>
<td>Peer pressure</td>
<td>‘Females shy to take out fruit from backpack’ [INDF07]</td>
</tr>
<tr>
<td>Spending money</td>
<td>‘Some of them bring money and just buy all sweets from the canteen’ [INDFM06]</td>
</tr>
<tr>
<td>Convenience of less healthier</td>
<td></td>
</tr>
<tr>
<td>alternatives</td>
<td></td>
</tr>
<tr>
<td>Availability of SSB and junk food</td>
<td>‘They (canteens) they provide food, but mostly are sweets, junk food and SSB’ [IDFM03]</td>
</tr>
<tr>
<td></td>
<td>‘There are more junks than fruit and vegetables in school canteen’ [INDFF01]</td>
</tr>
</tbody>
</table>
consumption at school are given in Table 3.

The theme of taste preferences was noticeable, with the majority of adolescents indicating that ‘they do not like fruit’, but preferred the taste of SSB and ‘junk food’, which was closely related to social preferences because they did not want to be seen eating fruit and vegetables. Adolescents reported that the high availability of SSB and ‘junk food’ at school compared to the unavailability of fruit and vegetables contributed to their (adolescents’) low fruit and vegetable consumption at school. An overlapping theme was clearly articulated by the link between peer pressure, access to spending money and the low consumption of fruit and vegetables at school. The most common barriers that adolescents expressed for fruit and vegetables consumption on the way home from school were consistent with those identified for ‘at school’.

While there were no ethnic differences in the findings, there were a few differences between the sexes. Female adolescents also described the benefits of fruit and vegetables as a dietary control to achieve the preferred body shape and size.

Adolescents were then asked: ‘Who would be the most influential people to encourage boys/girls your age to eat more fruit and vegetables?’ The most commonly cited people who could motivate more fruit and vegetable consumption were friends/peers, parents, health workers and teachers and senior students.

Table 4: Motivators to encourage consumption of fruit and vegetables for adolescents

<table>
<thead>
<tr>
<th>Identified motivators for fruit and vegetables</th>
<th>Typical comments on why and how</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friends/peers</td>
<td>‘Friends bring fruit to school’ [IDF9F01] ‘Look for abc other friends who eat fruit and vegetables rather than eating junk or avoid your friends’ [IND-F0H]</td>
</tr>
<tr>
<td>Parents</td>
<td>‘Children listen to their parents … they want us to be healthy and stay away from sickness’ [IDP902] ‘Mother cooks and looks after our health’</td>
</tr>
<tr>
<td>Health workers</td>
<td>‘Parents force us to eat veggies’ [IDF9F1] ‘Tell us the [healthy] benefits of fruit and vegetables’ [IDF9F0] ‘Doctors can advertise on TV the benefits of fruit and vegetable’ [IDF9F0]</td>
</tr>
</tbody>
</table>

There were some ethnic differences. While the majority of Indigenous Fijians mentioned friends and parents as the two most common motivators, more Indo-Fijian adolescents suggested parents and health workers. Some Indo-Fijian females explained that they motivated themselves to eat fruit and vegetables, while others stated that their close female cousins were their motivators for fruit and vegetable consumption.

Based on previous findings in a related study [8] which showed that significantly more females were attempting to lose weight and that they were reducing their intake of high-energy snacks, it was deemed important to explore their explanations for such behaviours in this study. Thus a set of questions in the focus group schedule targeted groups comprising adolescent females focused on trying to lose weight.

Female adolescents were asked: ‘What would be the barriers to eating less fried foods, salty snacks and sweets?’ Adolescent females from both ethnic and age groups were able to suggest messengers who motivated them to reduce consumption of fried foods, salty snacks and sweets. The most commonly identified motivators were: peers and health workers, followed by family members especially mothers, grandmothers, female cousins, models and national sport icons (see Table 6).

Table 6: Identified motivators for less consumption of fried food, salty snacks and sweets

<table>
<thead>
<tr>
<th>Motivators</th>
<th>Typical comments on why and how (paraphrased)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent</td>
<td>‘I am with them most of the time; they can encourage me to eat healthy foods’ [IN- DFF9F0]</td>
</tr>
<tr>
<td>Health worker</td>
<td>Educate people on why these foods are bad for health</td>
</tr>
<tr>
<td>Family members</td>
<td>Parents buy food and cook for (me especially mum) prepare and cook food for us’ [IDF9F0]</td>
</tr>
<tr>
<td>Grandparents</td>
<td>‘I am with them; grandma encourages me to eat healthy’ [IDF9F02]</td>
</tr>
<tr>
<td>Model cousins</td>
<td>‘Create awareness among canoe tu be healthy and to be good shape and beautiful’ [IDF9F0]</td>
</tr>
<tr>
<td>Models and national sport icons</td>
<td>‘Come to school and give awareness talk on the effects on these foods’</td>
</tr>
<tr>
<td>Mass media (TV, posters)</td>
<td>‘Eat less fatty foods make you slim like a model’ [IDF9F0]</td>
</tr>
<tr>
<td>Mass media (TV, posters)</td>
<td>‘They often show girls with fatty foods and slim girls with fruit and vegetables’</td>
</tr>
</tbody>
</table>

Further, female adolescents identified mass media such as TV and posters as effective media to convey messages about healthy diets, in particular, reducing consumption of fried food, salty snacks and sweets. Another motivator identified was increasing the price of less healthy food. These were expressed by some females in both age groups, but less frequently than other motivators.

Some differences were found between ethnic and sex groups for females. For instance, access to less spending money was well articulated as a motivator for Indo-Fijian males to cut down on the consumption of less healthy food items, but not suggested by other groups. Facebook was identified as an effective medium to convey messages about reducing fried food, salty snacks and sweets consumption mostly by Indo-Fijian females.

Discussion

This study utilised focus groups to gather information about adolescents’ perceptions of the benefits of and barriers to healthy diets and motivators that might motivate them to change to healthier dietary patterns. The study also provided information on similarities and differences in these factors across both ethnic, sex and age groups. The key dietary patterns targeted for this study were reducing SSB (increasing water), increasing fruit and vegetable consumption, and reducing high fat/sugar and salty snacks.

The Obesity Prevention In Communities (OPIC) study (Utter, Faemaani et al. 2008) has previously demonstrated that overall knowledge of basic aspects of healthy eating among adolescents in the peri-urban areas studied was high and this indicates that knowledge is not the main influencer of dietary practices. Adolescents in this study identified multiple barriers (perceived and actual) to changing to healthier dietary patterns (drinking more water and fewer SSB, eating more fruit and vegetables, and eating...
ORIGINAL RESEARCH

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less of high fat, sugar and salty snacks). The adolescents in this study indicated that they have a reasonable knowledge regarding the nature and benefits of healthy foods and drinks. Despite this knowledge, most participants found it difficult to practice by changing their drinking and eating patterns at school and/or on the way home and rather consumed SSB during and after school and, generally, insufficient fruit and vegetables and snack on high fat, sugar and salty snacks. Such obesogenic behaviours could be explained by the overwhelming barriers to drinking healthier beverages such as water and consuming more fruit and vegetables and less fat, sugar and salty snacks.

Peer pressure was well articulated by adolescents in this study as the most common barrier for a healthy diet, in particular, drinking water and eating fruit and vegetables, either at school or on the way home, because there was pressure to eat and drink the same things as their peers. This response was the same for all groups. Adolescents highlighted the desire to be with friends who then ‘persuaded’ them to drink SSB and also encouraged sharing (pooling) of spending money to purchase soft drinks. This is similar to other studies (Gracey D, Stanley N et al. 1996, Neumark-Sztainer, Story et al. 1999, Croll JK, Neumark-Sztainer D et al. 2001), which found facilitators of less healthy eating was the ready availability, peers, and parents (Ingersoll G 1992). This finding indicates scope to utilise peers as motivators for healthy eating among adolescents in Fiji, through peer leadership and role model schemes. Studies elsewhere (Croll JK, Neumark-Sztainer D et al. 2001, Story, Lytle et al. 2002, Mathews, Moodie et al. 2010), have indicated that the involvement of peers in school based intervention and initiatives could be feasible and acceptable by students and teachers.

Apart from peers, adolescents in this study are looking to their parents and teachers, to encourage, support and enable them to increase their fruit and vegetable consumption, as well as increasing water intake and reducing SSB. The role of parents as motivators to encourage adolescents to consume fruit and vegetables every day was highlighted. While participants recognised that peers can influence dietary change, they agreed that most adolescents respect and listen to their parents regarding what to eat, as parents are the daily providers of food. The findings about parents being important influences during childhood and adolescence are consistent with other studies (Field, Camargo et al. 2001, Story, Neumark-Sztainer et al. 2002, Salvy, Elmo et al. 2011). Parents should be the focus for nutrition intervention including adolescents such as providing and teaching about healthy food and drinks at home, monitoring of spending money. They should be informed about the consequences of unhealthy diets and poor lifestyle. Likewise, teachers also played an important role in shaping adolescents’ dietary patterns in schools as adolescents in this current study indicated that they listened more to their teachers than they did to parents. Participants believed that teachers were in a better position to teach them about healthy diets and to advise school canteens to have fruit and vegetables available every day. Thus teachers should be part of any school interventions arising to address the adolescents’ dietary patterns.

The food environment with ready access to unhealthy food and drinks further aggravated the problem. One of the frequently identified facilitators of less healthy eating was the ready availability of unhealthy food and drinks. This was particularly the case within the school grounds. There were number of reasons for this, but most importantly, school canteens in Fiji have a high availability of SSB and junk food due to limited enforcement of food guidelines and policies and a lack of awareness of the importance of monitoring school canteen food operators, head teachers and teachers (Varman S, Bullen C et al. 2013). While there are national school canteen guidelines in Fiji (National Food & Nutrition Centre 2005, Bole F 2008), a recent study reported that only about 16% of primary schools were fully compliant with national school canteen guidelines, while the remaining 84% only complied partially with the guidelines (Varman S, Bullen C et al. 2013). The situation is likely to be similar or probably worse in (secondary) schools in Fiji. The school environments can have a large effect on adolescents’ food choices and the quality of their overall diets because adolescents may consume over half of their total daily energy intake in school on a school day (Story, Neumark-Sztainer et al. 2002). A recent study conducted in Fiji found that noncompliant schools had a higher proportion of overweight and obese students than schools that were fully compliant with the canteen guidelines (Varman S, Bullen C et al. 2013). Given this evidence, there is a need to strengthen the enforcement of canteen guidelines and policies.

The extensive TV advertising of SSB and junk food was also an important perceived barrier for these adolescents to making healthy food and drink choices. This was found consistently among all sub-groups. A number of studies elsewhere have investigated the influence of TV viewing on children and adolescents’ dietary patterns (Uter J, Scragg R et al. 2006, Wiecha JL, Peter- son KE et al. 2006, Lipsky LM and Iannotti RJ 2012, Scully M, Wakefield M et al. 2012), and have showed a significant association between TV watching and consuming of most advertised foods, including SSB. There is also evidence that government regulation on TV advertising of energy-dense and nutrient poor food and drinks is effective in reducing children’s exposure to TV advertising of these types of food and drinks and promoted a conducive environment for child health improvement (Kim S, Lee Y et al. 2013). This is in line with international recommendations (Hawkes C 2004, World Health Organization 2010, Rain- ca KD, Lobstein T et al. 2013). There is currently no policy on restricting advertising of unhealthy food and drinks to children in Fiji, although a draft has been developed.

Fruit and vegetable consumption was low among adolescents in Fiji. All adolescents in the focus groups recognised the important benefits of daily fruit and vegetable consumption, including preventing sickness through vitamins and mineral contents of fruit and vegetables. Participants further described their enhanced concentration and performance in school when they consumed fruit and vegetables. The perceived health benefits of adequate amounts of fruit and vegetables that were identified in the current study were consistent with other previous studies elsewhere (Croll JK, Neumark-Sztainer D et al. 2001, Jago R, Baranowski T et al. 2007).

Perception about taste preferences for SSB and junk foods was found to be a critical barrier for consumption of fruit and vegetables, along with peer pressure and limited availability of healthy food in school. This is consistent with studies in other countries (Gracey D, Stanley N et al. 1996, Croll JK, Neumark-Sztainer D et al. 2001, Grimm, Harnack et al. 2004), and efforts to increase the availability of healthier foods in schools is needed.

Conclusions and Implications

It is clear that dietary patterns among Fijian adolescents have the potential to impact negatively on health and weight status. Educational approaches to changing diet are not sufficient and must be complemented by enhanced health promotion efforts which tackle some of the barriers to healthier eating and utilize respected peers and other role models.

This study suggests that media is substantially affecting children’s diets and efforts to control advertising of less healthy foods are needed. The school tuck shop and nearby shops are important locations where children are accessing less healthy foods and drinks. There should also be support for schools to encourage students to bring fruit to school every day as well as improving choices of food and drinks in school canteen to ensure healthy choices. This may need a targeted effort on creating school canteen guidelines to enforce them more. Efforts to improve the supply of healthier snacks and drinks at nearby shops to schools should also be considered.
**Conflict of Interests**

The authors declare that they have no conflict of interests regarding the publication of this manuscript.

**Acknowledgments**

JW’s PhD work is supported by Fiji National University and Deakin University. Participants were recruited from Faith-Based Organisations in peri-urban Suva.

**Authors’ contribution**

JW developed the objectives of the study as part of her PhD research, performed thematic analysis, interpreted the findings and drafted the manuscript. WS, RG, and AK participated in the interpretation of the findings, and edited the manuscript. BS participated in the interpretation of the findings and critically reviewed the manuscript. All authors read and approved the final manuscript.

**References**


Dietary pattern of Molituva and Vusuya communities -Tailevu, Fiji

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Keywords: Community, Dietary Pattern, Food Consumption, Non Communicable Diseases, Risk Factors

Introduction
Murray and Lopez (1997) indicated that Global burden of diseases (GBD) during recent years has noted the world’s health situation is changing rapidly especially Non communicable diseases (NCDs) (WHO,2010). In Pacific Island countries and territories (PICTs), NCDs accounts for approximately 75% of deaths annually, while the prevalence of diabetes (30%) are some of the highest in the world(WHO,2000); (Popkin,1999). Coyne (2000) identified that the changing dietary pattern plays a major influence on the development of obesity, and many lifestyle diseases. The modern diet has changed from one of predominantly root vegetables, coconut, fresh fish and green leaves, to one consisting of rice, bread, tinned fish and meat, sugar and salt. Addressing major risk factors by improving the diet, increasing physical activity, and controlling the use of tobacco and alcohol can have a significant effect on lessening the incidence of NCDs, preventing up to 80 per cent of heart disease, stroke and Type 2 diabetes, and 40 per cent of cancer. (WHO,2000)

The 2002 Fiji NCD Steps survey, (Ministry of Health, 2002) showed over half of the adult population was overweight. The National Food and Nutrition Center (2007), in their 2004 National Nutrition Survey (NNS) showed that the major sources of energy were cereal (bread and flour products, rice and roti (34%) and root crops (20%). In a household survey report by National Food and Nutrition Center (1996), showed that cereals contributed about 26% of total available energy. It was also noted that the contribution of sugar was high (12.5%). The 2002 Fiji NCD-STEPs survey, as cited in the Ministry of Health (2002) report, revealed that there was generally low consumption of fruits and vegetables with 66% of survey participants eating less than one serving of fruit per day and 26% eating less than one serving of vegetables per day. The 2008 Fiji Food Balance Sheet, reported by the National Food and Nutrition Center (2009), also showed that cereals were the major contributor (36%) of calories available per capita per day. Rush et al, 2001 conducted a study in Verata village, Tailevu which revealed that of the foods consumed at household level, 66% of energy was from carbohydrates, 13% from protein and 21% from fat respectively. Of these foods, cassava and flour were the most eaten foods.

The other major risk factors smoking, alcohol, kava consumption and physical inactivity and their effects on NCDs have been highlighted in global literatures (WHO,2004; WHO, 2011; Warren CW et al, 2000; Kava,R.2001) and national studies. (MOH, 2002; National Food & Nutrition Center, 2007; National Food & Nutrition Center, 1996; Singh & Matsuba,1996). Household food gardening promotes food security. In the 2004 NNS report,(National Food & Nutrition Center, 2007), reported that overall, 78.9% of households grew some food for home consumption, compared to 84.6% in 1993. The Naduri Survey, as in the National Food and Nutrition Center report (1996), noted that over half the households (64%) grew food for both home, market and ceremonial obligations while about 30% grew strictly for home consumption.

In 2010, Year 3 medical students of the Fiji National University conducted a Community Needs Assessment at Molituva and Vusuya communities under the Rewa Sub-divisional Medical Hospital. The Diploma in Dietetics & Public Health Nutrition (DPHN) year 2 students assisted with dietary intake of the communities. This study therefore aims to assess the dietary pattern of the community, identify NCDs risk factors such as smoking, kava and alcohol consumption, physical activity and determine food security in these communities.

Methods
This is a cross sectional survey in which the study uses the secondary data from the Needs Assessment and Community Profiling survey of 3rd Year MBBS and Year 2 DPHN students at Molituva and Vusuya Villages. The tool used was adapted from the Ministry of Health, Healthy Island Settings Questionnaire (2008), and contained a section on the households’ dietary intake. The Questionnaire is called the Family Assessment Form-Village/Settlement Setting. The DPHN students used Section 5.6-Diet (24hrs dietary recall) to record in each household what foods the family ate in the last 24 hours. The study is a population survey in which all households (52) were interviewed of which 26 were from Molituva and 27 from Vusuya village. Excel spreadsheet was used to analyze the data.

Ethical approval and written consent was sought from the Ministry of Health Divisional Medical Officer (DMO) in charge of the study population area. Upon permission, students and supervisors were then allowed to collect data.

Results

Types of Foods consumed for the three meals in a day.
Bread, Rice and biscuit are common for breakfast while leftover foods from the previous meal (dinner) are favorites for breakfast. Cassava is widely consumed as it is cultivated by most households. Green leafy vegetables such as bele, spinach, (tubua) and dalo leaves (rourou) are consumed with a can of tuna. Root crops like cassava, dalo, yams are mostly eaten (22 households).

Backyard Gardening or Farming
96.43% and 40.30% of households surveyed in Vusuya and Molituva respectively do gardening or farming, thus the availability of such crop as cassava and green leafy vegetables. Root crops are the main source of food from the garden followed by green leafy vegetables and then duruka (Saccharum Edule). Duruka was in season at the time of survey.

NCD Risk Factors- Physical Activity, Smoking, Kava and Alcohol Consumption
a. Physical Activity (PA)
Walking is the common physical activity both communities engage in, while farming has been identified as the next type of physical activity individuals engage in. More males engage in PA than women. 79% of households in Vusuya engage in P.A. while 21% do not. All households (100%) engage in PA in Molituva.

**Discussions**

**Major Food Sources.**

The grouping of the major food sources is adapted from the 2008 Food Balance Sheet (FBS), as reported by the National Food & Nutrition Center, 2009. Overall, cereals was the major food consumed (87%) with sugar (72%). Root crops such as cassava, dalo, yam followed next with 48%. Animal protein makes up 38% of the grouping while a pulse such as dhaf is 6%.

The Naduri Survey, (National Food & Nutrition Center, 1996), reported that cereal contributed to 25.9% to the total diet of the Naduri villagers. At the national level, the 2008 Food Balance Sheet showed cereal continued to be the major contributor (36%) of calories available per capita per day. This is similar to the 2004 NNS report (National Food & Nutrition Center, 2007) of which the major sources of energy were cereal (bread and flour products, rice and roti (34%).

From this study, cereals contribution to the diet of Molituva and Vusuya villagers was 52.9% and 50% respectively. It is seen that there is a continual increase of cereal production and consumption even at household level. Food consumed for the 3 meals per day.

Flour based products such babakau, roti, pikelets, topoi make up the communities Breakfast meals in a day (48 households). Beverages such as lemon grass tea (coboi) and lemon leaves are common beverages in a Fijian setting. Cereals such as noodles, rice with coconut cream, noodles are part of the morning meals. Fruits are consumed the least for breakfast, this is supported by the Ministry of Health (2002) survey that only 66% of the total population studied consumes less than 1 serving of fruits per day. Furthermore, the 2008 Fiji Food Balance Sheet, (National Food & Nutrition Center, 2009) noted that the availability of kilocalories from vegetables and fruits is only 2%. Root crops such as cassava, dalo, kumala are widely cultivated and consumed by many households. Of all the root crops, cassava is the most eaten starchy root crop. Often in a Fijian household dinner is seen as a heavy meal and an important meal, this could be due to all members of the household present after a days’ work. Root crops are mostly eaten (22 households) together with green leafy vegetables. Overall, cereals and root crops constitute the largest proportion of the household’s daily meals.

**Non Communicable Diseases (NCDs) risk factors**

**a. Physical Activity**

For the context of this study, physical activity is described as walking, farming, jogging or swimming (medium to high intense) activities. Walking is the most common physical activity for both male and female in both villages. Farming is also part of their daily life and a form of physical activity. Overall all households (100%) engage in physical activity such as walking, farming and swimming/jogging in Molituva as compared to Vusuya. (79% only) while more males engage in physical activity than females.

The later is a common trend over the years (5) which poses an alarming situation not only at a household level but at national level. There is a need for an active grass root level intervention program for females especially those of child bearing age so that...
there can be an observed change.

b. Smoking, Kava and Alcohol Consumption

In this study, the common age group that smokes consumes kava and alcohol is the 22-45 years age group with more males than females. This trend is consistent with the 2004 NNS survey, as reported in the National Food & Nutrition Center (2007), addressing that more male adults (18-44years) drank kava daily (15.8%) compared to 1.9% females.

The 2002 NCD Steps Survey, (Ministry of Health, 2002) noted that for alcohol use, binge drinking was more common in the 35-44year age group in both genders. The 2004 NNS survey noted the prevalence rate of smoking, kava and alcohol consumption for the adolescent age groups (12-17years). Of those adolescents surveyed, about 5% smoked, 38.7% reported drinking and 89.9% drank kava.(National Food & Nutrition Center, 2007).

Meo and Warner-Smith (1997) in their study on adolescent health are concerned with the prevalence rates of substance use by Pacific youth.

This is an alarming scenario as the age of taking up such habits is getting lower. The World Health Organization (WHO) and United Nations Children's Fund (UNICEF) have stressed that promoting the healthy development of adolescents is one of the most important investments that any country can make and that failure to do so would result in enormous economic and social costs. (WHO,2000).

Furthermore, as health workers we should be concerned for this age group as habits formed at early age will carry on to adulthood thus contributing to NCDs.

Study Limitations

1. The dietary intake was not quantified nor measured to ascertain nutrient intake of adults similar to the National Nutrition Survey 2004.
2. As this was descriptive study, no further statistical analysis was done to correlate dietary pattern with other variables.

Future Work

Future research work could help improve this study by:

i. Quantifying the foods or diet consumed in a meal in order to capture and observe trend over the years in nutrient intake especially for important micro nutrients that may be lacking in our diet. This could help provide dietary advice for NCDs related diseases.

ii. Find associations between risk factors identified and dietary pattern

iii. Identify intervention program(s) appropriate for the most significant risk factor(s) identified from the study.

Recommendations

1. Continue to encourage the consumption of varied and balanced meals at household level especially the consumption of fresh fruits and vegetables.
2. Actively involve women reducing weight by encouraging physical activity at grass root level.
3. Provide lifelong skills (e.g. carpentry, plumbing, welding, carpentry, sewing, screen printing, catering business) to youths to help with health, development and wellbeing.

Conclusions

The most dramatic changes over the years as evident from past surveys and this study has been an increase in energy intake (calories) from cereals, root crops and sugar. The 1994 Naduri Survey showed that cassava, was the most commonly eaten staple, again this is evident in this study. There has been inactive participation of females in physical activity, more intervention program at grass root level is needed. Lastly the initiation age of smoking, consuming alcohol and kava is getting lower as these risk behaviors are adopted at an early age. These findings stress the need to initiate prevention programs at an early age and using integrated approaches.

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Declaration of Conflicting Interest

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Consumers perception and use of nutrient labels

Karan A*  

Keywords: Nutrition Labelling, Consumer Perception, Process Food, Behaviour Change

Abstract

Background – Reading and understanding nutrient labels play an integral part in the consumer’s decision making process and provides information that assists in making healthy food choices. This is the first study to collect data looking at consumer’s perception on nutrient labels in Fiji. Design/methodology – Cross-sectional, descriptive study at New World Valelevu Supermarket consumers (n = 98) in were interviewed through a 21-item questionnaire in August 2012. Findings – Of the total respondents 90.82% read some form of label on the package, expiry date (75.5%) being the most common reason, followed by brand (55.1%) and Nutrition Information Panel (NIP) at 23.47%. NIP readers stated reading it as a personal interest. Non-label readers stated ‘not interested in reading’ (38.1%) as the most common reason for doing so. The Tick logo (38%) was the preferred choice for labelling type followed by NIP (35%). Conclusion – Majority of the respondents read food labels; however this did not necessarily mean that people made the right or healthy choice when purchasing. The study indicates need for further awareness and education on NIP as well as consumer education and motivation factors are key to informed choices made by consumers and thus a healthy nation.

Introduction

Legislations from the Food Safety Act, based on the Codex Alimentarius has made nutrient labelling a mandatory requirement for all processed food items being sold in Fiji. This research aims to explore if consumers’ understand or use nutrient labelling on food packages in making purchases.

Countries abroad have conducted similar research evaluating consumers’ understanding and interpretation of labelling. A research was conducted in New Zealand for the Maori, Tongan, Samoan population by Signal et. al. (2008) however no such research has been conducted in the Pacific region especially for Fiji.

One of the contributing factors to Non-Communicable Diseases (NCDs) is consumption of foods high in salt, sugar and fat contents, most of which are through processed foods. Thus understanding the nutrient labels on processed foods plays a key role in making informed food choices. This research would provide recommendations to relevant authorities to plan media and education campaigns to raise awareness on choosing healthier processed foods using nutrient labels as a tool.

Research Question

Does reading nutrient food labels impact consumers’ choice of purchasing processed foods at the Valelevu supermarkets in Nasina?

General Objective

To determine how the consumers’ shopping at Valelevu supermarkets read and use nutrient information on food labels.

Specific Objectives

• To obtain the perception of consumers on the nutritional information on food labels
• To identify the difficulties (if any) that they experience when using nutrient food labels and reasons for not reading and using these labels
• To assess the knowledge of consumers on nutrient labels and their ability to make informed choices
• To make recommendations to relevant stakeholders concerned for implementation of strategies and policies to make changes

Inclusion Criteria

Only adult (>18 years old) consumers present at the supermarket on the day of data collection

Tool

The data collection package consisted of the following:  
• Questionnaires (consisting of open and close-ended questions) including sample nutrition labels (to test knowledge on reading and understanding labels)

The questionnaire was not translated in vernacular as the pilot test did not identify this as a need.

Data Collection

The data collection process was undertaken in the month of August 2012. The research used a 21 – item questionnaire which is the first study to collect data looking at consumer’s perception on NIP. The research was conducted in New World supermarket in Valelevu. Consent from Management to interview at New World Valelevu Supermarket consumers who were present and consented to participate were interviewed at New World supermarket in Valelevu. Consent from Management to interview at MH Valelevu and Shop n Save Valelevu were unsuccessful.

Figure below summarizes the data collection process.

Figure 1: Data collection process
Results

A total of 98 respondents participated in the study. The respondents were primarily under the age of 48 years old, with 61% coming from the 18 – 28 year age group. 51% of the respondents were Females and 49% males. Majority of the respondents had their education until Tertiary level.

Out of the 98 respondents, 69% (68) stated that they were the frequent shoppers for their families, 14% sometimes and 2% stated that they were shopping for their family only for that particular day.

Of these respondents 90.82% read some label on the package. As stated in Table 2 (Q8), the most common items read on the labels was Expiry date (75.5%), followed by Brand of Product (55.1%), and third was Interestingly Nutrition Information Panel (NIP) (23.47%).

55.2% of the respondents read the Nutrition Information Panel (NIP) of these respondents 67.9% stated Personal reason as the main reason for reading. Of those who did not read the labels (44.9%), 38.1% were not interested in reading, 28.8% bought the same product most times and 23.8% did not have the time to read labels. Half of the respondents (54.1%) stated that nutrition labels are a helpful tool to buy healthier food. Most (53.1%) of the respondents stated that they get the nutrient content of foods shown in the 2 samples in the questionnaire. 29.6% stated as other information which was specified as the cost of the item.

On assessing the knowledge of the 98 respondents, 64.3% had identified the correct answer for the amount of Protein in Products. 66.3% had selected Product 2 as the item that had the lower sodium content.

However when asked to choose between the 2 Products most (51.0%) had selected Product 1 that they would buy, which was the unhealthier choice. 64.3% had chosen Nutrient content as the main factor that helped them choose the product, 29.6% had mentioned Cost as a factor and 15.3% stated taste or preference.

The table below shows the various reasons listed of their preference in selecting the labelling format.

<table>
<thead>
<tr>
<th>Labelling Type</th>
<th>Reasons for choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pick the tick</td>
<td>• Large, simple and clear</td>
</tr>
<tr>
<td></td>
<td>• Tick means someone has already checked that the product is good</td>
</tr>
<tr>
<td></td>
<td>• Quick and easy reference</td>
</tr>
<tr>
<td></td>
<td>• Anything approved by the Ministry of Health is good for use</td>
</tr>
<tr>
<td>Nutrition Information Panel</td>
<td>• Detailed, specific nutrients</td>
</tr>
<tr>
<td></td>
<td>• Contains nutrient content</td>
</tr>
<tr>
<td></td>
<td>• Lots of information</td>
</tr>
<tr>
<td></td>
<td>• Clearly states amount of nutrients available</td>
</tr>
<tr>
<td>Simple traffic lights</td>
<td>• Easy to make healthier choices</td>
</tr>
<tr>
<td></td>
<td>• Easy to understand</td>
</tr>
<tr>
<td></td>
<td>• Already shows what to choose</td>
</tr>
<tr>
<td></td>
<td>• All age groups can understand it</td>
</tr>
<tr>
<td>Percentage daily intake</td>
<td>1. Shows how much nutrients in a day</td>
</tr>
<tr>
<td></td>
<td>2. Easy to read</td>
</tr>
<tr>
<td></td>
<td>3. Shows daily intake</td>
</tr>
</tbody>
</table>

Discussion

This study had an almost equal number of participants from the 2 major ethnic groups i.e. iTaukei at 50% (n=49) and Fijians of Indian descent at 48% (n=47), the remainder were Fijians of Other races at 2% (n=2). A total of 98 respondents were included in the survey.

91% of the respondents had stated that they read some form of food label on the food package, most commonly was the Expiry date (75.5%), followed by Brand of product (55%) and the third most commonly read was Nutrition Information Panel (NIP) (23.5%). Similar findings were stated by Jacobs et al (2011), where respondents consulted the expiry date and ingredient list the most often.

The study also specifically looked at whether the respondent read the NIP on food packages. Only 31% responded that they always read the nutrition information panel. This was confirmed during observations made in the supermarket where consumers picked items of the shelf without reading the package for any information. Jacobs et al (2011) further explains the reason why a few consumers read the NIP because they may not have adequate understanding of the nutritional information provided or they do not know what nutritional information they should evaluate when choosing a particular food product.

Of the participants who read NIP, most stated a personal interest (68%) as a motivation to read, while 25% stated they read NIP only if it was a new product. 38% of the respondents suggested that they were not interested in reading the NIP, whereas 29% stated they bought the same product all the time and 24% stated they did not have the time. Out of the 98 respondents 9.5% stated they had difficulty in understanding NIP. These findings are similar to the study by Mannell et al (2006), where respondents had cited lack of interest as a reason for not reading nutrition labels, followed by lack of time. Mannell et al (2006) also suggests if consumers lacked interest to read NIP it could suggest that they did not see the relationship between reading labels and improved quality in their diet.

A statistical significance was found between the variables age, gender, education level and ethnicity in relation to reading NIP (p=0.0000; p=0.00285; p=0.0000 respectively). Jacobs et al (2011) found similar positive relationship between reading food labels and educational level.

Contrary to this, Drichoutsis et al., (2006) explains in his research that there is no consistency in the determinants of label preference.

Figure 2: Respondents knowledge verses the choice of Product

![Figure 2: Respondents knowledge verses the choice of Product](image1)

62.2% of the respondents stated that the current labels had enough information, whereas 22.5% suggested not enough information. 43.9% of the respondents found the information on the current labels easy to understand, with 17.4% finding it quite difficult to understand and 14.3% finding neither easy nor difficult to understand. When asked on how the labels can be improved 38.8% suggested to provide explanation of nutrition terms ad values used; 30.6% said to have easier format to read such as a larger print, different colour etc., and 27.6% suggested that no changes were necessary.

Respondents preferred simpler labelling formats to interpret the Nutrition Information Panel, as shown below most preferred the “Tick.”

Figure 3: Respondents’ preference to labelling types

![Figure 3: Respondents’ preference to labelling types](image2)
use. According to him and his colleagues no concurrence was seen on the effect of age, income, employment status on nutrition labelling. However, variables such as education level, gender (esp. being a female) had a positive effect on label use.

Jacobs et al. (2011) also explained that first time food purchasing does have a significant influence on the customer’s motivation to read labels. Similarly, health concerns also motivated the respondents to read labels and choose healthier food or food products. However this was not as commonly seen in this study’s findings. One of the reasons could be that people need to be made more aware of the health benefits for doing so.

In assessing the knowledge of the respondents a few questions were asked based on comparing 2 products. In comparing 2 Products (samples); 16.33% of the respondents did not understand or were unable to interpret the information on the NIP. Overall the respondents had an average of 65% in answering the questions correctly. Any respondent who answered the 2 knowledge questions correctly were classified as having a good knowledge on the Product example shown.

Similarly the behaviour between choosing either Product 1 or Product 2 was classified as good and bad choice. Product 2 was the healthier choice. These were then compared to the factor(s) that determined their choice Figure 4. Even though major the respondents (64.29%) stated that nutrient content helped in determining whether they bought a product, this was contrary to the choice that they made as shown in Figure 4. Overall, most of the respondents (81.16%) (n=8) (Fig. 4) made a correct choice of the 2 products shown in the questionnaire.

Jacobs et al. (2011) mentions that if consumers’ put price as an important factor then it implies that there is a need to educate consumers on how to best use the information provided in food labels to assist in choosing food products with a relatively high nutritional value at a relatively low cost.

62.24% considered NIP having enough information on the nutritional value of the product, however 8.16% stated that there was too much information provided. 22.45% stated that not enough information was provided, while the remaining 7.14% did not respond. In comparison to the above over half of the respondents (51.23%) stated that NIP was easy to understand. 20.41% found it very difficult, 14.29% were neutral whilst 4.08% did not provide a response.

Likewise Mannell et al. (2006) indicates manufacturers present nutrition information for an ‘average’ serving size of the product while the NIP as seen on ‘100g of the product’ and sometimes the respondents (64.29%) stated that nutrient content helped in determining whether they bought a product, this was contrary to the choice that they made as shown in Figure 4. Overall, most of the respondents (81.16%) (n=8) (Fig. 4) made a correct choice of the 2 products shown in the questionnaire.

The respondents were asked for suggestions to improve labelling. Majority indicated that proper explanation of nutrient terms and values should be used. 30.61% suggested larger print size and 20.55% stated that a change of the typeface would be appreciated. Respondents also mentioned for the health information to be in vernacular. Language including use of terminologies used on food labels have been found to directly affect consumers’ food choices as mentioned by Jacobs et al. (2011). Furthermore labelling should be presented in such a way to assist consumers with limited reading abilities to be able to understand the labelled products.

While a comparison between knowledge and informed choice revealed that the results were not significant. This may have been due to a small sample size used. However the study did reveal that reading NIP does not necessarily influence the choice made by consumers. In this study other factors such as the cost of the product, brand and preference influenced the consumer’s choice.

As mentioned by Gorton et al. (2008) and Jacobs et al. (2011) the goal of food labels is to provide information that is easy to interpret, understand and use or providing an explanation of the terms on the food packaging itself for consumers to make informed choices.

The respondents were shown four (4) different labelling formats on their respective food products. The ‘Tick’ was the most preferred format (90.76%) as it is easy to understand and use or providing an explanation of the terms on the food packaging itself for consumers to make informed choices. The respondents stated the ‘Tick’ as the most favourable (38%), followed closely by Nutrition Information Panel (35%), then the third choice was the Simple traffic light (14%) and Percentage daily intake (12%) as the least favourable. However the ability of consumers to use different formats needs more exploration and research.

Similar results were seen in the New Zealand study by Signal et al. (2008) where the respondents associated ‘positive’ meanings with the ‘Tick’. Overall the respondents in this study found that the ‘Tick’ was easy to understand and they preferred the minimal writing. Several respondents commented in Signal et al. (2008) study that if a product did not carry the tick it is less healthy for you. This research also revealed that the respondents preferred to see a seal of approval from the Ministry of Health, which may indicate that the product is healthy. Many of the studies cited suggest having combined label types could be beneficial for consumers such as having both the front of pack label like a ‘Tick’ and the detailed Nutrition Information Panel at the back of the pack.

Conclusion

This study aimed to understand consumer’s perception on NIP. The result of this study is that majorly the respondents read food labels; however this did not necessarily mean that people made the right or healthy choice when purchasing food items.

There was a slight discrepancy in the knowledge of respondents and their behaviour on purchasing preference. One of the most important factor that motivated people to buy products was the cost of the item. Although 44% had stated that NIP’s were easy to understand, 35% of the respondents preferred selecting foods which were pre-marked as a healthy choice such as the ‘tick logo’. The study clearly indicates the need for further awareness and education on NIP.

Despite having a small sample size, findings of this study are similar to several done abroad such as Cowburn and Stockley (2005); Gorton et al. (2008); Signal et al. (2008); Mannell et al. (2006) and Jacobs et al. (2011). The findings of this research challenge the health educators and food industry to promote behaviour modification techniques which will help consumers in choosing healthier products. This can be done through educating the consumers on the importance and relevance of reading and using NIP on food products, utilizing labels which consumers readily understand and through carrying out regular awareness. Drichoutsis et al. (2006) suggests in Figure 1 there are several factors that come into play for a person to read or use a label. Being a female or having a higher education as well as age are some such factors both seen in the current study as well as by Drichoutsis et al. (2006) has shown positive significance to label use. Mannell et al. (2006) and Jacobs et al. (2011) are other factors such as who are more concerned about nutrition and health are more likely to use nutritional labels and more likely to search for nutrition information than others. Media campaigns targeting such groups would prove effective at target the whole population.

Healthier choice of foods could mean a reduced burden on the NCD crisis that many of the Pacific Island Countries are facing. Mannell et al. (2006) similarly mentions nutrition labelling supplemented by public education programs emphasizing the benefits of reading nutrition labels, and teaching consumers how to use and interpret the wealth of nutrition information would prove advantageous.

Nutrition labelling can benefit by increasing awareness and consumer demand for healthier foods. This move also motivates food industries to make its products healthier, eventually improving diet of everyone including the consumers who do not use nutrition information. (WHO and FAO, 2007)

Consumer education and motivation initiatives appear to be key factor that will lead to making informed choices by consumers and thus a healthy nation.

Limitations

- Limitations to this study were that it had a small sample size and just one of the 3 supermarket as the study site thus findings cannot be generalized to the whole of Valelevu or Nasinu.
- More questions can be added to the questionnaire to be inclusive of household income, detailed list of factors influencing their choice and more knowledge, behaviour and practice
questions.

• In addition more prominence should be placed on the difference between nutrition / nutrient information and product composition information, as most respondents had thought the term ‘nutrition information labels’ also encompassed food ingredient information. This led to the interviewer having to explain the difference or showing examples on products prior and during the interview.

References


Abstract
This paper illustrates using the Food Balance Sheet (FBS) data to demonstrate food availability in Fiji. FBS is a comprehensive compilation of the country’s food supply for a specific time period. It shows the quantities and types of food potentially available for human consumption, sources of supply and the use of both primary and processed commodities. The daily per capita nutrient content of the available food supply in terms of kilocalories, protein and fats are calculated using FAO International Nutritive Factors. The regular compilation of FBS showed that dietary energy has increased to more than 50% of the recommended dietary energy. The total energy intake showed an increase in the availability of animal origin foods. Protein availability showed similar pattern as the dietary energy over the years. Fat also showed a marked increase that almost doubled in the past 2 decades. Fiji relies heavily on food imports to supplement domestic production. Government has put in place an “import substitution policy” to reduce imports and increase local production. FBS has been used to monitor Fiji’s food situation and also contributed to the development of government’s policies on food, health and nutrition.

Introduction
Fiji is the only Pacific Island country that prepares Food Balance Sheet (FBS) on a regular basis. The National Food and Nutrition Centre had been compiling FBS report annually since 1992. FBS is probably the most comprehensive data on national food availability worldwide and also among the most important sources of information on vital food issues (Jacobs et al, 2002). The regular compilation of Food Balance Sheet provides data on food availability for the country at a given time and shows the quantities and types of food available for human consumption; sources of supply and the use of both primary and processed commodities. It indicates the types of foods consumed i.e. the change in food pattern in the diet. FBS also shows the extent to which the food supply of a country is likely to meet the nutritional requirements of its population by proxy. For planners, it tells the degree of dependence on imported food supply (import dependency ratio). This paper presents selected useful information that Fiji has been able to obtain from the FBS annual reports.

Methods
Basically, the information of total food availability is from Fiji’s Food Balance Sheets compiled. In this regards, this paper highlights trends observed in the food supply and availability in terms of calories, protein and fat for selected years from 1985 to 2010. Data on national food availability of the main food commodities provide a valuable insight into the diets and trends over time.

Results
1. Total food availability
Food availability expressed in calories (kcal) per capita per day is a key variable used by FBS in measuring food situations in a country. Analysis of our food situation showed that dietary energy has been increasing gradually over the years from 2819 kcal in 1985 to 3548 kcal in 2010; an increase by 26%.

The trend observed for total nutrient availability showed a peak in 2005 (3,663kcal), decreasing to 3,298kcal (2006) and has retained a mean average of 3,482 kcal for the last three years (2007-2010).

The total energy (kcal) in the food supply available for consumption in Fiji over the years have been more than the recommended nutrient intake of 2,228 kcal (FAO, 1992) for the population. In other words, excess amount of energy available in the food supply for the latest FBS Report 2010 is 59.2% (1,320 kcal) in excess of the recommended nutrient intake (2,228 kcal).

Table 1 below shows the observed increase in energy food supply. This has been accompanied by a general increase in the availability of energy supply from animal-origin foods (meat products, milk products, eggs & fish).

Table below shows some trends in the percent share of dietary energy by major food groups towards the total energy supply.

<table>
<thead>
<tr>
<th>Year</th>
<th>Cereals</th>
<th>Roots</th>
<th>Sugar</th>
<th>Oil &amp; Fat</th>
<th>Animal Protein</th>
<th>Vegs &amp; Fruit</th>
<th>Pulse</th>
<th>Others</th>
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<tr>
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<td>39</td>
<td>12</td>
<td>11</td>
<td>15</td>
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<tr>
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<td></td>
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<tr>
<td>2007</td>
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<td>11</td>
<td>14</td>
<td>16</td>
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<td>2</td>
<td>5</td>
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<td>2</td>
<td>5</td>
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<tr>
<td>2009</td>
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<td>11</td>
<td>14</td>
<td>15</td>
<td>1</td>
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<tr>
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<td>15</td>
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<td>14</td>
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<td>2</td>
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The table clearly shows that cereals are the main sources of dietary energy in Fiji. A closer analysis of the percent share of dietary energy supplied by cereals showed a downward trend from 39% in 1985 to 34% in 2007 however increased to 41% by 2010. This fluctuations could be a result of a combination of factors, including an increase in the percent share of energy availability for oil and fat, animal products and root crops and dependency of cereal based products. Sugar’s share, on the other hand has declined over the years and may reflect the situation in the sugar industry in Fiji. However, the percent share of total energy from sugar still exceeds the upper limit of 10% recommended by the World Health Organisation.

Fiji is a country with an abundance of fruits and vegetables. Of interest is the contributions of vegetables and fruits to total energy intake over the years have remained low between 1-2% since 1985. The low contribution of fruits and vegetables to total energy can be explained by the fact that they are not energy foods but mineral and vitamin providers. However, the consistent small amount of percent energy contribution in-
icates that our consumption of fruits and vegetables have not changed. This finding appears consistent with 2004 National Nutrition Survey results and 2002 Non-Communicable Disease Survey where low consumption (1-2 servings per day) of fruits and vegetables were reported. We should be eating 5 servings of fruits and vegetables per day as per WHO Recommendations.

The percent contributions of the macronutrients (carbohydrates, protein & fat) to the total dietary energy available in the food supply showed that all three have remained within the recommended percentages of the nutrient goals as shown in Figure 1 below.

However the percentages have increased in comparison from the previous year, and total amount of energy in kcals is well above the recommended population goal of 2,228 kcals – 59.2% in excess.

In terms of nutrition, this relatively large increase in energy supply is of concern and may partly explain the increasing rates of obesity in Fiji.

Figure 1: Contribution of Macronutrients to Total Energy Intake-2010 vs WHO/FAO Recommendations
(Source: NFNC, 2010)

Table 2: Availability of protein from meat

<table>
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<tr>
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<td>8</td>
<td>100</td>
<td>10</td>
<td>100</td>
<td>11</td>
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<td>11</td>
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<tr>
<td>Lamb/mutton</td>
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<td>5</td>
<td>50</td>
<td>5</td>
<td>46</td>
<td>5</td>
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<td>5</td>
<td>46</td>
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<td>18</td>
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</table>

Table 2 shows that for meats most (around 40%) of the protein available from 1992 to 2001 was contributed by lamb/mutton meat. In 2004 to 2007, however, chicken was the major protein contributor for meats at around 46%.

There has been a marked increase in the intake of dietary fats over the past two decades. Total fat availability almost doubled from 67gm in 1985 to 102gm in 2010 as shown in Figure 3. However 2005 had 108 similarly in 2007.

The per capita supply of fat from vegetable foods has increased markedly (69%) from 35g in 1985 to 57g in 2010. Fat supplied by animal products have shown a similar increase from 32g in 1985 to 44g in 2010, as shown in Table 3.

Figure 3: Fat Availability in Fiji (per capita per day)
(Source: NFNC, 2009)
Table 3: Origin of fat supply in Fiji (per capita per day) from selected food commodities

<table>
<thead>
<tr>
<th>Year</th>
<th>Gram/% Fat</th>
<th>Vegetable Oil &amp; Fat</th>
<th>Nuts &amp; Oilseeds</th>
<th>Other</th>
<th>Meats/Fish &amp; Eggs &amp; Dairy</th>
<th>Animal Fat</th>
<th>Total Fat</th>
</tr>
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<td>(gm)</td>
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<td>6</td>
<td>32</td>
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<td></td>
<td>% of total fat</td>
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<td></td>
<td>% of total fat</td>
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<td>% of total fat</td>
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<td>9</td>
<td>45</td>
<td>26</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>% of total fat</td>
<td>57</td>
<td>9</td>
<td>42</td>
<td>9</td>
<td>45</td>
<td>26</td>
</tr>
</tbody>
</table>

Table 3 also shows that vegetable oil and fat are the major sources of fat in the food supply contributing 41% in 2010. This is followed by fat derived from animal products such as meat, dairy, eggs and fish at 26% during the same period.

Selected fat index were compiled for the major food groups, using 1985 as a base year (1985 = 100). A review of the 2 decades showed that vegetable oil and fat have made a two-fold increase in the first decade (1995) and three-fold increase in the second decade.

The proportion of energy contributed by dietary fats over the years have always been within the 15%-50% nutrient goal. However, a detailed analysis of the fat contribution towards the total energy supply showed an alarming rate of 52% increase in 2010 when compared to 1985 as the baseline year. Other periods have reported similar proportion of ≥19% increase as shown in Table 4.

Table 4: Percent increase in fat contribution toward total energy supply

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent Increase (using 1985 as a baseline)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>100</td>
</tr>
<tr>
<td>1992</td>
<td>119</td>
</tr>
<tr>
<td>1995</td>
<td>124</td>
</tr>
<tr>
<td>1998</td>
<td>124</td>
</tr>
<tr>
<td>2001</td>
<td>138</td>
</tr>
<tr>
<td>2004</td>
<td>129</td>
</tr>
<tr>
<td>2007</td>
<td>138</td>
</tr>
<tr>
<td>2010</td>
<td>152</td>
</tr>
</tbody>
</table>

2. Food Dependency

In analyzing the food situation of a country, an important aspect is how much of the available national food supply has been imported (import dependency ratio) and how much comes from local production (self-sufficiency ratio).

The country’s import dependency ratio showed that Fiji is still relying heavily on food imports to feed its population. Fiji is importing more than half (50%) of its available energy in the food supply every year. Government’s concern about this trend was also discussed at the recent 2010 “Symposium on Food Security and Export-Led Growth of Resource-Based Sectors” where it was reported that “Fiji relies heavily on food imports as domestic production has not been able to cater for the total domestic demand. Food imports have been rising over the years and totaled around $520 million in 2008” (Reddy, 2010).

Cereal is a major contributor of food energy in the diet. Fiji imports more than 80% of its energy from cereals (wheat flour and rice). This level of cereal imports has remained at a similar level in the past 3 decades.

Fiji imported about 96% of its cereal protein in 2010 while 43% was imported for meat - mostly from lamb/mutton and chicken. Imports of sheep meat in 1985 recorded 6,000mt. Since then, the amount imported every year has almost doubled. Chicken imports have slowly increased over the years from 584mt in 1992 to 1,481mt in 2010, valued at $4million.

Fat import dependency ratio for meats had made a marked increase since 1985 when the percentage of fat imported was only 7%. Since then, shares of fat in imported meats have soared to more than 60% since the early 1990s and have remained at almost the same level until today.

The food self-sufficiency ratio for Fiji in terms of dietary energy has always remained below 50% since 1992 as shown in Figure 3. Fiji has relatively high self-sufficiency ratio on roots, sugar, nuts and oil seeds, fruits and eggs (Table 7).

The low domestic production has been a result of many factors, including land issues, poor management, lack of technical expertise etc (Reddy, 2010).

Government has put in place an “Import Substitution Policy” of basic import commodities that could be produced locally such as potatoes, beef, rice, dairy products and lamb. This could save the country around $126million annually in import payments (Reddy, 2010). In recent years Ministry of Agriculture has tested crops like potatoes, kumala and disaster resilient crops for domestic production.

This policy will greatly assist in reducing the food dependency on imports and increase self sufficiency for the country.
Conclusion

FBS data has given Fiji a benchmark in assessing the food situation in the country and have contributed significantly to the development of evidence-based government policies on food, health and nutrition. This contribution has been included in the development of the Fiji Plan of Action for Nutrition (FPAN) in 1998 and its revision in 2009 and 2016. Other policies that FBS data has contributed to include the Food and Nutrition Policy for Fiji which was endorsed in Cabinet in 2008, and the 2009 Fiji Food Based Dietary Guidelines.

The regular compilation of FBS for Fiji has shown interesting trends in food availability and food dependency. It has also allowed us to monitor the food situation in the country. The share of staples such as cereals is declining while that of meat, oil and fat is rising. This change in the food availability could explain the rapid increase in the incidence of non-communicable diseases in the country.

The Fiji government is addressing food dependency on imports by identifying policies such as; import substitution and address issues to increase production in the agriculture sector. These moves will boost exports and reduce imports. Increased local production will ensure food self-sufficiency for the country.

To conclude, despite the documented limitations for FBS, Fiji has used the data for monitoring purposes and policy development. It is one of the vital tools in the country that provides national food availability data, indicates food dependency and helps in identifying loopholes in the food supply that needs to be tackled to address food and nutrition issues and trade.

References


Assessment of nutritional status and dietary intake of people living with HIV and AIDS in Fiji - A baseline study

Kama A1

Keywords: PLHIVAIDS, Nutritional Status, Dietary Intake

Abstract
Introduction: Current nutrition intervention programs in Fiji do not address nutrition management component and counseling for People living with HIV and AIDS (PLHIVAIDS). This baseline study which was the first to be done in Fiji, was carried out to assess the nutritional status and dietary intake of PLHIVAIDS in Fiji conducted to inform and assist the development of nutrition information, education, management and counseling for PLHIVAIDS.

Method: A descriptive, qualitative cross-sectional study using convenience sampling method was used to assess the nutritional status and dietary intake of 34 participants from the Northern, Western and Central/Eastern Divisions of Fiji. A structured questionnaire administered through face to face interviews was used to capture required information under the following categories; Demography and Socio-Economic, Nutrition Knowledge and Behavior, Anthropometric Measurements and 24-Hour Diet Recall.

Results: About 20% of participants had a normal and healthy weight according to BMI measurements. The remaining 80% were unhealthy; either from underweight, overweight or obesity.41% did not meet their daily recommended intake, resulting in an underweight status. More than half (55%) reported not knowing the nutrients and were not sure of what nutrients were obtained from foods they needed to consume to stay healthy. The average energy intake of Fijians was higher (3,308 kcal) compared to others at 2,472 kcal and Indians of Fijian descent in 1,573 kcal. Only 35% of respondents met their daily recommended intake in comparison to the United States Recommended Dietary Allowances (USRDA). On nutrition-seeking behavior, 77% conveyed the need for additional information on nutrition and availability guidelines, and training.

Conclusion: Although good nutrition cannot cure HIV infections, it is important to sustain the immune system and help achieve optimal quality of life for people living with HIV and AIDS (PLWHA). Nutrition education for PLWHA is a core component of HIV/AIDS Care, support and management. The results of the baseline assessment is expected to be used to develop appropriate policies, nutrition information and to enhance the quality of life for PLHIVAIDS in Fiji.

Introduction
HIV and nutrition are intimately linked. Evidence shows that there is an important link between improved outcomes of HIV and AIDS and nutrition (Houtzager L., 2010). Adequate nutrition is necessary for a person living with HIV to maintain the immune system, manage opportunistic infections, optimize response to medical treatment, sustain healthy levels of physical activity, and support optimal quality of life (FANTA, 2008). Good nutrition may contribute to slowing the progress of the disease (Castleman et al., 2004).

HIV infection can lead to malnutrition, while poor diet can in turn speed the disease’s progress. Because HIV and nutrition are so strongly linked, nutritional assistance is seen as an important part of the response to HIV. This may take the form of nutritional assessment, counseling, or food provision. Nutrition assessment helps HIV positive people receive appropriate treatment, care and nutritional support. According to the World health Organization, even in the poorest settings, screening for nutritional status and assessment of dietary intake should be included routinely in HIV treatment and care for adults and children.

The link between HIV and nutritional status work in both ways. It has long been known that weight loss strongly predicts illness or death among people with HIV. Recently, it has been found that this applies to even people taking antiretroviral treatment. For women, the goals of nutrition care, management and practices a means of addressing their nutritional needs through appropriate counseling needs to be.

PLHIVs have increased nutrient needs. When infected with HIV, the body’s defense system – the immune system – works harder to fight infection. This increases energy and nutrient requirements. Further infection and fever also increase the body’s demand for food. Once infected people living with HIV need to eat more to meet these extra energy and nutrient needs; which will increase even further as the HIV symptoms progress (FAO 2002).

Nutritional status is strongly predictive of survival and functional status during the course of HIV infection. A baseline nutritional assessment should be considered a standard of care for all HIV-infected individuals. Development and adoption of national recommendations for a baseline nutritional assessment protocol that is practical for routine clinical settings would greatly facilitate the introduction of nutritional assessment into clinical practice. National guidelines for adults and children with HIV are needed to provide the information and impetus for appropriate nutritional screening and intervention in people living with HIV and AIDS. National guidelines will enable practitioners to better determine who needs counseling and how aggressive that counseling needs to be.

For women, the goals of nutrition care, management and support during pregnancy and lactation is to support the health of the mother, promote optimal birth outcomes and help reduce vertical transmission of HIV and AIDS. As in all people infected with HIV and AIDS, support should also be aimed at strengthening the immune system and enhancing the quality of life.

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Further, nutrition care and support should address the maintenance of adequate weight and adequate nutrient intake through the promotion of a diverse diet and micronutrient supplements. Good hygiene and food and water safety must also be promoted.

For children born of HIV and AIDS positive women, the World Health Organization (WHO 2003) recommends exclusive breastfeeding for the first six months of life. In situations where this is not possible, care must be taken to ensure that infant feeding practices or replacement feedings are acceptable, feasible, affordable, sustainable and safe [FAASS].

Further, the World Health Organizations’ guidelines on HIV and infant feeding (WHO 2010) recommends breastfeeding with ARVs to reduce transmission or avoidance of all breastfeeding. Babies can contract HIV from their mothers if they are breastfed, approximately 20% of babies who are breast fed by HIV positive mothers will contract HIV through breast milk. However, transmission can be reduced to around 4% if babies are exclusively breast fed for the first 6 months of life.

Thus every effort must be made to enable people living with HIV and AIDS in Fiji adopt a healthy and balanced diet so as to meet their increased nutrient requirements and maintain their nutritional status and quality of life. Treatment and management efforts in Fiji have been clinically-oriented. Apart from the Infant Feeding component of the Integrated Infant and Young Child Feeding (IYCF) program, there has not been any nutrition information and dietary guidelines developed for PLHIV and health care providers in Fiji.

The overall objective of this study is to assess the nutritional status and the dietary intake of PLWHA. The specific objectives include assessing of general nutritional status of PLHIVs in Fiji through the Body Mass Index (BMI); assessing the adequacy of their diets via a 24-hour recall and making recommendations for policy development and opportunities for improvement.

Review of Literature

Nutritional Status and HIV/AIDS

In a study to determine the nutritional status of HIV clients that was presented at the International Conference on AIDS in Bangkok, Thailand by Nabiyro C. 2004, the results showed that nutrition status amongst study participants was generally below normal and healthy standards compared to individuals unaffected; justifying a need for nutritional intervention amongst clients for improved quality of life.

The study documented that the effects of the AIDS pandemic on the nutritional status of people living with HIV and AIDS are known. These effects are due to inadequate intake of food and nutrients and underutilization of the nutrients in food, attributed to conditions like diarrhea, nausea, and vomiting amongst others. Nutritional problems such as underweight and muscle wasting have been observed as a consequence of these effects.

A review article by the Nutrition Development Division of Albion Street Centre, Sydney, Australia (Houtzager L. M. 2009); provides an overview of the main nutrition related issues for people living with HIV and a review of the potential benefits of nutrition interventions for people affected by HIV. Nutrition plays a vital role in the immune system of all people, including PLHIV. Good nutrition strengthens the immune system, while HIV infection and poor nutrition have a cumulative effect in damaging it. PLHIVs are more vulnerable to malnutrition than the general population and nutritional status is a good predictor of their mortality risk.

The same article stated that the poor nutritional status of people living with HIV and AIDS is a result of weight loss, muscle wasting, weakness and micronutrient deficiency. Compounded with an impaired immune system, the body has a poor ability to fight HIV and other infections. Therefore there is an increased risk of infections such as gut infections, tuberculosis, flu and thus faster progression to AIDS. At this stage, there is increased nutritional needs due to mal-absorption and decreased intake of food.

Evidence also suggests that children need aggressive nutrition intervention to save their lives (Kikafunda J. K. and Namusoke H. K. 2006). This study that was conducted in Uganda looked at the nutritional status of HIV/AIDS orphaned children in households that are headed by the elderly, and found that these children have poor nutritional status. The findings also indicated that malnutrition is a big problem resulting from a number of factors such as poverty, big family sizes and the effects of the HIV/AIDS pandemic. The malnourished children did not have the required support to sufficiently care for them. The study recommended that the extent of support to meet the needs of these children and their elderly caretakers be increased.

In terms of energy balance in people living with HIV, (Shevitz AH and Knox TÁ 2001) discussed basic dietary problems in PLHIV and provided practical suggestions for their management. The study stated that changes in weight are caused by disruptions in energy balance, which can be disrupted by alterations in energy intake, energy expenditure, or both; and that factors that contribute to the disturbance of energy balance are discussed in the context of HIV infection. The management of weight loss and weight gain may then be directed at the affected components of energy balance. This information is intended to raise health care providers’ attention to nutrition in their patients, including monitoring of weight and dietary issues; and to encourage active interactions with experienced Dietitians and Nutritionists.

Nutritional management is integral to the care of all HIV-infected patients. HIV infection results in complicated nutritional issues for patients, and there is growing evidence that nutritional interventions influence health outcomes in HIV-infected patients (Nerad J. 2003). Nutritional counseling facilitates access to information on adequate dietary intake. When dietary counseling is combined with oral nutritional supplements, there is additional evidence for its value (Rothpletz-Puglia P et al. 1998). A regular resistance exercise program has also been shown to improve lean body mass and strength in HIV-infected patients (Roubenoff R. et al. 1999).

The same study by Nerad 2003 recommended that it is important to the health of people living with HIV and AIDS to have access to the services of a Dietitian/Nutritionist whose knowledge in the area of nutrition for HIV is current. It further recommends that each health program have a Dietitian/Nutritionist in some capacity: full time, part time, or as a visiting consultant.

The Dietitian/Nutritionist should provide a nutritional assessment, provide appropriate nutrition intervention counseling with appropriate educational materials, and participate in case conferences as part of the medical team. This information is intended to raise health care providers’ attention to nutrition in their patients, including monitoring of weight and dietary issues; and to encourage active interactions with experienced Dietitians and Nutritionists.

Epidemiology of HIV and AIDS in Fiji

According to the Ministry of Health report of July 2010, there was a total of 354 cumulative PLHIV confirmed cases; 188 males and 166 females; 286 Fijians (f-Taukei), 46 Indo-Fijians, and 19 Others. A total of 43 new cases were reported in 2009, with the highest incidence occurring among 20-29 year olds. It must be noted that individuals within this group are at their peak reproductive period, and so the risks of spreading the disease is higher compared to the other age groups.

24 PLHIV/AIDS have died since 1998 and 19 Others. These deaths were reported as confirmed HIV and AIDS cases. However, other secondary causes of death have been attributed to other deaths, which include tuberculosis and pneumonia.

Ante retroviral treatment [ART] has been available in Fiji since 2004. In 2009, 48 people living with HIV [Suva: 34, Lautoka: 10, Bau: 4] were on ART out of a total of 95 PLHIVs.
The breakdown of the total of PLHIV/AIDS on ART were as follows: Suva: 75, Lautoka: 10, Labasa: 10. Nine (9) of them were Divisional Hub Centre clients (UNGASS 2010). Not all of these clients were eligible for, or chosen to take up ART. While these numbers may appear to be low, compared with the 15% global uptake of ART, Fiji has a relatively high proportion of its PLHIV population on treatment (WHO/UNAIDS 2005).

The 3 Divisional Hub Centres in Fiji were more focused on clinical management of people living with HIV and AIDS, and referrals for a Dietitian/Nutritionist consultation were very few, if any at all. Most basic dietary and nutrition counseling was undertaken by the clinic nurses or the medical officer based on whatever nutrition knowledge and/information they may have. Due to the confidentiality involved, only a limited number of health staff come into contact with people living with HIV and AIDS, which also explains the lack of referrals for dietetics and nutrition consultation.

A few of the Divisional Hub Centre staff members have been on clinical attachments at the Albion Street Centre in Sydney, Australia, and they have spoken highly of the services that is offered at the Nutrition Development Division in terms of nutrition care and management of people living with HIV and AIDS. This is an important service that was lacking in Fiji.

It is encouraging to note that the current degree curriculum offered by the Dietetics and Nutrition Program of the College of Medicine, Nursing and Health Sciences of the Fiji National University, has included the nutrition management and care of people living with HIV and AIDS as a course. The course is also offered at post graduate level for health workers such as Medical Officers, Nurses and others in the medical profession, who may have missed out on this training at the undergraduate level.

Methodology

Study Design

This was a baseline descriptive, qualitative cross-sectional study, involving people living with HIV and AIDS in Fiji. The qualitative information gathered provided the basis of identifying clear goals and objectives, and set clear directions and strategies in terms of developing nutrition policies and guidelines for people living with HIV and AIDS. This is an important service that was lacking in Fiji.

Selection Criteria for Sample

The PLHIV’s have to be Fiji citizens. Signed, written consent was obtained from 34 out of 95 respondents, who were PLHIV’s and had publicly declared their status. Persons below the age of 18 years were excluded from the study. Trying to convince adult people living with HIV and AIDS to participate in the study was in itself a cumbersome task, and due to time limitations, it was felt that participants below 18 years be excluded from the study.

Ethical approval was obtained from the College Health Research Ethics Review Committee and the Fiji National Health Research Ethics Review Committee.

Sample Population

The total population of PLHIVs in Fiji at the time of the study was 354 out of which 95 were Hub Centre clients. The participants were notified through the Hub Centres in the Ministry of Health, and also through the Fiji Network for People Living with HIV and AIDS [FN+A], and the Pacific Islands AIDS Foundation [PIAF] which were the two organizations looking after the PLHIVs in Fiji at the time of the study. Initial contact of participants was made through telephone conversation to each of the Divisional Hub Centres located in Suva, Lautoka and Labasa; and PLHIV organizations, requesting for a verbal consent, followed by the actual visit.

During this visit, the study was explained to the participants, and if consent was given, the participant signed the consent form and the interview commenced shortly thereafter.

Sampling Frame

The selection of sample size was based on the 95 Hub Center clients from the three divisions; Northern, Western and Central/Eastern Divisions, utilizing convenience sampling method. Due to the stigmatization factor associated with people living with HIV and AIDS, non-response rate was expected to be high from the participants.

Variables

Variables for the study included the Body Mass Index [BMI] – measurements of height & weight; Food recall within the last 24 hours; Knowledge and Perception of PLHIVs on healthy foods, balanced meals, types and amounts of food consumed, nutritive value of foods consumed; and nutritional support and services provided by health care facilities. The Independent Variables included Demographic data on Age; Gender; Ethnicity; Marital status; Education level; and Occupation; Average Combined Income per Month and Amount of Money spent on Food.

Study Instruments

Data was collected through a structured questionnaire, administered face-to-face at the respective divisional Hub Centres during official working hours [8.00am-4.30pm], where personal and nutrition-related information and care provided by health care facilities to participants was collected. Questions were categorized under the following Sections - Demography and Socio-Economic Information; Nutrition Knowledge and Behaviour; Anthropometric Measurements; and 24-Hour Diet Recall.

Data Collection and Analysis

All data collected from the questionnaires and forms were entered and stored on a computer base file using Excel and FoodWorks database. All information collected was stored in a password protected laptop. All computer printouts were manually checked and verified with the original records. Data was collected from all participants who had agreed to be interviewed and signed the informed consent form. Although the questionnaire was in English, it was administered in the vernacular language to Fijians (i.e. Tauek) and in English to Fijians of Indian descent and Others. Cleaning and sorting of data was done through Excel, and responses with similar processes and patterns were grouped under similar themes as on the questionnaire. Excel and FoodWorks programs were chosen due to easy access and familiarity in their use.

FoodWorks is a database that calculates nutrient content of food and drinks based on different food composition data. The Pacific Islands Food Composition Tables was used to provide the nutrient content of Fiji foods used in the study. Food and drinks consumed from the 24-Hour Dietary Recall were merged with Pacific Island Food Composition data to enable analysis of nutrients from food intake data.

Nutrient data from food intake was inserted into FoodWorks to analyze the diet. Dietary analysis included seven selected nutrients [energy, protein, fat, carbohydrate, iron, vitamin A and vitamin C]. Adequacy of nutrient intake was assessed using the United States Recommended Dietary Allowances [USRDA], which included Estimated Average Requirements [EAR] since no EAR equivalent is available for the Pacific.

Results

The overall response rate was 36% (n = 34/95) where all key informants recruited and interviewed during the study were diagnosed with HIV/AIDS between 2000 - 2009. Divisional response rate was 23 [68%] for Central division, 7 [20%] for Western division and 4 [12%] for Northern division. The demographic and socio-economic characteristics of the participants are given in Table 1.
Results n(%)  
BMI/Nutritional Status  
Normal 7(20%)  
Obese 6(18%)  
Overweight 7(21%)  
Underweight 14(41%)  

BMI Status by Ethnicity, Gender and Age Category  
BMI Status by Ethnicity, Gender and Age Category  
As reflected in Table 4 below, Fijians (i-Taukei) had the highest proportion of BMI status in all categories and by gender, there were more females within the underweight [26%] and obese categories [12%], compared to males who topped the overweight [12%] and normal (healthy) range [12%]. With respect to age the older age groups of 30 years and more showed a higher proportion of underweight and obesity in comparison to the younger age groups. As for the status of respondents on ART, only 16% were within the normal and healthy range, the rest were either obese (12%), overweight (28%) or underweight (44%).

Table 2: Nutrition Knowledge and Behavior Characteristics of the Participants

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Results n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>15 (44%)</td>
</tr>
<tr>
<td>Female</td>
<td>19 (56%)</td>
</tr>
<tr>
<td>Age Distribution (in years)</td>
<td></td>
</tr>
<tr>
<td>(mean, SD, min, max)</td>
<td>35, 5.9, 19, 48</td>
</tr>
<tr>
<td>19-20</td>
<td>1(3%)</td>
</tr>
<tr>
<td>21-29</td>
<td>6(18%)</td>
</tr>
<tr>
<td>30-39</td>
<td>17(50%)</td>
</tr>
<tr>
<td>40-49</td>
<td>10(29%)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td>Fijian (i-Taukei)</td>
<td>27 (79%)</td>
</tr>
<tr>
<td>Fijian of Indian descent (Indian)</td>
<td>5 (9%)</td>
</tr>
<tr>
<td>Others</td>
<td>4 (12%)</td>
</tr>
<tr>
<td>PLHIV/AIDS on ART Treatment</td>
<td></td>
</tr>
<tr>
<td>ART</td>
<td>25 (74%)</td>
</tr>
<tr>
<td>No ART</td>
<td>9 (26%)</td>
</tr>
<tr>
<td>Education Level</td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>4(12%)</td>
</tr>
<tr>
<td>Secondary</td>
<td>16(47%)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>14(41%)</td>
</tr>
<tr>
<td>Occupation Profile</td>
<td></td>
</tr>
<tr>
<td>PLHIV Organizations</td>
<td>9</td>
</tr>
<tr>
<td>Domestic Duties</td>
<td>8</td>
</tr>
<tr>
<td>Self Employed</td>
<td>8</td>
</tr>
<tr>
<td>Driver</td>
<td>3</td>
</tr>
<tr>
<td>Caregiver</td>
<td>1</td>
</tr>
<tr>
<td>Receptionist</td>
<td>1</td>
</tr>
<tr>
<td>Salesgirl</td>
<td>1</td>
</tr>
<tr>
<td>Shipmate</td>
<td>1</td>
</tr>
<tr>
<td>Telemarketer</td>
<td>1</td>
</tr>
<tr>
<td>Unemployed</td>
<td>1</td>
</tr>
<tr>
<td>Average Income Earned per Month</td>
<td></td>
</tr>
<tr>
<td>&gt;$1000.00</td>
<td>11 (33%)</td>
</tr>
<tr>
<td>$800.00 - $999.00</td>
<td>12 (35%)</td>
</tr>
<tr>
<td>$600.00 - $799.00</td>
<td>5 (15%)</td>
</tr>
<tr>
<td>$400.00 - $599.00</td>
<td>3 (9%)</td>
</tr>
<tr>
<td>$200.00 - $399.00</td>
<td>2 (6%)</td>
</tr>
<tr>
<td>&lt;$200.00</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Food Expenditure Per Month</td>
<td></td>
</tr>
<tr>
<td>&gt;$100.00</td>
<td>22 (64%)</td>
</tr>
<tr>
<td>$100.00 - $299.00</td>
<td>6 (18%)</td>
</tr>
<tr>
<td>$300.00 - $499.00</td>
<td>5 (15%)</td>
</tr>
<tr>
<td>&gt;$500.00</td>
<td>1 (3%)</td>
</tr>
</tbody>
</table>

Calculations for the participants BMI/Nutritional status was obtained using the WHO cut-off points as reflected in Table 3 below.

Table 3: Nutritional Status of PLHIV/AIDS based on BMI

<table>
<thead>
<tr>
<th>BMI/Nutritional Status</th>
<th>Results n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>7 (20%)</td>
</tr>
<tr>
<td>Obese</td>
<td>6 (18%)</td>
</tr>
<tr>
<td>Overweight</td>
<td>7 (21%)</td>
</tr>
<tr>
<td>Underweight</td>
<td>14 (41%)</td>
</tr>
</tbody>
</table>

Table 4: BMI Status of PLHIV/AIDS by ethnicity, gender and age category

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Gender</th>
<th>Age Group</th>
<th>On ART</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fijian i-Taukei</td>
<td>Male</td>
<td>30-39</td>
<td>40-49</td>
</tr>
<tr>
<td>Fijian i-Taukei</td>
<td>Female</td>
<td>30-39</td>
<td>40-49</td>
</tr>
<tr>
<td>Primary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertiary</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

24-Hour Diet Recall  
A 24-hour diet recall was obtained from the 34 participants. This method does not always reflect what they usually eat as an
individuals intake varied on a daily basis. However, it provides an insight on the adequacy of food consumption for people living with HIV and AIDS in Fiji. Food and drinks consumed from the 24-Hour Dietary Recall were merged with Pacific Island Food Composition data to enable analysis of nutrients from food intake data. Nutrient data from food intake was inserted into FoodWorks to analyze the diet, which included the seven selected nutrients [energy, protein, fat, carbohydrate, iron, vitamin A vitamin C]. Adequacy of nutrient intake was assessed using the United States Recommended Dietary Allowances [USRDA], which included Estimated Average Requirements [EAR].

Energy
The average energy intake of Fijians was higher [3,308kcal] compared to Others at 2,472 kcal and Indians with 1,573 kcal. In comparison to the USRDA, only 35% of respondents met their daily recommended intake. The major sources of energy were flour and root crops. Figure 1 depicts the participants intake levels for fat, carbohydrates, protein and iron. Overall, the percentage intake of iron was more than the other energy intakes in all the 3 ethnic groups.

Vitamin A and C
The daily average intake of Vitamin A was higher in Fijians [344ug] compared to Indians at 62 ug and Others with 102 ug. In terms of Vitamin C, Fijians also recorded a high intake of 486ug, followed by Indians at 263 ug and Others with 122ug as reflected in figure 2.

Discussion

Overall Nutritional Status of PLHIVAIDS In Fiji
HIV AIDS being a culturally sensitive issue, I was only able to interview 34 participants. These were the people living with HIV and AIDS who had publicly declared their status. All participants were assured of complete anonymity, thus their agreement to being interviewed and to participate in this study.

Overall, only 20% of all participants in the study had a normal and healthy weight according to BMI measurements. The remaining 80% were unhealthy; either from underweight, overweight or obesity. There was no other vulnerable group among the participants, for example, pregnant or lactating women or children.

These results of the BMI assessment was consistent with what Fiji is currently experiencing in terms of an unhealthy population, where 60% were either underweight, overweight or obese; and the normal and healthy population was 38%. This result concurs with the findings of the 2004 National Nutritional Survey, where only 38% of the adult population surveyed were healthy; and about two thirds of the population, unhealthy.

The mean BMI of all participants in this study was 23. In general, Fijians had higher mean [24] than Others [22] and Indians [17]. By ethnicity and gender, Fijian women had a slightly higher BMI of 23 compared to Fijian men of 22. This was similar to the findings of the National Nutrition Survey of 2004 (NNS Report 2004) where Fijian women had higher mean BMI [29] compared to Fijian men [27] and both Indian women [24] and men [23].

The older age groups of 30-49 years showed a higher proportion of underweight [36%], and overweight and obesity [34%] in comparison to the younger age groups. This gradual increase in BMI with age is consistent with the norm where the older age groups have higher BMI than the younger age groups. This pattern is similar to the results shown in the 2004 National Nutrition Survey, which confirms that in general; BMI is age-related.

The BMI results indicate that more nutrition intervention and targeted health communications programs need to focus on the younger age groups to prevent and arrest the problem, as a high BMI status is a risk factor to non-communicable diseases. Coupled with the fact that HIV/AIDS is a degenerative condition, people living with HIV and AIDS must ensure they have the best possible nutrition care and management.

On the other hand, a higher proportion [41%] of people living with HIV and AIDS interviewed were underweight. The 24-hour diet recall of these participants indicated that they lacked the recommended daily intake required for optimal body systems and functions.

According to an Information Tool (UNESCO 2004), the body’s immune system works harder to fight infection when infected with HIV. This increases energy and nutrient requirements. Further infection and fever also increase the body’s demand for food. Once people are infected with HIV they have to eat more to meet these extra energy and nutrient needs, which will increase even further as the HIV/AIDS symptoms progress.

From this study, 41% of participants were not even meeting their daily recommended intake which resulted in an underweight status. The same Information Tool suggested that people living with HIV and AIDS often do not eat enough because the illness and the medicines taken for it may reduce the appetite and may modify the taste of food and prevent the body from absorbing it. In other instances, there is not enough money to buy food as indicated by the results in this study.

HIV/AIDS also reduces the absorption of food. Food broken down by the digestive processes pass as nutrients through the gut walls into the bloodstream and are absorbed into the organs and tissues throughout the body where they are needed. However, when the gut wall is damaged as one of the results of HIV infection, food does not pass through properly and consequently is not absorbed, thus, reducing the adequacy of nutrients needed for proper functions of the body. Reduced food intake and absorption lead to weight loss and malnutrition.

While it is worthwhile to note that 38% of the respondents have a high BMI, appropriate nutrition intervention programs are also required for people living with HIV and AIDS and are undernourished or underweight. This is double burden of malnutrition affecting the PLHIV/AIDS population in Fiji and must be addressed through a Ministry of Health policy brief that will drive an appropriate action plan necessary for the improvement in nutritional status of people living with HIV and AIDS, thus improving their quality of life in general.
74% of respondents are on antiretroviral treatment at the respective Hub Centres they attend, while 26% are not on antiretroviral treatment although they attend clinics. Almost all of the respondents not on treatment are on some form of traditional herbs and medicines, while still others are on a purely vegetarian diet. Most of these participants were on treatment at some stage of their condition, but have decided to change to traditional forms of treatment as a result of changing beliefs and practices of some of their members.

The report at the World Bank on the Evidence, Experience and Suggested Actions of Integrating Nutrition (Piwoz 2004), suggested that nutrition counseling and support are still important for patients’ receiving antiretroviral treatment as wasting is still a problem with patients on antiretroviral treatment.

The findings of this research project are also supported by a study of how antiretroviral treatment affects weight loss in HIV infection and the implications for clinical nutrition (Maia et al 2005). The report noted that antiretroviral therapy affects weight loss in HIV infections, and that HIV-infected patients treated with antiretroviral agents may lose subcutaneous fat, making nutrition management imperative in the care of PLHIV.

Therefore although almost three quarters of people living with HIV and AIDS in Fiji are on antiretroviral treatment, weight loss is still imminent resulting in a 44% of the respondents being underweight.

Poor eating habits also contribute to an individual’s nutritional status. This is poor eating habits can be affected by the level of knowledge an individual has in terms of appropriate food choices, affordability and accessibility to food supply; to name a few.

The findings of this study suggests that the respondents were reasonably well educated with 47% having completed secondary education while 41% had reached tertiary level of education. Only 12% reached primary education. The level of education shown here would not be representative of all PLHIVs as there may be variations amongst people of different ethnicity, gender and age groups.

In terms of affordability of healthy food to eat, a total of 32% or respondents earn a combined average household income of <$200.00 per month and a further 35% earn below $400.00 per month. These earnings will dictate how much is spent on food, with 64% reporting spending <$100.00 per month on food. This is will affect food choices and food security not only for people living with HIV and AIDS, but for their entire household as well due to other competing priorities for household budget, allowing them to know the value of eating the right kind of food. Some of the participants stated that they would rather spend money on Vitamin C injections and treatment for opportunistic infections than food.

Therefore some families may have limited choices in selecting a healthy diet even though they know the value of eating the right kind of food. More knowledge of healthy foods that people living with HIV and AIDS are supposed to be consuming is inadequate if they do not have the means to afford them and are not accessible to these right kinds of food.

Nutrition Knowledge and Behaviour

The most common responses to the participants’ perception of what balanced meals meant to them, the three most common responses were “foods from the 3 food groups”, “foods in the right amounts”, and “making my body healthy and strong, most, others stated the need for the Ministry of Health to provide nutrition information and guidelines, and also to provide training on nutrition. In the event that people living with HIV/AIDS are hospitalized, 27% would like the hospitals to develop meal plans for them.

9% of respondents reported that they would like MOH to provide supplements, as it is becoming increasingly expensive to procure these supplements every month. To emphasize the need for nutrition counseling, 1 respondent reported “crying to the doctor everyday to know what foods to eat to ease the suffering”.

Dietary Intake Analysis

This section is based on the assessment of the three macronutrients: fat, carbohydrate, and protein. It will also highlight the assessment of three micronutrients: iron, vitamin A and vitamin C. Further, this section will also identify major food sources of the relevant macro- and micronutrient based on the results of the 24-hour diet recall obtained from the 34 participants. This method does not always reflect what they usually eat, as an individuals intake varies on a daily basis. However, it provides an insight on the adequacy of food consumption for people living with HIV and AIDS in Fiji.

The average energy intake of Fijians was higher [3,308kcal] compared to Others at 2,472 kcals and Indians with 1,573 kcals. This is not necessarily different from the general population. The major sources of energy were flour and root crops. This result is similar to the findings of the National Nutrition Survey 2004 where the intake of energy by Fijians was higher compared to Indians, while the two major source of energy nationally were cereal and root crops.

People living with HIV and AIDS have additional energy requirements due to HIV, opportunistic infections, nutrient malabsorption, and altered metabolism. Energy needs depend on whether the individual is symptomatic (e.g. fever, wasting, diarrhea, weight loss) or asymptomatic. When asymptomatic [WHO stage 1, HIV] positive adults need to increase energy intake by >5% over the level of energy intake recommended for...
healthy non-HIV-infected persons of the same age, gender, and physical activity level (FANTA 2004; WHO 2003a).

In the presence of symptoms [WHO stage 2 and above], HIV-positive adults are encouraged to increase energy intake by 20 to 30% over the level of energy intake recommended for healthy non-HIV-infected persons of the same age, sex and physical activity level (WHO 2003a).

Energy is vital for people living with HIV and AIDS. In addition to adults, there is also increased kilocalories requirement of pregnant and lactating women which is approximately 200-285 kilocalories per day for pregnancy, and approximately 500 kilocalories per day for lactation women.

The total energy contributed in this study from the macronutrients was 26% from protein, 35% from fat and 50% from carbohydrates. The WHO/FAO recommended energy intake levels are 10-15% from protein, 20-30% from fat and 55-70% from carbohydrates.

The results of this study indicate that the participants were receiving more energy through protein and fat sources, and lacking the carbohydrate input into their diet. Their utilization of protein and fat stores for energy will further aggravate their condition, and will result in muscle wasting and underweight.

In light of the results discussed above, the respondents’ intake of energy via the three macronutrients must be corrected to improve their current nutritional status and nutritional deficiencies.

Total fat consumed was higher for Fijians at 55%, followed by Others at 28% and Indians with 19%. The major food sources of fat for the participants were vegetable fat, coconut and meat. The recommended fat intake for an HIV-positive person is the same as for a healthy non-HIV infected person, that is, 30 – 35% of total energy needs (WHO 2003a). For people living with HIV and AIDS, certain antiretroviral treatment, or infection symptoms such as diarrhea, may require changes in the timing or quantity of fat intake. Increase in energy required by people living with HIV and AIDS can also be met from using healthy sources of fat.

In terms of carbohydrate intake, Fijians recorded a high 109% consumption compared to the USRDA, followed by Indians at 67% and Others with 45%. The major carbohydrate sources consumed by respondents were root crops, flour products and rice. Fijians recorded a higher protein intake of 28%, followed by Others at 27%, and Indians with 14%. The major sources of protein recorded were fish and meat.

Evidence suggests that HIV-positive persons require the same level of dietary non-infected persons of the same age, sex, and physical activity level (WHO 2003a). The recommended protein intake for a healthy non-HIV infected adult is 12 to 15% of total energy needs, or 0.8g/kg body weight for females and 0.85g/kg body weight for males (WHO 2003a).

For females, protein intake should be the same as for non-infected pregnant and lactating women; which is 6 grams per day above non-pregnant levels throughout pregnancy, and 16 grams per day above non lactating levels during first 6 months of lactation.

HIV-positive children often have pre-existing protein-energy malnutrition [PEM] resulting from inadequate intake or poor utilization of food and energy (FANTA 2004). Nutrition support programs may need to address this by encouraging increases in food consumption to meet recommended intakes.

Overall, Fijians had a higher intake of the three macronutrients addressed above compared to the other two ethnic groups. This record is similar to that of the 2004 National Nutrition Survey, where Fijians recorded a higher intake of protein, fat and carbohydrates.

In terms of micronutrients, this report will only discuss iron, vitamins A and C. This is due to the significant role this micronutrients play in the nutritional health of people living with HIV and AIDS.

In comparison with the USRDA, The percentage intake of iron was higher in Fijians [250%] compared to Others at 129% and Indians at 117%. Although the iron intake across the ethnic groups are high, 65% of respondents did not meet the recommended iron intake. This is a matter of concern as half of Fiji’s population is suffering from iron-deficiency anaemia, especially among women and children according to the National Nutrition Survey. People living with HIV and AIDS also suffer from iron-deficiency anaemia are more susceptible to opportunistic infections, and their weak body system is further compromised by this aggravated condition. The major sources of iron in their diet were fish, legumes and root crops.

Micronutrient deficiencies are common in PHLVIs. PHLVIs often suffer from micronutrient deficiencies which potentially compromise their immune function and their ability to fight infection (FANTA 2004). HIV-positive adults are encouraged to consume adequate diets to ensure micronutrients intakes at recommended levels (WHO 2003). Diet alone may not be sufficient to correct nutritional deficiencies. Recent evidence suggests that a PHLV with multiple nutrient deficiencies may require more than one recommended dietary allowance [RDA] per day to reverse these deficiencies (WHO 2004).

According to the Houtzager report (Houtzager L. M. 2010) HIV infection may increase micronutrient requirements and cause or increase existing deficiencies. However, there is not enough evidence to recommend intake above recommended daily allowances [RDA] levels. WHO Guidelines (WHO 2005) recommend as per national guidelines for antenatal care of all pregnant women, and that iron dosage should not exceed WHO recommended dosage; as a high dosage iron may contribute to HIV disease progression.

In terms of Vitamin A and C, the daily average intake of Vitamin A was higher in Fijians [344ug] compared to Others at 102 ug and Indians with 62 ug. For Vitamin C, Fijians also recorded a high intake of 480ug, followed by Indians at 263 ug and Others with 122ug. 79% and 88% of respondents met their daily recommended intake for Vitamin A and Vitamin C respectively. People living with HIV and AIDS must increase their vitamin and mineral intake, as vitamins and minerals are essential to keep healthy. They protect against opportunistic infections by ensuring that the skin, lungs and gut remain healthy and that the immune system functions properly.

Vitamin A is important to keep the skin, lungs and gut healthy. Vitamin A deficiency increases the severity of diseases such as diarrhoea. Infection will increase the loss of vitamin A from the body. Vitamin C helps to protect the body from infection and helps in recovery from infections.

WHO recommends that Vitamin A supplementation should be the same as that for non infected women; and be limited to the recommended daily allowance of 770ug per day. The Houtzager presentation (Houtzager L. M. 2010) noted that a study in Africa indicates an increase in rates of mother-to-child transmission of HIV/AIDS [MTCT-1] by 40% with Vitamin A supplementation. The same report added that there is some evidence for multivitamin association with reductions in adverse pregnancy outcomes, however toxicity is possible from high levels of supplements, for instance >10xRDA. The report concluded that any micronutrient supplementation should not exceed recommended daily allowances for any micronutrient.

It is encouraging to note from the study that most of the respondents’ met their daily recommended Vitamin A and C intake. The major sources of Vitamin A in the diet were green leafy vegetables and fish, while food sources for Vitamin C were fruits and vegetables.

“...There is a place for micronutrient supplementation for people living with HIV and AIDS”, as stated by one of the participants since vitamin supplements are becoming increasingly expensive. More often when food intake is low as in the case of the 41% respondents who are underweight, multivitamin and mineral supplements can help to meet increased requirements.

However, these supplements are expensive and are often not...
available. Spending more of the household budget on supplements will leave less money for food. So whenever possible, it is better to provide a locally prepared diet rather than purchase supplements. Micronutrient supplements can be useful, but cannot replace eating a balanced and healthy diet.

**Case Studies**

In the first case study, the food recall for an underweight respondent indicated that all food intakes, except for one, do not meet the recommended daily requirement. This is a cause of concern as a low food and nutrient intake continued over a long period of time will adversely affect any individual. More so for people living with HIV and AIDS, the condition will deteriorate further; therefore calls for immediate action within nutrition circles and health sector in general.

The second case study depicted the food recall of a respondent with a normal and healthy weight range. With the exception of iron, the food intake for all other nutrients is adequate and in some instances, more than adequate. The participants’ healthy weight range is a result of adequate food intake, based on this food recall. However, not all persons with a normal BMI have an adequate food intake as indicated by the second case study. Of concern is the inadequate iron intake, which must be addressed through an appropriate meal plan.

The third case study showed the food intake of an obese participant based on the 24-hour food recall. It is noted that all intakes of food and nutrients are at an all-time high, thus the corresponding BMI status. The double burden of malnutrition in Fiji is a challenge, and requires a multi-pronged approach from all facets of society. People in general must be tasked to be responsible for their own health. While underweight and the inadequate food intake is an urgent issue needed to be addressed for people living with HIV and AIDS, nutrition care, management and support must also be given those with overweight and obese BMI status.

**Conclusion**

Nutritional concerns should be taken into account in the preparation of HIV and AIDS strategies and action plans at national, divisional and sub-national levels. These plans should be evidence based, with actions and interventions that are prioritized and budgeted. The choice of the appropriate nutrition response will be country-specific but this will be determined by the nature of the epidemic. In places where food insecurity prevents people from accessing or adhering to HIV treatment regimes, food support can play an important role in increasing intake and adherence to treatment. It is essential to have nutrition education, care, management and support as a core component of HIV and AIDS counseling and treatment. This will assist people living with HIV and AIDS prevent weight loss and gain as necessary, learn to prepare affordable meals of local and fresh food varieties, and enjoy life in general.

However, it is vital to note that nutrition cannot cure HIV infections, but is important to sustain the immune system and help achieve optimal quality of life for people living with HIV and AIDS. People living with HIV and AIDS need not have a special diet than that of the general population, as the principles of nutrition for people living with HIV are also the same for uninfected persons. A balanced healthy diet is essential for the health and survival of all people, regardless of HIV status. Therefore, there is no one diet for people living with HIV and AIDS. A multidisciplinary care approach including nutrition is required to improve quality of life and maximize survival outcome.

**Limitations**

The following limitations were noted:

1. People living with HIV and AIDS are a stigmatized population; therefore the number of participants recruited depended on their willingness to participate in the study;

2. Due to the sensitivity of their condition, sampling was based on convenience; so only those participants who have made their status public came forward to participate;

3. Obtaining ethical clearance was a lengthy process;

4. Time limitation to complete the entire project while working full time;

5. Retrieval of data from FoodWorks was not possible as the user license had expired, and renewal of license or purchase of a new one is expensive. As such, I was not able to provide quantity of daily intake in grams, making it difficult to make comparisons with the dietary data obtained during the 2004 National Nutrition Survey.

However, the FoodWorks software was able to analyze overall percentages intake for the seven nutrients and compare with the USRDA.

**Recommendations**

Based on the findings of the study, the following issues were recommended:

1. Develop a Policy Brief on Nutrition for people living with HIV and AIDS in Fiji;
2. Based on the policy brief, develop an Implementation Plan;
3. Develop a Strategic Communication Plan for a national program based on the Implementation Plan; and
4. Develop suitable and affordable diet plans for people living with HIV and AIDS especially those in low income families.

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Factors related to the early cessation of exclusive breastfeeding amongst mothers within the Suva sub-division
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Keywords: Exclusive Breast-feeding; legislation, Early cessation, Fiji

Abstract
Background: The adoption of the Innocenti Declaration in 1990 has made a remarkable progress in improving infant and young child feeding practices worldwide. Exclusive breastfeeding within the first six months has been identified and listed to be an indicator to the achievement of Millennium Development Goal (MDG) 4 in 2015 with other child survival intervention programs. In Fiji, breastfeeding initiative has been implemented to advocate breastfeeding practices amongst mothers. The Baby Friendly Hospital Initiative (BFHI) was initiated in the 1990’s and in 2009 Fiji was declared by the United Nation Children’s Fund (UNICEF) to be a Baby Friendly Nation with all its maternity facilities been awarded as Baby Friendly Hospitals. In 2003 under the Food Act Regulation it is an offence by suppliers to advertise breast milk substitute. This regulation was then enforced in May, 2010 under a new legislation on the Marketing Control of Food for Infants and Young Children which is adopted internationally in various countries. On the other hand, the 2004 National Nutrition Survey (NNS) showed that the rate of breastfeeding has dropped from 80% at initiation to 40% at six months. This was also supported by the 2008 UNICEF Report which revealed that the rate of exclusive breastfeeding in Fiji decreased from 57% at initiation to 40% at exclusive breastfeeding.

Objectives: The study aims to investigate factors related to early cessation of exclusive breastfeeding amongst mothers within the Suva sub division and to examine the effectiveness of the legislation on the Marketing Control of Foods for Infants and Young Children.

Design: It is a descriptive qualitative study. The study involves thirty (30) non exclusive breastfeeding mothers of five (5) Maternal Child Health (MCH) clinics under the Suva sub-division, nine (9) Managers of Retailers of Breast milk Substitute operating their business within the Lami to Makoi corridor and the Nutritionist of a Distributor (Nestle Fiji Limited ) of infant formula.

Results and Discussion: Two factors were identified from the study that has an effect on the low rate of exclusive breastfeeding. Working mothers (68.6%) of the population studied do not exclusively breastfed their babies when they return to work and they also revealed that their work environment were not supportive of the feeding practice. This finding has supported the 2004 NNS which also revealed that working mothers ceased to exclusively breastfed their babies. Inadequate knowledge on breastfeeding practice continuity was also identified to be another factor which resulted in the cessation of breastfeeding practice. 51.4% of the study population revealed that they were not educated on how to express breast milk, to cup feed baby and have no idea of the proper storage facilities and temperature of breast milk to ensure safe consumption. On the other hand, 88.9% of the Managers of suppliers and distributors of breast milk were not aware of the legislation on the Marketing Control of Foods for Infants and Young Children.

Conclusion: This study recommends the need to continue to advocate for breastfeeding practice and programs implemented need to be continually monitored for its effectiveness. There is a need to enforce the legislation on the Marketing Control of Food for Infants and Young Children to all suppliers and distributors of infant formula.

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A Review of the Revitalisation of the Community Health Worker Role in Fiji


Keywords: Primary Health Care, Community Health Workers, Fiji

Abstract

The Community Health Worker (CHW) programme in Fiji has undergone a revitalisation over the past five years. An evaluation of the programme was undertaken in 2016. Semi-structured interviews plus focus group discussions with CHWs, nurses and community members were facilitated. A thematic analysis was undertaken to identify themes and sub-themes in the data collected. The evaluation showed that the rollout of training and associated resources has improved the CHWs understanding of their role, knowledge and confidence. A major shift in the work that is undertaken by CHWs in the community has resulted in a broader emphasis on wellness, healthy lifestyle and community engagement as well as a closer working relationship with nurses. CHWs now play an important role in health advocacy, supporting improved health seeking behaviour, undertaking home visits, coordinating vector control efforts and promotion of backyard vegetable gardens and mobilising the community in relation to improving health and sanitation. These activities are recognised by the zone nurses to assist in the performance of their work and the continuum of patient care. The findings indicated improved health seeking behaviour and greater interest and awareness in health and wellness. Key challenges included access and affordability of transportation, in particular the cost and logistics of reaching remote areas; and the lack of financial support to CHWs to meet the out-of-pocket costs they incurred in performance of their role.

Introduction and Background

Fiji implemented a broad-based Primary Health Care (PHC) approach in 1979, expanding access to health services, increasing community engagement, environmental health, multi-sectoral engagement, and establishing village health committees and village health workers. Early reports suggest that the village health worker role had been informally in place prior to this time. (Tembon AC, 1988). A 2001 review of PHC, examining the years after 1979, noted that the conduct of sub-divisonal and community workshops was the most memorable activity following the introduction of the PHC concept. The major achievement in PHC and community awareness building regarding health in this era in Fiji was made possible through World Health Organization (WHO) funding following the Alma-Ata Declaration (Waqata-kirewa L, 2001). Fiji has traditionally been a strong supporter of the primary health care approach and there has been ongoing investment in strengthening Sub-Divisional and Divisional Hospitals and health care facilities, mainly in areas of significant population growth.

Despite Village Health Workers (now referred to as Community Health Workers) being an essential element in promoting health and preventing disease at the grassroots level, there was a lack of investment over time (in terms of both financing and clear policy direction) that contributed to a deficiency in resources, training, supervision that led to attrition of Community Health Workers (CHW) workforce. An evaluation of health care in Fiji over the past 50 years showed the importance of investing in strong community and primary health care (Negin J, Roberts G, Lingam D, 2010).

With the continuing increase in the prevalence of non communicable diseases (NCDs) and the impact of their complications, the capacity to intervene and increase focus and connection at the primary health care level has become even more critical. (Roberts G, 2011). The Ministry of Health and Medical Services (MoHMS) adopted the Wellness approach in 2012. The Wellness approach focuses on preventative health across the life course. The revitalisation of the Community Health Worker role has been key to enhancing primary health care and strengthening preventative health services and the continuum of care in Fiji, aligning with the Wellness approach. A review of the CHW role both in Fiji and internationally was undertaken by independent consultants to assist with defining the approach the MoHMS would take in strengthening the programme nationally (Ferreira M, 2014).

From 2012 the Fiji Health Sector Support Program (FHSPP) has assisted the MoHMS to confirm the number of active CHWs nationally and plan the provision of training and support to revitalise the CHW programme. Active CHWs were identified and nominated to attend training workshops. An ‘active’ CHW was defined as someone who was providing monthly reports to their zone nurse and was actively participating with their zone nurse on health activities. This initial identification process found 1581 active CHWs nationally. With MoHMS and partner support CHW training manuals were developed with three primary goals: improving wellness; improving maternal health and reduc-

Figure 1: Primary Health Indicators in Fiji, 1975-2008

Source: Negin et al 2010- included with the permission of the authors
ing illness and disease. To address these programme goals three main areas of focus were established for the CHW: encouraging the use of health services, promoting healthy behaviour, supporting health planning, and through developing community partnerships.

Four core training modules were developed in the period 2012-15: Core Competency, Wellness, Safe Motherhood and Child Health. The FHSSP 2015 report states that since 2012, 92% of active CHWs trained were trained in the core competency module. High numbers also completed the Safe Motherhood and Child Health modules that were developed in 2013-14. The proportion of CHWs who completed each training module in 2015 is shown in Figure 3. The lower numbers trained in the Wellness Module reflect its later introduction and addition to the training package in 2015.

Methods of CHW Programme Evaluation

A qualitative programme assessment of the revitalisation of the Community Health Worker training programme in Fiji was undertaken to determine the effectiveness of materials and training outcomes at both the health worker and community level.

Three independent health consultants undertook the review with permission provided by the Director of Nursing Services, MoHMS. Focus group questions and semi-structured interview questionnaires were developed in collaboration with the MoHMS. Pre-testing of the interview tools was undertaken and revision occurred prior to implementation of the evaluation. A team of four experienced Fijian field assistants were recruited and completed a week of training in interview techniques to ensure there was sufficient capacity to implement the methodologies and tools. Field work was undertaken in the Northern and Central divisions of Fiji over a four month period. Selection of the participants was undertaken by the sub-divisional nursing coordinators and zone nurses in liaison with the FHSSP team. The initial week of field work was supervised by an experienced health consultant.

Following verbal consent all interviews were recorded by the field assistants and later transcribed in Word Documents. Interviews undertaken in ‘i Taukei were translated and transcribed in English by the field assistants. All transcripts and voice recordings were reviewed and analysed by the consultant team. A thematic qualitative content analysis was undertaken by two members of the consultant team.

Results

Interviews with CHWs and zone nurses commenced in February 2016 in Vanua Levu, however at the end of the first week of field work at Category 5 cyclone devastated much of Fiji and a state of emergency was instigated for a period of approximately two months. The team were able to return to Vanua Levu to complete an additional four interviews with CHWs in April 2016, however the remaining field work and all focus group discussions were completed in Viti Levu in May 2016, where the cyclone devastation was less pronounced.

A total of 20 CHWs were interviewed, face to face in rural, urban and maritime locations. The majority of the interviews were undertaken in rural and maritime communities. The CHWs interviewed had been practicing in their role from 1 to 30 years (with a mean of 9.8 years), 90% were of ‘i Taukei ethnicity and 10% were Fijians of Indian descent. All CHWs interviewed in the field were female. A total of 13 nurses were interviewed in Vanua Levu, this group included two CHW champions and the Divisional Nursing Sister. Five focus groups were undertaken in Viti Levu. The focus groups included two focus groups of CHWs, one group of male community members, one group of female community members and a focus group of zone nurses (ZN) (11 ZNs from Viti Levu from urban and rural health centres and nursing stations). Transcription notes were completed by two field assistants and edited by the consultant who facilitated the focus groups.

Themes resulting from the data

Changes resulting from the training

The CHW training was widely reported to have brought about substantial changes in the role of CHWs, the communities’ attitudes and behaviours regarding their health, and in the interaction and relationships between the CHWs, the community, nurses and other key stakeholders. These changes emerged in findings from all three participant groups. CHWs reported that the training has given them knowledge that they previously did not have about their community, about what the CHW role entails, and how to perform their duties. This knowledge was described as giving CHWs more confidence in performing the role.

“I learnt many new things, and I can see it helps me to do my work better” (CHW)

“Before I don’t really know my community, what kind of sickness they got, but after the training I did my census. So when zone nurse comes to the community, I know everyone in my community what type of sickness they’ve got, especially hypertension, and what houses they live in” (CHW)

Zone nurses described a greater level of confidence among CHWs, and that CHWs are able to undertake a range of activities that previously they had not been able to do.

“There are CHWs are really confident. They feel really equipped to take on some of those responsibilities they are not paid for... They do things with a good heart.” (DHS Northern Division)

“The understanding of the role of a particular CHW, their role to their community really define it clearly for them, they know where to stand, they know where to act. They know where to refer, they know how to handle the community. It really assists them, when to refer cases to hospital, whom to contact, whom to rely on when shall any incidents or any accidents happen in the community.” (ZN)
Community members also described CHWs as now having more skills and knowledge to care for the health of the community. “[The CHW] talks about health topics at monthly village meetings ……encourages pregnant women to make arrangements early for delivery ….. gives advice on nutrition and arranges facility where patient should go. They do training with community” (Community members)

One of the strongest themes to emerge from the discussions with all three participant groups was the major change that has taken place in the role that the CHWs perform in their communities. CHWs described their role prior to the revitalisation of the programme primarily as being a go-to person for ailments and assistance with transfer to the health centre or hospital. The focus of the role now was described as much broader, with a primary focus on promoting wellness and a healthy lifestyle. CHWs emphasised their role in providing advice and guidance to the community around issues such as pregnancy care and prevention of NCDs.

“I really like what we learned, and in the village setting we are doing it…. The community like it also and they have accepted what I have informed them about what I learned from the training” (CHW)

In addition to advising on health issues, CHWs were active in teaching the community about leading a healthy lifestyle, including backyard gardening, vector control, physical activity and nutrition. Several noted that they felt it important to “lead by example”, and to this end had organized regular activities such as fitness classes, and would routinely help neighbours and other community members to maintain their gardens. Mobilising the community around regular village cleaning and sanitation activities were considered successful, with communities becoming actively involved.

“every Monday we do clean up for mosquito breeding” (CHW)

CHWs also described a number of ways in which they advocate for their communities, in particular for vulnerable groups. Teenage pregnancy was identified as an important issue in several communities. One CHW explained that she considers the provision of support to these teenagers as an important part of her role, and reassures pregnant teens that she will support them in informing the girl’s parents of the pregnancy and is seeking ante-natal care. While CHWs reported that they previously acted alone with little or no coordination or cooperation with other groups or agencies, a range of examples were noted of active engagement and the development of productive working relationships, including making links and coordinating activities with schools, church, social welfare, and law enforcement.

Discussions with zone nurses also supported a major shift in the work being done by CHWs, with many reporting that the CHW’s activities now greatly assist the nurses in the performance of their work. For example, the community profiling being performed by CHWs helps the zone nurses work more effectively. “The information provided by the CHW enables the zone nurse to plan activities. “[(CHWs are) my helping hands in the community” (ZN)

“I’ve been called to village meetings, I’ve been called to church meetings, and even they’ve [community members] come up individually to see me in my clinic, getting their own self for screening and all coming for follow-up really help us. It really assists me with my work. And most of all I know that the CHW have done their part” (ZN)

Community members also described a significant change in what the CHW does in their communities, observing that the CHW is now much more active and engaged. Specifically it was noted that prior to the training, the CHW did not do home visits or run any health information sessions with the community, but now these activities are routinely undertaken by the CHW. The CHW was also noted to now actively coordinate with health teams (eg eye and dental teams) to visit the village and liaise with community leaders to improve sanitation and health education. While overall respondents spoke of these changes, some zone nurses reported that a number of CHWs they work with remain relatively inactive. A lack of support from the community leaders was noted as a potential reason for their inactivity.

“For some villages, the CHW is not active, I would not lie. I would not hide. It’s not there, the support to the CHW is not there” (ZN)

Zone nurses and CHWs reported having observed substantial changes in the community in terms of their attitude and knowledge regarding health, and in their health behaviours. A number of key indicators in the community were reported to have improved, including:

- More use of outreach health services
- Earlier presentation at antenatal care
- Less deliveries in the community
- Fewer immunisation defaults
- Fewer malnourished children

Communities were also described as being much more responsive and engaged in health and wellbeing issues.

“People are taking ownership and they taking own concern of their health……now they know that their health is important, we’re not coming after them, they are the ones bringing themselves to the health clinics and even to outpost and outreach” (ZN)

Strong messages of community mobilisation and changes in health knowledge and behaviour also emerged from focus group discussions with male and female community members. Health seeking behaviour has improved.

“Wellness is upon individuals themselves” (Male FGD participant)

A number of female community members described the impact of an information session on breastfeeding delivered by the CHW. Community members also reported that more women are now having cervical screening. Improved management of diabetes and other non communicable diseases (NCD) was also noted, with patients wanting to know their blood glucose levels and blood pressure, and visiting the CHW for dressings on diabetic ulcers. Community members reported a greater overall awareness and understanding of health issues. Pregnant women know about their delivery date and plan, and there is more awareness on child health issues.

“Mothers are more vigilant in the health of their children now” (Male FGD participant)

Community mobilisation around sanitation was cited, with community members describing their participation in regular village cleaning and sanitation activities. A change in the way communities dispose of rubbish was also described in several discussions.

Overall the findings indicated improved linkages between the community and the CHW, between the CHW and the ZN, between the ZN and the community, and in some cases between the CHW and the broader health structure (eg sub-division). The relationship between CHWs and ZNs was identified as important for CHWs to function effectively. In the majority of cases,
a close and supportive working relationship and connection with their zone nurse was reported, and this was largely attributed to the recent revitalisation of the programme. Many reported that following the training there was more regular communication, support, and a sense of working together as a team.

"She [ZN] is doing the hard work with us" (CHW)

However, in some cases it was still a challenge to foster good relationships and communication. In some cases very little interaction between CHWs and the ZN was described, with dissatisfaction about this situation being expressed by those CHWs. Nurses who had not attended training with CHWs were the least supportive or understanding of the CHW role. While the majority of zone nurses reported a high level of understanding of the CHW role and familiarity with the CHW modules and manuals, the few nurses that didn’t have this prior exposure appeared much less engaged and supportive of the CHWs. In most cases, where the relationship between the ZN and CHW was strong, the relationship between the ZN and community had also been strengthened.

"It [the training] completely changes how we link or work with each other. I could see clearly and I know that I have a supervisor or my boss in relation to my work." (CHW)

The opportunity to address the community during village meetings was highly valued by CHWs, and appears important in fostering a strong and responsive relationship between the CHW and the community. Many CHWs expressed a sense of pride at being given the opportunity to address the village in this capacity. The training was explicitly described by CHWs and ZNs as having given the CHW a high level of respect and standing in the community. The CHW is now seen by the community to have an important role in providing advice on health and wellness, and the community is now more inclined to listen, respect, and follow the CHW’s advice.

"when they were not trained they used to receive negative feedback like for example, why she wants to say this when she is not even a nurse …Now the community knows that this one is equipped so she has some knowledge of this …rather than previously when they have not been trained, they don’t have any knowledge and when they want to talk about any particular issue it’s sort of received in a negative way. And after this programme …the community members are sort of accepting that their CHWs is equipped" (Nurse and CHW Champion)

This was also observed by community members, who reported that the CHW is now much better able to look after the health of the community. However, community responsiveness was variable, with several CHWs reporting that some communities were not particularly well engaged or supportive.

"Most of the time I work alone. Sometimes I ask for help in the village, no one helps" (CHW)

The community, village head and the CHW’s family (especially husband) were identified as key sources of support. Findings highlighted the importance of the CHW role being respected by village leaders, and for them to work collaboratively. Support from the village leadership was considered to be vital.

An emphasis and understanding of the importance of safe motherhood was an area that was observed to have improved in many communities. CHWs reported visiting women they have heard are pregnant, identifying teenage pregnancies, encouraging early booking and planning for delivery. Participants from all groups described an impact on health behaviour as a result, with an increase in first trimester ANC bookings; and women being described as more prepared for delivery, so now very few are taking place in the community. Husbands were also described as being more engaged in planning for birth and providing support.

"Now they come with their birth plans, after the training, so the patient came after the, after the awareness for the community health workers, after they are trained, so after that, they came in with that form, their plan – the emergency plan " (ZN)

"Births – before it used to be mothers own business. Were not bothered by CHW’s. Now, with encouragement they are coming in a lot more 'It seems that area has improved a lot'. To ere is a marked improvement in 1st trimester booking." (DHS Northern Division)

"Mothers go early for booking now. For many years there has not been a delivery in the village." (CHW)

**Challenges**

A lack of transportation and cost of transportation, was frequently cited as a challenge, both by zone nurses to be able to visit remote communities and for CHWs to refer patients or visit their nearest health centre. CHWs and zone nurses used mobile phones as their main means of communication between meetings and community visits. Poor phone signal was reported to be a barrier to communication by a number of interviewees. A high turnover of CHWs was cited by several zone nurses as a challenge, presenting a need for frequent re-orientation and re-training activities. Some zone nurses had not attended training and weren’t familiar with CHW modules and role. Where this occurred the relationship and attitude of the nurses to the CHWs did not appear to be as supportive. Most CHWs spoke of the challenges of undertaking the work without any financial support, with many citing frequent instances of having paid from their own money for costs incurred while performing their role, such as phone calls and bus fares.

**Suggestions for improvements**

Almost all CHWs reported that they would like more training. A number of CHWs reported that they were required to perform front line first aid and would like training and/or refresher training in this area. Many indicated a desire that training be provided in the village so that community members could also attend. Several suggested that having training conducted in local language rather than English would be preferable. Two Indo-Fijian CHWs were interviewed. They both reported positive experience and high-level support from their community. In unrecorded discussion following the interviews they stated that it was difficult for Indo-Fijian women to leave their families to attend training in main centres, as staying in a hotel was considered culturally inappropriate. They suggested that to attract more Fijians of Indian descent CHWs training could be delivered locally instead. The majority of i Taukei CHWs interviewed in rural villages chose to conduct their interviews in i Taukei and stated that they liaise with villagers in vernacular so translated resources may be a useful addition for them when conducting awareness sessions. A number of CHWs suggested that receiving an allowance for their role would greatly assist to cover their out-of-pocket costs. Community members expressed a desire for CHWs to conduct more home visits, for dispensing of medicines to be accessible all hours, more clean-up campaigns, and more medical equipment available such as crutches.

**Limitations of evaluation**

**Cyclone disruption**

Cyclone Winston, a category five cyclone, devastated much of Fiji at the end of the first week of the planned fieldwork. Initial interviews with zone nurses and CHWs had been completed by the team in Vanua Levu prior to the cyclone; however following the cyclone a National State of Emergency was declared by the Fiji Government for two months and all activities were suspended. A decision was made to redesign the assessment to undertake additional focus groups, which would include CHWs, community members and Zone nurse groups, to enrich the data already gathered.
collected. The Central Division of Viti Levu was selected for the focus group discussions as the impact of the cyclone had not been as devastating in that area. Despite the devastation and disruption of the cyclone, the final data collected was of a high quality and not compromised by the change in the initial collection plan.

**Sample selection**

An estimated total of >1500 CHWs have received training in the new CHW modules since 2012. A sample of these CHWs were selected by FHSSP to be interviewed by the assessment team. Following discussion between the consultants and the FHSSP team it was decided that the interviews should be undertaken in Vanua Levu. Training had been widespread in this division and populations were geographically and ethnically diverse. CHWs who received training since 2012 were selected for individual interview with liaison between the FHSSP CHW team and the assessment team. It was difficult for the consultant team to determine the process for this selection; therefore bias in the sample selected may be included. Two zone nurses reported that they had trouble engaging some of their CHWs, and it appears that only CHWs who were active in their role were included for interview. No male CHWs were interviewed individually and the majority of the CHWs interviewed were of iTaukei ethnicity, potential bias in the data due to these limitations cannot be evaluated.

**Interviewer experience level and ethnicity**

The local interview team consisted of two high level senior retired nurses and two young recently graduated public health graduates with some previous experience in data collection and qualitative interviewing. The interview data collected by the local interview team was acceptable overall; however some of the interviews failed to fully examine and probe the CHWs and Zone nurses to provide a comprehensive picture. The additional data from the five focus groups facilitated by one consultant, with local team support and translation, augmented the interview information and provided rich data that allowed for a more complete and comprehensive analysis.

**Conclusion**

The revitalisation and investment in the CHW programme nationally since 2012 appears to have been highly successful in increasing engagement between the community and health centres, focusing on prevention and primary health care at the community level and providing comprehensive information about communities and their needs. Further strengthening of the CHW programme by continued roll-out of all core modules and recognition of the CHW role, including provision of an allowance, will enhance the continuum of care and provide sustainability of the programme into the future.

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Keywords: Obesity, Fiji, Colonialism

Introduction
The world is currently in the midst of an obesity epidemic; nearly 600 million adults worldwide are classified as having a Body Mass Index ≥ 30, which places them at significantly increased risk of disease. (WHO, 2010). The Pacific region has emerged as obesity’s worst victim, with over 80% of adults in several islands suffering from the condition (WHO, 2010). A 2014 global meta-analysis published in the Lancet revealed that in Fiji, between 1980 and 2013, obesity rates had increased from 11% to 14% for men, and from 28% to 35% for women (Thow et al., 2014). The origins of this substantial increase obesity prevalence must be identified in order to construct and implement targeted intervention.

The Nutrition Transition
Studies conducted in Fiji since 1958 have revealed a trend of increasing average BMI and obesity prevalence; the latter exceeded over 30% of the population in 2008 (Coyne, 2000) (Lin et al., 2015). This rise in obesity is expressed clearly in the context of the nutrition transition, a term used to describe the abandonment of a traditional diet in favour of one comprised of mostly high-fat, energy-dense and processed foods (Popkin, 2012). Early depictions of the Fijian physique are indicative of a muscular body habitus, both well-nourished and acquainted with health (von Bellinghausen, 1931) (Williams, 1858). This coincides with what Thaman (1990) describes as the “Pre-European contact Food System”, a self-sufficient, sustainable model based on staple crops, large amounts of leafy vegetables and seafood-derived protein. Nevertheless, the continual degradation of such a system in adherence to the nutrition transition has been recorded ever since participants in a 1953 survey based in Naduri began to substitute parts of their diet with store bought foods, such as bread, milk and biscuits (Langley, 1953). The 1980 National Nutrition Survey, rice, sugar, and tinned meat and fish were recorded as some of the most important foods for Fijians, and by 1990, dependency on purchased food had become a national theme (Johnson and Lambert, 1982) (Saito et al., 1995).

The most recent national survey in 2004 found that more households record diets with increasing amounts of fat and sugary foods and reduced consumption of complex carbohydrates, dietary fiber and fruits and vegetables (Schultz et al., 2007). The modern Fijian diet is increasingly dependant on imported food items. The 2009 Food Balance Sheet revealed that calories from imported foods had increased by 13% in the last decade and accounted for 68% of overall intake, which was attributed to the high importation of cereals, dairy & vegetable fat (Fijian Ministry of Health, 2009). Inference would allude to increased dietary intake of such foods as a result of increased supply. However, this would be a gross essentialisation of a problem which necessitates analysis of more intricate elements of change that both forge and sustain a diet driven economy.

Food Supply and The Impact of Trade Policy
The role of liberalisation in altering food supply, with respect to availability and price of certain foods, can be particularly significant in influencing dietary consumption. Thow et al. (2011) established the implications of this on Fiji’s food supply in regards to four groups associated with the nutrition transition; cereals; meat; fats and oils; and processed and packaged foods. Analysis of results confirms that trade liberalisation in Fiji, which was actualised between the mid-eighties and early nineties, has been significant in increasing importation of all categories of food mentioned above, although this manifested slightly earlier in regards to vegetable oils and animals fats (Thow et al., 2011) (FAO, 1961-2011). Prior to this, most processed foods were classified as luxury items and therefore subjected to high import tariffs; the eradication of which led to decreased costs and greater accessibility to larger numbers of people (Stinson, 1977). Nevertheless, whilst liberalization has enabled consumption of such foods, consideration must be given to other supply factors and demand side-drivers (Thow et al., 2011).

This becomes evident in certain changing patterns of consumption that had been recorded in decades prior to liberalisation; for example, the shift from root crops to cereal as a dietary staple as early as 1953 (Langley, 1953). In response, however, there is insufficient evidence to claim an overhaul of the traditional diet (Webb, 1884) (Baxter, 1980). Nevertheless, influence still manifested in nurturing a ‘taste’ for imported foodstuffs, which have potentially contributed to the types of food consumed today (Baxter, 1980).

The annexing of Fiji by the United Kingdom in 1974 marked a hundred years of colonial rule and a more aggressive intervention of the Fijian food system (Foreign and Commonwealth Office, 1880). This can be attributed primarily to the immediate consequence of the sugar industry; an immensely profitable driven enterprise that fuelled export promotion policy (Robertson, 1931). Further to Thow et al’s (2011) assertion, the cash cropping approach was often practiced on the most fertile coastal and agricultural land, shifting traditional staple cropping, which was also discouraged, to inferior or more distant areas (Thaman, 1990). In the 1970’s, smallholder sugarcane farmers were encouraged by the Fiji Sugar Corporation to abandon the diversified production of rice, maize and vegetables, in favour of more intense farming of sugarcane (Thaman, 1990). Additionally, the paid nature of labour restructured the Fijian subsistence economy to a cash-based system, disabling historical networks of food exchange and enabling the purchase of imported foodstuffs (Knapman, 1976). The implications of this colonial economic initiative on obesity can be seen in terms of a long-term sustained attack on the local diet through the rapid annihilation of traditional Fijian agriculture. As a result, the growth of long-established staples was confined to home cultivation, which has become increasingly challenging in a country undergoing urbanisation (The World Bank, 2016).
Advancing Urbanisation
Census figures from the 1980’s and 1990’s reveal that urban populations in Fiji have been increasing since at least the 1960’s, and now account for 54% percent of the total population (Fiji Bureau of Statistics, 1989, 1998 and 2007) (UN, 2015). This is problematic in light of evidence that consistently indicates higher prevalence of obesity in urban populations (Schulzt et al., 2004) (Saito, 1995) (Zimmer et al., 1983) (Nye et al., 1986). Furthermore, the 1993 National Nutrition Survey data showed that urban households were heavily reliant on purchased foods; only 6.3% partook in home production via cultivation of home gardens, with the main reason cited as ‘no land available’, followed by ‘lack of time consuming’ (Saito, 1995). Rural-urban migration therefore not only contributes to lower food production through decreased employment in the agricultural sector, but also places a higher demand on imported foods in consideration of lifestyle factors that implicate cost and convenience. This latter is satisfied by over 70 urban supermarket chains, as well the proliferation of transnational fast food companies, small fast food services and street vendors, which have become increasingly popular with the rising price of imported food (Sculzt, 2009).

Results from 1993 National Nutrition Survey showed that urban inhabitants most commonly considered their activity as ‘light’, in contrast to answers from rural inhabitants (Saito et al., 1995). The 2002 WHO STEPS survey aimed at assessing risk factors for non-communicable disease revealed that the largest difference in the number of individuals (urban vs. rural) who were classifying their activities as ‘sedentary’ is found. The category of work, which implies that the predominant variance in energy expenditure is due to sedentary urban employment (Cornelius et al., 2002). It is important to recognise that, although urban inhabitants are believed to be more sedentary, it is presumptuous to assert that rural dwellers are sufficiently active, particularly in light of evidence, albeit sparse, that deems national levels of physical activity are on the whole inadequate (WHO, 2008). An explanation for this may lie in the inactive nature of leisure activities, which was found in 1995. Food in 2002 revealed that levels of energy expenditure were considered the most lacking, and furthermore, the area for which the difference between rural and urban inhabitants was negligible (Cornelius et al., 2002).

The Body as a Vehicle for Care and Connectedness
Mavoa and McCabe (2008) provide an informative determination of obesity-associated socio-cultural factors in Fiji. Evaluation of these factors illustrates a culturally induced susceptibility to obesity for a number of reasons, including the high value placed on food in general, and the importance of large quantities. This is seen by the daily practice of preparing more food than is required as part of the consumption of a family, and as the foundation of social relationships, therefore a well-nourished body indicates good care from kin and fruitful friendships, whilst a thin body implies neglect (Becker, 1995). The ambiguity surrounding the term well nourished provides some difficulty, and therefore perceptions of nourishment amongst Fijians, and whether this denotes obesity, needs to be clarified.

Western media has arguably had an impact on these traditional body ideals, particularly with regards to females. Becker (2002) reports a link between eating disorders and prolonged television exposure in adolescent Fijian girls as well as binge eating behaviour in a sample of women with both a non-traditional diet and attitude to weight loss (Becker et al., 2003). This suggests an in increase in body dissatisfaction and desire to modify weight, however further studies are needed to link this with modernisation.

Preventative Measures and Future Projections
The increased monitoring of the nation’s health has allowed for a number of interviews conducted with representatives of eleven ministries within the Fijian government involved in obesity prevention policy. Unsurprisingly, and in line with findings above, most policy makers cited imported foods as one of the main causes of obesity, and further, low self-sufficiency due to a poorly organised agricultural sector (Hendriks et al., 2015). The assertion raises the importance of food and trade policy, and in response, Thow and Snowdon (2011) advocate for the alignment of tariffs in line with healthfulness of food imports, and the restriction of imports based on fats. However, this must occur in accordance with increased investment in local agriculture in order to reignite the production of more traditional food crops at affordable prices (McGregor et al., 2009) (Foraetc., 2001).

Nevertheless, Fiji is relatively powerless in formalised agreements with the World Trade Organisation, which advocate a clear liberalisation agenda that prohibits barriers to importation. This five-year strategy for aimed at combating widespread onset of non-communicable disease (Ministry of Health, 2010). Certain objectives appear effective in this regard, including the assisting of community health and workers in educating members of the public about the benefits of a healthy lifestyle (Ministry of Health, 2010). This may prove to be a respectable approach in a country that places heavy emphasis on community. Other objectives, such as community training in food gardening, are well intentioned but antiquated. The reality of Fiji’s increasingly urbanised landscape simply does not accommodate for this, several policy makers even alluded to the lack of space, and therefore such a strategy is limited in its validity (Hendriks et al., 2015). This suggests an injection of innovation in Fiji’s obesity prevention efforts is needed; one such example would be the pre-preparation and sale of traditional root crops in order to improve convenience of consumption (Narsey, 1995). Nevertheless, in consideration of Fiji’s historically rooted dependence on imported food, growing urban population and pre-existing attitudes, controlling the impact of obesity becomes a sizeable issue.

References


Fruits and vegetables consumption in early life

Nalita S C

Keywords: Fruit, Vegetables, Consumption

Non-Communicable Diseases (NCDs) is the leading cause of deaths in most Pacific Island Countries and in 2013 at the Apia Health Ministers Meeting (WHO, 2013), they expressed continuing concern about its negative impact on individuals, their families, communities and nations. (Coyne (2002) reported that in the Pacific more than 75% of deaths annually are due to NCDs. In Fiji more people are suffering from diabetes and cardiovascular diseases linking diet, physical inactivity, smoking and alcohol as major risk factors. (Ministry of Health, 2011). The 2004 Fiji National Nutrition Survey (NSS) report by the National Food & Nutrition Center (2007), highlighted the rise in Anemia amongst the most vulnerable groups-young children and pregnant mothers. Obesity and overweight is prominent in the 2002 Fiji STEPS Survey (Ministry of Health, 2002), with more Indo-Fijian women being less physical active as compared to other ethnic groups.

The Ministry of Health STEPS Survey (2002) showed that 66% of those surveyed ate 1 or less servings of fruits and vegetables daily. This is an alarming scenario as one of the most important parts of a meal is omitted daily. Fruits and vegetables contains the nutrients Vitamins and Minerals which are rich in antioxidants and other chemicals important to scavenge free radicals that cause cancer and other degenerating diseases. (Wardlaw, 2002). In addition, as diet is a risk factor to NCDs, it is important to note that failure to properly nourish the body with important and variety of nutrients can cause adverse effects on the whole body system.

A child’s early years are the most crucial in any human development and this is where most habits are formed especially food choices. It is at this age group that they are most vulnerable too as food choices are heavily dependent on who provides what to eat and in this case they are usually the mothers, parents or guardians. Foods high in a variety of nutrients are encouraged because they provide essential nutrients needed for growth and development. Such nutrients come from consuming a diet rich in fibre, vitamins and minerals like calcium, iron and the macronutrients such as protein and energy. In their report, Wilkinson & Marmot (2003), highlighted that establishing good food habits at an early age has found to reduce life threatening diseases common in adulthood.

The adult population from 18 years above was surveyed in the 2002 Fiji STEPS Survey. No study has been documented for infants and toddlers’ fruits and vegetables consumption pattern in Fiji. Future research study that describes this age groups fruits and vegetables consumption pattern, reasons why they consume more or less of this food group and finding cost-effective interventions that will increase fruit and vegetable consumption in this early age group will be a way forward in describing the food habits of this lifecycle group. Findings from such study can assist policy makers and major stakeholders in choosing cost saving yet effective interventions to promote fruits and vegetable consumption at an early age.

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Nutrition-sensitive agriculture to improve household food and nutrition security in Fiji

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Abstract
This paper highlights the need for nutrition-sensitive agriculture in promoting food and nutrition security in Fiji. This paper presents briefly Fiji’s nutrition situation, self-sufficiency and local food choices, and existing policies and framework related to food and nutrition security. The paper stresses the potential benefits of nutrition-sensitive agriculture and the significant impact of the agriculture sector towards good nutrition outcomes. This paper also acknowledges partnership between the health/nutrition sector and agriculture sector to addressing food and nutrition security.

Introduction
Nutrition-sensitive agriculture is a concept that incorporates nutrition concepts into agriculture to address food and nutrition security. Nutrition and food security are complex multi-dimen- sional and multifaceted phenomena (Vatucawaqa, 2011). These are common challenges for all developing nations, and small is- lands like Fiji are no exception. The rapidly changing unhealthy diet and lifestyle has also contributed to the increasing trend of malnutrition among our population. Fiji’s depend- ency on food imports and low self-sufficiency impacts local food choices. Specific-nutrition interventions such as micronutrient supplementation and food fortification among others have always been the fastest way to achieve measurable results in the health/ nutrition sector while nutrition-sensitive interventions are very slow in the other sectors. This paper makes a case for why nutrition-sensitive interventions should be used to help ad- dress some of the underlying determinants of food and nutrition insecurity in Fiji.

Nutrition situation in Fiji
There has been increasing prevalence in non-communicable diseases. The Fiji 2011 NCD STEPS survey revealed a high and rapid increase in hypertension, diabetes, overweight and obesity from 2002 (Snowdon and Tukana, 2011). The rapidly increasing childhood overweight and obesity and their association with diet and lifestyle have also become a major public health concern (National FPAN Advisory Committee, 2010). The rate of iron deficiency anaemia amongst our population (especially pregnant women and school children) has also increased significantly coupled with infant malnutrition and emerging micronutrient deficien- cies like vitamin A and iodine deficiency disorders (Ministry of Strategic Planning, National Development & Statistics, 2014; Schultz, 2007).

One of the major causes of the increase in NCDs is the rapidly changing unhealthy diet and lifestyle habits of people. Our popu- lation are consuming a poorer quality diet (National FPAN Advi- sory Committee, 2010). At least 85% of our population consume less than 2 servings of vegetables and fruits daily which is lower than the recommended amount of 5 servings per day (Snowdon and Tukana, 2011). The shift in preference from nutritious, fresh and quality foods to highly consumed imported (e.g. rice), processed (e.g. wheat flour) and convenient (e.g. ready-to-eat/ restaurant/fast foods) foods now currently compete with domestic foods (e.g. fresh local vegetables and fruits, traditional starchy crop varieties [uvi, Tivoli, kumala], fish and seafood etc). These foods are generally of low quality and are high in salt sugar and fat. However, they are often readily available and more accessi- ble and affordable to the people than most local healthy choices. This may partially explain their dominance in household meals.

Nutrition specific interventions alone will not address these nu- trition issues hence the need for strengthened nutrition-sensitive interventions.

Food Security status in Fiji
Food self-sufficiency determines a country’s ability to meet con- sumption needs (particularly for staple food crops) from local production rather than importing. Fiji’s self-sufficiency level in terms of calories was at 32% in 2009. At the same time, the 2009 Food Balance Sheet also reported a total of 3,421 calories avail- able per capita per day which is 54% in excess of the FAO nutri- ent requirement of 2,228 calories for a healthy adult. Fiji’s low self-sufficiency explains a high import on cereals including dairy and vegetable fat/oil that contribute significantly to the increase in imported calories at 68% in 2009 (from 55% in 1999) (Vatu- cawaqa, 2012) which can be attributed to the excess available calories per capita per day.

Along with locally processed and convenient foods, food imports have contributed to food security by meeting a growing demand for more and a greater variety and consistent food supply (Narsen, 2011; SPC, 2014; Vatucawaqa, 2012). At least 49% of Fiji’s population live in rural areas (Ministry of Strategic Planning, National Development & Statistics, 2014) where crop and animal production, fisheries and forestry activities are direct sources of food and income. With Fiji’s growing popula- tion, there is mounting pressure on land and fisheries resources to service the growing demand. Agricultural production is beyond the scope of this paper. However, it can be implied that increased urbanization may also reduce labor in the rural agriculture sector. This may partially explain a decrease in local food production for domestic consumption (self-sufficiency) mentioned earlier. Limited supply of local food contributes to high market prices of domestic food than most imported options. As a consequence this fuels consumer preferences away from locally grown food to cheaper imported and often processed alternatives as well as fast food. The country’s food self-sufficiency is an issue that needs to be addressed for improved food choices.

National nutrition policy and framework
The Fiji Plan of Action for Nutrition (FPAN 2010-2014) had been endorsed by Government in 2009 with special budgetary allocation as a high-level framework to improve the nutrition and health of the people in Fiji. This is a multi-sectoral framework that operationalizes the 2008 Fiji Food and Nutrition Policy (FFNP). The policy exists to generally address i) food availability, ii) nutritional status, iii) nutrient intake and iv) other health and lifestyle indicators (National Food and Nutrition Centre, 2010). The FPAN 2010-2014 aimed to reinforce Government’s com- mitment to improve food security, nutrition and health of its population hence contribute to Pillars 10 and 8 of the Peoples Charter for Change, Peace and Progress (National FPAN Advisory Committee, 2010). The National Food & Nutrition Centre (NFNC) is responsible for coordinating and implementation the FPAN framework as well as to monitor its progress. The FPAN 2010-2014 is currently under review.

Keywords: Nutrition, Nutrition-sensitive, Agriculture, Nutrition Security, Food Security

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Through the FPAN framework, the NFNC recognizes the need to apply a mixed strategy with targeted nutrition-specific interventions for immediate impacts, as well as investing in packages of nutrition-sensitive interventions that address the immediate and underlying multi-sectoral determinants of food and nutrition insecurity. Based on these key principles, the NFNC requires the close collaboration with the agriculture sector in i) developing nutrition-sensitive agriculture interventions, ii) linking nutrition and agriculture to other sectors and iii) improving agriculture’s contribution in increasing household food and nutrition security. There are opportunities to incorporate nutrition-sensitive concepts into our agriculture sector and into relevant agriculture policies and programs to improve nutrition outcomes. While Fiji works towards developing an overarching national policy on food security under its Green Growth Framework (Ministry of Strategic Planning, National Development & Statistics, 2014) the health/nutrition sector and the agriculture sector need to strengthen partnership through the 2008 FFNP, the revised FPAN, the 2020 Agriculture Sector Policy Agenda.

**Nutrition-sensitive Agriculture**

Nutrition-sensitive agriculture is a concept that incorporates nutrition objectives into agriculture to address the utilization dimension of food and nutrition security, including health, education, economic, environmental and social aspects (Jaenicke and Virchow, 2013). Such nutrition-sensitive interventions aim to reduce the existing gaps for the consumption of food needed for a healthy and balanced diet. At the same time, diversity local food production and promote existing and new sustainable practices like organic gardening, conservation agriculture, water management and integrated pest management, all of which improve nutrition without depleting natural resources. Most importantly, nutrition sensitive agriculture creates a platform to complement and increase the impact of nutrition-specific interventions within the health/nutrition sector (Ru et al. 2013). There is a potential to improve the country’s self-sufficiency and ensuring more food availability and accessibility through nutrition-sensitive agricultural production. This would make food itself more nutritious and provide a consistent food supply to the population. Significantly, this can possibly support the extensive efforts in health/nutrition sector in reducing risks of malnutrition, NCDs and other nutrition-related diseases in Fiji.

Family farming, backyard gardening and homestead food production are some ways the agriculture sector can make a wider variety of crops available at the household level. At the same time, improve both the health and economic status at the community and national level. The challenge however is for the health/nutrition sector and agriculture sector to work collaboratively to develop promote and implement relevant interventions. There is Government commitment to address food security in Fiji but a lack of tools, coordination and resources (Matheson et al, 2013) may explain why nutrition-sensitive interventions have not been a high priority. Nutrition has a direct bearing on the success or failure of the Sustainable Development Goals (SDGs). Therefore it must be understood as an input to and an outcome of, the SDGs as a whole (UNSCN, 2015). Nutrition-sensitive agriculture needs to be acknowledged and committed to as a priority intervention that will assist the progress of food and nutrition security programs and initiatives across sectors.

**Conclusion**

Ensuring food and nutrition security to all is a critical challenge and a converging interest and shared responsibility of multiple sectors. The agriculture sector provides important sources of livelihood, income and employment. Hence, initiatives to develop a food and nutrition security program beginning with nutrition-sensitive agriculture have the potential to align our local agriculture sector to produce good nutrition outcomes among our population. Promoting and implementing nutrition-sensitive agriculture is the foundation to achieving household food and nutrition security in Fiji. This requires strong partnership between the health/nutrition sector and the agriculture sector.

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**Introduction:**

The Oceanic Nutrition Leadership Platform (ONLP) is a new network of emerging and established nutrition leaders from across the Oceania region. ONLP was set up to nurture leadership in the field of nutrition, to facilitate collaboration, to share knowledge and opportunities, to seek feedback, and to create new avenues for the support of good nutrition practice, and capacity building.

The aim of this platform is to celebrate successes, to raise awareness of problems, and promote sustainable, scalable solutions for challenges in the food and nutrition environment in the oceanic region.

**Methods**

Participants were selected through a competitive selection process and selection made by an independent selection committee. Twenty-two applicants were selected (19 female, 3 male). Training sessions were based on leadership, team building, communication, networking, policy, social responsibility and trans-disciplinary approaches to solving ‘wicked’ problems.

The participants were placed in groups of 4 - 5 members, and were responsible for different roles and responsibilities each day of the training. In addition to these teams, the participants were also placed in special committees to coordinate activities such as networking, social event, closing day ceremony. The participants got the opportunity to fulfil different roles and functions, which exposed them to new experiences and sometimes conflicting demands. This also contributed to the participant’s growth, development and self-awareness. These activities provide opportunity for self-reflection and peer feedback, which is critical for growth and development.

**Results**

According to Meyer, 2016, of the 16 participants (73%) who completed the evaluation, majority (62%) of the participants reported they were completely satisfied with the course with no participant dissatisfied. Furthemore Meyer, 2016 reported that 75% of the cohort stated that the course met their expectations. Participants were also exposed to modern information technology platforms to enhance their ability to connect with the ONLP network and beyond. Two of the common tools discussed and encouraged to be used by the participants were Twitter and Slack. Participants have also assigned themselves to maintain the ONLP Blog page for the next 2 years until the next ONLP program.

The group also developed and agreed on a new ONLP logo and Declaration of Intent, as stated below:

- **Declaration of Intent:**
  "We are committed to strengthening the network of Oceanic nutrition leaders and to support a healthy food environment in our region. We acknowledge the diverse contexts in which we work and the range of skills and experiences we all offer. We will achieve our aims through sharing experiences, working together and raising awareness of sustainable, evidence-based approaches to improving our food environment. We will move forward together in a way that reflects our values of integrity, honesty, equity and respect. We will act in a socially responsible, fair and sustainable manner". ONLP 2016.

**Funding**

Funding for participation in this training was through the University of the South Pacific Strategic Research Theme Grant funded project-Kakana for a Healthier Fiji in collaboration with staff from the Centre for Flexible Learning. Project name: Creating a Mobile Application - Kakana for a Healthier Fiji.

**Conclusions**

The inaugural ONLP participants were like different pieces of a colourful puzzle, and came together at the end of the program with a common goal to continue the established network formed. A common goal by “empowering emerging nutrition leaders to collaborate and raise awareness of sustainable, evidence-based approaches in food and nutrition security.

**References**

Regional workshop on regulating the marketing and sale of foods and non-alcoholic beverages at schools - Manila, Philippines 1st - 3rd June, 2016

Kama A*1

Keywords: Food Non-Alcoholic Beverages, FNAB, schools, marketing regulations, Fiji

Summary
Promoting a healthy diet by improving the food environment is central to preventing and controlling noncommunicable diseases (NCDs). The school food environment can play an important role in the child’s daily choice of foods and beverages. However, foods and beverages sold and marketed in schools are not always consistent with national school food standards (where available). Regulating foods in the school environment is essential to protect, promote and support healthy diets for children. This includes restricting the sale and marketing of products high in sugar, salt, and fat, setting school food standards, and increasing the availability and accessibility of healthy options.

Global and regional mandates call upon countries to prioritize action in school settings. WHO-recommended policy options include setting school food standards and restricting marketing and sales of foods and drinks based on identified standards. However, progress in implementing these mandates has been slow across the Region.

This regional meeting on regulating foods and non-alcoholic beverages in and around schools contributed to advancing country-specific adaptation and implementation of these policy options. In relation to the sale of unhealthy FNAB in schools, only one of 10 countries reported being in the monitoring phase (having fully implemented restrictions). Most Member States were currently enacting restrictions (four countries) or attempting to implement them (three countries). Progress in banning the sale of sugar-sweetened beverages (SSB) was a little more advanced, with eight countries already enacting, implementing or monitoring bans on sweetened drinks. During the meeting, every country identified these goals as being important or very important in the future.

It was evident that progress towards restricting the marketing of unhealthy FNAB in and around schools was substantially slower than for food restrictions. Only one country (Samoa) was at the monitoring phase of restrictions across all forms of marketing. Many of the others had not taken any actions to ban branded vending machines (six countries), branded sponsorship (seven countries), promotions and tie-ins (six countries) or branded sponsorship of school events (seven countries).

Most countries had progressed to implementing programmes and policies aimed at promoting healthy FNAB to children in the school environment, for instance by strengthening nutrition curriculum and promotion for the wider school community, and promoting healthy foods and special events. A mapping activity saw countries assess the most impactful (given their most pressing health priorities) and feasible interventions given their capacities and socioeconomic climate, providing a more realistic framework for prioritizing where to direct resources.

All ten countries identified restricting the sale of sugar sweetened beverages as their first priority for action, with seven countries wanting to develop a new (or strengthen an existing) policy to support this action. Nine countries, namely China, Fiji, Lao People’s Democratic Republic, Malaysia, Mongolia, Philippines, Samoa, Vanuatu and Viet Nam, identified training of school staff, including teachers and principals, as a necessary next step. Seven countries, namely Cambodia, China, Fiji, Lao People’s Democratic Republic, Malaysia, Mongolia and Philippines, identified training of school staff, including teachers and principals, as a necessary next step. Seven countries mentioned the need to either develop (or update existing) food standards to support restricting ‘unhealthy’ and promoting ‘healthy’ foods in schools namely Cambodia, China, Lao People’s Democratic Republic, Malaysia, Mongolia, Philippines and Viet Nam (Table 4 provides further details on country priorities and actions).

This report summarizes the outcomes of a three-day regional workshop.

Introduction
Meeting organization
Regulating foods in school environments includes dietary guidelines for school meals, as well as voluntary and mandatory restrictions on the sale and marketing of products high in sugar, salt and fat, as well as increasing the availability and accessibility of healthy options.

Recognizing that childhood obesity has emerged as one of the greatest threats to health in the 21st century, global mandates endorsed by the World Health Assembly have consistently called for the need to prioritize school settings and requested technical support to advance action, including the development of tools, such as a nutrient profile model for school food procurement (a nutrient profile model for marketing restrictions has already been developed by WHO, and adapted to the Region by the WHO Regional Office for the Western Pacific).

Progress in implementing these mandates, however, has been slow across the Region. Few countries have developed enforceable legal frameworks to restrict the sale and marketing of foods in school environments, or food standards for school canteens. Only four countries in the Region reported having any legal measures on the marketing of foods rich in sugar, salt and fat to children, three of which are voluntary and one mandatory. Twelve restrict sales of selected unhealthy foods and non-alcoholic beverages in schools (10 of which are voluntary and two mandatory). A total of 17 countries in the Region have any type of guidelines for school meals, and only three have enforceable standards.

To advance implementation of global and regional mandates and country-specific adaptation of policy options to promote, protect and support healthy diets in school environments, the Non-communicable Diseases and Health Promotion (NCD) and Nutrition (NUT) units at the WHO Regional Office for the Western Pacific convened a follow-up regional workshop on

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regulating the marketing and sale of foods and non-alcoholic beverages in and around schools.

Meeting objectives
The objectives of the workshop were to:

1. Review country experiences in regulating the sale and marketing of food and non-alcoholic beverages (FNABs) in and around schools, and increase the availability and accessibility of healthier food options;
2. Identify next steps for countries and recommend support from WHO towards regulating FNABs in school settings.

Opening Remarks
The workshop was opened by Dr Susan Mercado, Director, Division of Non-Communicable Diseases and Health through the Life-course (DNH), WHO Regional Office for the Western Pacific, on behalf of Dr Shin Young-soo, WHO Regional Director for the Western Pacific. Dr Mercado initiated the proceedings by reminding participants that childhood obesity is intrinsically linked to obesity in adulthood, a key risk factor for NCDs which now account for four out of five deaths in the Western Pacific Region.

Children spend many hours at school, and typically eat at least one meal and one other snack there. The types of foods and drinks available in and around schools tend to be unhealthy — high in calories, sugar and salt, and low in nutrients. This is compounded by aggressive marketing of unhealthy foods and drinks to children through various forms of advertising, promotion and sponsorship. Regulating foods in and around the school environment is therefore an essential component of a comprehensive plan to protect, promote and support healthy diets for children. This includes setting dietary guidelines for school meals; restricting the sale and marketing of products high in sugar, salt and fat; and increasing the availability, accessibility and awareness of healthier options. While global mandates endorsed by the World Health Assembly have consistently called upon countries to prioritize action in school settings, progress in implementing these mandates has been slow across the Region. Few countries have developed enforcible legal frameworks to restrict the sale and marketing of foods in school environments, or food standards for school canteens.

This workshop was organized in response to requests to focus on the school food environment made at the recent workshop on regulating the marketing and sale of unhealthy foods and beverages to children in this setting, and the support provided to countries by the Regional Office, will need to be suited to these varying contexts.

Dr Engelhardt thanked participants for attending and reminded all that the emphasis of the meeting would be on “regulation”, which includes restricting the sale and marketing of products high in sugar, fat and salt, setting school food standards, and increasing the availability and accessibility of healthier alternatives. Participation in the meeting and group work activities will ideally lead countries closer to advancing action on the strategies being discussed.

Introduction to the Commission on Ending Childhood Obesity
Dr Temo K Waqanivalu, Surveillance and Population-Based Prevention, WHO headquarters

This session provided an overview of the burden of childhood obesity and the complex problem facing countries in attempting to stem childhood obesity, while simultaneously addressing malnutrition and nutritional deficiencies.

Halting the rise of childhood obesity is one of the six Global Nutrition and NCD Targets. At the Sixty-seventh World Health Assembly the WHO Director-General announced the establishment of a high-level Commission on Ending Childhood Obesity (ECHO) to provide policy recommendations to governments to prevent identify and manage overweight and obesity in infants, children and adolescents.

The report of the commission, Ending Childhood Obesity was provided at the Sixty-ninth World Health Assembly in 2016. It included six strategic objectives, including tackling the obesogenic environment and norms through healthy eating and physical activity of children; reducing the risk of obesity by addressing critical elements in the life-course in critical periods, including preconception and pregnancy, infancy and early childhood, older childhood and adolescence; and treating children who are obese to improve their current and future health.

Two strategic objectives are of particular significance to the proceedings of this meeting. Objective 1, to promote intake of healthy foods and reduce the intake of unhealthy foods, would be achieved by promoting healthy food environments with policies targeting key food settings, restricting marketing of unhealthy FNAB, fiscal policies and improved food labelling. This policy objective includes underpinning policies to promote healthy foods with nutrient profiling.

Objective 5 of the report is to implement comprehensive programmes that promote healthy school environments, health and nutrition literacy and physical activity among school-age children and adolescents, including eliminating the provision and sale of unhealthy food and beverages to children.

Introduction to WHO Nutrition Guidelines
Dr Chiara Nishida, Coordinator, Nutrition Policy and Scientific Advice (NPU), WHO headquarters

This session introduced the work of WHO headquarters to provide ongoing guidance in the face of rapidly changing global contexts and demographic shifts. While the nutrition transition leading to the double burden of malnutrition continues to challenge health workers and policy makers, there has been increased recognition of the critical role of nutrition in achieving sustainable development. The Sustainable Development Goals adopted in September 2015 include the Global Nutrition Targets (Goal 2, Target 2.2). The United Nations General Assembly proclaimed 2016–2025 the UN Decade of Action on Nutrition
in April 2016. The Global Strategy on Diet, Physical Activity and Health (2004) included that recommendations for populations and individuals should be based on the following:

- achieve energy balance and a healthy weight;
- limit energy intake from total fats and shift fat consumption away from saturated fats to unsaturated fats and towards the elimination of trans-fatty acids;
- increase consumption of fruits and vegetables, legumes, and whole grains and nuts;
- limit the intake of free sugars; and
- limit salt (sodium) consumption from all sources and ensure that salt is iodized.

The WHO Nutrition Guidelines Committee was established in 2007 to ensure that all WHO guidelines were consistent with internationally accepted best-practice and evidence. The resulting suite of standardized nutrition guidelines provide the basis for dietary recommendations for sodium, potassium, free sugars, total fat, saturated fatty acids, and trans-fatty acids. These technical guidelines have been translated into a resource “5 keys to a healthy diet”, which calls for individuals to:

- exclusively breastfeed babies for the first six months and continuously breastfeed until two years and beyond;
- energy intake should balance energy expenditure;
- keep total fat intake to less than 30% of total energy intake, with a shift in fat consumption away from saturated fats to unsaturated fats, and towards the elimination of industrial trans fats;
- limit intake of free sugars to less than 10% (or even less than 5%) of total energy intake; and
- keep salt intake to less than 5 g/day and eat at least 400g of fruit and vegetable a day.

WHO guidelines provide the highest quality of evidence around food and nutrition requirements and should be used as a base when developing policies around the marketing, provision and sale of FNAB.

Restricting the sales of unhealthy foods and beverages in schools

Australia’s School Food Guidelines, Dr Kaye Mehta, Senior Lecturer, Nutrition & Dietetics, Faculty of Medicine, Nursing and Health Sciences, Flinders University, Australia

This session introduced national school food guidelines adopted in Australia, where the majority of schools have canteens or “tuckshops” run by parents, canteen workers and volunteers. While most Australian states and territories had introduced school canteen guidelines to improve the standard of food sold to children prior to 2009, these were being implemented with varying success. In response to a call to harmonize school food guidelines across states and territories, the Australian Government Department of Health released National Healthy School Canteens: Guidelines for healthy foods and drinks supplied in school canteens in 2014. These were based on a traffic light system of food promotion, and underpinned by a nutrient profiling model to help in determining categorization as green, amber or red. The guidelines included a comprehensive set of guides and monitoring tools and underwent countrywide consultation.

The inbuilt methods and tools for monitoring compliance included process and impact evaluation, measures for training and development, and audits of canteens for compliance to the traffic light system. Dr Mehta noted that monitoring, however, had remained a weakness throughout, and as a result implementation and monitoring of compliance was not as sustainable as hoped. Several studies were introduced showing wide variability in implementation across states and territories, and a drop-off in compliance as time progressed. A further concern was the way in which the food industry was able to manipulate traditionally unhealthy products in order to meet guidelines.

Dr Mehta concluded that the strong focus on healthy eating in canteens from late 1990s was reminiscent of strong government action in health promotion during the late 1990s. Since that time however, government priorities have changed and reduced emphasis was placed on healthy eating in canteens.

Healthy Meals in Singapore Schools, Dr K Vijaya, Director, Youth Preventive Services Division, Health Promotion Board, Singapore

This session provided insight into the ways in which Singapore has been able to implement and sustain a healthy school lunch programme. The meals programme was implemented by creating what Dr Vijaya referred to as a healthy meals ecosystem, which included incorporation of guidelines into existing policy frameworks, extensive training and consultation for canteen vendors and parents, improved access to healthier options both in and around the school and at supermarkets, and empowering students to make healthier choices.

A key achievement in the programme was the way in which it reached out beyond the traditional health and school grounds to the community. Partnerships were created with supermarkets and the food sector with a healthier dining and ingredients initiative.

Nutrient profiling was used under Guideline 7, which states that stalls selling snacks shall only sell home-made snacks, such as salads and sandwiches, or commercially-prepared products with a healthier choice symbol or healthier snack symbol, by providing an upper limit for sugar content in homemade snacks. To promote the production and consumption of drinks and desserts with lower sugar levels in Guideline 8, nutrient thresholds were provided for allowable sugar limits in drinks, including sweetened drinks, teas, juices and Asian dessert drinks, such as bubble tea, pearls, green bean soup and cultured milk beverages.

A noteworthy feature was the use of fiscal incentives to support additional costs associated with healthier food options, awarded to schools and providers following monthly school food audits. Through this and other complementary interventions, compliance has reached 74%.

EatSmart – promoting healthy eating in schools: experiences from Hong Kong, Dr Fung Yu Kei Anne, Assistant Director (Health Promotion), Central Health Education Unit, Department of Health, Hong Kong SAR (China)

Dr Fung gave an overview of the process undertaken in Hong Kong SAR (China) to implement restrictions on the provision of unhealthy foods and beverages in schools and the promotion of healthier options. Promoting healthy eating habit among school children was chosen as a policy initiative of the Government between 2005 and 2006. The implementation of the programme entitled EatSmart@school.hk campaign involved a five pronged approach under the headings of alliance building, publicity and advocacy, supportive environment, education and empowerment, and research and evaluation. It included a broad, high-level stakeholder group which provides direction to the overall development of the campaign.

For the provision of school meals, very specific guidance was provided. The exact make-up, quantities and serving sizes were specified and a list of encouraged, limited and strongly discouraged foods provided. Snacks were classified as being allowed, limited or disallowed based on whether they met criteria under a nutrient profiling model, where applicable. Of particular interest was an acknowledgement by Dr Fung that vendors did initially find it difficult to follow the guidance and were worried about their business, however the Government was able to engage and empower the stakeholders by ways of training and discussion.

Compliance has been assessed using an awards scheme based on self-monitoring, school visits and provision of supportive documents, with a comprehensive re-accreditation scheme.
Restricting the sales of unhealthy foods and beverages around schools

Restricting the sales around schools through green food zones: experience from the Republic of Korea. Dr Kwang-il Kwon, Assistant Director, Dietary Life Safety Division, Food Nutrition and Dietary Safety Bureau, Ministry of Food and Drug Safety and Dr Cho-il Kim, Korea Health Industry Development Institute, the Republic of Korea.

In this session representatives from the Republic of Korea introduced a new legal instrument which was enacted in response to concerns that Korean children were consuming excessive amounts of trans fats and sweetened beverages, and that foods being provided to children were unsafe or unhygienic.

The Special Act on the Safety Management of Children's Dietary Life was enacted in 2008. The Act focuses on these main issues: (1) the designation and management of children's food safety and protection zones (green food zone); (2) the management of children's favorite foods including restriction on advertisement; (3) information provision including education at schools and nutrition labelling in restaurants; and (4) establishment and management of children's meal service support centres. The subjects of the Act can be classified into foods, environment, information provision, and media management. For restrictions around the sale and marketing of unhealthy foods and drinks, the Korean Government created a flowchart underpinned with nutrient thresholds for saturated fat, sugar, sodium, total calories and protein to define which FNAB would not be allowed.

The Government declared that all stores and retailers within a 200 metre radius around of schools were now in what was called a “green food zone”. All small stores, stationary shops and snack bars designated as “exemplary business places” within this zone around schools were prohibited from distributing food and beverages which were deemed to be of low nutritional quality, or prepared using questionable hygiene practices. Stores and businesses willing to comply with the regulations were able to apply for financial support for remodelling and repairing cooking facilities, display facilities and stands, and provided a sign showing that they had met the accreditation process.

The Government established a monthly monitoring schedule. Coverage achieved by the programme included 10 516 of 11 704 schools nationwide and over 2500 “exemplary business places” for children’s favorite foods. Dedicated managers were designated among consumer food sanitation supervisors under Article 33 (1) of the Food Sanitation Act by the head of local governments. As well, “Safety Sheriffs” (part of Safety SHERIFF for children's dietary life) were selected from volunteers (children and their mothers) to monitor and report ongoing violations. The violation rate has gradually decreased along with continuous management of the green food zone.

Country presentations - restricting the sales of unhealthy food in schools

1. Mr Darryl Pupi from the Ministry of Health and Ms Nimera Tofa from the Ministry of Education presented on work to restrict the provision and sale of unhealthy foods in schools in Samoa. In 2006 a new school food policy in Samoa was championed by a group of parliamentary advocates called the Samoa Parliamentary Advocacy Group for Health (SPAGHL), however implementation of the policy was slow and there were ongoing concerns that foods being provided were not meeting standards. In 2012, new School Nutrition Standards were introduced under the National Food and Nutrition Policy (2012–2018) and likewise supported by SPAGHL. Stipulation of which foods can and cannot be provided is done using a yes/no food list based on a Samoan Dietary Guidelines. A unique feature of Samoa’s approach has been the Ministry of Education adopting new minimum service standards which embrace the Ministry of Health’s

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Brunei Darussalam’s Healthy School Canteen Programme, Mr Zakaria Kamis, Senior Dietitian/Head of Public Health, Nutrition Unit, Health Promotion Centre, Brunei Darussalam

In 2009, the Ministry of Health in Brunei Darussalam distributed Guidelines on Healthier Food and Beverage Choices in School Canteens. Routine monitoring by the Ministry of Education in 2012 found that 56% of schools were selling non-compliant food items to children, prompting the launch of a new and more comprehensive programme. This programme was comprised of broad-reaching training, a curriculum review, and the introduction of a new contractual arrangement for food providers, whereby school principals were empowered with the authority to enforce the canteen guidelines by issuing warnings and terminations for uncompliant canteen vendors.

The canteen guidelines were traffic light-based with a nutrient profiling component specifying allowable sugar content limited for some specific food categories, namely beverages, including dairy and soya drinks, teas and other sweetened beverages.

A canteen grading committee developed a complex grading system to award scores to canteens based on the make-up of green, amber and red foods in their menus. The latest round of monitoring found that 51% of foods being provided were in the amber category and 25% were in the red, demonstrating an ongoing challenge for the country to sustain full implementation of the policy.

Food classification and defining “healthy” in food policies

Ms Erica Reeve, Global Obesity Centre, Deakin University, Australia

Food classification is the basis of much nutrition promotion, education and policy-making. To implement strong, enforceable policies, countries will need to clearly define which foods are considered to be healthy or unhealthy for that specific policy and target population. Monitoring and enforcement involves examining which policy parameters are being met, including whether healthier options are being provided or less healthy options restricted.

There are a number of ways to promote or define healthier options in school food policies. The most common way of doing this is by using food-based dietary guidelines, and promoting or restricting foods which are aligned to those. While these allow a simplified interpretation and can be easily communicated to a wide audience, they can be limiting, in that there is a large diversity in the types of foods and beverages available in each of the food groups and even within food types. Adopting a food-group-based approach often requires applying restrictions or promotions to whole groups, using subjective phrases such as “eat more”, “limit”, and “junk food”. Within food groups being promoted, there is considerable opportunity for traditionally healthy foods to be promoted, even when they have been highly processed or had substantial salt, sugar and trans fat added.

WHO is using nutrient profiling to define healthy and less healthy foods. It is defined as a set of equations or algorithms that “categorize foods for the purpose of health on the basis of their nutritional properties”. Nutrient profiling applies thresholds across a range of different nutrients to generate a single score or grade to indicate which foods are nutritionally better than others. A key benefit is that this provides a clear answer to which foods and beverages will be restricted or promoted, and that the determination of a food’s healthfulness is more transparent and can be easily communicated to the public.

The Act focuses on these main issues:

1) the designation and management of children’s food safety and protection zones (green food zone);
2) the management of children’s favourite foods including restriction on advertisement;
3) information provision including education at schools and nutrition labelling in restaurants;
4) establishment and management of children’s meal service support centres.

The subjects of the Act can be classified into foods, environment, information provision, and media management. For restrictions around the sale and marketing of unhealthy foods and drinks, the Korean Government created a flowchart underpinned with nutrient thresholds for saturated fat, sugar, sodium, total calories and protein to define which FNAB would not be allowed.

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1. Mr Darryl Pupi from the Ministry of Health and Ms Nimera Tofa from the Ministry of Education presented on work to restrict the provision and sale of unhealthy foods in schools in Samoa. In 2006 a new school food policy in Samoa was championed by a group of parliamentary advocates called the Samoa Parliamentary Advocacy Group for Health (SPAGHL), however implementation of the policy was slow and there were ongoing concerns that foods being provided were not meeting standards. In 2012, new School Nutrition Standards were introduced under the National Food and Nutrition Policy (2012–2018) and likewise supported by SPAGHL. Stipulation of which foods can and cannot be provided is done using a yes/no food list based on a Samoan Dietary Guidelines. A unique feature of Samoa’s approach has been the Ministry of Education adopting new minimum service standards which embrace the Ministry of Health’s
School Nutrition Standards. Embedding the school food standards within the performance framework of school principals is a unique compliance mechanism.

2. Mr Glenda Ilaia from the Ministry of Education and Training and Ms Nelly Ham from the Ministry of Health presented on a policy to restrict the sale and marketing of sugar-sweetened beverages to children across the education sector of Vanuatu. The aim of the policy was to reduce the risk of harm associated with the consumption of sweet drinks by children throughout schools and early learning environments, as well as sending a strong message to communities about the negative impact of sweet drink consumption more broadly. In this policy sweet drinks are defined as "drinks which contain sugar, sweetener or flavouring, and have low nutritional value". It includes carbonated or "fizzy" drinks, cordials, sports drinks, energy drinks, fruit drinks, fruit juices, sugarcane juice, flavoured milks and other drinks with added sugar. Barriers to full implementation of the policy included the absence of any incentives, the lack of classification to define sweetened drinks, challenges in maintaining access to clean drinking water, and the lack of government capacity to communicate, monitor and enforce the policy.

3. Dr Yinghua Ma from the Peking University in Beijing, China discussed that while there were no national-level policies being implemented to restrict the sale, marketing and provision of FNAB in schools in China, local and provincial initiatives are being implemented. For example in Beijing, the Government has put in place restrictions on the sale of hamburgers, instant noodles and carbonated beverages in primary and secondary schools. In the Chengdu Municipality sugary drinks were included in "evaluation standard of school health work of primary and secondary schools", with points being subtracted from schools where more than 10% of students drink sugary beverages.

Restricting the marketing of unhealthy foods and beverages around schools

Protecting children from marketing practices: Introduction to Pathways for Effective Action through Regulation and Legislation (PEARL), Dr Ki-Hyun Hahn, Technical Officer, Legislation and Regulation, Division of Health Systems, WHO Regional Office for the Western Pacific

This session began with a visual demonstration of the extent and type of marketing being used in the Western Pacific Region to promote unhealthy FNAB to children. In response to the pervasive marketing strategies of companies, PEARL is a new policy tool designed to assist countries by helping them to self-assess the extent of their marketing to children for tobacco, alcohol and FNAB. The tool asks questions about the extent of marketing, advertising and promotion, and then generates a summary report of the extent of marketing. This helps countries to identify which laws they will need to strengthen and improve targeting.

In the Convention on the Rights of the Child, children have the right not to be misled by untrue statements and protected from exposure to unhealthy substances. Policy tools will be strengthened through linkages to existing mandates and international legal frameworks.

Country presentations

1. Ms Jovita Raval from Philippines National Nutrition Council presented the finding of 2012 study which aimed to determine the pervasiveness of food advertisements within a 500 metre radius of primary schools in selected sites in Metro Manila and Rizal Province. The findings included that 85.2% of FNAB advertised in that area were for "unhealthy" products, largely SSB, fast foods and ice cream. Density of FNAB marketing was higher closer to schools (<250 m) than it was farther away (250–500 m). The study demonstrated that the Philippines self-regulation code for responsible advertising and the Code of Ethics for Outdoor Advertising may not be having a substantial enough impact on the marketing practices of companies, raising questions about the effectiveness of industry self-regulation.

2. Dr Enkmyagmar Dashzeveg from the Public Health Institute in Mongolia presented findings from a similar study undertaken in 2012. Their study likewise found a significantly higher density of branded food advertisements in areas close to schools compared with those further away.

Promoting healthy food and beverages in and around schools

History of the school-based Shokuiku Law in Japan, Dr Midori Ishikawa, National Institute of Public Health, Japan.

This session provided participants with insight into the implementation of a law by Japan’s federal Cabinet Office called “Shokuiku”. Shokuiku is viewed as the "foundation for living" in Japan, achieved by fostering the acquisition of knowledge related to Shoku, and raising children who learn through experience what it means to acquire and consume healthy foods. The Shokuiku Law was adopted across the entire Government and overseen by a special Shokuiku Promotion Office located within the Cabinet Office. Advocacy for the law from such a high level ensured implementation across a number of significant sectors, including early childhood, schools, health services, food retailers and other community groups. A component of the Shokuiku included providing children with the experience of growing and preparing foods and a number of nutrition promotion activities to empower children to make better choices.

Dr Ishikawa provided the meeting with insight into the national healthy school lunch programme, which has been closely overseen by trained nutrition specialist teachers or dietitians. School menus were carefully nutritionally balanced in accordance with national dietary guidelines, and with the intention of promoting environmental and cultural protection. One component of this programme is a monthly newsletter to parents to demonstrate the degree to which they are meeting nutritional needs and promoting the consumption of local foods. Another is the training of registered nutrition professionals to be closely involved with nutrition promotion in schools, and the design and monitoring of school meals programmes.

Country presentations

1. Ms Soutsaychai Douangsavan, Country Coordinator for School Health Programme at the Ministry of Education and Sports, in the Lao People’s Democratic Republic presented an initiative undertaken in 2013 to promote healthy foods in schools in six pilot schools. The school health policy, designed to improve the quality of foods provided to children, emphasises nutrition training using new educational and curriculum materials. The aim is to expand nationally and ensure that the policy is supported with the enactment of new national food regulations.

2. Dr Chavvyoth So, Head of Technical Bureau, School Health Department, Ministry of Education, Youth and Sport, Cambodia, presented work to utilize the school setting to implement comprehensive child health programmes, including school feeding. Since 2008 the Government has been working to implement policies to boost the provision of safe, healthy and hygienic food to children. While Cambodia is implementing a wide range of child health initiatives, these largely focus on micronutrient supplementation, breastfeeding promotion, deworming and management of malnutrition. A limitation for Cambodia has been the absence of dietary guidelines for NCD prevention, however, this has recently been addressed and food-based dietary guidelines for children are being developed. It was noted during the session that a host of unhealthy foods and drinks are increasingly appearing in schools, and as a result, new food and beverage
guidelines would be developed and nutrition training provided to the school community.

3. Ms Areta Kama from the National Food and Nutrition Centre at the Ministry of Health and Medical Services presented Fiji’s comprehensive Health Promoting Schools Program. The programme is a joint initiative of the Ministry of Health and Medical Services and the Ministry of Education and was introduced in 2007 as a strategy of the National Food and Nutrition Policy (2008) and Fiji Plan of Action for Nutrition (2010–2014). The programme operates under a national steering committee and a series of district committees which ensure wide coverage of the programme, which envelops a number of health priorities and includes strategies which involve communities, staff, families and health services. FNAB promotion was based on a traffic-light system to promote and restrict foods, as per the Fijian Dietary Guidelines. The promotion of school canteen guidelines included training school workers, canteen operators and parent groups. Capacity for ongoing training and promotion of the guidelines and an inability to sustain monitoring has hindered coverage of the programme. An additional barrier noted by Ms Kama was a failure of the guidelines to trickle down to those requiring it.

Capacity and tools to aid progress through the policy development cycle

Dr Katrin Engelhardt, Technical Lead, Nutrition, Division of NCD and Health through the Life Course, WHO Regional Office for the Western Pacific

The steps adopted in the WHO Regional Office for the Western Pacific’s PEARL tool include Prepare, Enact, Implement and Monitor phases, and stepping through each critical aspect of policy implementation, is likely to require more resources and capacities than can be provided through training workshops. This session examined the policy-making process and introduced the range of capacities, skills, tools and resources that might be required by Member States to achieve full implementation.

In the adoption of marketing regulations for example, countries need human and other resources to build the evidence-base, undertake analysis of stakeholders and the policy context, and undertake advocacy to secure political and public supports. Where monitoring and evaluation capacity is limited, competency-based training opportunities may be needed for members of the policy implementation team, support agencies and/or the management team. In low-capacity settings, committed civil society partners could be empowered with the skills and tools to undertake monitoring and enforcement activities as a mechanism to boost capacity.

The WHO Regional Office has developed a number of resources to aid progress through the policy cycle. These include the PEARL policy tool, the WHO Nutrient Profile Model for the Western Pacific Region for food classification, the Pocket Guide for a Healthy Diet, the Be Smart Drink Water guide for school principals, and the Healthy Weight in Childhood: a winning goal for life guide.

In country groups, participants were asked to consider the guidelines and policies they have in place for restricting the provision and sale of FNAB to children, and how advanced they were in the policy development cycle. Countries were asked to identify and map their progress on a spidergram poster to illustrate their progress in that cycle. This activity prompted countries to consider whether progress should emphasise the completion or enforcement of existing policies, or whether resources should be directed at new ones.

In relation to the sale of unhealthy FNAB in schools, only one country reported being in the monitoring phase (having fully implemented restrictions). Four Member States reported that they are currently enacting restrictions and three that they are attempting to implement them. Progress in banning the sale of SSB was a little more advanced, with eight countries already enacting, implementing or monitoring bans against sweetened drinks. Every country identified these goals as being important or very important in the future.

Following more country presentations, country groups emulated the activity above on a separate poster which focused on actions to restrict the marketing of FNAB to children.

It was evident during this activity that progress towards restricting the marketing of unhealthy FNAB in and around schools was substantially slower than for food restrictions. Only one country (Samoa) was at the monitoring phase of restrictions across all forms of marketing. Many others had not taken any actions at all to ban branded vending machines (six), branded sponsorship (seven), promotions and tie-ins (six) or branded sponsorship of school events (seven).

Finally, countries undertook the same activity but using a poster showing mechanisms to promote healthy FNAB to children in the school environment.

Group work 5: Assessing feasibility, impact and risk: countries consider the policy spidergram

It is acknowledged that not every action is applicable or impactful in every country context or feasible in every setting, given the varying socioeconomic, political and environmental circumstances. This activity provided countries with the opportunity to consider their progress in each of the actions from the activities above, and how likely it would be for them to make further progress given barriers, capacity constraints and political will. Countries mapped out for each action as to whether it was considered important, given their most pressing health priorities, feasible, given their capacities and socioeconomic climate, and/or risky, given possible external interferences in advancing the action. This was a significant activity because it provided a more realistic framework for prioritizing where to direct resources.

Countries were then asked to prioritize two actions from two of the spidergrams, namely: restricting the provision and sale of FNAB to children and restricting the marketing of FNAB to children, as shown below.

Summary of group work activities

Group work 1:

Countries tested different food classification systems to highlight that defining food as healthy or not healthy is challenging and warrants careful consideration. Groups expressed that nutrient profiling and food-based dietary guidelines were the most useful policy underpinning controls around school food and beverage provision, particularly nutrient profiling, as it formed the most objective measure of healthfulness. Additional feedback included that nutrient profiling will require some capacity to interpret and understand, and is highly dependent on food labelling.

Group work 2–4: Assessing current restrictions around the provision and sale of FNAB in schools
Identified priorities and actions

Group Work 6: Stakeholder mapping
Participants took time to consider the two actions prioritized by each country, and the types of stakeholders that should be engaged in the process of change. Stakeholders included those in health and education departments, civil society, parent groups and nongovernmental organizations (NGOs). Partnering with existing programmes like WASH and the NGOs supporting school and health programming were also considered. For some countries, private food providers who operate inside and around the school setting were critical stakeholders. In others, government agriculture departments were critical partners in order to ensure stable supply of fruit and vegetables to schools, or promote seed programmes to boost school food supplies.

Group work 7: Capacities needed to drive action (which tools and resources)
After session 2.8 on capacity, countries were asked to consider what skills, resources and tools they would require to progress towards policy goals. Potential capacities identified by participants included a food classification tool (nutrient profile model), quality evidence which could be used to build political will for action (including policy briefs, evidence summaries, country or issue-specific research), financial resources, buy-in from high-level agencies, skills to develop monitoring and evaluation systems, human resources to implement or undertake monitoring, and Information, Education and Communication (IEC) materials to guide implementation of policies and programmes promoting healthy eating.

Group work 8: Marketplace
Countries presented to one another their selected actions, the mechanisms they would use to achieve these actions, including strengthening existing policy mechanisms. Countries then needed to promote these actions to other participants, in a marketplace scenario. This activity was in lieu of developing action plans as the countries were encouraged to think critically about which stakeholders they require support from, what resources would be required, and how they would source those resources. Countries needed to be clear on how they would achieve the desired outcome, what it would cost to achieve that outcome, and the economic costs of restricting the sale and provision of certain foods. Pitching to stakeholders is a skill that must be learned and developed.

Closing
Dr Susan Mercado, Director, Division of NCD and Health through the Life-Course, WHO Regional Office for the Western Pacific

Participants and advisors were thanked for travelling to the meeting and actively sharing their strategies and ideas. Dr Mercado asked participants to think back on how people sourced and consumed food in previous times, and reflect on how we have allowed the food industry to determine what foods we consume and when. She highlighted that we cannot continue to permit this, and must ensure that there is an undoing of these forces to restore balance.

Dr Mercado reminded participants that while they may be enthusiastic now, upon their return home they will be faced with competing commitments which may compromise their enthusiasm. Participants should instead harness their enthusiasm and aim to accomplish a few small things each week to achieve progress on some of the commitments made.

Conclusion and Recommendations

Conclusions
1. Unhealthy foods and non-alcoholic beverages high in sugars, salt and fat are aggressively marketed and widely available and accessible to children in and around schools.
2. Policies exist in most countries, but none that comprehensively restrict the sale and provision of certain foods. Pitching to stakeholders is a skill that must be learned and developed.
3. Policies commonly focus on the promotion of healthy foods and non-alcoholic beverages, and few address restrictions on the sale and marketing of unhealthy foods and non-alcoholic beverages in and around schools.
4. Lack of capacity (at different levels of the policy development cycle) and sustainable financial resources were identified as key barriers to creating healthy school food environments.
5. Tools for food classification are required to effectively implement strong, clear and enforceable policies, but are lacking in most countries.
6. Enforcement and monitoring of existing policies were identified as a major challenge.
7. Partnerships was recognized as a critical element for policy development, implementation and evaluation. Partnerships should be fostered beyond health and education, with measures being taken to safeguard against conflict of interest and vested interests.

Recommendations
Recommendations for Member States
Member States are encouraged to:
1. Review existing policies and, as necessary, develop comprehensive and legally enforceable policies that restrict the marketing and sale of unhealthy foods and non-alcoholic beverages to children, particularly sugar-sweetened beverages, in and around schools:
   a. All 10 participating countries identified restricting the sale of SSB as a priority action;
2. Develop, adapt and apply, as necessary, a food classification system based on WHO guidelines for salt, sugar and fat to ensure consistent enforcement of school food guidelines.
   a. Seven of the 10 countries mentioned the need to either develop (or update existing) food standards to support restricting ‘unhealthy’ and promoting ‘healthy’ foods in schools including Cambodia, China, Lao People’s Democratic Republic, Malaysia, Mongolia, Philippines and Viet Nam;

3. Strengthen enforcement and evaluation of school food policies, for example, through increased training of food vendors and providers, incentive systems, linking enforcement and evaluation of school food policies namely Cambodia, China, Lao People’s Democratic Republic, Malaysia, Mongolia, Philippines and Viet Nam;

4. Develop mechanisms to safeguard against conflict of interest in the development, implementation and evaluation of school food policies.

Recommendations for WHO Secretariat

The WHO Regional Office for the Western Pacific will prioritize action to:

1. Provide technical and legal assistance in the development, implementation and evaluation of school food policies;
2. Review existing tools and, as necessary, develop new tools for:
   a. enabling effective classification of food and enforcement of school nutrition policies, such as a regional nutrient profile model for school food procurement;
   b. advocating to government leaders for strong school food policies;
   c. monitoring the marketing and sale of foods and non-alcoholic beverages, including vending in and around schools;
3. Support countries to build an evidence base on marketing, including regulatory impact assessments; and
4. Enhance technical and legal capacities through in-country workshops, as appropriate, to better develop, implement and evaluate school food policies.
Bi-regional workshop on restricting the marketing of foods and non-alcoholic beverages to children in the Western Pacific and South-East Asia - Kuala Lumpur, Malaysia, 1st - 4th, December 2015

Keywords: FNAB, Children, Marketing

Summary
Marketing plays a powerful role in shaping attitudes towards and encouraging consumption of unhealthy foods and non-alcoholic beverages, particularly among children, who are most susceptible to marketing messages. Evidence shows that marketing increases children’s awareness and preference for brands, purchase request and purchases, and consumption of foods that are often high in fats, sugar and salt. A correlation has been observed between the levels of unhealthy food advertising and the prevalence of overweight. To reduce the impact on children of marketing of foods high in saturated fats, trans-fatty acids, free sugars or salt, the World Health Assembly in May 2010 endorsed a Set of Recommendations on the Marketing of Foods and Non-alcoholic Beverages to Children. The main purpose is to guide efforts by Member States in designing new and/or strengthening existing policies on food marketing communications to children. Since then, numerous global mandates have consistently called for countries to implement the Set of Recommendations with support from WHO; however, progress has been slow. This bi-regional workshop for the Western Pacific and South East Asian Regions was convened to bring together public health officials, regulators, and/or lawyers within ministries of health and other relevant agencies to assess country progress, strengthen capacities across a wide range of technical and legal issues on the implementation of the Set of Recommendations. It was hosted by the Ministry of Health Malaysia, in Kuala Lumpur from 1 to 4 December 2015. The workshop included sessions on each of the 12 recommendations (rationale, exposure and power of marketing, comprehensiveness, clear standards, settings, stakeholders, cross-border issues, enforcement, monitoring, evaluation and research), including presentations, discussions and group work. This was followed by action planning sessions, in which countries identified their stage of implementation of the Set of Recommendations (prepare, enact, implement or monitor), identified barriers and opportunities for implementation, and developed action plans with priority actions in the short- and medium-term. This report summarizes the outcomes of this four-day workshop.

Introduction
Meeting organization
In 2010, the 63rd WHA endorsed the WHO Set of Recommendations on the Marketing of Foods and Non-alcoholic Beverages to Children (Recommendations). Since then, numerous global mandates have consistently called for countries to implement the Recommendations with support from WHO; however, progress has been slow. This bi-regional workshop on restricting the marketing of unhealthy foods and non-alcoholic beverages (FNAB) to children in the Western Pacific (WPR) and South East Asian (SEAR) regions was convened to bring together public health officers, regulators, and/or lawyers within ministries of health and other relevant agencies to assess country progress, strengthen capacities across a wide range of technical and legal issues, and identify next steps for countries and WHO. The event was hosted by the Ministry of Health Malaysia, in Kuala Lumpur from 1 to 4 December 2015.

Meeting objectives
The objectives of the meeting were:
1) To assess country progress in implementing the WHO Set of Recommendations on the Marketing of Food and Non-Alcoholic Beverages to Children;
2) To develop technical and legal capacities for participants on restricting the marketing of FNAB to children;
3) To identify next steps for countries and to recommend support from WHO towards restricting marketing of FNAB to children;
4) To discuss the establishment of a regional network or networks on the marketing of FNAB to children.

Proceedings
Opening session
The workshop was opened by the Honourable Minister of Health of Malaysia, Datuk Seri Dr. S. Subramaniam, and Dr. Graham Perry Harrison, WHO Representative in Malaysia. The WHO Representative highlighted the major role that marketing plays in shaping children’s beliefs that can last a lifetime, the high investment of the food industry on marketing of unhealthy FNAB, and their use of the same tactics for advertising, promotion and sponsorship pioneered by the tobacco and alcohol in-

Session on Recommendation 1 (Rationale)
This session set the scene of the NCD and nutrition situation globally and in the Western Pacific and South East Asian regions, and provided an overview of the WHO Set of Recommendations, as well as existing mandates and regional policy options. NCDs and unhealthy diets are a common modifiable risk factor in both regions. The marketing of FNAB is causing an increasing concern to nutrition and health status. Marketing refers to any form of commercial communication or message that is designed to, or has the effect of, increasing the recognition, appeal and/or consumption of particular products and services. The evidence on the effects of marketing is compelling: marketing increases children’s awareness and preference for brands, purchase request and purchases, and food consumption. Furthermore, a correlation between the levels of unhealthy food advertising and the prevalence of overweight has been observed.

Even though countries endorsed the WHO Set of Recommendations in May 2010, as of 2015 only 27% of WHO Member States had any policies partially implementing the Recommendations. Only one country in the WPR has implemented marketing restrictions through law (Korea). Several reasons for slow implementation have been identified:

a) The recommendations suggest both voluntary and regulatory pathways, but the evidence so far suggests that self-regulation or voluntary measures are not effective.
b) There is a gap in the involvement of the legal sectors, professional and civil society organisations in policy advocacy, development and implementation.
c) The undermining work by industry to oppose efforts by Member States has been obvious.
d) There is the need for tools for countries, as well as for enforcement capacity to progress implementation of existing laws and regulations that have been enacted but not enforced.
e) There is limited awareness on the Recommendations amongst policy-makers, health professionals and the general public.

The 2018 reporting to the UN General Assembly includes implementation of the Set of Recommendations as one of the key indicators for Member States to report on. For Member States to deliver on commitments heads of state made through the UN Declaration on NCDs, it is timely to scale up efforts to implement the Set of Recommendations.

Session on Recommendation 2 (Exposure and Power)

This session addressed the different types of food marketing, which includes three categories: advertising (broadcast, such as TV and radio; print; outdoor; point-of-sale; online, including social media and advergames; and vending machines), promotion (loyalty programmes; free samples; brand stretching in other products including clothing and games; brand sharing; characters; tie-ins; celebrity endorsements) and sponsorships (sports and cultural events; sponsorships in schools, communities, and "science"). All these types of marketing techniques should be restricted on the implementation of the Set of Recommendations.

The discussions highlighted the need for more guidance on how to differentiate when marketing is directed at children. A starting point could be to identify channels targeted at children, children TV-viewing times, and usage of toys. Children are also attracted to marketing directed at adults or at adult viewing times (e.g. family TV shows), and this warrants consideration. The difficulty in restricting all types of marketing was acknowledged. The use of company logos (branding / brand-sharing) was discussed, falling under the promotion category of marketing. Group work discussed the different techniques used for marketing in the country context.

Session on Recommendation 3 (Comprehensiveness)

In this session, five countries (Fiji, Indonesia, Malaysia, Republic of Korea and Thailand) provided updates on their current situation regarding the marketing of FNAB to children, with examples of voluntary and mandatory measures. Malaysia has since 2013 implemented a self-regulatory industry pledge to reduce the marketing to children; the country reported challenges faced such as unreliable self-monitoring by industries, not enough details in the text of the pledge and lack of nutrition criteria/standards, and the status report by industries covering only those companies who signed the pledge. In terms of mandatory approaches, Fiji and Malaysia have drafted new food advertisement regulations, which are under discussion. The Republic of Korea implements since 2008 a law (Special Act) prohibiting sales and advertisement of unhealthy foods to children. The country highlighted the existence of clear and regularly updated standards and the role of civil society and academia to support to establishment and implementation of the regulation as key lessons learned.

The importance of building a political momentum and strong evidence to support restrictions on marketing of FNAB was also acknowledged. Some countries (e.g. Indonesia) mentioned the pressure from food and beverage industries as a key challenge. Presentations were followed by group work, in which country teams assessed their current progress on implementation of Set of Recommendations using a spidergram tool.

Session on Recommendation 4 (Standards)

The session discussed clear standards to restrict the marketing of FNAB to children, mainly regarding age of children to be protected and unhealthy foods to be restricted.

Defining age: the definition should be aligned with existing legal and policy frameworks, e.g. the Convention on the Rights of the Child, Family acts and others. The higher the age set, the higher the coverage and therefore more children are protected. There is growing evidence that adolescents are also affected by marketing, and likely more at risk due to their purchasing power.

Children can also be targeted by focusing on settings where children gather (e.g. schools) and TV programmes at children- and family-viewing times. Different marketing techniques used for the different age groups should also be considered.

Defining unhealthy foods: the draft WHO nutrient profile model for the Western Pacific Region was presented as a tool to classify foods according to their nutritional content, helping identify foods that should be restricted for sales or marketing. It can also be used to set standards for taxation, procurement of food for schools and other public institutions, and for health claims. The process for developing the regional model was also presented, including country field testing and a regional consultation to adapt the European model. Group work invited participants to test the model by classifying sample processed food items provided and determining whether or not they could be marketed. Challenges highlighted included the differences in g/kg, labels not always being clear and the use of licensing characters.

Session on Recommendation 5 (Settings)

This session highlighted the importance of school environments to promote good nutrition. Schools have the crucial roles of educating future generations and of creating health, and are also used to spread unhealthy marketing messages to children. Common in-school marketing approaches include vending machines, posters and signs, ads on buses, school materials/supplies such as notepads, sports uniforms, cups and containers and scholarships. Marketing restrictions of FNAB in school settings should include school premises, but also areas surrounding schools. Country examples from Mongolia and the Philippines highlighted the density of food advertisement around schools, mostly for non-core, unhealthy foods, fast foods, and sugar sweetened beverages; adverts were particularly clustered within the immediate vicinity of schools. Group work discussed a case scenario on sponsorship of school activities by food companies and conflicts of interest.

Participants indicated that such offers come with strings attached and restrict schools’ abilities to create healthy environments for children. Any partnership with companies should have clearly defined conditions, e.g. no branding. Discussions revealed that overall awareness among school principals on childhood obesity and its causes is low in many countries. Also they may not be aware of conflict of interest. Thus, it was suggested that schools would benefit from tools on how to deal with sponsorship offers and actual or perceived conflicts of interest. There was an overall sentiment that governments should invest more in schools to ensure such partnerships are not needed. Companies without conflict of interests (e.g. non-food companies) and civil society organizations were identified as alternative sources of funding.

Session on Recommendation 6 (Stakeholders)

This session discussed the role of stakeholders and industry pledges and other forms of self-regulation. There is virtually no evaluation of voluntary pledges and no evidence that they work, in addition to evidence on non-compliance with such pledges. Industry self-regulation pledges generally considers three components: restrictions on nutritional value of the products marketed; different marketing media; and different marketing tools. Self-regulatory commitments from different organizations, including industry associations, are common practice in several countries, and voluntary industry pledges exist for example in India, Malaysia, Thailand. Some small changes have been observed in marketing practices where voluntary measures are in place, however not substantial; additionally, companies that do not sign the pledges are marketing more heavily. The limited existing research shows that studies funded by the food industry generally have results that are favourable to voluntary schemes, while the opposite is found in independently funded studies. Self-regulation diverts attention from other regulatory approaches. During group work, participants performed a stakeholder mapping, identifying actors from different constituencies and placing them on a stakeholder
map based on their level of interest and influence in implement-
ing the Set of Recommendations. Common stakeholders that were considered to have high levels of influence and interest were the Ministries of Health, Food and Agriculture, and Education, as well as civil society organizations (none specified) and the food and beverage industry. The extent to which such influence is posi-
tive or negative was not discussed in detail.

Session on Recommendation 7 (Regulatory Frameworks)
This session was divided in four major parts:

Law as a tool of NCD prevention: Law should intervene in obesity prevention because obesity is not exclusively a question of personal responsibility. However, laws alone are not sufficient, and should be part of a broader mix of policies. Areas of possi-
ble regulatory intervention include: consumer information, food education in school curricula, marketing restrictions, taxation or other economic measures, product reformulation and limiting product sizes. Laws should be adequately designed and framed to maximize effectiveness and withstand industry challenges, with support from legal experts/lawyers from the start. They should also be based on evidence of their need, and on an independent, in-
dependent and reliable food classification system. Law is context/ country specific, therefore general principles may apply broadly but details must be seen in context. The main constraints to law include: trade restrictions, constitutional arrangements (alloca-
tion of powers between the different levels of government), and fundamental rights (e.g. right to freedom of speech). However, laws alone are not su-
fficient to influence and interest were

Principle of proportionality: Advertising is a tool that allows consumers to be informed and choose between competing brands and products, but since it brings risks to vulnerable groups such as children, reasonable restrictions are necessary for the protec-
tion of health. Nonetheless, measures should not be more restric-
tive than necessary. The principle of proportionality promotes that a balance is needed: a measure must be necessary, and it must not exceed what is required to achieve the objective at hand. Legislators must take into account if equally e

effective alternative

Human Rights and NCD Prevention: Human rights are not only ethical principles, but also legal principles. They have been more commonly invoked by industry operators in the discussion of advertising, e.g. arguing for freedom of (commercial) expres-
sion. However, a paradigm shift is needed: governments can use the rights to health and food, and related human rights instru-
ments such as the International Covenant on Economic Social and Cultural Rights and the Convention on the Rights of the Child, to invoke the need for public health measures.

WTO processes and implications for the marketing of FNAB: The WTO is the central multilateral mechanism governing interna-
tional trade, and through that system WTO members have made commitments to abide by rules in respect to regulation to ensure that trade is (in theory) fair – for example regarding taxation and customs duties. There are also other mechanisms at regional level such as ASEAN and the European Union. There have been no WTO disputes concerning restrictions on marketing of FNAB, but the threat of disputes has been used as a tactic to delay efforts towards more regulation. The core legal principle of proportion-
ality (described above) should be followed, along with the prin-
ciple of non-discrimination: restrictions of marketing must not be discriminatory in their form and effect, and differential treat-
ment of product categories should be based solely on a legitimate regulatory distinction (e.g. nutrient profiling model). If these principles are followed, laws can withstand both national and interna-
tional industry challenges. Outside of the WTO system, a number of other instruments such as state contracts (e.g. con-
tracts to host large sports events with predetermined sponsors) are also relevant for marketing of FNAB. The role of civil society in advocacy and pressure for marketing restrictions should not be underestimated. Countries can also find smart solutions around international trade agreements (e.g. Fiji has not prohibited im-
port of turkey tails, but prohibit their sales).

Session on Recommendations 8 (Cross-Border) and 9 (En-
forcement)
This session focused on enforcement mechanisms with exam-
pies from country and civil society perspectives. The Republic of Korea presented existing monitoring frameworks and related bodies tasked with monitoring. Enforcement is done by central and local governments, and there is budget allocation from cen-
tral to local levels. Consumers can report violations through a complain mechanism online, however most violations are de-
tected by active monitoring. Penalties are imposed for violations. Academia has been involved throughout the process and research has supported enforcement and monitoring.

The civil society perspective indicated their role in raising pub-
lic awareness and ensuring industry compliance. Consumer or-
ganizations can help monitor marketing practices by companies, comparing countries to show that companies have double stand-
ards being applied. Examples of misconduct by companies were presented. CSOs can also support and push for regulatory poli-
cies (e.g. Fiji Consumer Council supporting soda tax) and help counteract industries’ vested interests. The proposal of a Global Convention to Protect and Promote Healthy Diets, similar to the WHO FCTC, was presented. Efforts of civil society need to be amplified through the support of WHO to effectively monitor compliance by industry.

The example of the WHO European Action Network on reduc-
ing marketing pressure on children was also presented. The net-
work is active since 2008, with 28 country members. It is led by Member States, with secretariat in Norway. It is voluntary in na-
ture, and the Set of Recommendations provide their framework for action and guide the topics to be addressed. It has helped with the implementation and monitoring, and the development of tools (e.g. nutrient profile model for Europe). The network is a forum to discuss new challenges and share experiences (e.g. the issue with digital media/marketing), and to keep updated with emerging research. There was discussion on a possible network on restricting the marketing of FNAB across the WPR and SEAR re-
regions, or a network using other channels such as ASEAN. Over-
all, countries supported the idea of a regional network or alliance and that this should be further explored. Malaysia brought up the regional “Alliance for Healthy Cities”, which could serve as an example. The network/ alliance could be led by a WHO Col-
laborating Centre or a resource center. Inter-country networks can also be explored as a first step.

Session on Recommendations 10 (Monitoring), 11 (Evalua-
tion) and 12 (Research)
This session introduced concepts on monitoring to check compliance with the Set of Recommendations, and evaluation to verify effectiveness and impact of measures. To measure ex-
posure and power of marketing, the following should be taken into account: platform (TV, internet, magazines, etc), sampling and time period (representative of the target group), data collection (commercials etc), indicators (frequency, rate, rank by type of advert, type of food, time of advert, techniques, etc). Country experiences with evaluating compliance with the International Code of Marketing of Breast-milk Substitutes can help inform the way forward for the Set of Recommendations. In Malaysia, for example, the Code is not a regulation, but there is a monitor-
ing system with complaint mechanisms, a disciplinary committee that evaluates the complaints and decides penalties for the com-
panies. The country has also hired trained monitors to help with monitoring compliance. This is quite effective for the control of direct marketing, but there are issues with indirect marketing of products. In the Philippines, the Department of Health issued guidelines for monitoring codes of implementation at different...
levels, there is also a website where the general public can report violations, and also strong civil society groups that watch for violations. However, the burden of proof rests on the whistleblowers and there is no legal support for them. In Sri Lanka, industry must provide scientific evidence to prove their claims, but this process takes time. In Bangladesh, monitoring in the field is done on a regular basis (monthly) by a committee. In Fiji, a health impact assessment on the draft regulations on marketing of food and non-alcoholic beverages is currently taking place and will predict the potential health impacts, costs and benefits of the draft regulations on marketing.

Next steps: Action Planning for Implementation

Group work on current status

Participants discussed and identified at which stage of the policy cycle (Figure 1) their country is with regards to implementing the Set of Recommendations. This exercise made clear that the process to implement the set of recommendations is not linear.

Fiji is at the Enact Stage

Group work on prioritization of actions

Participants discussed and prioritized one actionable recommendation, based on the spidergram exercised from Day 1 and the current status of implementation. The majority of countries identified research as a priority action, followed by stakeholder engagement, setting standards and enforcement, and monitoring and evaluation.

Fiji’s Spidergram on Prioritization

Group work on identifying barriers and opportunities for advancing the implementation

Participants identified barriers and opportunities for advancing implementation of the priority actionable recommendation.

Fiji’s worksheet on Barriers and Opportunities

Group work on action planning

Countries drafted an action plan to implement priority recommendation, in the next 12 months.

Fiji’s Action Plan

Closing session

The closing session provided a brief summary of the workshop, and a reminder that no country has yet implemented the Set of Recommendations comprehensively. The world is looking for a champion country to set the example to others, which could be one of the countries that attended the workshop. The Ministry of Health Malaysia thanked all for conducting a successful workshop and reminded countries about the challenges associated with protecting children from marketing, including the pressure from industry. However, with political will and the support of civil society countries can safeguard the health of our future generations by providing supportive environment for children to adopt healthy diets.

Conclusion

The objectives of the Bi-Regional Workshop on Restricting the Marketing of Foods and Non-Alcoholic Beverages to Children in the Western Pacific and South-East Asia were met. With respect to restricting the marketing of foods and non-alcoholic beverages to children, the participants acknowledged:

1. That unhealthy diets – comprised of foods and non-alcoholic beverages high in fat, sugar, and salt (FNAB), which are more readily available, accessible, affordable and attractive than ever – are a prime risk factor for the increasing rates of childhood obesity and non-communicable diseases in both the Western Pacific and the South-East Asia Regions.

2. That children are highly exposed to an array of aggressive marketing techniques, which strongly influence their beliefs, preferences and consumption patterns of FNAB.
3. The importance and urgency of country implementation of the Set of Recommendations.
4. The complexity of the challenges faced by countries, including limited technical and legal capacity, limited human and financial resources, limited public awareness and support, and the vested interests of the_FNAB industry.
5. The existing actions on restricting marketing of FNAB to children in countries at various levels of implementation, which need to be further strengthened.
6. The need to develop enforceable, proportionate, and coherent legal frameworks – including the strengthening of existing frameworks, such as regulations on advertising, child and consumer protection, or school food environments – as well as the essential role of legal officers throughout the process.
7. The need to continue building the evidence base, particularly at country level.
8. The need to build consensus both within and beyond government, through advocacy, evidence-building and other strategies.
9. The need to engage relevant stakeholders where appropriate, and identify champions, while avoiding conflicts of interest.
10. The need to establish clear standards for uniform implementation, including the age of children to be protected, the types of marketing to be restricted, and the types of FNAB to be restricted from marketing, with the use of tools such as the regional WHO nutrient profile model.
11. The need to further explore opportunities for developing regional and/or intercountry networks to address cross-border issues and to facilitate the implementation of the whole Set of Recommendations.
12. The importance of engaging civil society organizations, particularly in the areas of research, advocacy, monitoring and evaluation.
13. That lessons learned from experiences in implementing other global mandates, such as the International Code of Marketing of Breast-milk Substitutes and the WHO Framework Convention on Tobacco Control, may help to inform the process.

Recommendations for Member States

Member States are encouraged to:

1) Undertake policy advocacy to strengthen commitment and action to advance the implementation of the Set of Recommendations comprehensively.
2) Raise awareness on the negative impacts of marketing of food and non-alcoholic beverages (FNAB) to children, and engage in a whole-of-government, whole-of-society approach that encourages the participation of all stakeholders while protecting the public interest and avoiding conflicts of interest, including professional organisations, academia, civil society, and other grassroots organisations.
3) Strengthen civil society organizations to ensure their participation and role on policy advocacy, promoting awareness, generating evidence and supporting monitoring and evaluation.
4) Initiate and facilitate research to assess the extent of exposure and power of marketing of FNAB to children as part of evidence gathering to advocate regulatory action at country level.
5) Develop, strengthen and enforce legal frameworks, as appropriate to national context and need, and engage legal officers throughout to process, to restrict the marketing of FNAB to children.
6) Define clear standards, for example by adapting existing the WHO regional nutrient profile models as appropriate, to determine which foods should be restricted for marketing.
7) Initiate implementation of the priority action identified during the workshop, using the evidence, skills, tools, and other resources made available at the workshop, to advance implementation of the Set of Recommendations at country level.

Recommendations for WHO

WHO is requested to:

1) Provide legal and technical support to countries in the development and implementation of regulatory frameworks to restrict the marketing of foods and non-alcoholic beverages to children (FNAB), engaging other partners as appropriate, including:
   a. Prepare: research and advocacy for stakeholder engagement.
   b. Enact: defining clear standards (e.g. adaptation of existing WHO nutrient profiling models to the country context), mapping of existing legal frameworks, drafting of legal instruments.
   c. Implement: strengthening enforcement mechanisms.
   d. Monitor: supporting the establishment of monitoring and evaluation systems.
2) Share information with Member States on existing evidence and tools, as well as experiences from other countries (e.g. existing laws and regulations).
3) Strengthen national capacities in policy development and implementation, for example through follow-up country-level workshops.
4) Explore mechanisms of networking amongst Member States for information sharing, regional technical cooperation for restricting marketing of FNAB to children, e.g., ASEAN platform.
5) Develop guidance on impact assessment for proposed regulations to restrict the marketing of FNAB to children.

Action Plan for Fiji

Current status: “ENACT” stage in “draft” regulation on marketing is “ENACT” stage in “draft” regulation on marketing is...