The **FJPH**, 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.

**FJPH** is published quarterly.

The format of **FJPH** accommodates three types of submissions:

1. **Original Academic/Scientific Research Papers** - Research-based works addressing a specific area of public health or any other general topic in health - between 3,000 and 4,500 words.
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.

**Submission Procedures**

1. All manuscripts should be prepared according to the guidelines below.
2. The call for submissions and a description of the optional theme can be found in the Health Research web page.
3. All manuscripts should be submitted via the online submissions form on the Research web page.

**Publication Eligibility**

1. For each manuscript, at least one of the authors needs to be an undergraduate, medical, or graduate student at a nationally accredited institution.
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.
4. The primary author is willing and able to work with **FJPH** editors in revising the submission if it is selected as a likely candidate for publication.

**Submission Types**

1. **Original scientific Research - Research** - based works addressing a specific area of public health or any other general topic in health
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 any 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

The views and opinions expressed in **FJPH** do not necessarily reflect those of the Editorial Board, editorial staff, or their support organizations.

**FJPH Contact:** Ministry of Health, Dinem House Level 2, 88 Amy Street Suva.
**Email:** fjph.2018@gmail.com
**Website:** www.health.gov.fj/eJournal

For all enquires, subscriptions to:

The Editorial Team
Ministry of Health & Medical Services, Suva, Fiji
Phone: +679 3306177 Extension 340170
Email: Health-Information@govnet.gov.fj/fjph.2018@gmail.com

**Acid Free Paper:** This Journal has been printed on paper that meets the American National Standard Permanence of Paper for Publications and Documents in Libraries and Archives (ANS/NISO z39.49. 1992(R1997) and the International Standard Information and Documentation – paper for documents – Requirements for Permanence (ISO 9706: 1994).
CONTENTS

EDITORIAL

GUEST EDITOR
• Dr. Rajat Gyneshwar

ORIGINAL RESEARCH
• A review of hand hygiene practices in sub divisional hospital: A case study of Nadi District Hospital
  Tamani L, Tamani T, Gavidi F, Singh Y K, Qereqeretabua W, Hussein N

• Assessing the breastfeeding initiative in Ba Mission Hospital: A compliance assessment with WHO/UNICEF
  ten steps global criteria on breastfeeding hospital initiative (BFHI)
  Tamani L, Tamani T, Bulolu M, Begum A, Pau'u E, Sili I

• Non communicable disease prevention in Fiji: A policy analysis
  Dasi S D

• Community-based initial survey for prevention and control of non-communicable diseases in central Fiji

• Second generation graphic health warnings (GWS)'s for tobacco packaging in Fiji
  Padayachi P, Tukana I, Silatolu A, Ali N, Moadsiri

• A social cultural investigation of the diabetes knowledge, attitude, perceptions and prevalence for indigenous Fijian
  (iTaukei) from the two selected tribes in the western division of Fiji: Issues and challenges.
  L. N T Kuridrani

STRUCTURED ABSTRACTS

• Strengthening tobacco control enforcement in Fiji

• Improving blood sugar levels of 30 years and above in Makolei village through reduction in sugar intake and increase in physical activity
  Salekini V, Veilave P; Silatolu A M

• Reduced proportion of overweight from the age of 20-50 years in Nabalebale village after 5 months intervention
  Tikolbua S, Veilave P; Silatolu A M

• Supporting lifestyle change of adults at risk of diabetes mellitus in Natavarau settlement
  Chand D D, Veilave P 1,2; Silatolu A M

• Awareness and food preparation demonstration assisted in the reduction of salt intake at Naravuka village
  Tabaukuru D M, Veilave P, Silatolu A M
<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empowering workplace partnership in NCD intervention</td>
<td>34</td>
</tr>
<tr>
<td>ChandD D, Veilave P, Silatolu A M</td>
<td></td>
</tr>
<tr>
<td>Controlling prevalence of hypertension at Naiyaca village</td>
<td>35</td>
</tr>
<tr>
<td>Naisei L, Veilave P, Ligairi J</td>
<td></td>
</tr>
<tr>
<td>Addressing salt intake behaviour in Naduri</td>
<td>36</td>
</tr>
<tr>
<td>Ratule L M, Veilave P, Ligairi J</td>
<td></td>
</tr>
<tr>
<td>Reduction of salt intake in Sawanikula village</td>
<td>37</td>
</tr>
<tr>
<td>Qiovula K, Veilave P, Ligairi J</td>
<td></td>
</tr>
<tr>
<td>Reduction in incidence of hypertension in a community based intervention</td>
<td>38</td>
</tr>
<tr>
<td>Datt P, Veilave P, Silatolu A M</td>
<td></td>
</tr>
<tr>
<td>Salt reduction in Valeni village</td>
<td>39</td>
</tr>
<tr>
<td>Nakanacagi U, Veilave P, Ligairi J</td>
<td></td>
</tr>
<tr>
<td>Blood pressure level drops with local intervention</td>
<td>40</td>
</tr>
<tr>
<td>Narokolevu R S, Veilave P, Silatolu A M</td>
<td></td>
</tr>
<tr>
<td>LITERATURE REVIEW</td>
<td>41</td>
</tr>
<tr>
<td>Prevalence of obesity in Fiji: A literature review</td>
<td></td>
</tr>
<tr>
<td>Singh K, Sendlafi M, Phil Crane</td>
<td></td>
</tr>
<tr>
<td>PERSPECTIVE</td>
<td>48</td>
</tr>
<tr>
<td>A journey of survival - Fiji's public health journey towards wellness</td>
<td></td>
</tr>
<tr>
<td>Veilave P, Ligairi J, Silatolu A M, Tukana I</td>
<td></td>
</tr>
<tr>
<td>A healthy smile reflects the wellness within you</td>
<td>50</td>
</tr>
<tr>
<td>Loga N, Silatolu A, Lal J, Tukana I</td>
<td></td>
</tr>
<tr>
<td>FIELD REPORT</td>
<td>52</td>
</tr>
<tr>
<td>Population lifestyle (7d) project in schools - planning meeting technical report</td>
<td></td>
</tr>
<tr>
<td>Veilave P, Padayachi P, Silatolu A M, Tukana I</td>
<td></td>
</tr>
<tr>
<td>Situation analysis of PEN Fiji: A review of PEN implementation in Fiji's selected health facilities</td>
<td>55</td>
</tr>
<tr>
<td>Ligairi J, Silatolu A M, Padayachi P, Tukana I</td>
<td></td>
</tr>
<tr>
<td>Assessment of decentralized laboratory service targeted for NCD's in Fiji - A facility based survey summary report</td>
<td>59</td>
</tr>
<tr>
<td>Ligairi J, Padayachi P, Silatolu A M, Tukana I</td>
<td></td>
</tr>
<tr>
<td>Diabetes and Fiji: A retrospective descriptive analysis of diabetes related admissions and mortality in Fiji's hospitals between 2006 -2015</td>
<td>61</td>
</tr>
<tr>
<td>Ligairi J, Veilave P, Silatolu A M, Tukana I</td>
<td></td>
</tr>
<tr>
<td>NCD related deaths between 2012 - 2014: A retrospective descriptive study</td>
<td>64</td>
</tr>
<tr>
<td>Ligairi J, Silatolu A M, Tukana I</td>
<td></td>
</tr>
</tbody>
</table>
I was invited to be a guest editor in this volume of the FJPH due to my interest in health promotion, a key strategy to combat the emergence of non-communicable diseases (NCD) as the major contributor to morbidity and mortality in Fiji.

As someone who first practiced as a doctor in Fiji in the early 1970’s I have seen many changes in the health sector. In the 1970’s the sub divisional hospital was the hub from which services reached out to health centers and nursing stations. Even though there were no mobile phones or lap tops or other electronic data storage the health information system was reliable and there were detailed population and health data available.

Fiji’s health indicators such as immunization rates were some of the best internationally. Tuberculosis, leprosy and filariasis were major public health priorities. NCDs were uncommon amongst the iTaukei and an emerging threat for FIDs. However, health observers such as Cassidy, Zimmet, Taylor and Parshu Ram in the 1960’s began to raise concern about the increasing rates of NCDs as a major health threat.

When Alma Ata and the Ottawa Charter were declared Fiji was performing well as far as health indicators were concerned. However, the population of Fiji then was about half of what it is now. Fiji was emerging as an independent nation. There was a policy of localizing leadership in government departments.

Funding towards health promotion activities was affected in the early 1990’s and impacted on the health program. After being a lifelong clinician I am persuaded that the current health challenges in Fiji requires a strong Public Health response.

This edition of the journal presents a nice blend of original research, literature review, abstracts, perspectives and field reports. Both articles by Tamani et al identify major issues with service delivery and the need for strong “Continuous Quality Improvement processes in all sections of health care.

The article on Social Cultural Investigation of the Diabetes Knowledge, Attitude, Perceptions and Prevalence for Indigenous Fijian highlight the importance of understanding, recognizing and valuing cultural beliefs, indigenous knowledge and perceptions of diabetes in developing responsive strategies for prevention and control. The NCD Risks surveys conducted in Fiji in 2002, 2011 and others recently identify obesity as a major life style risk factor for the community.

The problem starts in childhood and women seem to be affected more.

The Health Promoting Schools initiative appears to be a good initiative but it requires monitoring and evaluation.

Laboratory support services are essential for both curative and preventative health; unfortunately essential laboratory tests are not readily available to many citizens of Fiji. This together with unreliable supply of essential drugs is a major challenge in managing patients with disease let alone screening for those at risk of disease. The PEN tool appears to be of promise but requires evaluation for its utility.

The contributors to this edition of the Fiji Public Health Journal need to be congratulated for focusing our attention to some key issues which require attention as we combat NCDs.
A review of hand hygiene practices in sub divisional hospital: A case study of Nadi district hospital

**Keywords:** Hand hygiene practices, Hand wash

**Introduction**

The efficacy of hand disinfection in reducing nosocomial infections was initially demonstrated by Semmelweis in 1847 (Pittet D, Boyce JM, 2001; Semmelweis IP, 1941). Adherence to hand hygiene recommendations is the single most important and cost-effective practice of preventing the transmission of infection, reducing the incidence of healthcare associated infections (HAIs), and directly contributes to patient safety (Pittet D, Allegranzi B, Sut H, et al., 2006; Boyce JM, Pittet D, 2002). Despite published guidelines from national and international infection prevention and control organizations emphasizing the importance of hand hygiene (Boyce JM, Pittet D, 2002; WHO, 2000) and specific promotional campaigns (Pittet D, Hugonnet S, Harbarth S, et al., 2000), healthcare providers’ adherence to hand hygiene remains suboptimal (Larson E, Kreutzer EK, 1995; Pittet D, Mourogu P, Perneger TV, 1999). A 2000 report suggested that the incidence of hospital-acquired infection in the hospital could potentially be reduced by 15% if hand hygiene recommendations were followed as part of the National Health Standards national plan (Comptroller and Auditor General, 2000; NPSA, 2004).

Hand hygiene is a new vocabulary used in the healthcare to emphasize the role an organizational hand hygiene program has in preventing healthcare-associated infections (HAIs) and it replaces the narrow term “hand washing.” Hand hygiene includes hand washing, hand antisepsis and actions taken to maintain healthy hands and fingernails and is necessary before and after doing any procedure or in between the contacts of two clients. Moreover, good infection control practices and procedures in place will not only lower the cost of health care facilities but also protect the community from the infections which may occur from health care facilities (Rotter M., 2004; Simmon B, Bryant J, Neiman K, et al., 1990). Therefore, everyone who is present at the health care facility is potentially at the risk of getting infections, not only the doctors and nurses, who have direct contact with clients, but also those who sterilize instrument, cleaning and disposing medical wastes are also at the equal risk. Ultimately, prevention and management of infection are the primary duty of all staff working in health and social care plus an inbuilt element of patient safety plans.

As for this study, the Infection Prevention Control Officer (IPCO) of Nadi District Hospital, argues that hand hygiene is still a major concern in the facility despite efforts to improve it still remains an ongoing challenge. This study specifically looks at the infection prevention policies and procedures in place at Nadi District Hospital facility focusing on ‘Hand Hygiene’. This study was carried out using both the mixed approach of qualitative and quantitative analysis to highlight the key thematic issues on the need and future challenges of this subject.

**Specific Objectives**

The purpose of this paper is to identify and document the existence of appropriate infection prevention policies and procedures on hand hygiene at Nadi District Hospital facility specifically focusing on the followings:

i. To determine the existence and the availability of appropriate infection prevention policies and procedures in the facility

ii. To determine the availability and the provision of the supplies required under the infection prevention policies and procedures to the staff for safety purposes.

iii. To determine and discuss staff’s knowledge on hand hygiene practice and its importance in providing healthcare in the facility.

iv. To assess and observe staff compliance and adherence to proper infection prevention practices in the facility

**Methods**

This study employed both the qualitative and quantitative study methods to capture the data required for the above specific objectives. This includes brief reviews of studies on hand hygiene, semi-structured questionnaires and in-depth face to face interviews of key informants on knowledge and observations of staff for compliance and adherence to the required infection prevention practices by WHO. Furthermore, data collected were acquired from the selected health personnel’s from the following units/wards in the health facility: Outpatients Unit, Emergency Unit, Children’s Ward, Women’s Ward, Men’s Ward, Maternity Unit, Paying Ward & CCU, IMCI Unit and the Kitchen Unit. Approval for this study was granted by the Sub Divisional Medical Officer (SDMO) of the hospital with the full support of the Infection Prevention Control Officer (IPCO).

**Interview & Observation**

As for the in-depth face to face interviews, four (4) staffroom each unit were conveniently selected and interviewed using the structured questionnaire in order to assess staff knowledge and practices on hand hygiene. A separate questionnaire was developed and used to interview the Infection Prevention Control Officer (IPCO) for in-depth information on hand hygiene policies and guidelines reinforced in the hospital. A direct observation was also randomly conducted on four (4) healthcare staff selected from the nine (9) working units identified above and were closely observed during the performance of their duties for assessment of compliance and adherence. In total, 36 health staffs were undergone the observation supported by a structured checklist. All data collected were cleaned and analyzed using Microsoft excel software.

**Results**

**Ward/ Unit Observation**

From the observations of the nine (9) wards the following results were compiled and documented: all the nine units had no excess to liquid soap at all the hand washing sinks; 33% have dispensers while 67% do not have the dispensers; 100% do not have access to paper towels/paper towel dispensers for hand hygiene/drying; 100% had no wall mounted pump dispenser hand creams; 100% availability of hand wash sinks; 67% hand wash sinks were free from in-appropriate items whilst 33% were not; 56% had hand wash sinks dedicated for hand washing whereas 4 (44%) were used for other purposes; 67% had sufficient numbers of hand wash sinks in accordance with National and Local Guidance; 89% had easily accessible sinks; 67% have clean and in-tact hand washing facilities; 33% have appropriate temperature control to provide suitable hand wash water, while 67% have normal tap water; 56% of the units had clean hand washing sinks in the
toilets, 22% do not have clean sinks while the other 22% do not have toilets in their units; 100% of the units with toilets do not have access to liquid hand soaps and paper towels; 0% of the units with toilets have a foot operated waste disposal bins; 77.7% units have visible hand hygiene promoting posters; 100% of the units do not have access to alcohol hand rub gels; 67% of the staffs wear accessories on duty; and 100% compliance on hygiene practices before and during meal preparation and serving.

In the overall units observation feedbacks on availability of facilities that reduces the risk of cross infections, the following percentage (%) of compliance in accordance to standard were documented: children’s ward 42%; Kitchen 45%; GOPD 26.3%, CCU & Paying ward 15%, A&E 31.5%, IMCI 47%, PNW 31.5%, Women’s ward 47.3%, and Men’s ward 47.3%.

Staff Knowledge & Practices on Hand Hygiene

Of the total 36 staffs interviewed from the nine (9) Units; three were kitchen staff, I was an allied health staff, 2 were medical officers, 2 were ward assistants, and 28 were nurses. Feedbacks on training on proper hand hygiene practices, 89% interviewed have completed training on hand hygiene while only 11% have not attended any hand hygiene training. On the availability of items used for hand washing, 11% mentioned that nothing is available for hand washing; 11% brings their own hand sanitizer; while the remaining 78% use what is supplied to the wards/units for hand washing. Commonly used items by the staff are dishwashing paste, washing soap and medicare soap. Of the total staff interviewed, 11% use greenish dirty water from the tap that is available for hand washing.

As for hand drying, a total of 75% mentioned that pillow case and hand towels are the common available items used for hand drying while the other 25% use other items that are still not applicable for hand drying.

As for the hand hygiene challenges faced by staff on a daily basis, 86% mentioned the inadequate supply of proper hand hygiene materials for hand washing and hand drying, 8% mentioned the lack of time to wash hands while attending to patients, and the other 6% mentioned the lack of knowledge and lack of finance to but items required. In addition to the challenges faced were some concerns on the lack of appropriate equipment, lack of time due to staff and patient ratio, lack of knowledge on hand hygiene, poor staff attitude, auditing tool not up-to-date, and allergies to available products.

From the direct observation and the observation checklist used to measure compliance on 5 Moments of Hand Hygiene shows that 50% of staff observed do perform hand hygiene practices before contact with patient while 44% do not, 67% do take time to practice hand hygiene after performing any clinical procedure while 33% of the staffs do not, 56% of the staffs do practice hand hygiene before performing an aseptic task while 33% do not, 64% do practice hand hygiene when in contact with blood or body fluids while 25% do not, and 44% do practice hand hygiene while moving from a contaminated body site to a clean site during patient care while the other 44% do not. The other remaining proportion do not practice hand hygiene with a minor proportion that it is not applicable in their areas of work. As for food handling in the facility, only 17% of the staff observed do take initiative to wash their hands before food handling while 50% do not and 33% that it is not applicable in their work units like the A&E and IMCI Units. On the compliance of staff to hand hygiene after removal of hand gloves, 31% of the staffs do wash their hands after removal of hand gloves while 69% do not. Overall, only 47% of the staff interviewed are compliance with hand hygiene practices while in the wards.

Discussion

The main purpose of washing hands is to clean the hands of pathogens and chemicals which can cause infection. According to studies conducted by health care workers (Dubbert PM, Dolce J, Richter W.et al., 1990; Simmons B, Bryant J, Neiman K, et al., 1990; McLane C, Chenelly S, Sylwestrak M, Kirchhoff KT., 1983), the average of adherence to hand hygiene recommendations is estimated to be below 50% and it further states that the higher the workload the lower the compliance. Similar trend can also be seen in this case study. Thorough observations conducted in the nine (9) units/wards to determine and measure the accessibility of staffs to proper hand hygiene equipment’s, shows that none of the units met the standard to support Hand Hygiene Practices. Therefore, accessibility of staffs to proper hand hygiene equipment’s and adherence with hand hygiene in Nadi Hospital is really ‘poor’ and needs urgent
intervention. Even though 89% of the staff interviewed have completed the required training on hand hygiene during their years of service, the overall results show that staff compliance and accessibility to proper hygiene while attending to patients is relatively poor. The hospital IPCO also revealed that majority of the staff are not practicing proper hand hygiene especially the five (5) Moments of Hand Hygiene recommended by WHO (Guidance for nursing staff, 2012) because of the unavailability of proper hand hygiene equipment's due to lack of funds, the lack of staff knowledge on the importance of practicing hand hygiene, and poor staff attitude on the need.

According to UNICEF, practicing the 5 Moments of Hand Hygiene can save more lives than any single vaccine or medical intervention, cutting deaths from diarrhea by almost half and deaths from acute respiratory infection by almost one quarter (The State of the World’s Children, 2008) For this study at Nadi Hospital, the results shows very poor staff adherence and compliance to the five (5) moments of hand hygiene recommended and this is mainly due to lack of interest and awareness by both management and staff in the practicing of hand hygiene guidelines. This lack of interest is also attributed to the lack of support on the required resources from the divisional and central offices.

In essence, the paper is hoping to highlight that it is imperative to recognize that the hands of any health care staff will always carry bacteria, be it their own bacteria or those that have attached as a result of activities (handling equipment, touching surfaces or patients). However, transmission of these harmful bacteria can be reduced significantly through good hand hygiene practices. While it is not possible to perform hand hygiene on every occasions during working hours in the day or night, there are a number of occasions when hand hygiene is specifically recommended to guide staff in best practice. One of the framework exist to guide staff decision-making on when to perform hand hygiene, include the WHO Five Moments for hand hygiene (WHO, 2013).

Conclusion
In conclusion, hand hygiene is critical in controlling hospital-acquired infection in scarce health resource settings. It is also one of the cost-effective and best recommended practices of slowing the spread of infection and protecting one’s health. However, in this study at Nadi Hospital, the high percentage on lack of knowledge and non-compliance can be argued that it is due no policy documents on hand hygiene in place and also the lack of ongoing awareness training for staff on hand hygiene. Notably is the lack of commitment from management on funding to support the need for proper equipment’s and adequate consumables for staff to practice what is required under the policy. Finally is the lack of motivating factors for staff to take responsibility and ownership to comply and adhere to the hand hygiene guidelines. These are the challenges faced by Nadi Hospital and other similar health settings on hand hygiene practice and the study is recommending to be considered with some priority in the agenda.

References
Boyce JM, Pittet D. Guideline for hand hygiene in health-care settings: Recommendations of the healthcare infection control practices advisory committee and the HICPAC/SHEA/APIC/IDSA hand hygiene task force. MMWR 2002; 51:1-47.


Essential practice for infection prevention and control Guidance for nursing staff. Royal College of Nursing 20 Cavendish Square London W1G ORN, January 2012.


Semmelweis IP. The etiology, the concept and the prophylaxis of childbed fever. In: Murphy FR, editor. Medical Classics. 1941. p. 350-73.


Assessing the breastfeeding initiative in Ba Mission Hospital: A compliance assessment with WHO/UNICEF ten steps global criteria on breast feeding hospital initiative (BFHI)

Tamani L1, Tamani T2, Bulou M3, Begum A4, Pau'u E1, Sili I1

Keywords: Breastfeeding, Breast feeding Hospital Initiative, Compliance Assessment

Introduction
Breastfeeding, the Golden Standard to Infant Feeding provides ideal nutrition for infants and contributes to their healthy growth and development. It reduces incidence and severity of infectious diseases, thereby lowering infant morbidity and mortality. It also contributes to women’s health by reducing the risk of breast and ovarian cancer, and by increasing the spacing between pregnancies. Furthermore, breastfeeding provides social and economic benefits to the family and the nation and provides mothers with a sense of satisfaction when successfully carried out (Greiner Ted, 2000). The move to globally create awareness on the importance of Breastfeeding started way back in 1990 when UNICEF and World Health Organization (WHO), adopted the “Declaration on the Protection, Promotion and Support for Breastfeeding. This Baby Friendly Hospital Initiative (BFHI) has been, without doubt, the most important and powerful step ever taken on behalf of breastfeeding (Greiner Ted, 2000; UNICEF, MOH Fiji, 2002). 2610 hospitals having been designated in 156 countries around the world including Fiji (WHO, UNICEF, 2009). The BFHI in Fiji is a Continuous Quality Improvement process it is one of those programs that has a well-defined monitoring and evaluation component in terms of public health. UNICEF acknowledges that “mothers own experiences are the best measure of effective support for breastfeeding” (WHO, UNICEF, 2009).

Background
Ba Methodist Mission Hospital commonly referred to as Ba Mission Hospital (BMH) is a Level 1 Sub divisional hospital catering for more than 58,000 total population of the Ba medical subdivision. The total Child Bearing Age (CBA) in the medical sub division is 12,913 (I-tukeni Fijian – 3534; Indo-Fijians – 9238, and Other Fijians – 141), which accounts for 22.3% of the total population. Ba Mission Hospital is a 55 bed hospital and was established in 1926 by Methodist missionaries. It has a total of six wards (i.e. men's, children's, women's, ante-natal, post natal and outpatient unit). There are 50 clinical staffs in the facility that deals directly with approximately 420 plus breastfeeding mothers that go through the antenatal clinic every quarter. It has a twelve bed maternity services offering Antenatal clinic, antenatal ward and post natal ward services and labour and delivery services. The hospital had embarked on the BFHI program, and in 2006 it was declared a Baby Friendly Hospital. The second reassessment was carried out in 2009; unfortunately the hospital was stripped off this award for failing to pass the assessment criteria for a Baby friendly hospital.

Objectives
The purpose of this study is to document the outcome of the external assessment done on the Ba mission hospital to verify its compliance to the WHO requirements of the successful declaration and awarding of a baby friendly hospital. The aim of this study is to explore, discuss and evaluate the Baby Friendly Hospital Initiative (BFHI) activities at the Ba Mission Hospital, specifically focusing on the following objectives: i. To observe, assess and discuss the compliance of the Ba Mission Hospital to the Baby Friendly Hospital Initiative Policy. ii. To assess compliance to the ten steps of successful breastfeeding using the global criteria and self-appraisal Tool iii. To assess compliance to the three extra requirements to the breastfeeding policy; namely the a) code compliance, b) mother friendly, and c) HIV infant feeding. iv. To make recommendations for the way forward for the successful implementation of the BFHI initiative in the Ba hospital.

Methods
This study employed both the qualitative and quantitative study tools to capture the data needed. The data collection tool includes brief reviews of documents and studies on breastfeeding initiative, semi structured questionnaires using the global criteria, were general observations to gauge the knowledge and attitude of staff for compliance and adherence to the requirement of successful breastfeeding. Data source includes birth register, ante-natal folders, post-natal folder; ante-natal and post-natal clinic registers, postnatal discharge register and WHO/UNICEF global criteria on BFHI etc. It is also important to note that the post-natal women and 10 clinical staff were randomly selected and interviewed. Approval for this study was granted by the Sub Divisional Medical Officer (SDMO) of the hospital and signed consent forms for the participants on the purpose of study. Data collected were cleaned and analyzed using the Microsoft Excel software.

Results and Discussions
The results for this study will be presented based on the assessment carried out on breastfeeding initiative at Ba Mission Hospital against the WHO/UNICEF ten (10) steps Global Criteria on BFHI. In STEP 1, BMH has a Breastfeeding Policy: it covers all topics adequately, and is displayed in all three languages (Fijian/Hindi/English), however the policy is not displayed in the post natal ward. In STEP 2, of the 49 staff only 73% (6 MOs, 34 nurses, and 1 Dietician) have been trained either on the 18hrs or 20hrs breastfeeding course. In STEP 3 (Inform all pregnant women about benefits and management of breastfeeding), 93% of the mothers attending the antenatal clinic had previously attended breastfeeding lectures and only 7% have not attended any lectures. In assessing breastfeeding practices knowledge, 100% of the mothers understand exclusive breastfeeding although more works to be done for mothers to better understand its importance in sustaining breastfeeding. However, with a random check of 30 ANC folders with gestation of 32weeks and above, shows that 20 of the 30 women have attended lectures whereas 10 have not, therefore 66% of women have attended lectures on breastfeeding. In STEP 4 (Help mothers initiate breastfeeding within half an hour of birth), study shows that 100% mothers had skin-to-skin contact with their babies in which 90% of the mothers initiated skin-to-skin contact less than 5minutes after birth while the other 10% stating their babies were given to them more than 5minutes after birth. However in the document review of 20 folders that were randomly picked and assessed for Skin to skin contact and initiation of breastfeeding from Jan 2015 to April 2015, reveals that skin-to-skin happened in all 20cases but the length of the process varies. Only 25% of the cases completed the 1hour recommended for skin-to-skin whereas 35% was less than 1hour. The remaining 40% documented the start of the process but did not document the ending time. In STEP 5 (Show mothers how to breastfeed & how to maintain lactation), while some mothers

1 College of Medicine, Nursing & Health Sciences, Fiji National University
2 Ministry of Health and Medical Services, Suva, Fiji
3 Address for correspondence: lebua.tamani@fnu.ac.fj

Volume 6, Issue 1, 2017
may breastfeed successfully without our help, there are still others, particularly first time mothers who do need our help. Of the 40 ante natal and post natal women interviewed, 67% were able to remember 4 or more points on position and attachment while 33% either could not remember or did not get the message clearly during the lectures or had not attended the breastfeeding lectures yet. Regarding the seven staff interviewed were rated well with their demonstration of the skill of positioning and attachment meaning they were able to mention about half of the eight key points. However, BFHI criteria requires 80% of mothers and staff to confidently demonstrate correct positioning and attachment therefore, BMH fail in the step 5 requirements due to only 67% and 70% of mothers and staff correctly demonstrate the skill respectively. On the knowledge of hand expression of breastmilk to demonstrate the effectiveness of awareness and education, BFHI criteria requires 80% of mothers and staff to demonstrate or describe correct technique of expressing breastmilk, however BMH did not meet the requirements again in this area. In STEP 6 (give newborn infants no food or drink other than breastmilk), after reviewing the discharge register, shows that BMH meet the requirements as 100% of mothers are well documented stating that only breastmilk was given to babies. In STEP 7 (practice rooming-in allowing mothers & infants remain together – 24hrs), BMH meet the requirements as 100% of mothers and babies are roomed-in at all times and separation is justified. In STEP 8 (encourage breastfeeding on demand), BMH did meet the requirements as 100% of mothers breastfeed whenever baby wants. In STEP 9 (give no artificial teats or pacifiers to breastfeeding infants), BMH did meet the requirements as 100% of mothers breastfeed and there is no use or sign of bottle and dummies observed. In the last step, STEP 10 (foster the establishment of breastfeeding support groups), mothers indicated that they would rather see a medical personnel in regards to breastfeeding problem rather than anyone in the community. In addition, BMH did meet the requirements as 80% of mothers were advised on where to get help if they needed it.

Additionally, there were three (3) extra components to the Breastfeeding Policy: Code Compliance (BMH-57%), despite successfully achieving the ten steps to successful breastfeeding; it failed to achieve the BFHI award due to the hospitals acceptance of a donation by Nestle in the upgrading of its Outpatient and CCU units. This has breached the International Code of Marketing of Breast milk Substitute which is also part of the BFHI Reassessment Criteria. Mother Friendly (BMH-46%) and HIV Infant Feeding (BMH-80%), introduced after the review in 2005 and BMH passed only one component.

**Overall Rating of the Ten Steps to Successful Breastfeeding (BMH)**

In summary, for a hospital facility to be designated as Baby Friendly Hospital, according to the Global Criteria, the hospital facility shall fulfill all the ten steps requirements with a minimum score of 80%. The study finding on the overall rating clearly shows that Ba Mission Hospital did not qualify to be designated as Baby Friendly Hospital as the score was 78%. The score may look promising but the study findings shows a lot of areas in the ten steps that requires total commitment and ownership from both the management and staff in the hospital towards meeting the global criteria of the Breast Feeding Hospital Initiative programme.

**Limitations**

Few obstacles were faced during this study survey; (i) not enough post-natal mothers interviewed, (ii) unavailability of some records due to poor documentation, and (iii) the reluctance from some staff to be part of the survey. However, the study was designed and conducted in such a manner to meet and capture quality data and information on the study’s subject of interest.

**Conclusion**

In conclusion, the study shows that Ba Mission Hospital has not fully complied with the requirements of the Baby Friendly Hospital Initiative. In spite of the availability of a Breastfeeding Policy in the hospital, not all practices warranted by the policy is followed, therefore it failed to meet the overall 80% required by the global criteria of a BFHI. BFHI is a well-defined program with international recognized monitoring tools that can be utilized by the hospital and the ministry of Health to improve the quality of care between a mother and the child. Therefore, to meet the global criteria and regain the status of being a baby friendly hospital Ba Methodist Mission Hospital will require the full commitment of management and staff in the hospital to improve in the compliance and scoring in Step 1, 2, 4, 5, as well as the extra components of the policy on the code compliance, mother friendly care and HIV infant feeding.

**References**


UNICEF, MOH Fiji (2002): Implementing the Baby Friendly Hospital Initiative Best Practice Standards.


---

**Table 1: Summarizes all the scores from each of the Ten Steps to Successful Breastfeeding**

<table>
<thead>
<tr>
<th>Step</th>
<th>Global Criteria %</th>
<th>BMH %</th>
<th>Pass/Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100%</td>
<td>87%</td>
<td>Fail</td>
</tr>
<tr>
<td>2</td>
<td>80%</td>
<td>75%</td>
<td>Fail</td>
</tr>
<tr>
<td>3</td>
<td>80%</td>
<td>80%</td>
<td>Pass</td>
</tr>
<tr>
<td>4</td>
<td>80%</td>
<td>46%</td>
<td>Fail</td>
</tr>
<tr>
<td>5</td>
<td>80%</td>
<td>64%</td>
<td>Fail</td>
</tr>
<tr>
<td>6</td>
<td>80%</td>
<td>100%</td>
<td>Pass</td>
</tr>
<tr>
<td>7</td>
<td>80%</td>
<td>100%</td>
<td>Pass</td>
</tr>
<tr>
<td>8</td>
<td>80%</td>
<td>100%</td>
<td>Pass</td>
</tr>
<tr>
<td>9</td>
<td>80%</td>
<td>100%</td>
<td>Pass</td>
</tr>
<tr>
<td>10</td>
<td>80%</td>
<td>100%</td>
<td>Pass</td>
</tr>
<tr>
<td>Code Compliance</td>
<td>80%</td>
<td>57%</td>
<td>Fail</td>
</tr>
<tr>
<td>Mother Friendly care</td>
<td>80%</td>
<td>46%</td>
<td>Fail</td>
</tr>
</tbody>
</table>
Non communicable disease prevention in Fiji: A policy analysis

Dosi S D 1*

Keywords: Non Communicable Disease, Policy Analysis, NCD Prevention, Fiji

Abstract
Non communicable diseases (NCD) are a huge burden on the Fijian health care, which threatens to erode the health budget, deplete health resources and overwhelm health professionals. The continual rise of NCD requires that policies are developed by countries to ensure that the progress to reduce NCD burden is in progress. Especially in developing countries like Fiji, where there are low resources, prevention of NCD is more cost effective than treating the complications. And therefore, policies are important to ensure that preventative strategies are in place to control risk factors which cause NCDs. In this document, policy analysis will attempt to determine whether the National NCD plan 2015-2019 was addressing the goals, objectives and actions in the prevention of NCDs by using the WHO Global Action Plan 2013-2020. Results show that in general the prevention of NCDs and their risk factors were well addressed and policies were aligned to the WHO Global Action Plan. The objectives were compared with the Fijian plan and they appear to be similar. The challenges include the fact that NCD prevention is primarily focused on diet and lifestyle changes which needs strong community advocacy and participation. Monitoring and evaluation has to be strengthened at all levels. Screening for NCDs should be targeting high risk groups. Research should be encouraged as it directs health interventions to areas where health inequity exists. The costs of treating NCDs is far less than the cost of treating the complications of NCDs. The Fijian Ministry of Health cannot work alone in the prevention of NCDs. It needs to cooperate work together with all stakeholders in order to achieve the targets set out by 25x25 goals which strive to reduce 25% of deaths from premature NCD mortality by 2025.

Introduction
Non Communicable Diseases (NCD) cases are increasing exponentially on a global scale. All countries are showing a rise in trend of NCD in the past 30 years, and this is particularly more in middle income and low income countries. (Di Cesare, M., Khang, Y. H., et al 2013) In 2012, there were 38 million deaths caused by NCD and three quarters of these were in low and middle income countries, and 48% of these deaths occurred before the age of 70. (WHO, 2014)

The costs of NCD are tremendous and can potentially drain health care sources. In particular Pacific Islanders are very vulnerable as climate change and urbanization have affected their traditional lifestyle and thus they have one of the highest rates of NCD in the world. These countries resort to prevention of NCDs as treatment of complications is very expensive and often results in unfavorable outcomes such as disability and death. In addition, NCDs such as Diabetes and hypertension cause major morbidities like heart diseases, stroke, blindness, amputation of lower limbs and kidney diseases. And they give rise to premature mortality. (Chan, J. C., Cho, N. H., et al 2014).

This paper focused on the analysis of a national health promotion policy in Fiji. The central aim of the analysis was to examine the contents, objectives and the strategies of the NCD Strategic Plan 2015-2019. The plan emphasizes three risk factors that accounts for most of the NCDs, namely, high body mass index, dietary risks and high blood sugars. These have been identified to be the leading cause of mortality such as ischemic heart Disease, Diabetes Mellitus and cerebrovascular disease. The plan includes the social, economic, and political determinants of disease and was therefore used in the policy analysis.

The policy analysis particularly focused on the goals and targets which include reduction of premature mortality, reduction salt intake, reduction in hypertension, increasing physical activity, maintaining good control of hypertension and diabetes and by increasing fruit and vegetable intake in the population.

The NCD framework 2015 to 2019 Fiji was analyzed using WHO framework- Global NCD Action Plan 2013-2020, endorsed by the World Health assembly in May 2013 and is known as “25x25” strategy with a target of a 25% relative reduction in NCD mortality by 2025, (Beaghele, R., Bonita, R., & Horton, R 2013). The plan has 6 objectives, 9 voluntary global targets and 25 indicators. Out of the nine (9) targets, two are all inclusive; these are to reduce mortality from NCDs, and to ‘halt the rise in diabetes and obesity’. The other seven are more focused, including reduced alcohol consumption, increased physical activity, reduced dietary salt, reduced smoking, improvement in blood pressure control, and appropriate treatment of those at risk from the major NCDs. (WHO, 2013)

The objective of this study was to analyze the contents of the NCD policy using the WHO Global action plan 2013-2020, Identify strengths and weaknesses in the policy which can be utilized in future policies, this includes partnership of actors and the approaches to tackle NCD which will be presented to the Fijian Ministry of Health in order to improve subsequent policies in the future.

Background
Fiji is a multi-ethnic society (Melanesian 57%, Indian 38%) of 827,900 people, (FIBS 2007). The population is relatively young with 48% of Fijians under the age of 24 years, (FIBS, 2008) 51% of whom are indigenous Fijians and 44% comprise of Fijians of Indian origin. Although all citizens of Fiji are recognized as Fijians, for the purpose of this report, native Fijians will be referred to as Fijians and Fijians of Asian Indian descent will be referred to as Indians.

Food patterns
The traditional native Fijian was a hunter, a farmer and relied on traditional root crops, and fish. Meat was available by hunting, usually of wild boar in the jungles, and sea food was abundant in fresh waters as well as the ocean. Food preparation methods were very simple. All food was cooked in stone earthen pits. Basically a pit was dug and stones were placed in it which would cook the food and took a few hours. With the arrival of British and Indians, food patterns were drastically changed. Introduction of fast food which incorporated salt, sugar, and fat was influenced by the British whereas Indians introduced deep frying and preservation methods which used a lot of salt, (Whitney S. 2003). Recent visits to Fijian villages are reminiscent of the changes, for example a breakfast will consist of bread, butter, jam, fried eggs, black tea and roti curry for lunch parcels for children. (Wate, J. T., Snowdon, W., 2013).

Mortality and Morbidity from NCDs
Eighty two percent (82%) of all deaths in Fiji are attributed to NCD, (Carter, 2007). Complications such as diabetic lower limb

1 Ministry of Health and Medical Services, Suva, Fiji.
2 Address for correspondence: suavinya@gmail.com

Volume 6, Issue 1, 2017
amputations were high, with 938 amputations in Fiji for Diabetes from 2010 up till 2012. Kumar and Snowdon have analyzed that male patients have more amputation than females (54.1% vs. 45.9%) as a result of diabetic foot sepsis. They also investigated that more Fijians than Indians (71% vs. 26.2%) were diagnosed with diabetes at the time of presentation to the hospital with foot sepsis, (Kumar, Snowdon 2014). These statistics are of concern because diabetic foot sepsis can be prevented due to early referrals and good blood glucose control.

Prevention

WHO has set up guidelines for prevention of NCDS and their complications, (WHO 2013)

Four cost-effective measures proposed by WHO are;

1. Quit Smoking
2. Alcohol consumption in moderation
3. Nutrition with emphasis on fruits and vegetables
4. Physical inactivity

In order to address the above measures, health programmers need to motivate change in lifestyle which requires public health awareness as well as creation of supportive environment. Unfortunately these changes are not visible and will take long time so this may not be a very attractive proposal for policy makers to adopt. Therefore most Governments opt for funding and investment in curative services such as dialysis for kidney failure and angiograms for ischemic heart diseases.

Health care costs

Fiji Health Budget allocated 51% to curative and 24% to preventative medicine, (FHNA, 2011). Curative care receives more than twice the amount invested in preventative care. Although the three highest burden of diseases in Fiji are NCDS and the risk factors related to these diseases can be prevented, (obesity, dietary patterns, high blood pressure, smoking and physical inactivity). Despite this, government funds allocated to NCD prevention has not increased even though they are preventable. Global Burden of Disease Study (2010) suggest that health resources in prevention activities for NCD is necessary. There are many studies which support prevention over curative treatment as it is more cost effective, (World Bank, 2012).

In a powerful statement held in a High-Level Meeting on the Prevention and Control of Non-communicable Diseases held in New York City, World Health Organization Director-General Dr. Margaret Chan emphasized “Countries cannot treat their way out of NCDS. Prevention is crucial”, (CMAJ, 2011).

Usefulness of health policy analysis

The World Health Organization (WHO) defined health policy as an agreement or consensus on the health issues, goals and objectives and actions that are undertaken to achieve specific health care goals within a society. An explicit health policy can achieve several things: it defines a vision for the future which in turn helps to establish targets and points of reference for the short and medium term, (WHO 2016)

Health care industry plays an important part in the economy of a country. It is seen as either a sponge which absorbs most of the nation’s resources or as a major driver of the economy by ensuring a healthy population which is economically productive, (Buse, K. et al 2005).

Health is affected by many factors which are called social determinants of health. For example poverty, pollution, poor sanitation all affect people’s health and these have to be taken into account. This is possible when policies are created; there is involvement of all stakeholders.

Economic policies such as taxes on cigarettes or alcohol may also affect people’s behavior. The contribution to rise of obesity includes high calorie, inexpensive fast food, fizzy drinks and less exercise. Therefore it is important to understand the relationship between health policy and health in order to address the rise in NCD such as obesity.

A health policy analysis can be done from an economic, planning or medical perspectives. For instance an economist may focus on the allocation of scarce resources and the productivity of health. A health planner may see it as a tool to address the social determinants of health in collaboration with other stakeholders, and a medical personnel will be interested in health outcomes. Since NCDS are a huge burden on the Fijian Health care system, effective and evidence based policies can lead to improvement in NCD prevention, (Wilcox, 2014).

Justification for using NCD strategic Plan 2015-2019 as a case study

The NCD strategic Plan 2015-2019 was selected as a case study as the strategies outlined are focused on the prevention and treatment of NCD and it will be interesting to understand whether the targets can improve the NCD burden in Fiji. Mental health care which is often neglected has been addressed in the policy and it will be useful to see whether it is tackling the social determinants of health and will it address the inequities as well. As such, such an important plan must have cost a lot of resources to be conceptualized, printed and distributed to the 126 health facilities in Fiji. It is vital that such policies are reviewed so it can assist policy makers to identify gaps which can be incorporated and strengthened in the next plan.

Methods

In order to analyze the Fiji NCD policy, the WHO 2013-2020 Action Plan for the Prevention and control of NCDS was used as an existing framework for policy analysis. The six objectives outlined in the Action plan was used as the guideline to review the Fijian NCD policy

Results

WHO Objective 1: Raise the priority for the prevention and control of NCD in Global, regional and national agendas.

The Pacific NCD Roadmap which the Fijian NCD policy conforms to, includes four key strategies common to all countries in the Pacific:

1. Strengthening tobacco control, including raising the excise duty to 70% of the retail price of cigarettes.
2. Reducing consumption of food and drink directly linked to obesity, heart disease and diabetes such as sugar-sweetened drinks, salty and fatty food.

It is pertinent to take NCD policies to the highest level of cabinet meetings and the actual target should be when the head of the state endorses the policy and makes it a nations priority. If this is done, then it is very easy for the other ministries to take NCD as a priority and to incorporate it into their business plans. For instance, although there was an important strategy to support backyard gardening, which was to be implemented by Ministry of Education (MOE) and Ministry of Primary Industries (MPI), there was no mention of this in the MOE annual plan nor in their 2015 annual report. The mortality and morbidity due to NCD should have the highest possible government priority.

NCD related to Sustainable Developmental Goal (SDG)

In September 2015, Heads of State and Government committed themselves at the United Nations General Assembly to develop ambitious national responses to the overall implementation of
the 2030 Agenda for Sustainable Development, which include the following NCD-related targets to be attained by 2030: (WHO, 2016)

By 2030, reduce by one third premature mortality from NCDs through prevention and treatment and promote mental health and wellbeing (target 3.4). In addition to this there was strengthening of the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol (target 3.5).

There was consensus to achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all (target 3.8). It is certainly not possible to reach the targets above without empowering NCD policies with sufficient budget, and prevention of NCDs as an integral component of all government departments.

NCD Target 25 x 25

The NCD plan has in its goal to achieve a 25 x 25 ie 25% reduction in premature mortality by 2025. A 25% relative reduction in the overall mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases is an important SDG target which is well reflected in the Global Action Plan. The NCD plan has in its goal to achieve a 25% reduction in premature mortality by 2025.

WHO Objective 2: Strengthen national capacity, leadership, governance, multisectoral action and partnerships to accelerate the countries response for prevention and control of NCDs

Governments are ultimately accountable and responsible for a population’s health and therefore they have to ensure that legal, financial and logistical arrangements are made for the prevention of NCDs. If NCDs are not addressed, this will affect the achievement of the SDG and its rise will contribute to poverty.

Capacity building includes education and training. In Fiji, access to health care is obstructed by various factors, such as an inadequate public health insurance system and medical infrastructure, shortages in the human resources needed for the manufacture and quality management of medicines, and poverty.

The Global action plan has captured this element of SDG as its first target, which is a 25% relative reduction in the overall mortality from cardiovascular diseases, cancer, diabetes or chronic respiratory diseases. And linked to the NCD plan is the Strategic Framework for Change Coordinating Office (SFFCO, 2015) This is the main monitoring and coordinating body reporting to the Prime Minister of Fiji. It has a quarterly reporting format whereby each Government department reports, and Ministry of Health also does so. The indicators relevant to this paper;

1) Premature mortality due to NCDs from 40 years upwards. This indicator is part of the UN initiative SDG, in which Target 3.4 states “By 2030, reduce by one third, premature mortality from NCDs through prevention and treatment, and promote mental health and well being”.

The inclusion of this SDG target is indicative that the Government is committed to the SDG, and NCD has been captured.

The NCD plan 2015- 2019 addresses this objective by involving government sectors such as education, food and agriculture. There were clear roles and responsibilities outlined in the plan. This reflects the acceptance of NCD as a problem where stakeholders are determined to prevent the increase of NCD. Also included were NGOs and private sectors as well. This included media, faith based organizations and district advisory officers.

In the strategic plan area of Diet, there was involvement of Ministry of information and communication and Food Task force Technical advice group (FT-TAG) and Fiji Plan of Action for Nutrition. Incorporation of gardening into the primary school curriculum was overseen by both Ministry of Education as well as Ministry of Primary industry.

WHO Objective 3: To reduce modifiable risk factors for NCDs and underlying social determinants through creation of health promoting environments

Although deaths from NCDs mainly occur in adulthood, it is important to note that exposure to risk factors begins in childhood. Therefore health promotion activities are needed which engage both state and non-state actors from both within and outside health sector. These are outlined in the NCD policy.

Table 1: WHO Action Plan vs Fijian NCD plan

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>WHO action plan</th>
<th>Fijian NCD Plan</th>
<th>Tools (Data source)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>At least 10% relative reduction in the harmful use of alcohol, as appropriate, within the national context</td>
<td>Age-standardized prevalence of heavy episodic drinking among adolescents and adults reduced by 5% by 2018 (and by 10% by 2025).</td>
<td>STEPS survey in 2019. GSHS survey every 3 years. FRCA figures on units alcohol consumed annually.</td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>A 10% relative reduction in prevalence of insufficient physical activity</td>
<td>Prevention of insufficiently physically active adolescents (defined as less than 60 minutes of moderate to vigorous intensity activity daily) reduced by 5% by 2018 (and by 10% by 2025).</td>
<td>Tools (Data Sources): STEPS survey every 3 years.</td>
</tr>
<tr>
<td>Sodium intake</td>
<td>A 30% relative reduction in mean population intake of salt/sodium</td>
<td>Age-standardized mean population intake of salt, per day in grams per person aged 18+ yrs reduced by 20% by 2019 (and by 30% by 2025) Increased daily average serves of fruit and vegetables among adolescents and adults by 10% by 2019 No increase in obesity prevalence in adults or adolescents.</td>
<td>STEPS survey in 2019. GSHS survey every 3 years. FSIA survey 2015.</td>
</tr>
<tr>
<td>Tobacco</td>
<td>A 25% relative reduction in the overall mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases</td>
<td>Reduced prevalence of current tobacco use among adolescents by 10% by 2019 (and 30% by 2025). Reduced age-standardized prevalence of current tobacco use among persons aged 18 yrs by 10% by 2019. Increase in number of settings banned tobacco-free policies by 20% by 2019.</td>
<td>STEPS survey in 2019. GSHS survey every 3 years.</td>
</tr>
</tbody>
</table>
WHO Objective 4: To strengthen and orient health systems to address the prevention and control of NCDs and the underlying social determinants through people centered primary health care and universal health coverage.

The MoH drafted their new five-year Strategic Plan 2011-2015 with seven outcomes:
Reduced burden of NCDs; Reduced spread of HIV/AIDS and other CDs prevented, controlled or eliminated; Improved maternal health and reduced maternal morbidity and mortality; Improved child health and reduced child morbidity and mortality; Improved adolescent health and reduced adolescent morbidity and mortality. (MOH, 2015) These seven outcomes are interrelated and interdependent of each other. It is crucial that unless the health equity is addressed, it is impossible to address the social determinants of health. This is caused by unequal distribution of power, income, goods, and services, globally and nationally, the consequent unfairness in the immediate, visible circumstances of people’s lives – their access to health care, schools and education, their conditions of work and leisure, their homes, communities, towns or cities – and their chance of leading a flourishing life, (Commission on the Social Determinants of Health, 2008: 1)

Universal health coverage (UHC), which implies all people have access to needed services without the risk of financial ruin, has become a major goal for health reform in many countries. Fiji is currently seeking to modify its financing systems so it progresses more rapidly to UHC and to maintain it once it has been achieved. A 3 year study is being conducted currently in close collaboration with the National University of Fiji which aims to help Fiji move towards universal coverage and to build local capacity in the routine assessment of health systems equity. The preliminary results find that Fiji is making progress towards UHC, however there are many challenges regarding the quality and accessibility of health service. The study shows that health system is being funded by wealthier Fijians. Also important was the assessment of which socio-economic group benefits from public subsidy for health. This was done by measuring their usage of health services. The Fijian health-care system is financed by government resources, mainly from taxes (44%), out-of-pocket payments (29%) and private health insurance schemes (7%). However indirect taxes (VAT and custom taxes) are regressive as poorer groups contribute more to revenues raised from these taxes relative to income. As far as out-of-pocket are concerned, the rich contribute more than the poor as they resort to private facilities whereas the poorer groups used outpatient and inpatient services in government healthcare facilities which are free, (Wheelahan, D 2015).

Screening for NCD
Fiji has health professionals who are trained to screen for Diabetes. These are mostly nurses who are based in nursing stations which look at a ratio of 1: 300 population , then Health centres: look after 5,000 population , which report to Subdivisional Hospitals and then to Divisional Hospitals and the Specialist Hospitals, (Korovuva J, 2013).

To assist with screening, NCD tool kit manual was published. This is an initiative by Ministry of Health Fiji and is supported by Australian Aid. (Tukana I, 2011). The NCD tool kit is both a screening and intervention tool for NCD in Fiji. The kit assists primary health care workers to implement NCD screening and provide SNAP (Smoking, Nutrition, Alcohol, Physical inactivity) intervention immediately. Also it provides guidelines on referrals for further management of clients/patients. The overall goal of the NCD tool kit program is to screen the target population (25 years and over in any catchment area.). 20% of the target population is screened annually until 100% coverage is reached. The NCD Tool Kits contain a weighing scale, glucometer, measuring tape, sphygmomanometer, Mini-STEPs questionnaire, register, health record book with SNAP information (which are issued to all clients for their records and follow-up), and specialist clinic referral form.

For example, if a nurse looks after the population of 5 villages, with a population of 800 people, her target population over the age of 25 would be 600. 20% of 600 equals to 120 persons to be screened in a year. If screening tests are positive, then proper diagnostic tests are required and the client is referred to a medical officer or Nurse Practitioner for further investigations.

Snowdon has pointed out that there is not enough evidence whether high risk groups were targeted during screening activities, (2013). For instance during the STEPS survey, samples of the population are taken and are screened. However screening for NCD is only effective if it is well targeted and filters out the high risk groups who can be easily missed out.

WHO Objective 5: To promote and support National capacity for high quality research and development for the prevention and control of NCDs

Academics are important in assisting the Health Ministry to estimate the disease burden by combining data from mortality statistics with surveys of the prevalence of the four major risk factors that predict NCD epidemics: tobacco and alcohol use, unhealthy diets, and physical inactivity.

WHO STEPS wise approach to surveillance of NCD risk factors (WHO STEPS) assists in collection of reliable data for risk factors and requires far fewer human and financial resources. Continuous data collection for the health, social, and economic effects of NCDs; the cost and cost-effectiveness of interventions; and the future costs of inactivity are helpful to build support for multisectoral policy action and law reform by governments. Because of the lack of evidence on costs incurred as a result of NCDs, there is little evidence that MOH considers equity in access to NCD services and therefore it is difficult to identify where disparities lie. When this is done then it can help to determine the actual nature of out-of-pocket expenses for those with NCDs. This should also include mobility equipment, for example, canes and prostheses for those with amputations due to diabetic foot ulcers as well as rehabilitation for stroke patients, (Snowdon, W., Waqa, G., et al 2013).

Especially significant are health-care costs related to NCDs paid by governments, businesses, and families including OOP, as well as the social and economic costs of absenteeism and decreased work productivity related to NCDs.

Crisis in Paradise- when friends become foes
It is timely that Fiji adopt to health data collection, as impact analyses and economic estimations will provide evidence to stay resolute and not be wavered by bullying tactics from donor counties.

Fiji took a radical stand in 2000 against importation of mutton flaps which are up to one third fat, causing cardiovascular deaths. Fiji banned this due to concerns about dumping and “unfit food”, (Thow AM, 2010). These flaps were imported from New Zealand. While Fiji’s bold action was praised by many in the nutrition sector, the meat industry saw it as being a bad example in international trade practice which could set a precedent for other countries to follow. As a result, New Zealand considered taking action against this ban through World Trade Organization (WTO) (Thow, A. M., & Snowdon, W. 2010).

However the overall impact on overall diet or reduction in deaths due to cardiovascular disease is unknown. And this gap in evidence needs to be addressed to ensure that leaders are equipped with vital health statistics when negotiating in trade discussions.

In Fiji, CPOND is a research body founded by the Deakin University in Australia as well as Fiji School of Medicine, now known as the College of Medicine Nursing Health Sciences, (CMNHS), Fiji National University (FNU) and in particular
it oversees the research done on NCD and obesity related programmes. In addition to this, there is stepwise approach which is a monitoring tool by WHO which measures the NCD risk factors every 10 years. It is expected that these research bodies will help fill up the gaps.

**WHO Objective 6:** To monitor the trends and determinants of NCDs and evaluate progress in their prevention and control.

The SFCCO (Strategic Framework for Change Coordinating Office) is the main monitoring and coordinating body reporting to the Prime Minister of Fiji and the indicators relevant to NCDs are:
1. Premature mortality due to NCD.
2. % of targeted health facilities trained and issued NCD Toolkit

These indicators are reported quarterly. In addition to this, subdivision has a monitoring and evaluation team which has been trained to monitor the progress of activities outlined in the Business plan pertaining to NCDs

### Discussion

**Strengths**

The six objectives outlined by WHO Action Plan was addressed by the policy documents. The first ever Pacific Summit for NCD prevention allowed regional members to share experiences as well as plan strategically to combat NCDs in the Pacific.

The Prime Minister's commitment to the Sustainable development goals at the UN Summit is very encouraging as the SDGs include NCDs and also addresses the social determinants of health. We cannot simply focus on NCDs without acknowledging the social determinants of health which can greatly increase the chances of an individual to develop NCDs. Therefore the inclusion of multi-sectoral actors in the plan can be instrumental in ensuring that social determinants of health are considered and addressed in the prevention of NCDs. These included FBOs, institutions such as Pacific Theological college, the various Women's groups as well as Fiji council of disabled persons.

It was very reassuring to note that all the different government sectors were involved in the plan such as Ministry of Trade, Finance, Education, Social welfare, information and media, and the Police. Education Ministry's involvement is very crucial and the introduction of backyard gardening in schools looks to be promising as children can realize the importance of both physical activity and growing nutritious food for their family.

Legislative process is vital in NCD prevention especially with regards to the regulation of risk factors and so it was reassuring to see the presence of the Tobacco enforcement Unit as well as the Liquor control board. The 25 x 25 initiative in which there will be a 25% reduction in premature mortality by 2025 has the mandate of the government which can claim credit for the success of this initiative.

### Fiji Risk Assessment Score for NCD

<table>
<thead>
<tr>
<th>Risk Assessment Score for NCD</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Your age group</strong></td>
<td></td>
</tr>
<tr>
<td>Under 35 years</td>
<td>0 points</td>
</tr>
<tr>
<td>35 – 44 years</td>
<td>2 points</td>
</tr>
<tr>
<td>45 – 54 years</td>
<td>4 points</td>
</tr>
<tr>
<td>55 – 64 years</td>
<td>6 points</td>
</tr>
<tr>
<td>65 years or over</td>
<td>8 points</td>
</tr>
<tr>
<td><strong>2. Your gender</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0 points</td>
</tr>
<tr>
<td>Male</td>
<td>3 points</td>
</tr>
<tr>
<td><strong>3. Your ethnicity/country of birth:</strong></td>
<td></td>
</tr>
<tr>
<td>3a. Are you Fijian or Asian descent?</td>
<td>No 0 points</td>
</tr>
<tr>
<td></td>
<td>Yes 2 points</td>
</tr>
<tr>
<td><strong>3b. Where were you born?</strong></td>
<td></td>
</tr>
<tr>
<td>Fiji, Middle East, North Africa, Southern Europe</td>
<td>2 points</td>
</tr>
<tr>
<td>Other</td>
<td>0 points</td>
</tr>
<tr>
<td><strong>4. Have either of your parents, or any of your brothers or sisters been diagnosed with diabetes (type 1 or type 2)?</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>0 points</td>
</tr>
<tr>
<td>Yes</td>
<td>3 points</td>
</tr>
<tr>
<td><strong>5. Have you ever been found to have high blood glucose (sugar) (for example, in a health examination, during an illness, during pregnancy)?</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>0 points</td>
</tr>
<tr>
<td>Yes</td>
<td>6 points</td>
</tr>
<tr>
<td><strong>6. Are you currently taking medication for high blood pressure?</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>0 points</td>
</tr>
<tr>
<td>Yes</td>
<td>2 points</td>
</tr>
<tr>
<td><strong>7. Do you currently smoke cigarettes or any other tobacco products on a daily basis?</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>0 points</td>
</tr>
<tr>
<td>Yes</td>
<td>2 points</td>
</tr>
<tr>
<td><strong>8. How often do you eat vegetables or fruit?</strong></td>
<td></td>
</tr>
<tr>
<td>Every day</td>
<td>0 points</td>
</tr>
<tr>
<td>Not every day</td>
<td>1 point</td>
</tr>
<tr>
<td><strong>9. On average, would you say you do at least 2.5 hours of physical activity per week (for example, 30 minutes a day on 5 or more days a week)?</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>2 points</td>
</tr>
<tr>
<td>Yes</td>
<td>3 points</td>
</tr>
<tr>
<td><strong>10. Your waist measurement taken below the ribs (usually at the level of the navel, and while standing)</strong></td>
<td></td>
</tr>
<tr>
<td>Waist measurement (cm)</td>
<td></td>
</tr>
<tr>
<td>For those of Fijian, Asian or Pacific Islander descent:</td>
<td></td>
</tr>
<tr>
<td>Men Women</td>
<td></td>
</tr>
<tr>
<td>Less than 90 cm</td>
<td>0 points</td>
</tr>
<tr>
<td>90 – 100 cm</td>
<td>4 points</td>
</tr>
<tr>
<td>More than 100 cm</td>
<td>7 points</td>
</tr>
<tr>
<td>For all others:</td>
<td></td>
</tr>
<tr>
<td>Men Women</td>
<td></td>
</tr>
<tr>
<td>Less than 102 cm</td>
<td>0 points</td>
</tr>
<tr>
<td>102 – 110 cm</td>
<td>4 points</td>
</tr>
<tr>
<td>More than 110 cm</td>
<td>7 points</td>
</tr>
<tr>
<td><strong>Add up your points</strong></td>
<td></td>
</tr>
<tr>
<td>Your risk of developing type 2 diabetes within 5 years*:</td>
<td></td>
</tr>
<tr>
<td>5 or less: Low risk</td>
<td></td>
</tr>
</tbody>
</table>
Although Fiji is well into UHC, where the rich pay more taxes but the question of accessibility and equity remains. Perhaps the most important reason is limited data combining from mortality statistics with surveys of the prevalence of the four major risk factors that predict NCD epidemics: tobacco and alcohol use, unhealthy diets, and physical inactivity. Having access to this evidence will increase the bargaining power of leaders with the civil society's involvement as well as include the business community in engagement and dialogue. NCD prevention is all about lifestyle and therefore dialogue must be established with all walks of life in order to implement health promotion programs into the community.

Snowdon has argued that although there seems to be a lot of activities, the Ministry of health is not providing leadership at the helm, rather driven by the organizations themselves. She continues to add that although strategic planning for NCDs is well outlined, the implementation is weak. (Snowdon, 2013).

There is a huge turnover of health staff who do not stay long in an area. Human resources need to be retained. There are so many training programs but when staff’s leave, it is difficult to implement programs.

There is not much commitment in terms of research which links risk factors to morbidity and mortality of NCDs. This correlation is vital and can be very influential as seen in Seychelles which is similar to Fiji as an island country. There has been a decrease in smoking prevalence in the Seychelles in the past two decades and this has contributed to a decrease in cardiovascular disease mortality. This combination of mortality from cardiovascular death and tobacco is the type of evidence needed for commitment at all levels. Surveillance of diseases should be complimented by specific research. This can result in broad consensus in stakeholders. (Bonita, R., Magnusson, R., Bovet, P., et al 2013)

Recommendations

The WHO Action Plan recommends strong and continuous national leadership by heads of state or governments to establish NCD prevention as a top government priority, as health outcomes are dependent on the close network and commitment of all sectors from the planning, implementation and evaluation phases.

This is already being carried out in Fijian context, however it is not reflected in the business plans of other Ministries such as Education and Social welfare. Discussions are valid, however it is important to encourage cross-sectoral departments to actually place NCD prevention into their annual business plans. NCD prevention and treatment has to be regularly emphasized as they contribute to poverty reduction, economic growth and health improvement. More constructive commitment has to be undertaken by line Ministries. Ministry of Health cannot work alone, rather it is dependent not only on other Ministries but civil society as well. In addition to involving and getting commitment from stakeholders, it is important for the Government to strengthen human, financial, and legislative capacity. Staff retention, more fund allocations as well as empowering law enforcement in the case of tobacco and alcohol has to be prioritized.

As far as risk factors are concerned, Fiji has been exemplary when it banned cheap lamb mutton flaps from New Zealand as this can be seen as intervening at the source of the risk factors. Hence this same action can be repeated with dealing with other risk factors such as alcohol and tobacco. Usually the industries are not affected, as they provide revenue to Government finance. The consumers are penalized by being taxed heavily, however there should be more focus on the supply side as well which is to place more measures on the tobacco and alcohol industry. (Malone, R. E, 2012).

It is important that an accountability mechanism should be established and thereby all stakeholders can understand their roles and responsibilities especially regarding their contributions and commitments towards the achievement of NCD goals. This is not the issue with government and Ministry of Health sector but as other parties come on board, it is necessary that they have long term commitment in the prevention of NCDs in the community.

Impact assessment has to be carried out regularly to monitor the success of NCD programs in order to avoid continuing programs that do not have an impact, and also on which programs should be replicated. In addition, impact evaluations are focused on high level results such as outcome rather than inputs and outputs and is attributable. This is important as so many activities are done simultaneously and we need attribution otherwise we cannot decide whether a program was cost effective and efficient.

If resources are limited then strategies placed to prevent NCDs should be more efficient. Thus it is recommended that Risk assessment scores can be used for screening purpose to ensure that those who are at most risk for developing NCD are detected early and with proper advice on diet and lifestyle, they can be reverted.

Conclusion

The costs of preventing NCDs is much less than the cost of treating the complications of NCDs. It is not only the financial aspect but the social burden is felt by a small island country where seventy percent (70%) of the population die prematurely of NCD related causes. Fiji is not alone in battling with the massive NCD epidemic and is fortunate to receive global assistance in planning to prevent NCDs and has strong partnership with its regional Pacific Islands and has developed a national NCD plan to ensure that it can reduce the burden by NCDs in Fiji.

However the Ministry of Health cannot work alone. It needs to work together with all stakeholders in order to achieve the targets set out by 25x25 goal which strives to reduce 25% of deaths from premature NCD mortality by 2025.

The biggest challenge lies in the fact that NCD prevention is primarily focused on diet and lifestyle changes which needs strong community advocacy and participation. Each opportunity to campaign against the rise of NCDs must be taken especially at the community level. At the national level, leadership should ensure that all government department ensure that NCD prevention is incorporated into their business plans. Unless the NCD epidemic is regarded as a national emergency which threatens the wellbeing of the nation, the epidemic will continue to rise. Monitoring and evaluation has to be strengthened at all level. Research should be encouraged as it directs health interventions to areas where health inequity exists. Although Fiji does not have abundant resources, if  it maintains focus on high-priority cost-effective interventions, this will bring the greatest health benefits to all.

References


Fiji National Health Accounts Reports 2007 to 2012 in SHA 2011 (forthcoming), Fiji Ministry of Health


Wate, J. T., Snowdon, W., Millar, L., Nichols, M., Mavoa, H., Gaundar, R., ... & Swinburn, B. (2013). Adolescent dietary patterns in Fiji and their relationships with standardized body mass index. Int J Behav Nutr Phys Act,10(1), 45.


World Health Organization.(2016) Health Policy; Retrieved 4-8-16 http://www.who.int/topics/health_policy/en/
Community-based initial survey for prevention and control of non-communicable diseases in central Fiji

Silitolu A1, Nomura M1, Nishi N1, Kinoshiito S1, Kikuchi M1, Matsuura S1, Prasad A2, Miyashii M1, Ishikawa M1, Miura H1, Tukana F1

Keywords: Community Based Survey; NCD Risk, Fiji

Abstract

Background: Non-communicable diseases (NCDs) are the leading causes of premature deaths in Fiji. For better prevention and control of NCDs, an understanding of the current situation of NCD risk profiles is essential. We conducted a community survey in Central Fiji as an initial survey of the Project for Prevention and Control of NCDs under the Ministry of Health and Medical Services (MOHMS) and Japan International Cooperation Agency (JICA).

Methods: We selected Baulevu medical area (rural) in the Rewa medical sub-division and Nuffield medical area (semi-urban) in the Suva medical sub-division in the Central medical division. Using the resident register based on nurse census, one household member aged 18 to 69 years was randomly selected from each household. Questionnaire survey, physical measurements and blood test were conducted from February to March, 2016 in Baulevu and in May in Nuffield.

Results: A total of 1,014 people (429 men and 585 women) participated in the survey (participation rate: 57.3%). The percentage of obese participants (body mass index>=30.0 kg/m2) were twofold higher in women (51.3%) than in men (26.6%), and the highest percentage of 60% was observed in women aged 50 to 59 years. Proportions of participants who had risk behaviors in smoking, nutrition, and alcohol drinking were lower in older participants while the proportions did not differ by age for physical activity. The highest average score of having answered correctly to ten questions on diabetes were observed in men aged 50 to 59 and in women aged 30 to 39. The percentage of having had health screening in the past 12 months was only 33% in men aged 18 to 29 years.

Conclusions: High prevalence of obesity, especially in middle-aged women, needs urgent public health actions such as promoting physical activity and increasing awareness of diabetes risk for prevention and control of NCDs in Fiji.

Introduction

Non-communicable diseases (NCDs) are the leading causes of death in Asian and Pacific countries, and the burden of NCDs is rapidly increasing with significant social and economic consequences. NCDs are estimated to account for 80% of total deaths in Fiji in 2012 (WHO, 2014b), and estimated proportional mortality of cardiovascular disease, cancers, chronic respiratory diseases, diabetes and other NCDs are 35%, 11%, 5%, 16% and 13% of total deaths, respectively. The main risk factors for NCDs such as tobacco use, unhealthy diets, physical activity and harmful use of alcohol are avoidable, and a systematic approach to NCD prevention and control is necessary (WHO, 2014c).

To effectively address the growing problem, it is essential to have accurate information regarding the risk factors that contribute to the development of NCDs. Recently in Fiji, a stepwise approach to NCD risk factors surveillance (STEPS) by the World Health Organization (WHO) revealed that prevalence of NCD risk factors, such as raised blood pressure and obesity, have greatly increased from 2002 to 2011 (MOHMS, 2015). However, a participation rate was as low as 55% in the STEPS survey in 2011, and a community-based survey with a high participation rate has been awaited to confirm the results.

In consideration of the high burden of NCDs, Ministry of Health and Medical Services (MOHMS) has emphasized more focus on prevention of NCD through promoting wellness. In 2015, MOHMS launched its Non-communicable Diseases Prevention and Control National Strategic Plan 2015-2019, which focuses on the smoking, nutrition, alcohol and physical activity risk factors (MOHMS, 2010). In May 2015, MOHMS and JICA launched a technical cooperation project for five years to strengthen NCD prevention and control in the Central Division. As an initial survey, a community-based survey was conducted to understand the current NCD risk profiles of the target population of the project.

Methods

Participants

In the Central Division, Baulevu medical area in the Rewa medical sub-division and Nuffield medical area in the Suva medical sub-division were selected as rural and semi-urban survey areas, respectively. Sample size was calculated as 641 in each survey area to detect an increase of screening rate by 20% from 40% to 48% through an intervention of the project. A participation rate of the survey was assumed to be 65%, and a target sample was set for 1,000 people in each survey area. Villages and settlements were selected to collect a total of 1,000 households in each survey area.

Using the resident register based on nurse census, one household member aged 18 to 69 years was randomly selected from each household. The percentage of single-person households was around 1% among all households in the survey areas, and members aged 18 to 69 in all the single-person households were sampled. Among 1,927 households (930 in Baulevu and 997 in Nuffield) initially selected, 100 households (60 in Baulevu and 40 in Nuffield) were found to live away from the survey area and another 55 households (32 in Baulevu and 23 in Nuffield) did not have a member in the age range of 18 to 69 or provide a correct list of ages of household members.

The survey was conducted in February and March 2016 in Baulevu, with an intermission of about 3 weeks due to Cyclone Winston, and in May 2016 in Nuffield. Invitation letters were distributed to sampled household members by district nurses, zone nurses and community health workers. The survey took place at a designated venue in the vicinity of their home. As a result, one member of each of 1,014 households among 1,772 households participated in the study (participation rate: 57.2%).

Questionnaire survey

Questionnaire survey was administered by trained research nurses on demographic information, knowledge about diabetes mellitus (ten questions about basic knowledge on diabetes mellitus), health behaviors, hospital medication, quality of life, social capital, locus of control and family history of NCDs. Responses to the questionnaire were checked by senior research nurses at the venue, and missing or unclear responses were corrected by interviewing the participants again.

Physical measurements

Physical measurement was performed by the same trained research nurses that administered the questionnaire survey for every participant. Height was measured to the nearest tenth of a centimeter on participants with bare feet using Seca 213. Weight was measured to the tenth of a kg in light clothes on participants’ with bare feet using Seca Clara803. For the participants whose
weight were higher than 150kg, Seca Clara 877 was used. Overweight and obese were defined as body mass index (BMI) ≥25 kg/m² and ≥ 30 kg/m², respectively. Waist circumference was measured to the nearest tenth of a centimeter without clothes in a space for men and women, separately surrounded by a curtain, using Liberty Retractable Measuring Tape. Body fat was measured as a proxy indicator of body composition using Health Monitor, JS-2009. Blood pressure was measured 3 times with 3-minute intervals using Mediscope MS-08C (for the participants whose arm circumference was larger, a large size cuff, Liberty LRI-SCV78 was used). An average of the second and the third measurements were used for the analysis.

**Blood test**

A total of 3ml venous blood samples, 2 ml for HbA1c and 1ml for random blood sugar (RBS), was taken from the forearm by a certified phlebotomist. HbA1c (%) was measured by Latex particle, and RBS (mmol/L) was measured by oxidase method. All the samples were tested at Vanua Levu Medical Diagnostics. Diabetes was defined as HbA1c ≥6.5% and or on medication (WHO, 2011).

**Ethical considerations**

This study was approved by the Fiji National Research Ethics Review Committee in December 2015 (No. 2015.122.CEN). Participants gave informed consent for questionnaire and physical measurements, and blood test, separately, after research nurses explained to each one of them individually about the survey. Secondary use of linked anonymized data of the survey were approved in National Institute of Health and Nutrition, National Institutes of Biomedical Innovation, Health and Nutrition, Japan in February 2016 (No. KENEI-37) and National Institute of Public Health, Japan in June 2016 (No. NIPH-IBRA#12117).

**Results**

As shown in Table 1, approximately 80% of both men and women completed most of secondary school. Ethnic majority was iTaukei and religious majority was Christian in both men and women. Approximately 70% of men and women were currently married. Twenty-four percent of men were never married and 10.9% of women were widowed. In men, the majority of work was in primarily industry, whereas it was housewife in women, except for “other”. Regarding living status, approximately 70% of men and women thought their life was “relatively comfortable” and the rest were “just getting along”. More than half of the families had a family size of five or more in both men and women.

**Table 1: Characteristics of participants**

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-29</td>
<td>98</td>
<td>22.8%</td>
</tr>
<tr>
<td>30-39</td>
<td>99</td>
<td>23.1%</td>
</tr>
<tr>
<td>40-49</td>
<td>92</td>
<td>21.4%</td>
</tr>
<tr>
<td>50-59</td>
<td>86</td>
<td>20.0%</td>
</tr>
<tr>
<td>60-69</td>
<td>54</td>
<td>12.6%</td>
</tr>
<tr>
<td>Total</td>
<td>429</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>No formal schooling</td>
<td>4</td>
<td>0.9%</td>
</tr>
<tr>
<td>Less than primary school</td>
<td>28</td>
<td>6.5%</td>
</tr>
<tr>
<td>Primary school</td>
<td>158</td>
<td>36.8%</td>
</tr>
<tr>
<td>Secondary school</td>
<td>157</td>
<td>36.6%</td>
</tr>
<tr>
<td>College/University</td>
<td>76</td>
<td>17.7%</td>
</tr>
<tr>
<td>Post graduate degree</td>
<td>5</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

The percentage of obese participants were 26.6% in men and 51.3% in women. About 60% of women in the youngest age group (18-29yrs) were overweight or obese (26.0% and 34.6%, respectively) (Figure 1). From the age group of 30s to 60s, women who were overweight and obese accounted for more than 80%. There exists a big difference in the prevalence of obese women between the youngest age group and the 30s. A similar pattern was observed in men.
The average test score of knowledge on basic diabetes reached a peak in the 30s in women, whereas it was the 50s in men. Women had lower scores than men in all age groups, and the difference of average score against men increased in older age groups (Figure 2).

Participants who had risk behaviors of smoking, nutrition and alcohol were lower among higher age groups in both men and women, except for physical activity (Figure 3).

Men who had health screening in the past in 18-29 years old were only 30%. The percentages who had had health screening in the past 12 months and health guidance in the past 12 months were higher in older age groups (Figure 4).
Discussion

In the present study, we conducted a survey on residents in Central Division of Fiji to explore the current situation of obesity, diabetes and relevant behavioral characteristics. The results showed there is high prevalence of overweight or obese in both men (58.1%) and women (78.8%). These figures were almost consistent with the results from the STEPS survey in 2011 in Fiji, where the prevalence of overweight or obese had been 59.4% in men and 74.7% in women (MOHMS, 2015). In all of the WHO regions, including the Western Pacific, women are more likely to be obese than men (WHO, 2014a). Generally, people’s lifestyle change in the Pacific states has also caused excess weight gain among both sexes, but has had an even greater impact on physical activity levels in women (Kanter & Caballero, 2012). In the Pacific states, compared to men, more women often lead a traditional, sedentary lifestyle. Even the lowest prevalence of overweight or obese was seen in the youngest age group of 18-29 years, and it was approximately 40% in men whereas for women it was 60%. The prevalence of overweight or obese in women started to increase noticeably from the youngest age group to the 30s age group and reached over 80% in middle age groups.

Obesity is a well-known single and predominant risk factor of NCDs, such as cardiovascular disease and diabetes. For obesity, self-monitoring is the centerpiece of behavioral weight loss intervention programs (Burke, Wang, & Sevick, 2011). However, weight scale is still unfamiliar technology in the community of the Pacific region such as Fiji because the present survey found that approximately 30% of the participants had never weighed themselves (data not shown).

A recent meta-analysis, which analyzed more than 300,000 adults in several ethnic groups, showed that the waist-to-height ratio (WHR) should be considered as a screening tool because of the superiority of WHR over waist circumference and BMI for detecting cardiovascular risk factors in both sexes (Ashwell, Gunn, & Gibson, 2012). In our study, the strong association (correlation coefficient: 0.87) between BMI and WHR was observed. Therefore, the WHR should be considered as a screening indicator to monitor and manage their own physique in a community where weight scale is not readily available.

According to the article in the Lancet, prevalence rate of diabetes is expected to increase, in the following years (Morgan, 2015). Another recent analysis concluded that the prevalence of diabetes has been continuously increasing (7.7% in 1980 to 15.6% in 2011) along with the rise in the prevalence of obesity over 30 years (Lin et al., 2016). The prevalence of diabetes was 16.7% in our participants (excluding pregnant women). As shown in Figure 7, the prevalence was higher in older age groups. However, the correlation between BMI and HbA1c was weak (data not shown), so that possible and effective approaches to screen the diabetic population in a community might be a combination of simple methodologies, such as measuring WHR or waist circumference and urine sugar test.

In implementing the study, quality control was prioritized through the entire process of the survey. As an initial step, training for research nurses was conducted at the Ministry in advance, using the study manuals based on the STEPS survey. On the survey sites, one pair of research nurses conducted interviews of the questionnaire and physical measurements in consecutive order as prearranged. Three supervisors, who were retired nurses, joined the survey to check the answers in the questionnaire. In the data cleaning process, some outliers were excluded from the dataset. In this manner, this study was designed to maximize quality of the collected data. To further quality control in future community-based surveys in Fiji, introduction of web-based survey, using tablet devices, could build better surveillance systems in the community.

Cyclone Winston hit Fiji during the survey period and brought heavy damage in our survey areas, Baulevu and Nuffield. However, the cooperation rate achieved 57.2% under such a difficult situation, which was slightly higher than the cooperation rate of the STEPS survey, 55%. This figure was the result of an excellent team effort through all of the cooperation of Ministry of Health and Medical Services. One of the notable achievements of this study was capacity building of nurses and relevant staff through participating in this survey for the generation of evidence by their own. JICA and the Ministry of Health and Medical Services will jointly work for NCD prevention and control in Central Division of Fiji through an evidence-based approach.

Acknowledgements

We thank research nurses of the Ministry of Health and Medical Services, and all the participants in Baulevu and Nuffield.

References


Second generation graphic health warnings (GHW’s) for tobacco packaging in Fiji

Padayachy P1, Tukana I, Sialatolu A1, Ali N, Moadsiri A2

Keywords: Graphic Health Warning; Tobacco Packaging; Tobacco Use, Fiji

Abstract

Warnings on tobacco products are an ideal way of communicating directly with smokers as they are directed at their behaviour. Health warnings on cigarette packs inform smokers about the health hazards of smoking so it encourages smokers to quit and deters non-smokers from smoking. Fiji implemented the first-generation Graphic Health Warnings on manufactured tobacco products in 2012. The objective of this study is to determine the understanding and acceptance of the current GHWs by the target audience with a focus group exercise. Participants were asked to identify the previously mentioned graphic health warnings from each theme and state which was most influential in deterring them from smoking or consider quitting. A total of 65 people participated in the focus group discussions which included 44 males and 21 females, of which 40 were smokers and 25 were non-smokers. Most responded to the GHWs about Cancer, Oral Cancer and Death. The results are Cancer with 61 (93%) participants; the highest vote was made towards the Australian Image with 14 (22%) votes and the second most voted for image was the EU with 13 (21%) votes. Oral Cancer had 58 participants with an (89%) response rate; the highest vote was made towards the Thailand Image with 25 votes (43%). Death had 52 (80%) participants respond with the highest vote being for the Australian Image with 22 (42%) votes. The visual impact of these chosen images strongly shows as having a positive effect on reinforcing a no smoking behavior in non-tobacco users.

Introduction

In an effort to deter non-tobacco users and to warn current tobacco users about the dangers of tobacco use, Fiji implemented the first generation Graphic Health Warnings on manufactured tobacco products, as legislated in the 2012 Tobacco Control Regulations. The regulations were approved 8 January 2013 and published in the Government of Fiji Gazette Supplement on 8 February 2013. The Regulations also contain warning requirements for tobacco products other than cigarettes.

The 2002 Fiji NCD Step Survey showed that the overall proportion of current adult smokers was 36.6%. The results of the Fiji National Adult Substance Use Survey conducted in 1999 showed an overall prevalence of smoking at 38%, with the greater proportion of current smokers being males (53.0%) and females (18.0%).

The 2011 Fiji NCD Step Survey showed that the smoking prevalence rate was 30.8% with significantly higher smoking rates among males (47%) compared to females (14.3%). Among men, the higher proportion of current smokers were seen in younger adults aged 25-34 years.

The 1st generation Graphic Health Warning were copied from other country's warnings and there was no testing of acceptability among target audiences as to the appropriateness to Fiji’s context. This study wanted to find out if there is a need to change the current Graphic Health Warnings for Fiji; what images and text would be helpful in warning about the dangers of tobacco use to people in Fiji; what images will increase motivation to quit among tobacco users; and what images and text will help deter non-tobacco users from starting.

The objective of the study is to determine the understanding and acceptance of the current GHW’s by the target audience. It is also to test various graphic health warning themes among target audiences in Fiji.

Method

The study design included focus group discussions with adult and youth smokers and non-smokers at the community level. The study was approved by the Ministry of Health and Medical Services of Fiji’s Non-Communicable Disease Section, in consultation with WHO, as a process to modify GHWs for Fiji. SDMOs of relevant survey areas were consulted and participants were informed of the objectives of the survey. They then consented to participate as per the objectives of the survey. Fiji is divided into four divisions, namely Central, Eastern, Western and Northern. Focus group discussions were conducted as follows; 4 in the Central Division, 6 in the Western Division, 2 in the Eastern Division, and 4 in the Northern Division. Each focus group consisted of either 4 smokers or non-smokers.

The participants were shown images and messages in power point presentations in 12 different themes related to smoking including: addiction, heart disease, cancer, oral cancer, death, pregnancy-fetus, stroke, diabetes, second hand smoke, other health effects, aging, skin, and poor health and social and economic.

The images and messages shown included the current Graphic Health Warnings being used in Fiji and other countries within the themes. The participants were asked to identify the Graphic Health Warning from each theme that was best influential in deterring them from smoking or consider quitting.

Results & Discussion

The individual reports of each focus group discussion and the overall summary is included in the annex for reference. A total of 65 people participated in the focus group discussions, which included 44 males and 21 females; of which 40 were smokers and 25 were non-smokers. Of this, 51 were youths (aged 14 to 34) and 14 adults (aged 35 to 71). The findings for each theme were as follows;

1. Addiction: 41 participants responded. There was a tie between the EU Image and the Vanuatu Image, with 11 votes each.
2. Heart Disease: 48 participants responded. The highest voted image was the Brazil Image with 15 votes.
3. Cancer: 61 participants responded. The highest was the Australia Image with 14 votes. The second most voted image was the EU Image with 13 votes.
4. Oral Cancer: 58 participants responded. The highest was the Thailand Image with 25 votes.
5. Death: 52 participants responded. The highest was the Australia Image with 22 votes.
6. Pregnancy-Fetus: 50 participants responded. The highest was the Uruguay Image with 12 votes.
7. Diabetes and Stroke: 54 participants responded. The highest was the Australia/Samoa Image with 22 votes.
8. Second Hand Smoke: 55 participants responded. The highest were the Thailand and Vanuatu Images with 13 votes each.

1 Ministry of Health and Medical Services, Suva, Fiji.
2 World Health Organization, Suva, Fiji
3 Address for correspondence: padayachy@who.int

Volume 6, Issue 1, 2017
9. Other Health Effects: 52 participants responded. The highest was the Australia/Samoa Teeth Image with 18 votes.
10. Aging, Skin and General Poor Health: 52 participants responded. The highest was the Costa Rica Image with 23 votes.
11. Social and Economic: 51 participants responded. The highest was the Solomon Islands Image with 29 votes.

Summary of Popular Image Findings

<table>
<thead>
<tr>
<th>Theme</th>
<th>Reference/Source</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addiction</td>
<td>EU Image</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vanuatu Image</td>
<td></td>
</tr>
<tr>
<td>Heart Disease</td>
<td>Brazil N/A Image</td>
<td></td>
</tr>
<tr>
<td>Cancer</td>
<td>Australia Image</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EU Image</td>
<td></td>
</tr>
<tr>
<td>Oral Cancer</td>
<td>Thailand Image</td>
<td></td>
</tr>
<tr>
<td>Death</td>
<td>Australia Image</td>
<td></td>
</tr>
<tr>
<td>Pregnancy-Fetus</td>
<td>Uruguay Image</td>
<td></td>
</tr>
<tr>
<td>Diabetes and Stroke</td>
<td>Australia-Samoa Image</td>
<td></td>
</tr>
</tbody>
</table>

The powerful potential effect of graphic images seems to justify the huge resources invested by the tobacco industries to maintain brand images as a marketing strategy to enhance consumer retention. Graphic images engage the viewers and enable more effective processing of the information presented with the images.

The results suggest the kind of images that people would like to see on tobacco packaging in Fiji as those that were most highly voted for in each of the themes.

The visual impact of these chosen images strongly showed to have a positive effect on reinforcing a no smoking behaviour in non-tobacco users. In those who were casual or social tobacco users, these images instigated motivation to quit. For the current tobacco users, these images increased thoughts to reduce use or quit.

There have been ideas suggested on how best to modify the images to suit the Fiji context and these are included in the overall report.

Conclusion
Overall, there was a consensus that the current Graphic Health Warnings should be changed to the ones that the participants chose, as they indicated these as having a strong influence over motivation to quit or deter from starting.

References
Hammond D. Health warning messages on tobacco products: a review. Tob Control. 2011;20:327e337.


A social cultural investigation of the diabetes knowledge, attitude, perceptions and prevalence for indigenous Fijian (iTaukei) from the two selected tribes in the Western division of Fiji: Issues and challenges

L. N T Kuridani

Abstract
This study reports the findings of the first in-depth qualitative research on diabetes knowledge, attitude, perceptions and prevalence for the Western division of Fiji: issues and challenges from the two selected tribes in rural Fiji. The study is guided by an ethnographic framework with grounded theory approach. Data was obtained using methods of Key Informants Interviews (KII), Focus Group Discussions (FGD), participant observations and archival search from newspapers articles obtained from a broad range of Fijian sources.

The study findings confirmed that the iTaukei's are aware of and concerned about diabetes in Fiji. Specifically, control over their lives and decision-making is shaped by changes of vanua (land and its people), lotu (church), and matanitu (state or government) structures. This increases their vulnerabilities. Informants identified diabetes as "sanivanua"; "mate cabal" as an outcome of loss of control over the traditional way of life, over family ties, over oneself and loss of control over risks and vulnerability factors. The understanding of diabetes is situated in the cultural context as indigenous in its origin and required a traditional approach to management and healing. The informant's responses are constrained by their socio-cultural status, cultural meanings and beliefs of illness.

The findings also reveal that there remains a big gap between cultural knowledge and what people know, what people need to know and what is currently provided by the health ministry to address diabetes in Fiji. In addition, health seeking choices included accessibility, availability, affordability and quality of care provided in the formal health sector. The analysis highlights that health planners, policy makers and health promotion messages are not addressing these factors.

The research findings highlight the importance of understanding, recognizing and valuing cultural beliefs, indigenous knowledge and perceptions of diabetes in developing responsive strategies for prevention and control.

Introduction
This study addresses the diabetes knowledge, attitude, perceptions and prevalence of Indigenous Fijian (iTaukei) from two selected tribes in the Western division of Fiji an island group in the Southern Pacific. To respect and protect the confidentiality of the participants, the two selected tribes will be identified as Tribe N and Tribe S in this report. The arrangement of this paper is as follows:

Firstly outlines the aims and objectives of the study, rationale and provides an overview of the study. Secondly it discusses a brief overview of the epidemiological trends of diabetes at the global, Asia Pacific and the numbers, associated risk behaviours and vulnerability factors in Fiji.

It also detail Fiji's health services responses in terms of policies, voluntary counselling therapies, treatment, and health education, current knowledge of diabetes and traditional knowledge. It also examines the variables affecting diabetes prevalence such as, poverty due to limited opportunities to access money especially amongst rural and urban populations, access to services and health seeking behaviours.

Thirdly it offers an account of how the Fijian society is affected by societal changes, modernity and Christianity. It discusses briefly Fiji's history, the social political structures within the Fijian chiefly system, the basis of the Fijian culture and the socio-cultural aspects of the Fijian way of life and relationships to unearth how Fijian links to land, clan, tribes affect healing practices, how identity and status determines iTaukei population placement in society, affects access to financial resources, ability to make decisions and choices to care, taboo talk about disease and illness, the different perceptions of diabetes as a curse or disease of the land, how this affect delayed response to treatment and how the church further dictated the teaching linking illness to retribution and sin.

Fourthly a detailed descriptions of the aims and objectives of the research, the research methods and discusses reasons why ethnography and the grounded theory were chosen. Details about the research sites, participant selection, sample size, specific data collection methods, ethics are discussed. The strengths and limitations of the research approach taken are described.

Fifthly reports the results of the field work focusing on the social construction of illness especially diabetes among indigenous women in Fiji. It further discusses beliefs about health and illness, beliefs on the causation of illness especially diabetes in Fijian society, beliefs that diabetes is the most chronic disease known as matenivanua, beliefs that traditional illnesses caused by violation of Fijian social and cultural norms, beliefs about traditional healing practices is the first line of care, beliefs about healers and medical practitioners and vulnerabilities to diabetes.

Lastly, it discusses the main results and findings of this study and finally summaries the findings and draws out implications and recommendations for diabetes prevention, control and management in rural Fiji.

To address the prevalence of diabetes among iTaukei population in the western division of Fiji. Although previous studies have identified the increased prevalence of iTaukei to diabetes, little work has been done on the role of iTaukei's perceptions and responses to prevention and control strategies. This study underlines the importance of understanding traditional values; cultural beliefs and practices in addressing diabetes in Fiji. It highlights that local knowledge and perspectives should be identified, valued and incorporated in the design of Fiji's intervention programs. This study was originally conceived and described in a research proposal submitted to the University of Fiji Research Committee for the Fiji Higher Education Unit grant.

Keywords: Diabetes prevention and control, losing control of cultural values, beliefs, indigenous knowledge & traditional practices.
Objectives of the study
Specifically it has four objectives: 1) Conduct an in-depth ethnographic study using a grounded theory approach in two selected tribes from the Western division of Fiji; 2) To establish baseline data on iTaukei perspectives and responses to diabetes in Fiji; 3) Ascertain existing socio-cultural perceptions, values, beliefs, myths and traditional cultural practices, relating to diabetes; 4) Analyse the present strengths and weaknesses on diabetes prevention activities from an iTaukei perspective and identify gaps and recommend potential actions for change; 5) Determine both the compliance and non-compliance factors.

Rationale of the study
This study is important given the increasing diabetes problem in Fiji, and this is further discussed in the results and discussion of findings. That greatly challenges development and public health concerns (MoH, 2012). The Global Burden of Disease (GBD) in terms of the number of years of life lost (YLLs) due to premature death in Fiji, confirmed that ischemic heart disease, diabetes mellitus, and cerebrovascular disease were the highest ranking causes (Institute for Health Metrics and Evaluation, 2010).

Fiji ranks among countries with the highest rate of diabetes in the world. Figures released by the Fred Hollows Foundation of New Zealand following its first-ever Fiji Eye Health survey in November 2009, showed that four out of every 10 people in Fiji had diabetes (Fiji Times online, 29th December, 2009).

Epidemiological trends of diabetes in Fiji
The prevalence of diabetes in adults in the Pacific Islands Region is the highest in the world (WHO, 2010) and Fiji is no exception. There were an estimated 57,640 cases of prevalent diabetes in Fiji in 2013. In a total adult population (20–79 years) of 54306000, the prevalence rate is over 10.9% (World Bank Data, 2013). In parallel, the financial burden of NCDs on Fiji’s health-care system is also increasing. Efforts to curb the complications of diabetes in Fiji therefore face substantial challenges. According to International Diabetes Federation (IDF) Fiji has 16% of its population suffering from Diabetes (Refer figure 1). There are 58,800 people affected with diabetes in Fiji (IDF, 2014).

An overview of the state of research knowledge in the field, identify that past diabetic research in Fiji have focused on general prevalence on other sites in Fiji. The identified gap in the literature is the lack of knowledge about diabetes care, access to services in the Western division of Fiji and this is what our research work seeks to fill.

Strengths and Weaknesses on diabetes prevention activities
The Non Communicable Disease problem in Fiji and Fiji has been termed as crisis (MoH, 2014). The recent NCD STEP Survey in Fiji has revealed alarming trends of increasing level of risk factors, unhealthy behaviours, NCDs and death. Approximately 78% of all deaths and 40% of premature deaths before the age 60 in Fiji are due to NCDs (refer fig 2).

![Graph showing prevalence of diabetes in Fiji](image1)

![Graph showing diabetes prevalence by age](image2)

![Graph showing age-standardised population and diabetes prevalence](image3)

Figure 2: Diabetes Age Standardised Population 25 – 64 years in PICT.

Dr. Tom Schaefer from the Fred Hollows Foundation, New Zealand said, the survey was conducted in 34 communities in Fiji and found that 40 per cent of people had diabetes. Further he stated that the impacts in terms of costs, family aspects and economics are going to be staggering, (Dr. Schaefer, 2009). The magnitude of the problem is worrying for a health system, which has committed staff but few resources, Dr. Schaefer said,

“The cost of medication alone is going to outstrip the ability of any health system provide to do it” (2009: p3)

The foundation’s survey in Fiji was trying to measure the prevalence of blindness and vision impairment, and also investigate the prevalence of diabetes, diabetic eye disease and glaucoma.

Lancet (2015) found that one in three people are believed to have diabetes. The undiagnosed figure remains high as of 2014. In figure 1, the number undiagnosed is 3.13 per 1000’s that is the equivalent to 31,300. Most of the undiagnosed are believed to be denial patients that usually turn up with bad diabetes infection like diabetic foot sepsis (DFS), Diabetes Keto- Acidosis (DKA) and uncontrolled diabetes, diabetes induced coma, blindness and kidney failure.

The success of the national response to diabetes prevention and care is based on the extent to which the policy is translated into action, and understood by stakeholders and enforced by law enforcers and policy makers. Fiji finalised the National Strategic Plan 2012-2015 (MoH, 2012) at the completion of the previous National Strategic Plan period of 2007-2011. The overall goal is improve the quality of life of people of people that are infected and affected by diabetes.

Methods
This is a qualitative study using ethnography and grounded theory approach. A culturally sensitive research method is required for this study and an ethnographic framework will best address this. The study is unique by focusing specifically on two selected Fijian tribes in Western Fiji. This study helps fill this gap in the research evidence by examining on iTaukei population.

Discussions and literature reviews highlight the need to conduct a comprehensive qualitative study of the understanding.
of the traditional Fijian culture and diabetes. Among the common qualitative methodologies including phenomenology, hermeneutics discourse analysis, conceptual descriptions, ethnography, thematic analysis and constructivism (Creswell, 2003), ethnography is best suited for this task as it aims to develop a rich description of a society or group of people and pay attention to how culture shape details of everyday life. As a method, ethnography refers to ways of studying, knowing and reporting about the world (Atkinson, 2001), with an emphasis on learning's about context and content, meaning and action, structures and agents; an ethnographic framework is the best match to collect data and investigate this topic.

Field work arrangement

During fieldwork, we commute between the two selected tribes in Western Fiji. We engaged in a number of group talanoa sessions around kava bowls which is a traditional Fijian drink. Talanoa is an activity of sharing stories amongst family members, kinship members or a group of individuals in a shared context (Gatty, 2009).

Within the talanoa framework, small jokes are usually drawn into the discussion creating platforms for openness. In an informal set in a communal or public domain, talanoa promotes a playful gesture breaking communication barrier amongst cross cousins and other traditional kinship links that are a tabu. The kava setting helped to facilitate discussions on tabu issues, which are often not openly shared due to the tabu connotation tagged to the matter.

As an insider to the iTaukei culture, part of my other observations for both tribes, was that the placement of women was at the lower part of the hall. We noticed that although women's views were heard during the kava sessions, the men's opinion and values dominated the scene. But the significant difference observed that the women of Tribe N were much more outspoken and vocal.

A bundle of kava was presented to the village elders of the two tribes as the protocol of entering a Fijian village called, ‘sevusevu’ and also presented before leaving the village site called, itatau (Ravuvu, 1987; Durutalo, 1986). Failing to do so is considered an act of disrespect in a traditional Fijian society (Ravuvu, 1997).

Another thing we observed was that informants felt secure to express themselves in numbers rather than individual. Also my role as an insider allowed me to understand this is an important approach to collect data and I organised 2 participatory workshops at the study sites. Participants were asked to tabulate their findings on paper sheets which I collected for analysis of new emerging concepts. To complement the use of an ethnographic framework, I also follow the principles of grounded theory approach in my data analysis as they provide a naturalistic, bottom up approach that allowed concepts and ideas to emerge from the data (Charmaz, 2000).

Sample size was not predetermined and interviewing continued until saturation point occurred that is no new data regarding a category and categories are well developed (Strauss, 1987; Rice, 1999).

Key informant interviews

Formal interviews were conducted with the interviewer and the moderator tapping responses and an interview sheet to guide the questions. Informal interviews were conducted through talanoa sessions around the kava bowl. The informal interviews took 2-3 hours but flow of discussions generated a lot of rich and valuable data.60 participants from each of the two selected tribes were interviewed and the interviews were tape recorded and transcribed.

The interview was aimed at eliciting the informant's stories in their own words and from the perspectives of the meanings they attach to their understanding of diabetes.

Follow up interviews for 25 respondents were conducted one week after the first interview to seek clarification of points and to ensure that no adverse emotional effects had occurred. The interviews were recorded on tape recorders. Notes were also written on the interview sheet. I had trained the research assistants to act as moderators to facilitate the interview process. Other data collection techniques were also used in triangulation included focus groups discussions, direct observations, field work and two participatory workshops in local settings.

Focus group discussions (FGD)

The purpose of the focus group discussions was to generate issues in wide opinion. The primary strength of a focus group is the synergistic influence of the group setting which may result in the elicitation of data or ideas not obtained in individual interviews (Creswell, 2000). There were 2 group meetings and three focus groups organized at each location. Each focus group had between 6 and 8 participants and lasted for about 1-1½ hours.

The focus group approach was conducted in the evenings around the kava sessions and was also used to validate interview responses.

We also conducted archival research of historical records, review of Fijian documents and reports, and gap analysis of the current services and programs on diabetes in Fiji.

Data collection & analysis via a grounded theory approach

Grounded theory is any form of sociological theory that is built up gradually from the careful naturalistic observation of selected phenomena. The approach to grounded theory builds upon a mutual creation of knowledge by researchers and research participants, and aims to provide interpretive understanding of the studied world (Charmaz, 2000).

In this study an insider point of view is adopted (Spradley, 1979) to gain an understanding of the iTaukei perceptions and responses to diabetes because the researcher needs to understand the meanings they attach to those experiences as they themselves see them. Following approval by the University of Fiji Research and Ethics committee, field work started in March to May, 2015; a timeline of 3 months.

Issues of language

The researcher had no difficulty with the language expressions because he understands the dialect of both Tribe “S" and “Tribe “N". However, the researcher was challenged in conducting interviews because the interview questions were written in English which had to first be translated to Fijian, and their own tribal dialect. The fact that the researcher can speak the three main languages in Fiji: Fijian, English, and Hindi and the fact that the researcher do understand the 14 provincial dialects in Fiji assisted greatly in conducting this research.

Ethical issues

Participants when signing the participant information sheet and the informed consent form were also briefed on their rights to refuse to answer questions. All interview records were filed and kept in secure lockers.

The information sheet was read to the participant before she was requested to sign the form as an agreement for confidentiality of the information shared and her willingness to participate as an informant to the study. In addition, training of Research Assistants emphasized confidentiality and ethical issues. There were no challenges faced with ethics.

Strengths and limitations of the research design

A clear strength of the design was that the discussion of the challenges of being an insider and outsider in relation to the research community and culture. Also the rich interview material...
was also a major strength of this study. However, there was some limitation in the depth of data because the researcher was able to access only a certain percentage of individuals from the two tribes who have provided responses unique only to the tribe settings and cannot be used to represent Fiji. However, the richness of the data was enough to make analysis of the indigenous Fijian beliefs and practices to health and healing.

There was limitation in sample percentage and methods; however logistics were balanced by insider and outsider advantage that the researcher has. The concern is that this study concentrated on 2 tribes in the Western division of Fiji and it is possible that these 2 tribes may have characteristics that are different from other indigenous tribes around Fiji. This caution is needed when making generalisation from the two tribes to all indigenous people in Fiji.

The researcher found that the practicalities of taking field notes and conducting interviews, alongside her attempt to reconcile observations with theoretical questions and vice versa enabled her viewpoint fairly smooth to shift from that of an insider to that of insider researcher. At the same time, the researcher is also cautious of potential bias that could compromise quality. Because of the nature of this research the researcher’s insider and outsider perspectives added value to richness of the data collected.

Results and Discussions

Noncompliance factors
Most of the respondents shared the bad experiences from nurses at hospital settings as the major causes of noncompliance to special clinic dates.

Two specified that their belief that diabetes tablets is causing more bad effects such as giddiness and repeated itchiness and was more comfortable with their traditional herbs. Each was advised that the conditions could be signs of adverse or allergic effects of the drug and that they need to consult with their physicians immediately.

Respondents expressed their belief that traditional herbs was readily available at reasonable costs however they were also advised to consult with the medical doctor first before taking traditional medicine.

Socio-cultural factors affecting iTaukei’s risks to diabetes
Several factors have been identified such as poverty, care of the ill, stigma, and indigenous belief. High levels of urban migration are also believed to have broken down traditional methods of social control (Buchanan-Aruwafu, 2007).

There is this iTaukei saying “Dui tauca ga na bua ka tea” implies that what goes around comes around (Gatty, 2009). Individuals and families in Fiji will face or reap the consequences of their own actions especially the social changes and the speedy transitions from traditional to modernity continues to take its toll on the burden of NCDs, also called lifestyle diseases.

The discussions of diabetes highlighted the importance of understanding health and illnesses in the Fijian socio-cultural context. Fijian culture has its own explanations of health and illnesses (Ravuvu, 1987) and this is important to be understood and respected. A common discourse amongst the iTaukei as typical amongst all respondents in my study held the general belief that measures health against body framework: emphasis on body size, height, good appetite, fitness and uses these as indicators of an overall ability to overcome illness.

Both health and illness are seen as communal products and requiring a collective intervention. This perception applies to different events from the celebration of healthy births down to supporting in person. Informants discussed the cultural practice of care and support during times of illness and important occasions in life such as birth and marriage. Vessororovi is a Fijian conflict resolution to clear pathways and seek deliverance and healing. The Ai Soro is ritual apology and avoidance of punishment in Fijian dispute settlement (Ravuvu, 1983) Vessororovi is usually performed between individuals, families and tribes when they have a disagreement (Hickson, 1975). The parties in conflicts arrange a forum where they come together and reconcile their issues. Fijians believe that the vessororovi protocol of conflict resolution clears pathways and commands some form of deliverance and healing to the sick and the affected individuals. It also highlights the importance of families binding together and creating foundations to resolve family conflicts, restore relationships and create unity for the Fijian society as a whole.

There is a communal responsibility to the management of any illness, including diabetes. Communism is a deep ideological and character-forming force in the iTaukei culture and it cannot be set aside or modified without extensive transformation of traditional institutions and social systems (Lasaua, 1984).

One very important element in the theories regarding matenivanua, is that not only the offending person himself may be punished by the vu, but his children and his children’s children for generations may also suffer as a consequence, until the vu has been appeased (Spencer, 1941).

Social Construction of Diabetes amongst the Indigenous Fijian

This section focuses on analysis of informant responses regarding the Fijian culture, the cultural meanings of health and illness, and the cultural beliefs of health and illness in the Fijian context: health and illness from conception through to death, it explores the importance of religion, traditional healers and healing practices, cultural meanings and beliefs about causation of these illnesses, and health seeking behaviour (HSB) to diabetes prevention and intervention. It describes the culture of healing with a special emphasis on diabetes and the social construct of Fijian healing practices.

The participants in the participatory workshops continued the discussions about how breaking tabu causes several common conditions labelled as sanivanua; matenivanua; sosobulicane (diabetes), and kalounidraki (slim disease). Soso (medical) carbuncle is a one or more very deep painful boil that begins with a cluster of pimples. Some Fijians describe this as occurring mainly on the back and neck (Gatty, 2009). People from Tribe N also call it matenivanua.

Informants as described the common symptoms of diabetes: “luto ni yego, loss of weight, loss of appetite, dark spots on the skin that can turn infected (Tai Eni, 18th March, 2015)

Respondents believed that the complications of diabetes is most likely caused by sorcery and can only be cured by the traditional healers.

Typically said, “I think the cause of diabetes is witchcraft. It is just jealousy. They are putting a spell to blindfold these people to fall into the trap. So fast how diabetes is killing people in that family, one by one. The recent death is Sereima, their eldest child (Aliti youth, 11th Mar, 2015).

Aliti is referring to the fact that matenivanua (illness of the land) do not only affect people who have breached social norms and obligations. The “vu” (spirit ancestors) who cause these illnesses can also choose to punish their descendants. She evokes the fact that first born’s are particularly susceptible to matenivanua through their generation and bloodline bondage. In order to manage these health problems, the respondents described coping mechanisms rooted in tradition as being the only solution. These included:
renewing family unity with the elders, seeking purification from the supernatural God; and bulubulu or veisorosorovi (seeking forgiveness) from the tribe.

The women respondents provided three interpretations. The first was that diabetes came through individual choices and decisions; the second emphasized the role of chance and of individual responsibility; and thirdly was a context where no one really knows who is living with diabetes and so one is inherently at risk. These discussions illustrate how many of the informants believed diabetes is the latent manifestations of wrong doings filtering through the generations and affecting people either by choice or chance. Matenivanua is thought to only be healed by the traditional vanua approach and combines traditional conflict resolution and reconciliation amongst families and kinships to lead to restorations and healing as positive outcomes.

Some common signs and symptoms attributed to diabetes were: kabakuba ni ma (thickness of tongue leading to loss of appetite), loss of weight, varavara (skin rashes), loss of hair, vakaivakalalo (oedematous or puffiness) and shortness of breath. Traditional healers interviewed often discussed common treatments of these symptoms, and how they combined these as treatment for diabetes.

Informants shared the two common plants: dasalaki and tavola as commonly used for the treatments of macake rua.

Two respondents willingly show case effects of traditional medicine on their healing.

While they have in their perceptions positive attitude to healing, they are also advised to seek medical attention first to avoid complications that could arise in future.

Conclusion

Diabetes is present in Fiji and affecting the indigenous population particularly the indigenous women. It is obvious from the informants’ discussions that there are two types of challenges created by diabetes in Fiji, a challenge associated with the perception of diabetes as caused by outside influences, from deviant behaviours often stigmatized and a challenge of diabetes as a chronic illness.

The major findings are that health and illness vary between individuals, families, cultural groups and social classes. The traditional construct of illness in the Fijian society is shaped by people’s understanding and beliefs about the causes of illness. A terminal illness always carries with it a number of symbolic meanings and can have multiple effects on the sick (Arno, 1976). Cultural constructs influence health-seeking behaviour and there is a healing process that has to be followed by the sick and her immediate family. It is also evident from the analyses of the informant’s discussions that traditional practices are still active amongst iTaukei’s (indigenous Fijians) but these practices often remain hidden to non-Fijians. Informants also shared that there is a mismatch between what they need and want and the services provided. In other words, the MoH is not offering the standard and quality of care as the informants perceived. There is a need to empower the local communities with personal skills for preventing disease and maintaining health through lifestyle change, social support networks, and the ability to access social support.

Any approach or strategy to programmes on prevention and control in Fiji should seek, value and recognise addressing the indigenous cultural values, beliefs, their cultural meanings, their health narratives (modern and traditional) and social systems. Informants also discussed that the consistent neglect by public health planner, policy makers, and the wider communities are failing to see patients who actually are at risk of infection and suffer from the disease, and are in need of support and care.

There was a broad consensus amongst the informants that the most effective prevention efforts are those developed within the local context where program implementation takes place, in response to cultural understandings about the human body, health and disease.

It was obvious from the informants’ responses that the social construct of the Indigenous Fijian identity is shaped by multiple factors, that are social, cultural, religious, economic and political. In the process, the indigenous Fijian struggle to meet the expectations of the two worlds of traditional and modernity in their everyday living arrangements. However, there still need to be a coordinated response amongst the vanua, lotu and mataniu and utilizing the family, the school, and the church are the influential mediums of learning. Informants discussed that regardless of the changes that have transpired in modern Fiji, the role and potentials of iTaukei to contribute to society still have to be recognized and appreciated. A communal response strategy for diabetes prevention and intervention programs is needed in Fiji. This is the gap that needs to be addressed. Of importance, health planners and policy makers to develop a Fijian socio-cultural approach that tailor the best of traditional practices and the best of modern approaches to match the specific local context of the diabetes situation unique to Fiji. The time for Fiji to close the gap is now.

References


Bolabol, C (1986), Fiji: customary constraints and legal progress, Institute of Pacific Studies, University of the South Pacific (USP), Suva.

& Health services, Open Uni Press, Philadelphia, 2nd edition


Chavez, C. Conceptualizing from the Inside: Advantages, Complications and Demands on Insider Positionality, the Qualitative Report Volume 13, No. 3 September 2008, pp. 479-494.


Diabetes Federation, 2013 Annual report


Eves, R 2005. Claims by Traditional Healers and Traditional Medicine in PNG, paper presented to the Anthropologists in Oceania, February, ANU, Canberra.


Gatty, R (2009), Fijian – English dictionary with notes on Fijian culture and natural history, Oceania Printers, Suva.


Glasser, B (2005), Theoretical Coding Grounded Theory Methodology, Mill Valley CA, Sociology Press.


International Diabetes Federation, Western Pacific at a Glance, Diabetes Atlas 2014 Update


Ravuva, A (1992), Culture and Traditions: Implications for modern nations building In


--------------- (1983) VakaiTaukei, the Fijian Way of Life, Suva, Institute of Pacific Studies, University of the South Pacific (USP).

Rice PL & Ezzy D 1999 Qualitative research methods: a health focus, Oxford University Press, Melbourne


--------------- (1989), Qualitative Methodology and Sociology, Aldershot: Gower.

Silverman, D (2004), Qualitative Research: Theory, Method and Practice, Sage Publications, New Delhi

--------------- (1993), Interpreting Qualitative Data: Method for Analyzing Talk, Text and Interactions, Sage Publications, New Delhi

Spector, R.E (2004), Cultural Diversity in Health and Illness, Pearson Prentice Hall, New Jersey, USA

Spradley, J.P (1979), the Ethnographic Interview, New York: Holt, Rinehart & Winston


--------------- (1997), Nai Vola ni WaiVakaViti, Institute of Pacific Studies, USP, Suva.

Strengthening tobacco control enforcement in Fiji

Ali N*, Chand D*, Bonnar M1, Luveniyali N1, Waqanisau A1, Radaniva J1, Taginitoakula S1, Nasedra W1, Tovilo N1

Keywords: Tobacco legislation, Enforcement

Objectives: Ten years into implementation of the WHO FCTC, Fiji is currently the only Pacific island country that has an established and resourced tobacco control enforcement unit (TCEU). The aim of the TCEU is to ensure public adherence to Fiji’s Tobacco Control Decree and its respective regulations. The work of the TCEU includes enforcement of tobacco control laws through the application of a tobacco control fixed penalty notice.

Methods: The TCEU consists of 5 enforcement officers, 2 prosecutors and 1 officer-in-charge who actively mobilize to carry out enforcement and bookings of those violating the Tobacco Control Decree. They issue spot fines (fixed penalty notices) to people smoking in public service vehicles and designated smoke free public places, as well as violators of laws prohibiting loose cigarette or tobacco sales and sales to minors, those requiring specific tobacco control signage, and licensing requirements. The unit also trains health inspectors who may become deputized to assist in enforcement for a wider reach. The TCEU has its own prosecutor to fast track the court cases.

Results: The unit made 267 bookings in 2014 and collected $15,276.00 in fines. The total revenue expected from the bookings was $123,800.00. In total, 220 cases were listed with Fiji courts for prosecution and 47 offenders paid the spot fines within 21 days. At the end of 2014, 182 cases were pending in court due to adjournment. Challenges hindering tobacco control enforcement include limited human resources, as well as severely limited availability of transportation for enforcement officers, which is required to conduct bookings and attend court cases across the country.

Way Forward: The Fiji Tobacco Control Enforcement Unit, along with the legislative enactment of a fixed penalty notice, may be a model for replication in other Pacific islands.

---

1 Ministry of Health and Medical Services, Suva, Fiji.
2 Address for correspondence: nafiz.ali@health.gov.fj
Improving blood sugar levels of 30 years and above in Makolei village through reduction in sugar intake and increase in physical activity

Saleshni V1; Velove P2; Silatolu A M3

Keywords: Random Blood Sugar, Physical Activity, NCD, education and awareness

Lifestyle of people in Fiji places them in risk situation of contracting Non Communicable Diseases (NCD) and is a serious concern. With the known NCD’s, Diabetes is noted to be the most outstanding as it is not only increasing in number but is ranked as one of the main cause of death in the country. We conducted intervention in Makolei Village located in Nabouwalu, Bua which is noted to have a high number of amputations due to Diabetes.

The main objective is to intervene in the population above 30 years of age with increased physical activity and awareness for reduction of sugar intake in cups of tea drunk in Makolei Village. Screening was conducted for BMI, RBS and sugar consumption followed with a survey distributed to 36 individual families. Food demonstration and educational talks were conducted to sensitize the subject group towards healthier food choices over sugary food.

Families were encouraged on swapping sugary snacks with available fruits and as well as swapping sugary drinks with water, low fat milk. Awareness included reducing number of cups of tea consumed per day and reducing the amount of sugar used in tea. Individuals were motivated in taking initiative for sugar test-screening (RBS). Villagers were provided with sports equipment to engage in some form of exercise based on health status example walking, jogging, playing volleyball, rugby, rugby and doing Zumba. The programme lasted for at least 5 months after which we evaluated the project.

Our results showed that 79% of those involved in the intervention project improved their RBS reading and at least 60% improved in their BMI reading after the five months program. It was observed that 50% of the people consumed tea 3 times a day with majority using 2 tablespoon of sugar, in their tea after conducting a post intervention assessment.

To conclude, to the program has increased the desire for physical activity within the general populace. Support for sporting events and physical activities needs to be provided together with motivation within the group. Health workers and household heads were trained on planning, organising activities to help reduce NCDs in their communities. It’s important that audio/visual materials and charts is made available to villagers and schools for educational purpose and motivation for behaviour change towards a healthier lifestyle free of NCDs. Group intervention is ideal at local level.

---

1 Wellness Center, Ministry of Health Medical Services
2 WHO, Suva Office
3 Address for correspondence: s-vadana@ymail.com
Reduced proportion of overweight from the age of 20-50 years in Nabalebale village after 5 months intervention

Tikoibua S 1*, Veilove P 1,2, Silatolu A M 1

Keywords: Overweight, Diabetes, BMI, Lifestyle

Overweight is a major concern in Fiji whereas the number of people who have been diagnosed monthly and even weekly with hypertension, diabetes or both increase. Basically it is due to the behaviour and lifestyle of people that is impacting their health and wellness status. We conducted a survey and intervention in Nabalebale village in Cakaudrove where more than 50% of the population was overweight. The objective is to reduce the weight of individuals in the target group every month and also reducing BMI every three month for 80 % of the target population by the end of 2017 through local intervention. Existing activities identified root crop farming as a common engagement an is also a source of income. Community members in Nabalebale have responded to some of the verbally asked question that showed that despite knowing the impact and effect of this lifestyle on their health there seem to be fewer changes seen. Local intervention was advised in terms of Diet, Physical Activity and Backyard Gardening. Calculation of BMI after measurement for height and weight was noted. Out of the 125 screened 54 was overweight while 9 were obese. Re-screening was conducted this year but the age group was changed to 20-50 years.

We had a 85.2% participation rate defining those that continued to come for screening in the 5 months period. With Body Mass Index (BMI) at least 85.7% of those with higher reading improved dramatically to the normal range while 65.4% showed weight loss for the entire 5 months. Those that gained weight was 20.2% and those that made no change was 14.4% There are still some who are least bothered or still deciding to change their behaviour and attitudes especially with the three strategies promoted and could be due to laxity and lack of time management or giving less priority to their health. With backyard gardening about 12 household were able to start of their garden and have benefitted a lot from it as it has supplied them with vegetables for a more healthy and balanced diet and less money is spent on buying.

Finally, the three intervention strategy needs to be continuously stressed out to the community as this may change their ideas and attitudes towards healthy living. The community needs also be involved in tailoring intervention packages for their own health as it is necessary to get them motivated in the designs for them to stay involved. To improve or assist with the behavioural changes a proposed workshop having guest speakers which should include dietitian, physiotherapist, agriculture officer for them to triangulate messages delivered for their benefit.
Supporting lifestyle change of adults at risk of diabetes mellitus in Natawarau settlement

Chand D D 1*, Velove P 1,2, Silatolu A M 1

Keywords: Random Blood Sugar, Carbohydrate, 7D project management; Food demonstration; health education

Background: The Wellness 7D project management cycle was introduced to the Divisions in 2015, as a move towards the wellness for the population. We worked with Natawarau settlement in Ba in an intervention to improve their RBS readings. The project was targeted at those aged 30 years as their initial overall data showed that majority of this group had high blood sugar level.

Methods: At least 27% (N=163) of the population was screened and 32 % (n=44) of these had high sugar level. Presentation in the community was done on the data gathered from the baseline screening measuring sugar, starch intake as well as frequency of consumption. Awareness and counselling was delivered to community members. Continuous monthly screening was done for 5 months. Stakeholders such as physiotherapist and dieticians were involved for further health education talks and demonstration. Intervention programs also employed active participation in afternoon sporting activities and counselling and awareness sessions as well as reduction of carbohydrate intake. We examined weight reduction progress but more specifically RBS over the intervention program.

Results: We only worked on those with above normal reading of RBS whose number was 44. The participation rate was 32% as we excluded the sick and pregnant women over the course of the project. At the end of the 5 month program we saw 85.7% with high RBS improved in their readings and of those that improved their RBS readings 83.3% fell in the normal range.

Conclusion: Participation in Sporting activities, attendance sheet, self-confession, participant observation broke down the barriers that isolated members of the community from sharing behavioural pursuits against NCD in general. Food demonstration and awareness increased knowledge on healthy eating, active living as we interviewed community members.

This project found out that collaboration with village heads and village health workers enabled in the progress of the implemented programme. The interventions that were used were really effective as behaviours the community changed for an improved lifestyle together as a community who themselves became empowered and encouraged in the group participation.

1 Wellness Center, Ministry of Health Medical Services
2 WHO, Suva Office
*Address for correspondence: chanddelishna@gmail.com
Awareness and food preparation demonstration assisted in the reduction of salt intake at Naravuka village

Tabuaokuru D M 1, Veilove P 1, Siatolu A M 2

Keywords: salt consumption behaviour, hypertension, food additives; behaviour change

Background: Salt is found to be one of the causes of Hypertension that seldom lead to heart disease, stroke and death. Increased hypertension incidence in our routine screening was a common observation in our Nursing Zone. We formulated plans to shift our focus to the community level whereby our food handlers were targeted to find out the amount of salt they used daily in terms of table salt behaviour and consumption of foods with hidden salts.

This project was done at Naravuka village with a population of 168 with 10 suspected cases; 13 known cases and a healthy population of 54 at a location that is 30km South West of Labasa town. The objective of the project was to identify the salt consumption behaviour of Naravuka villagers. We intervened to improve their table salt behaviour with increase knowledge of salt replacement strategies by increased knowledge of hidden salt.

Methods: Questionnaires were formulated and distributed to 10 families out of the 20 families in Naravuka village which were reviewed in 2 month to evaluate daily consumption of raw salt and hidden salt. Blood pressure screening was carried out where we focused on our target group from 20-55 years. Food demonstration and awareness was also carried out to highlight preparations of foods that had food additives and hidden salt with supplements to raise its nutritive value.

Results: Interviews were carried upon revisit and results analysed. Upon analysis, it was found that 90% of the families interviewed used table salt daily which decreased to 50% after intervention. Upon interview we gathered that most of the community member and the food handlers were not aware of the detrimental effect of raw salt and how it relates to high blood pressure. Awareness helped when the dietician to stressed it. Cooking demonstration using salt additives was done and given to the community members present on that day to have the taste of the food with less salt [less than one teaspoon]. There were also a decrease in noodles and Viet-sin usage after awareness as capture in the re-assessed questionnaire. There were not much changes noted in the screening results. Overall it was noted that behaviour changes was mostly influenced by the heads of the families.

Conclusion: Due to the positive outcomes and the lack of knowledge seen at the community level at the start this intervention should continue with other villages whereby heads of the family included and should also be incorporated with school programmes. Bylaws and policies on salt should be enforced at community level for those that need strict monitoring of their salt intake if necessary.

1 Wellness Center, Ministry of Health Medical Services
2 WHO, Suva Office
*Address for correspondence: veilovep@who.int
Empowering workplace partnership in NCD intervention: A generalised workplace intervention strategy to address the incidence of obesity at the Nadi weather office

Camaira V1*, Veilave P1,2, Silatolu A M3

Keywords: Wellness in workplace, obesity, Body Mass Index, consistent participation

Obesity proves to be one of the predisposing factors to unhealthy lifestyle. The death of one of their staff from heart attack has prompted them to make a change in their lifestyle behaviours. There are about 90 staff working at the weather office, but due to shift work, only 54 staffs were screened. The objective of the project is to screen the staffs and identify those with high readings (BP/Sugar) and those with obesity and to find ways to tackle these problems.

Initial results shows that 18.5% had elevated blood pressure reading, 40.7% were obese, 40.7% were overweight, 18.5% were under the normal category and 3.7% had elevated blood sugar readings who are known cases. Those with high blood pressure reading were given dates for repeat readings. Wellness screening was conducted with the presence of Dietician to conduct one to one session, during the screening the following were measured Body mass index, Blood Pressure and Blood Sugar. With an awareness and understanding of their health status, the management adopted intervention programme for physical activity:

It included 2 hours dedicated to physical activity on every Friday afternoon. One hour was solely committed for zumba dance with an instructor hired to conduct it. A counsellor from Empower Pacific conducted a session on motivation to change behaviour/lifestyle. We had 69 member initially involved at the start of the project, however only 59% (41) stay on for the evaluation. At least 41.5% (n=17) loss weight and was encouraging on those who continued with the programme.

Consistency in participation aided in weight loss. For both genders and in the mixed ethnicity. Intervention program in the workplace is effective and requires the support of managers to release their members and or device plans that is inclusive of health and wellness for staff members. It is vital in the sense of maintaining sustainability and ownership. Similar intervention can be carried out in other work settings against other measures besides health indicators alone.

1 Wellness Centre, Ministry of Health Medical Services
2 WHO, Suva Office
3 Address for correspondence: venianac@yahoo.com
Controlling prevalence of hypertension at Naiyaca village: A post intervention analysis on the effectiveness of a targeted NCD intervention

Noisi L 1, Veilave P 1, Ligairi J 2

Keywords: salt consumption behaviour, hypertension, food additives; behaviour change

Background: Hypertension is the leading risk factors for cardiovascular disease. This project was piloted at Naiyaca Village, located 30km inland of Tavua in Nadarivatu Medical Area under Tavua Subdivision. It has a total population of 85, 32% (N=11) of >30yrs in this village have Hypertension while 7 out of the 21 screened have abnormal BP reading after the initial screening. The project aimed to assess the effectiveness of addressing causes of hypertension, specifically minimizing salt usage among food handlers at Naiyaga. Intervention introduced included addition of natural flavours (spices) and total removal of table salt during meal times for the maintenance of a healthier lifestyle.

Methods: Health profile was taken for the target group with regards to Blood Pressure readings and in an initial screening and the findings were presented back to the community. During a village meeting, discussions were facilitated on interventions measures suitable address these issue in the village. Therefore, as a result the team identified health education and cooking demonstration appropriate for the target site. Regular follow up with the assistance of the Community Health Workers was made consecutively during the six months that followed to show at least a change in behaviour and demonstration of understanding in the salt usage behaviour. Their blood pressure was also measured.

Results: Successively 26% of those with abnormal BP reading reversed to normal and 4 Hypertension cases are off anti-hypertensive medications and continue with low salt diet after evaluation in June. Mothers/food handlers reduced salt consumption by adding available flavours and removing table salt. Evaluation showed there is an improvement in behaviour reflected by 37% of the household in the community have changed their salt usage behaviour.

Conclusion: Therefore it can be concluded that community involvement at all levels of any community based intervention is proved to be successful. The study shows that involving the community in decision making on choosing appropriate intervention strategy for their communities is vital and empowering the role of the community health workers in their settings sure gave recognition and sustainability of the program. More in depth study is needed to identify the enabling factors of community participation in an I-Taukei Village setting.

1 Wellness Center, Ministry of Health Medical Services
2 WHO, Suva Office
* Address for correspondence: nikarabi85@gmail.com
Addressing salt intake behaviour in Naduri: An assessment of the effectiveness of targeted intervention towards hypertension in a local Fijian setting

Ratule L M 1, Maopa L 1, Veilave P 1, 2*, Ligairi J 1, 2

Keywords: knowledge and practices of salt usage, salt intake, salt replacement strategies, hidden salt

High salt intake was seen to be the major contributing factor in the increase number of Hypertension cases in Naduri village. Data have showed that from the 312 population, 28 are known hypertensive.

The objective of this project is to relate the knowledge of salt at source, changes in the manner of the accessibility of salt shakers and the salt related dietary practices targeting food handlers between the ages of 25-55years old.

Interview was conducted to three (3) canteen owners in order to gather data on the number of salt packets sold in a week and questionnaires were distributed to sixty five (65) households to measure the level of knowledge and practices of salt usage and intake. Food demonstration was conducted by the dietician mainly focusing on the amount of hidden salts.

As a result, out of the total 65 households only 13 answered questionnaires were received. Data showed that 8 households buy 1 packet of salt in a month whereas 7 households buy 2 packets in a month. 46% have salt shakers placed on meal tables, and 46% do not use salt replacement strategies. However, knowledge on the relationship of salt and foods high in salt and salt replacement strategy are very poor. Food demonstration was an eye opener for the 13 food handlers as to how much salt are hidden in foods.

To conclude, there is a need to robustly validate an assessment on knowledge and practice of salt usage/intake in Naduri village as this will greatly have an effect on the change of behaviour and lower blood pressure.

1 Wellness Centre, Ministry of Health Medical Services
2 WHO, Suva Office
*Address for correspondence: veilavep@who.int

Volume 6, Issue 1, 2017 36
Keywords: salt intake, salt replacement strategies, hidden salt, hypertension, food handlers

Background: Sawanikula village, located in the interior of Naitasiri alongside the Wainimala river is faced with rapid increase in hypertension over years. Data showed that the number of hypertension kept on increasing in the women population compared to men. Increased in hidden salt and fat intake from processed food was observed in most households. According to the data collected it has been affirmed that there is also a high consumption of hidden salt from processed food in Sawanikula village. Health awareness was conducted to raise knowledge level and improve salt and fat intake. We examined the effect of this behaviour change on Hypertension.

Methodology: Questionnaire that was formulated was distributed to 63 food handlers in each household. The questionnaire given was targeting their salt intake at source (food handlers), table salt behaviours, hidden salt consumption and their salt replacement strategy. Screening captured 30 or more and home visits was conducted on those with marked pressure.

Result/Findings: Post intervention results noted that most individuals were consuming excessive amount of salt recommended as a daily dietary intake.

Initial observation noted that majority uses the 1kg salt packet rather than the 500mg packet. 42% of the house uses the 1kg salt less than 1 month, 36% within 1 month, 15% within 2 months and 7% within 3 months. The project has also noted that 91% uses 3 teaspoon of salt per meal (during cooking) while only 9% uses 2 teaspoon per meal. This shows that even mothers are not aware of the daily consumption of individuals per day. The village of Sawanikula, majority of them uses table salt, as 84% families were noted to have such behaviour as compared to the 16% that doesn't, but uses salt replace instead.

Conclusion: The migration in rural dietary behavioural patterns has seen a major shift in the morbidity and mortality trend in predominant rural settings across Fiji. Use of foodstuffs with hidden salt and salt consumption behaviour can be reduced with a well-targeted intervention in a close and controlled community setting.

Effective health talk and direct involvement of community members will give them a clear understanding of the impact of high sodium (salt) intake in their bodies and the provisions of optional healthy choices as a salt replacement strategy will further encourage the behaviour for personal adoption. Further studies should be done to substantiate the effects of the strategy as an intervention tool for wider implementation.

1 Wellness Center, Ministry of Health Medical Services
2 WHO, Suva Office
*Address for correspondence: veilavep@who.int
Reduction in incidence of hypertension in a community based intervention

**Keywords:** Risk factors, physical inactivity, intake of fatty foods, teamwork and collaboration, behaviour changes,

Hypertension is one of the leading causes of death in Fiji. Some of the risks factors causing hypertension are smoking, alcohol consumption, lack of physical activity, high intake of fatty foods, obesity and genetic.

An intervention project was conducted at Nasea village that is located along the coast about 60km from Labasa town and about 30km from Seaqaqa town in Macuata.

According to our recent community survey, 35% of the population suffered from hypertension in the village. Based on the background, a health education programme was carried out in order to improve the wellness of the population above 30 yrs of age in Nasea village by 80% by November, 2016. Strategies included health awareness and education for reduction of salt intake and having salt replacement strategies to induce behavioural change. Visit was paid to the community at least three times over the five month period. A dietician was also involved and food displays/demonstration was included within program.

Screening was carried amongst the adults with age of 30 years. Out of 22 households, 10 households were randomly selected and questionnaires were distributed for salt consumption/month (use of salt in cooking). Rescreening was also done together with analysis of questionnaires. Additional behavioural changes observed included; (40%). households that were initially using 1 packet/month reduced to ½ packet/month. (2) We found none detected with high Blood Pressure. The only individual with the blood pressure of 150/95mmHg changed to 130/70mmHg after rescreening. (3) The other 6 households that were using ½ packet/month still continued the same.

Lessons learned from the project included the following; (1) health awareness and food demonstration addressed by the dietician to the participants was really a source of motivation. (2) Continuous and close monitoring of individual with high blood pressure enabled the person to reduce blood pressure. This means the individual was advised on SNAP and advised on 3 consecutive visits. (3) Lastly, it could be negligence from the other 6 households that really didn't empower the families to change.

We affirmed that good teamwork and collaboration amongst health personnel and villagers of Nasea village had enabled in successful and effective completion of the project.

Collaborative effort is needed for PHC interventions in communities. Health care providers should also continue to address on the risks of hypertension in communities, in order to create empowerment and make healthier and easier choices.
Salt reduction in Valeni village – A qualitative study on modifiable measures to curb the incidence of hypertension at Valeni village

Nakanacagi U 1, Veilave P 2*, Ligairi J 1*

Keywords: Raw salt intake, hidden salt intake, empowering mothers, younger generation, hypertension

Valeni Village is one of the most populated villages in the Nakorovatu Zone and was chosen for the 7D wellness project. This was due to the high number of hypertension cases in Valeni village and the age group diagnosed, youngest was within the age range of 20 years, and was quite alarming. One of the contributing factors is the use of salt, raw (table salt) and the use of other products that contains hidden salt. Empowering mothers on reduction of salt while cooking and discouraging the use of table salts can be very helpful in targeting salt reduction. The objective of the project was to see that by the end of December 2016, at least 75% of Valeni Villagers reduce their use of table salt by using natural additives like lemon, ginger etc and cut down on the consumption of hidden salt and an increase in the reduction of salt during cooking. Increase in number of hypertension was detected through Screening done every year. The incident of hypertension in Valeni was detected by the screening results done by zone nurses in the previous years. Information on individual’s lifestyles and food choices in relation to salts were gathered through awareness programmes and in interview questionnaires. In Valeni, the new cases are always more than one every year. In 2015 there were 8 new cases and this year2016, there were 6. In the Nakorovatu Zone there is 160 cases of HTN, 24 is from Valeni and for Dual Cases, there is 14 altogether and half of it are the Valeni cases. Results gathered after the survey through pre and post questionnaires, observation and through stories told by the CHW and Turaga ni Koro. For table salt behaviour the villagers collectively agree for a no table salt policy to be established in the village. Concerning hidden salt, people are now aware of the hidden salts, like for chasers they now go for fruits (pineapple, pawpaw & sugar cane) instead of bean, peanut and Chinese lollies. Mothers have also agreed on the use of natural additives rather than salt as form of reduction of salt at source. In conclusion, tackling hypertension can be possible through well targeted strategies at grassroots level. Members of the community especially the younger generation needs to be empowered on the whole issue of behaviour modification to ultimately prevent the increase in number of Hypertension. Further studies to be carried out to explore the efficacy of the intervention strategies in similar settings.

1 Wellness Center, Ministry of Health Medical Services
2 WHO, Suva Office
*Address for correspondence: veilavep@who.int
“Blood pressure level drops with local intervention” – An assessment of localised intervention in Laselevu Village

Narokolevu R S 1, Velave P 1*, Silatolu A M 1

Keywords: Community Level; Food handlers, reduce intake of hidden salt, snacking, shopping, conscious eating; remote community

Hypertension is a rising problem in the world including Fiji. At community level it is also rife in the rural level. Intervention was conducted at Laselevu Village located in the highlands of Naitasiri, Fiji where Hypertension cases diagnosed in the community continued to increase from the year 2015 to date. The community has a population of 222 with a target population of 89 in the 30 years and above age group of which 14 are known cases of hypertension. The objective of this Project is to provide intervention that Reduces Salt at cooking source, Reduce table salt, Reduce intake of hidden salt and Control Hypertension cases at Laselevu Village. Measurements were taken before and after 5 months intervention on the amount of salt used at cooking source, table salt usage and intake of hidden salt through processed foods.

Intervention included health awareness and education on salt usage and NCD as well as cooking and salt replacement strategies (gardening).

Findings from distributed questionnaires in 15 households in this community gathered that food handlers in the kitchen when cooking a pot of meal for the family, 26% of food handlers added only 1 teaspoon of raw salt to the pot of meal prepared, 40% added 2 teaspoon of raw salt, 26% added 2 table spoon of raw salt and 7% added 3 table spoon or more.

The study also looked at how much salt is included in a monthly shopping budget for each household. According to findings from questionnaires, 80% of this household were consuming one packet of salt every month, 6.7% consumed one and a half, and 13.3% consumed 2 packets each month. A total of 46.6% of studied household mentioned that it was impossible for their household to go without salt in a day. 80% of the household visited in this study were all consuming table salt during meal times.

The study was focussed on weekly consumption of processed foods, 53.3% was seen to consume at least 1 canned fish in a week. Canned tuna was another common processed food consumed and 33.3% consumed at least 3 cans. 100% of studied household include packed noodles on their menu each week. Also 40% of this household studied, consumed at least 1 packet of biscuit in a week. As gathered from this study, 46.7% of the studied household use vat-sin in cooking their meals and 80% uses soya-sauce. Other additions to hidden salt foods include snacks consumed by children and also ‘finger food’, snacking by adults in occasions like Kava sessions.

After implementing the project, positive changes have been brought about in this community. Changes in the proportion and size of salty food intake have taken place. The practice of having table salt has been beaten as people have stopped the intake of raw salt or table salt. Replacement strategies with harvests of gardens herbs were employed for a healthier choice. It can be concluded that controlling hypertension in the community through reduction in salt intake is possible. More educational and motivational activities at community level can improve the behaviour of people at risk of hypertension and maintain the healthy population of people in a community. Conscious eating needs revamping with snacking in adults and children for local food supplement as it impacts the wellbeing of the individual. We need to sensitize our community on conscious eating.

However, further in-depth assessment and study to be done to evaluate the strengths of the interventions and strategies for local implementation for group motivation and involvement and ownership.

1 Wellness Center, Ministry of Health Medical Services
2 WHO, Suva Office
*Address for correspondence: velavep@who.int
Prevalence of obesity in Fiji: A literature review

Singh K¹, Sendall M², Phil Crane³

Keywords: Obesity, Non Communicable Diseases, Globalisation, Urbanisation, Social cultural, Physical activity.

Abstract

The aim of this paper is to understand the social and cultural components that contribute to obesity in rural and remote areas of Fiji islands. The study sought to help our understanding of the perceptions of the communities’ behaviours related to obesity within their unique social context. The burden of obesity has increased rapidly in developing South Pacific Islands in recent decades, prevalence in many Pacific Islands as high as or even exceeding developed countries. Obesity is a complex, multifactorial chronic disease involving environmental, social, cultural, genetic, physiological, metabolic, behavioural and psychological components. The high rates of obesity and chronic disease in the island nations of Samoa and Nauru, Fiji, and Melanesia have demonstrated this crisis, and it is epidemic. Obesity are the cause of mortality in the world, contributing to 36 million mortality yearly and responsible for 47 percent of the worldwide burden of illnesses. Burden of obesity and the risk factors have arisen in levels since the progression of Economic globalisation and urbanisation, which have been influenced social determinants of health in Fiji such as poverty, lack of knowledge, decline health literacy, lack of health resources, infrastructure and unhealthy ecology. The literature was gathered through widespread searches on academic databases, such as: ProQuest, Trove, EbscoHost, PubMed, Web of Knowledge, Science Direct, and Google Scholar. The exploration was, in the main, guided by a number of key words, for example obesity + factors + NCDs, and year of publication from 1997 to 2014. During an extensive literature review limited empirical evidence was found on obesity. What information was available focused on developing and developed countries; however, there was a lack of evidence of the social cultural factors related to obesity in rural and remote area of Pacific island countries.

This research is expected to have an impact on policy development in the rural and remote Fijian community to prevent obesity and reduce Non Communicable Diseases (NCDs). It will highlight the importance of evolving a set of guidelines to influence policy makers in developing an evidence-informed policy for the rural and remote communities. Further, the study will make an important contribution to public health intervention evaluation and our understanding of how to develop evidence-informed policy making capacity, not only in Fiji but also for other Pacific islands countries that have a high prevalence of obesity. Obesity is more than just an individual problem, it is a community problem, driving up health care costs and reducing productivity. This research also opened up discussions for other researchers and policy makers to rethink how they deal with communities that have sensitive cultural issues around body size and the influence of modernization. It is hoped that the current research will also guide future obesity prevention determinates in the rural and remote areas of Fiji. Such guidelines will be particularly important to the Ministry of Health of Fiji and other Pacific nations, where the prevalence rate of obesity is the highest in the world, and the complications from obesity is a major burden on health care resources.

Introduction

Prevalence of obesity began almost simultaneously in most high-income countries in the 1970s and 1980s. Since then, most middle-income and many low-income countries have joined the global surge in obesity rates for adults and children (Sassi, Devaux, Cecchini, & Rusticelli, 2009). In Fiji, Non Communicable Diseases (NCDs) have been the leading cause of deaths over the past three decades. According to World Bank Group (2012), 82 percent of all mortality statistics in Fiji were contributed to by the NCDs, which are responsible for one third of all mortality rates in the age group 40-59 years. This figure is an increase in the figures that were announced following a national survey in 1980, which positioned the mortality rates caused by NCDs at just over 50 percent (WHO, 2010a). In Fiji, the prevalence of NCDs, such as diabetes, hypertension and heart disease, is increasing. The change in the disease pattern reflects the increase in Westernisation, which is significant in terms of the change in social, cultural, economic and environment areas (WHO, 2010a).

In Fiji, the burden of diseases caused by obesity, namely, related to social, economic and health consequences, is increasing rapidly and is expected to increase significantly. The Ministry of Health (2011) reported that type II Diabetes Mellitus is one of the highest NCDs. NCDs have severe complications and chronicity which affect the adult population during their working lifetime. The diabetes rates have increased progressively, with an estimated 500 new cases being reported, through the diabetes notification and inpatients reporting system of the Ministry of the Health, each year (Ministry of Health Fiji, 2011). Early efforts to battle obesity in the Pacific region evaluated diet and exercise behaviour change interventions that were focused at the individual; they were shown to be significantly ineffective (BeLue et al., 2009). According to the Fijian Ministry of Health Fiji (2011), the National Diabetes Centre, supported by WHO funding, was established in 1980 to strengthen their efforts to prevent and control diabetes. In 1991, the National Non-Communicable Disease taskforce was formed to coordinate activities for the prevention and control of NCDs and to develop interventions. The healthy islands concept was adopted as a unifying theme for health promotion and health protection.

¹Queensland University of Technology
²Address for correspondence: K13.Singh@qut.edu.au
³
Methods
The literature review commences with an examination of the global trends and patterns of obesity, social cultural factors, and interventional studies, with the focus on developed and developing countries and the Fijian context in English language. Next, the key findings from the literature review and the conclusion are presented.

The literature was gathered through widespread searches on academic databases, such as: ProQuest, Trove, EbscoHost, PubMed, Web of Knowledge, Science Direct, and Google Scholar. The exploration was, in the main, guided by a number of key words, for example obesity + factors + NCDs, and year of publication from 1997 to 2014.

During an extensive literature review limited empirical evidence was found on obesity. What information was available focused on developing and developed countries; however, there was a lack of evidence of the social cultural factors related to obesity in rural and remote area of Pacific island countries.

Results & Discussion
Economic globalization impact on obesity
Additionally, obesity has increased in parallel with economic globalization; this observation then poses the question about whether these two issues are associated. Economic globalization is defined as a process characterized by the growing interdependence of the world’s people; it involves the integration of economies, culture, technologies, and governance (Chapman, 2009). A study, conducted by Costa-i-Font, Mas, and Navarro (2013), in 23 countries over 15 years, identified three types of globalization as contributing to obesity: economic, political and social. Further, economic globalization appears to be affecting both developed and developing nations. Such economic globalization seems to create constructive modifications to developing nations, such as growth in socioeconomic status and education, and reduction in mortality (Aikins et al., 2010; Bhagwati, 2007; Misra & Khurana, 2008).

Economic globalization has helped developed nations through increasing employment and efficiency, and improving quality of life (Sachs, 2009). However, economic globalization has also generated significant concerns for developing nations, specifically the impact on nutrition (Chopra & Darnton-Hill, 2006; Unwin & Alberti, 2006). Further, increasing obesity in virtually all nations is driven mainly by changes in the globalized food system, namely, manufacturing more processed, inexpensive, and effectively advertised food (Swinburn et al., 2011). In Fiji, the free trading system is moving away from the domestic production and consumption of staple foods and towards imports of staples and obesogenic processed foods (Abduali, 2010).

Drewowski and Popkin (2007) showed that economic globalization played a part in the early stages of the ‘nutrition transition’ in Fiji, where traditional primary diets rich in whole grains, fruits and vegetables were substituted with ‘Westernized’ diets rich in fats and sugar, and nutritionally poor in calories.

Costa-i-Font et al. (2013) systematic literature review provides robust evidence that economic globalization has a strong association with obesity, and that the effects of economic globalization contributes to cheaper food prices and food transitions. Further, a dramatic shift has occurred regarding how the global population eats, drinks, and moves. These changes clash with human biology and has created significant changes in body composition. Kastorini et al. (2011) predicted that, in 2030, an estimated 2.16 billion adults, worldwide, will be overweight, while 1.12 billion will be obese due to food manufacture and supply patterns, combined with the rise in the number of inactive jobs (Kadiri, 2005; Maher, Smeeth, & Sekajugo, 2010). Additionally, due to rapid economic globalization in low income countries, problems have also arisen with the inconsistency in food labelling. According to the authors, this problem has had a major contributing effect to obesity and has increased the risk factor of NCDs in the Pacific region.

Urbanization and Suburbanization impact on obesity
As a consequence of rapid economic globalization growth, urbanization, and the move away from the traditional ways of life, obesity has become a critical health issue for which many nations were and are not prepared (Routley, 2011). Examining the increase in the economic globalization effect in Africa, Steyn et al. (2005) found a similarly strong association with urbanization and suburbanization, which is occurring rapidly in many developing countries, including Fiji. Rapid urbanization, which appears to originate with globalization, has created an environment in which overweight and obesity risk increase (Kadiri, 2005; Maher et al., 2010). Further, there appears to be a strong link between urbanization and suburbanization the negative impact of the intake of fats and caloric intake. Additionally, female labour force participation also appears to have a strong relationship with obesity outcomes (Costa-i-Font et al., 2013; Misra & Khurana, 2008).

In Fiji, urbanization and suburbanization has increased the threat of obesity. Literature review, conducted by Costa-i-Font et al. (2013), has shown that there are concerns about the rapid increase in urbanization and its association with the surge in sedentary lifestyles and the availability of more processed food options. Bleich, Cutler, Murray, and Adams (2007) showed a strong positive association between urbanization and obesity in advanced economies, where there is more accessibility to a greater variety of food than in rural areas. Additionally, urban migration, due to globalization, frequently affords extreme modifications in nutrition and physical activity levels (Popkin, 1998; WHO, 2010a). Further, people living in metropolitan areas frequently eat food which is entirely different from hat eaten by people living in the rural areas of the developing country (Popkin, Adair, & Ng, 2012). In such rural areas, many people grow and eat traditional staple diets that are low in fat and calories (Bleich et al., 2007; Caballero, 2005). In contrast, even in developing countries, urban populations have increased accessibility to imported ‘Westernised’ diet alternatives (Pouano, Bradley, & Hughes, 2005), which are advertised to people through a wide range of multimedia sources (Kruger, Pouano, Senekal, & van der Merwe, 2005). These foodstuffs are regularly available at subsidized, inexpensive prices, making it economical to the alternate low-priced vegetable fats and accessibility and fast foods instead of traditional staples (Misra & Khurana, 2008; Stiglitz & Charlton, 2005).

The WHO (2010b) states that a revitalization of a healthy setting approach cannot be achieved by the health sector alone. In the Pacific region, the healthy setting in the cities and the villages have been widely accepted and taken for granted however, the rapid increase in urbanization and suburbanization means that those healthy setting have not been sustainable (WHO, 2010b). The study by Becker, Barwell, Herzog, Hamburg, and Gilman (2002) found that, in Fiji, teenage girls in urban centres were
profundely influenced, in their attitudes and behaviours, by their exposure to the mass media's marketing of beverages, which is shifting people's preferences away from traditional staples. For example, the participants, with EAT-26 scores (the likely value as an indicator of disordered eating in teenage girls) greater than 20 was 12.7 percent in 1995, compared with 29.2 in 1998. The latter data was significantly related to dieting and self-induced vomiting; self-induced vomiting was not used to control weight in 1995; however, this result had changed to 11.3 percent by 1998. This study has some validity, although it has some limitations as no clinical diagnosis was not used. Further, although the study identified disordered eating attitudes and behaviours they cannot necessarily be equated with the presence of eating disorders.

There are inequalities in the obesity rates between Fijian males and females; however, socio-economic status and urban lifestyle do not sufficiently explain these inequalities. Abdulai (2010) contends that only a certain level of growth, where wealth regulates accessibility to nutrition and physical activity, plays a part in most people's days. The impact of urbanization and suburbanization on obesity has been well researched around the globe, however, more research appears to be needed to understand the factors which increase obesity in rural and remote areas of Fiji. This understanding is important as there is an increase in the rural to urban drift, and vice-versa, with implications for people from rural areas who, in the main, do their household shopping in urban areas. The major result is the greater consumption of processed food, even though rural and remote villagers sell their fresh produce in the urban markets.

Sedentary behaviour and occupational impact on obesity

Sedentary behaviour describes a distinct class of activities that require low levels of energy expenditure in the range of 1.0–1.5 METs (multiples of the basal metabolic rate) 3 and involve sitting during commuting, in the workplace and the domestic environment, and during leisure” (Thorpe, Owen, Neuhaus, & Dunstan, 2011).

The nature of occupations also appears to have an impact on obesity prevalence in Fiji. Employees in urban occupations are frequently more inactive than employees in rural occupations, prominently due to decreased physical inactivity during working hours (Misra & Khurana, 2008; WHO, 2010a). Worldwide, Popkin (1998) found that there was a shift to more deskbound work, even for individuals working in agriculture, industry and services, with similarities in the types of work that make up the numerous occupations. As adults spend a lot of their day working, how they work has a strong effect on their complete daily energy disbursement, and this aspect is crucial in terms of being overweight and obese (Allman-Farinelli, Chery, Merom, & Bauman, 2010).

As well as reduced activity being related with occupation, there is an increase in activity through the use of transportation to get to a job or to get to the university, as well as the increasing use of technology at home, and extra inactive leisure time (Popkin & Doak, 1998). The availability and affordability of television and computers substitute for more active leisure undertakings, particularly in situations where the outdoor environment is considered unsafe (Popkin et al., 2012). As new technologies infiltrate Fiji’s rural islands, employment tends to become less physically challenging.

Additionally, the movement of the Fiji workforce into occupations with higher salaries and better employment conditions does not always signify a negative tendency. Moreover, attention should be given to determine which of these conditions generated the development of obesity and other numerous health problems. Recently a knowledge-brokering study was conducted in Fiji. It focused on workplace obesity prevention approaches, by the government and by NGOs, that were developed to facilitate workplace obesity prevention policy (Gade Waqa, Helen Mavoa, Wendy Snowdon, Marj Moodie, Rigieta Nadakuitavuki, et al., 2011; Gade Waqa, Helen Mavoa, Wendy Snowdon, Marj Moodie, Iimaima Schultz, et al., 2013). The study is distinctive in that it was the first to study the perceptions of the participants about a knowledge-brokering approach which were designed to reduce obesity in a lower-middle income country in the South Pacific. Importantly, the knowledge-brokering team had in-depth local knowledge and was able to identify the knowledge-brokering components that were likely to be effective in the specific context of Fiji. The research had some limitations. Firstly, there were insufficient NGOs, so that the participant numbers within the NGOs were too small to make a valid comparison between the NGO and government organizations. Further, there was a lack of control over the selection of the participants, resulting in the participants having a wide range of evidence and performance based skills and roles. Additionally, having the research team members interview the participants had both strengths namely, that the interviewers had reviewed all the data from each participant (baseline and follow up) prior to interview and weaknesses or limitations (there was the potential for bias). Given the close relationships developed between the interview team and the participants, they were able to speak freely during the engagement process and, thus, they were able to make a number of suggestions for change; as the interview transcripts included negative comments, it is unlikely that the participants felt constrained in their responses (G. Waqa et al., 2013; Gade Waqa, Helen Mavoa, Wendy Snowdon, Marj Moodie, Rigieta Nadakuitavuki, et al. 2013) workplace interventions rarely targeted evidence-informed policymaking structures and processes to prevent obesity and reduce NCDs.

Lack of social relationship impact on obesity

The lack of social relationships have been shown to be influential on health, both physical and mental (Seeman, 2009). The advantages of such social relationships can be emotional (intimacy, sense of belonging, comfort), instrumental (guidance, advice, physical assistance), and material (money, goods, other resources) (Kana’laupuni, Donato, Thompson-Colon, & Stainback, 2005; Pridmore, Thomas, Havemann, Sapag, & Wood, 2007). Further, social integration reduces mortality and disability (Kana’laupuni et al., 2005), elicits faster recovery rates from illness, and offers protection against mental illness (Seeman, 2009). However, relationship complications between social relationships and health have been explored using social network studies, as well as qualitative concepts, such as social support and social wealth (Seeman, 2009).

Further, social relationships are affected by stress, which can sometimes lead to binge eating (Zhao et al., 2011). A large study, undertaken in the U.S., from 1999 to 2008, demonstrated that a high prevalence of stress related eating contributed to the rapid increase of obesity. In the study, 72.3 percent of adult males and 64.1 percent of adult females were obese or overweight (Flegal, Carroll, Ogden, & Curtin, 2010). Similarly, Zhao et al. (2011)
found that, in the U.S., there was a link between stress and appetizing or comfort diet intake. Further, the perceived stress was identified as being related to a significantly lower intake of healthy nutrition, probably as a result of increased consumption of highly appetizing nutrition.

Cohen and Sherman (2014) argue it is just as important to learn about the effective ways to protect overweight individuals from negative social and psychological impacts of this condition, as opposed to only examining ways to induce weight loss. Consequently, protective interventions might be most efficient if they are aimed at overweight individuals. Today, there is a prevalence of “anti-fat” attitudes in society, which can lead to the discrimination and stigmatization of overweight and obese people. For this reason, protective interventions might be most effective if they were aimed at addressing the society which judges and treats them so poorly (Thomas, 2012).

Carroll (2013) posited that a key aspect in successful adult socialization is for one to have an active and productive engagement in society; it is important, therefore, to determine how and why obesity is an obstruction to this engagement. Overall, social participation has been shown to benefit people’s lives, regardless of age, in a number of ways, such as the decreased likelihood of mortality (Zimmer, Martin, Jones, & Nagin, 2014), improved psychological wellbeing (Overman et al., 2013), and better physical and mental health (Whaley, Smith, & Hancock, 2011). As these benefits can help offset many negative factors associated with obesity, it is important to investigate if obesity, or being overweight, is associated with decreased social relationships.

Environment influence on Nutrition Intake and Physical Activity Impact on Obesity.

The spaces in which individuals live, work, play and eat (referred to here as the ‘environment’) are strongly associated with nutritional intake and physical activity (Caballero, 2005). Worldwide, it appears that nutrition interconnects with local environmental factors and increases the prevalence of obesity among people (Swinburn et al., 2011). The association among the environmental and individual factors, includes genetic makeup, and reveals variations in body size among individuals.

An interventional study was undertaken in Fiji by Waqa, Moodie, Schultz, and Swinburn (2013) using faith based organisations and schools to increase physical activity and promote a healthy eating environment; this process involves community engagement. However, in the design of strategies and programs, cultural and social factors were seen as influencing health behaviours, and affecting specific groups. One of the best mechanisms for intervening was determined to be capacity building. The challenge for health promotion programs such as these is to understand how to accommodate an essentially bottom-up community capacity-building approach, within a school system, that is conventionally managed top-down. Issues associated with these two diverse styles of programming need to be clearly thought through at the program’s outset. They need to be viewed as parallel, complementary tracks rather than as programs that compete and create tension. While schools may seem a relatively easy setting in which to target adolescents, multiple issues can arise when working in this setting. For example, in this study, despite strong collaborations and good working relationships with the schools, the study experienced multiple challenges with the implementation of different project components, such as a healthy eating environment in the school’s canteen. These changes to the environment resulted in a drop in the profits of the school management, and so they withdrew from the study. The study design was deemed not suitable for the Fiji islands, especially as Fiji has a very strong cultural and parental influence in the community. To build a strong community environment there needs to be strong community engagement. Such engagement which is not manageable in the urban areas of Fiji due to the diversity of cultures and ethnicity; in contrast, rural and remote Fiji has a strong sense of community engagement.

In 1993, Fijians purchased 79.9% of their daily food; they still grew their own root crops, green vegetables, and fruit (Wate et al., 2013). However, there have been marked changes in the Fijian diet over the last two to three decades, with a shift from a traditional diet, high in complex carbohydrates and low in fat, to a more Westernized and less nutritious diet, derived from refined sugars and fats. H. M. Mavoia and McCabe (2008) reported a 62% increase in the fat intake between 1963 and 2000. The dramatic increase in the proportion of total energy derived from cereals and sugars between 1980 and 1993 was accompanied by a concomitant reduction in the consumption of traditional foods, especially root crops and fresh green vegetables. Moreover, there has been a decrease in the consumption of traditional root crops attributed, in the main, to urbanization, the abolition, in 1962, of a regulation requiring Fijian males to produce sufficient crops for their families, an increase in the export of dalo (taro), and the substitution of root crops with cereals.

Currently, in Fiji, prestigious or high status foods include yams and pork. Root crops are highly valued throughout the Pacific as a protein, which is produced in large quantities for ceremonial occasions (H. Mavoia et al., 2012). Root crops and protein are also highly valued and their variability reflects their value. For example, pork is valued more than fish by coastal-dwellers as fish is more readily available than pork (Wate et al., 2013). Further, imported food items have also become highly valued. Highly valued foods retain this high status even after they are economically and physically accessible. The decreased consumption of fruit and green vegetables in Fiji may be due, in part, to the rural-urban shift; as part of this shift, Fijians are moving to squatter settlements where there is minimal space for gardening.

The reduction in physical activity levels, which are associated with nutrition imbalance and weight gain, have been widely studied (WHO, 2010a). In 2010, the WHO (2010a) reported that 60% of the world’s population does not undertake the suggested level of physical activity to achieve health benefits. Physical inactivity rates have been identified as varying significantly in developing nations (from 17 to 91%) (Oldridge, 2008). Additionally, the fast growth of nutritional transition has seen a reduction in physical activity levels and hours of relaxation, as well as a rise in the levels of stress (Tagoe & Dake, 2011). Nevertheless, physical inactivity is associated with increasing urbanization, alongside the introduction of technologies that create work and more inactive physical activity (Abubakari et al., 2008; BeLue et al., 2009; Kruger et al., 2005). H. M. Mavoia and McCabe (2008) contend that locality also influences the type and frequency of Fijians’ physical activities. Further, urban dwelling Fijian adults engaged in less frequent and less strenuous activities than did their rural counterparts. However, according to (H. Mavoia et al., 2012), more urban-dwelling adult males (43.9 percent) did...
regular “exercise” for fitness and health than did rural-dwellers (36.4 percent).

A 2004 pilot study of adolescent physical activity was conducted with three Fijian secondary schools. The findings show that 98% of students had one or more 35-minute period of physical education each week, and 60% of students engaged in some form of vigorous activity (Dewes, 2010). This data appears to show that Fiji, and other developing countries, are exceptionally vulnerable to increasing obesity rates, with the limited levels of physical activity, the high prevalence of obesity among the poor, and the rapid introduction of calorie-dense and increasingly cheap imported food (Caballero, 2005; Tuet, Marjoh, & Ha, 2010; Walker, Walker, & Segal, 2004)

Social cultural perceptions of body image impact on obesity

Body image has been gathering attention within the health sciences and, more recently, within the psychological sciences. A significant subject, which is often ignored when contemplating obesity in the Pacific context, is the cultural perceptions surrounding body image (WHO, 2010a). Obesity is a perception which is considered differently across cultures; seeing it as a disease is a Western phenomenon (Puaone et al., 2005; Renzaho, 2004). Further, obesity has been traditionally connected with wealth, health and happiness. From this perspective, it makes sense that ample (or over) weight symbolises privilege and obesity and, corroborated with a larger sample image among a positive characteristic, greater influence wealth, health and happiness. Fr 2010; sh 2004 and the rapid introduction in 2004 of these small sample were a number goals to the body image significant disease or cultural environment which has the potential or cultural factors that relate the nutrition transition and the prevalence of obesity across all Pacific islands, including the Fijian Islands.

Conclusion

There is paucity of research in the literature pertaining to social cultural factors that relate to obesity in the rural and remote areas of Fiji. Further, the literature review highlighted the need to understand, at the local level, the impact of globalization and urbanization on food supply and shopping behaviour change. Also, there was the need to understand the social cultural aspects of the environment and how it influences eating habits and physical activity. In addition to addressing these issues, the current research seeks to identify the social cultural perceptions of body image, and how these social cultural factors impact upon obesity in the is still in its infancy. Hence, this research will explore, and contribute to our greater understanding of these issues.

References


Volume 6, Issue 1, 2017 45
LITERATURE REVIEW


Waqa, G., Mavoa, H., Snowden, W., Moodie, M., Schultz, J., McCabe, M., ... Swinburn, B. (2013). Knowledge brokering between researchers and policymakers in Fiji to develop policies to reduce obesity: a process evaluation. Implementation Science, 8(1), 74.


Wate, J. T., Snowden, W., Millar, L., Nichols, M., Mavoa, H., Gauldar, R., ... Swinburn, B. (2013). Adolescent dietary patterns in Fiji and their relationships with standardized body mass index. Int J Behav Nutr Phys Act, 10(1), 45.


WHO. (2010b). WHO raises warning over the effects of urbanization.


PERSPECTIVE

A journey of survival: Fiji’s public health Journey towards wellness

Velave P 1,2, Ligiari J 1,2, Silatolu A M 1, Tukana F 1

Keywords: Primary Health Care, Wellness, Public Health Journey

“Survival doesn’t come easy son, but it is characterized with dire determination of a sight of reality beyond us”, Pita barked out loud in his pursuit to embed the beauty of a reality inside him to his 5 year old son. “But how can we get safely across dad, we have absolutely nothing”, “Look around you boy, you can easily start with what you have”.

The story of how we arrived at this place began with extractions of clauses from the British Public Health Act that were relevant to the vast changing realities inside our colonial eras. Consolidation of those clauses resulted in the formulation of Fiji’s Health Ordinance of 1936. Beautifully placed and articulated in that it reached deep into the fabrics of indigenous social existence and dictates and integrates health as an integral component of daily living.

This became the tug boat that ensured the initial departure of Pita and his son to a reality they believe they can possess.

Figure 1 - DMII/HTN Prevalence Rate (40yrs Trend) vs Wellness Journey to 2025

Even now he still marvels at the innocence of life they once lived on the other side of the sea. A season where Fiji’s communitarian culture facilitated a high degree of community engagement that was structured under an effective indigenous governance and judicial system. No one lacked for anything as each labored for all. They called it “solesolevaki” and “sasamaki vakoro” was mandatory.

Pita continually recounted the days where the Buli’s would turn up to their village for a quarterly monitoring of agricultural activities for all male villagers for a certain age group. That was long before Fiji’s trade link as part of a global village was established.

“Son,” Pita exclaimed, “that is a season that can be called the organic age” and is marked with the abundance of local delicacies that builds who you see before you today,” he boasted, as they journeyed on, now in open waters.

The beauty of the horizon they beheld was short-lived as dusk was fast approaching. Night brought with its own atmosphere that automatically changes the entire environment. “Dad, what had happened and what can we do to ensure our safety?” the son asked.

The review of the Fijian Affairs Act in the early 1970’s also had major implications on our Public Health reach, as the role of health workers in predominantly Fijian villages was reduced to merely advisors to the Provincial Councils.

In our effort to bridge the gap of knowledge and understanding that now exists between health care providers and the people, a beacon of light shone out powerfully in the midst of nowhere in the open sea that stands to be a marker in our public health intervention in Fiji. With a global theme of “Health for All” by the Year 2000 and the development of “Primary Health Care” as the global tool, the 5 principles and the 9 components of the

1 Ministry of Health and Medical Services, Suva, Fiji.
2 World Health Organization, Suva, Fiji
3 Address for correspondence: velavep@who.int
PHC became the guiding compass of our movement into the future.

Because of the architectural make-up of their vessel and its irrelevancy to their current location, Pita and his son began to face difficulty in the open sea. “I had no idea son that we would go through such an encounter, but I am sure that we can do something up ahead,” Pita remarked as the duo journeyed.

While PHC set a strategic direction moving forward that resulted in the control and perhaps almost elimination of most of the infectious diseases, by trend one can easily say that it can also be the birthing place of the NCD tsunami that hit Fiji later in 2002. Pita glanced over to his son as he asked “Dad tell me, how does tsunami starts?”. Without hesitation, Pita with absolute certainty and specificity, outlined the little understanding people have on the symbiotic relationship between the social determinants of health and its major impact on peoples’ blood chemistry. A period that was recorded by the Fiji Bureau of Statistics to be one of mass rural-urban migration that placed almost 60% of the population into a sudden state of culture shock.

The local adaptation process of the 1986 Health Promotion Resolution saw the establishment of the “Healthy Islands” program both at the regional level and for Fiji in particular. This was further boasted with the Fiji’s bilateral Program on Health with Australian Government, the Fiji Health Sector Improvement Program (FHSIP). It set the platform accurately for major interventions on the social determinants of health but at the end fall sort on addressing the risks in its entirety. Evaluation by Tebbutt Research and the Fiji School of Medicine recorded a few significant positions that could have been points of capitalization for further public health advancements.

The day became suddenly dull and gloom, “storm ahead son, brace yourself” Pita consciously remarked as they noticed a sudden change in the weather and the atmosphere.

With NCDs now becoming a global concern, the WHO sought to establish a global NCD baseline from all its member states. At this point NCD in Fiji had placed increasing burdens on resource allocations internally. Specifications and assumptions met reality with NCDs in Fiji reaching epidemic level as the result of the first national NCD STEPS Survey was published.

At the height of the storm with rain falling like a waterfall on the duo, the 5 year old felt a resurgence of inner confidence bubbling higher inside him as he turned to see his old man with a full smile that stretched across the sky. “Son” he said, “this is the best time to be on the sea”. “To continually feel refreshing rain from heaven when we are faced with obstacles here in time”.

And sure enough, this becomes the birthing place of a global strategic movement towards a unifying effort of addressing NCDs as a whole. Global targets make it even more necessary that national strategic directions are realigned to achieving the same.

Two solid phases of strategic movement end with the second NCD STEPS Survey, and the result sets a platform for recourse. “Seagull are always a welcoming sign at sea son,” Pita said groggily as he was awakens to the sound of a passing flock of seagulls searching for the best feeding spot at sea. “Keep a look out, for land is imminent”.

On the horizon a beacon on a solid rocky little island looms as Pita described the nature of this sea to his son. “Son,” he said, “this is the most dangerous sea any man can ever sail. During storms, decisions here are important because it ensures either life or death. During uncertain weather conditions, a decision for turning back is always the right decision to make at this point”.

The Package for Essential Non Communicable Disease (PEN) is by far the most important and essential risk assessment tool in use at the primary health care level. Decisions here can only be in two distinct directions, a reversal for better quality of life or a movement forward to receive better quality care.

7D becomes the core of all interventions at the grassroots level. Risk eradication at that level are a possibility for a handful of reasons. “You will encounter all of those ashore son, and your survival will always rest on your choice”. Pita continued through until night fell.

A slight breeze was coming in from the East that felt as if it was arising out from the pole that gripped the entire atmosphere into one of ice and frost, making the morning unbearable to embrace. Seconds later, with it came a brief shower that turned the entire sea into absolute and unbelievable calmness. All of a sudden, one, two, three rays of light form an arch on the horizon, as Pita’s son screamed in excitement “rainbow, rainbow”, and land was at last a relief to behold.

“Josua, son, this is my last piece of advice before we hit land. Know that there are seven human behaviours, considered wellness behaviours namely; breathing, eating, drinking, moving, thinking, resting and reproducing that constitutes the y-axis of the wellness matrix. These seven behaviours represent vital human behaviours needed for creating and maintaining human wellness and reducing risk to illness as one sails through life.”

References
National Center for Health Promotion, Fiji (1998), Recommendation for Policy to support Health Promotion in Fiji” A report to the Minister for Health, Fiji., p50.
A healthy smile reflects the wellness within you
Loga N1, Silotolu A1, Lal J1, Tukana P1

Keywords: Wellness; Smile, Oral health, Fiji

Introduction
A smile - an observable expression of the present state of mind providing the friendliest impact on the recipient; yet the giver is more blessed than the receiver.

A smile from the heart is an expression that touches the heart and mind, and is itself a preventative and curative solution to many stressful situations while it releases happy hormones that are therapeutic and healthy for both parties.

Smiling is a form of communication and connection for the reminiscing of good memories, present realities and contemplation of the future, all conjured in a smile.

The smile, given either consciously or subconsciously, is normally viewed as a sign of friendliness, especially when greeting someone. Frowns, on the other hand, are generally recognized as indicating sadness or disapproval.

Smiling should become a habit to be maintained as a behaviour depicting the state of the mind in the wellness form.

Since many prevalent illnesses are related to lifestyle and behaviour patterns, it is important to start from the beginning of life and address all factors or domains of influence that an individual goes through daily, one of which is oral health.

Oral health wellness
Oral health is the essence of humanity, a natural, functional, acceptable masterpiece of creation enabling an individual to enjoy life, look, speak, chew, taste food and socialise. The only natural mode for the nourishment of the body and of vocalising thoughts.

With the Fiji Wellness Concept the normal development of the 4 spheres of health, physical, mental, social and spiritual wellbeing, is taken into considerations.

The child to be nurtured in body and mind begins at conception.

The first 1000 days of life, which include the nine months in the womb, are a blueprint for our health for the rest of our lives.

Naturally, the first set of exclusive primary teeth is a gift for children to enable them in the first 5 years of life to take on age appropriate oral health functions that pertain to their specific growth need.

An oral health wellness concept for all

---

1 Ministry of Health and Medical Services, Suva, Fiji.
* Address for correspondence: loga.oralhealth@gmail.com
The Healthy 5:20 Smile age specific concept was first initiated in 2009 to target the toddler age group in accordance with 7.2 recommendations from the 2004 National Oral Health survey. (Page 38). It has a wellness and natural connotation that at the age of 5 years a child should be having 20 healthy teeth. This is locally coined terminology with a universal normality for toddlers.

A smiling toddler gives a positive impression that life is at its best and they are carefree enjoying, eating, talking, drinking and looking good. It’s the start of a positive outlook on life for a growing child. Children need to enjoy life daily and their yearly dental visits, with the encouragement of the first dental visit from the age of 1 year onwards. Parents and caregivers need to understand the wisdom of having primary teeth, their function and the relation to systemic health involvement.

Factors that may contribute to children to achieve a 5:20 smile

Mother- Child connection in basic oral care

- Mother and caregivers to give the right food daily
- Mother and/or caregivers to brush children’s teeth daily
- Mothers to peep into child’s mouth regularly

The early years in a child’s development are the best time for a child to learn about oral health and to develop a positive attitude about good dental habits. Communicate to children about why it is important to keep teeth healthy. Explain the function of teeth to chew food, speak, and have a healthy smile. A healthy mouth is part of a healthy body.

To keep our children’s teeth healthy, there is a need to:

- Brush teeth twice a day with a half pea sized drop of fluoride toothpaste.
- Eat lots of crunchy foods such as carrots, apples, celery and sugar cane which are natural teeth cleaners.
- Drink water always first thing in the morning when you wake up and have it be the only drink to take after brushing the teeth at night before you sleep.
- Visit the dentist at least once a year as dental wellness visits (even if there is no dental complaint).

It is very important that children enjoy and understand all these activities to help in the sustaining of healthy habits in all life stages.

Common Health Risk Factor approach- A lifestyle behaviour

We have to understand the thread that connects Wellness. One has to be temperate in lifestyle and that is to use everything good in moderation and avoid everything that is not good. Wellness is a journey and resilient lifestyle bounds back on track and moving forward harvesting the wellness within you daily.

Strategies initiated to maintain the primary and permanent teeth of the Fijian population

Empowering and assisting Fijians on health matters should start early in life and be age specific so that it’s relevant to everyone during their life stages in a life time.

The maintenance of healthy oral health habits from the toddler stage is significant for all. The positive interaction of oral health practitioner and wellness approach in addressing health issues is necessary for our knowledge and application in the early stages of oral development. Collaboration from common health factor and risk approach ensures that Fijians have the spontaneous healthy smile in their lifetime with proper care and maintenance habits.

Reference

Population Lifestyle (7D) Project in schools - Planning meeting technical report

Keywords: 7D, Health Promoting School, Wellness

Introduction
The Fiji Ministry of Health and Medical Services developed the Wellness Concept in 2014 as a reinvention of the health promotion strategies to achieve focus in maintaining the “Well population Well” 1. The main emphasis of the attempt was to address the 7 risk factors of both the Communicable Disease (CD) and Non Communicable Diseases (NCD) across an individual’s lifespan from conception to old age in settings where they interact, play and dwell in such as schools, workplaces, churches, villages or the community at large.

Important lifestyle risk factors such as smoking, obesity, poor diet control, to aid CD and NCD management, prevention and control at the local level2. NCD risk Intervention in the context of Fiji Wellness is provided in a Project management cycle identified as 7D and the Ds are (Discovery, Discussion, Dream, Direction, Design, Delivery, Driving)3.

Henceforth, Fiji Wellness Centre establishment, recognises that social determinants of health are important because Health or “Wellness” cannot be explained simply by genes and genetic effects. It involves the circumstances in which young people live; their access to health care, schools and leisure opportunities; and their homes, communities, towns and cities. It also reflects individual and cultural characteristics such as social status, gender, age and ethnicity, values and discrimination.1

The importance of social determinants to young people’s health, well-being and development is clear. This is a world of great opportunity in relation to health, education, occupation, social engagement, discovery and fulfilment. Their world is laden with risks that can affect their ability to achieve full health both now and in the future, impacting social and economic costs.4

Life course interventions in Wellness for School Children is critical because health inequalities in adult life are partly determined by early life circumstances and behavioural approaches towards issues such as tobacco and alcohol use, dietary behaviour and physical activities.2

These socio-economic determinants of health (SDH) are well-known to population health as it describes the influence that all sectors of society have on public health, much more than that which is controlled by the health sector.3

Wellness is a state of optimal and balanced well-being of body, mind and spirit oriented towards maximising an individual and community’s potential, maintained at every stage of development. It involves a broad range of strategies aimed at producing behavioral change to promote good health.2,3,4

The wellness approach as earlier highlighted extends beyond the traditional health education approach to disease and behavioral control. It is clear that focusing on individual change will have less impact than broad based population approaches. Given that healthy behavior is intimately associated with culture and tradition, a population based approach, which seeks to modify the social norms of health behavior, is likely to be effective.1-4

The wellness approach travels beyond the health care system and it puts health on the agenda of policy makers in all sectors and at all levels, enabling them to become aware of the health consequences of their decisions and to accept their responsibility for health. It connects the current implementation gap and serves to facilitate a more synergistic means of combating NCD in Fiji and also CD. It is an approach that ensures the active participation of our partners in addressing the same at the earliest or primary care level. (ibid)

Non-Communicable Diseases continues to be on top of the agenda in the health sector across the Pacific, and Fiji continually steps up its’ momentum to see that appropriate measures and strategies are in place in our effort to see that it is contained within the bounds of resources we have.6,7 Majority of families have had encounters with the same, bringing numerous socio-cultural and socio-economic effects when the life of an income earner is lost prematurely to NCD leading leaving dependants to suffer.

As a long term implementation strategy, the population lifestyle projects (7D) in schools as an intervention tool seeks to address NCD risks as early as possible with our young ones in primary schools, and facilitate the development of NCD risks reduction projects for healthy behaviour change that can carry them to early adulthood and beyond.

With the determination to address issues surrounding the impact of NCD to our society and children, the Ministry of Health and Medical Services, through the Wellness Unit, together with the Ministry of Education and the World Health Organisation, convened a Population Lifestyle Project (7D) Planning Meeting for 15 selected Health Promoting Schools (HPS) in Fiji. Selection included only those schools that have reached the institutionalisation phase in their HPS implementation for the last 5 years. It included 30 participants altogether with representatives from the four Medical Regions of Fiji and included 15 Headteachers and 15 Subdivisional School Health Representatives which could either be a Zone Nurse or a Dietitian.

Objectives of the meeting were to:
1) Convene a national planning meeting for the 15 selected HPS in Fiji as a forum to facilitate sharing of successes of HPS implementation as resources for other schools to draw from.
2) Presentation of a school specific profile on NCD risks that will serve as a baseline for further planning and evaluation in the course of the project.
3) Prepare and develop a school specific Population Lifestyle Project (7D) Implementation Plan and Matrix for the 15 participating HPS

Footnotes:
1 Ministry of Health and Medical Services, Suva, Fiji.
2 World Health Organization, Suva, Fiji
3 Address for correspondence: veilavep@who.int

Volume 6, Issue 1, 2017 52
Proposed Outcomes are:
1) Establishment of a resource-based forum as a place for other HPS to draw resources from – through successes and challenges
2) Clear understanding of a national NCD risk environment as a platform for further planning in the context of schools.
3) Establishment of an understanding of a localized NCD risk environment (school specific) as a basis for planning.
4) Development of 15 Population Lifestyle Project (7D) that specifically addresses a NCD risk prevalent in each school.

Method
Pre-Meeting Preparation:
The preparatory phase for the meeting, included participants forming into project teams before coming into the meeting.
Each team was to collaborate in accomplishing the following task:
a) To establish a baseline on the NCD risk environment that exists within their individual schools – a sample questionnaire was sent to them for modification into their context.
b) To Review existing school health data on NCD risks prevalent with children and prepare some scenarios for sharing.
c) To prepare a 5-slide presentation on the NCD risk environment that exists in their school.

The design of the meeting was structured as much as possible, to facilitate a flow of information from participants to the rest of their project team members and from the participants to the facilitators for collaboration and understanding.

The workshop proper were delivered through power point presentations, group discussions, group presentations, open forum discussions and for most of the time during the project planning review process, an open forum for constructive discussions and criticism that gave an opportunity for project teams to amend and improve their project implementation plan.

Discussion
Following the formalities at the beginning of the meeting was the presentation of an overview of a national NCD risk environment that was targeted at the following issues;
1) The national reality of the NCD risks that our children are currently in, going into the meeting’s planning phase.
2) Understanding the diversity of risks and the structures of societies (home, school, peers, etc.) out of which that is presented.
3) Identify risk areas within the school environment (obesity – school canteen, etc.) that could be controlled to safeguard children’s help
4) Establish a national baseline for the NCD risks in the school-aged context going into the planning phase.

The technical formalities to establish through power point presentations covered a few existing data sources listed below:
a) Global School Health Based Survey (GSHS)
b) Global Youth Tobacco Survey (GGYTS)
c) Obesity Prevention In Communities (OPIC) study - “School Aged dietary patterns in Fiji and its relationship to standardise BMI”
d) OPIC study – “Reducing unhealthy weight gain in Fijian adolescents”

With the establishment of a national picture of what exists within their own world, the next phase of the meeting involved Project Teams presentation on an NCD risk environment that exists in their schools. The session was intended to achieve the following:
1) Establish a school specific NCD risk environment that will serve as a baseline for the planning meeting.
2) Identify issues relevant to them that would have been presented by other schools but they might have missed or overlooked.
3) To establish a broader understanding of the diversity of risks that the children are exposed to, even in their school settings.
4) Present an opportunity to initiate dialogue and understanding as a team towards the planning phase and priority setting.

The two initial sessions, presented the project teams with an opportunity to discuss among themselves a risk of their choice that they want to address as their project. The confirmation of that amongst the team allowed them to present a complete picture of how the risk is viewed in the context of each individual school’s environment and mission.

The presentation was made easier for understanding with simple “mind mapping” that allowed teams to build a “web of thoughts “around each risk to form and present the entirety of what that risk entails in the context of the school.

Few schools were selected to present their mind mapping results giving others an opportunity to draw from and further refine and align their work to form the core of what was intended.

The web of thoughts presented around the risks provided the perfect opportunity for planning because they form the core of the chain of activities that needed to be addressed in that phase.

The discussion was rich as we listened to teachers and school health team’s alike dialogue on practical issues that needed to be done to facilitate change of behaviours with our children.

Project teams were then introduced to the project planning template that formed the core of what they had to do to progress their work. Fulfilling the task became the actual planning phase as teams worked in their groups to put together their school project. In that respect much of what they had to do had already been identified from the previous sessions.

Planning took the whole of Day Two and it was made possible through provision of necessary learning resources to facilitate drafting of plans to address of schools’ population lifestyle projects.

Each team presented back to the forum what they had planned during the last two days. The session produced the following outcomes:
a) Project teams were provided the opportunity to present their 7D projects to the forum.
b) It provided an opportunity for an open review of the same with the forum’s contributions and input - It enabled the technical team members to use the to further refine and improve
c) Establish an understanding of a localized NCD risk environment (school specific) as a basis for planning.

d) Establishment of a resource-based forum as a place for other HPS to draw resources from – through successes and challenges.

e) Development of 15 Population Lifestyle Project (7D) that specifically addresses a NCD risk prevalent in each school.

**The main Output was**

a) The Development of a finalised Project Plan for implementation.

b) Discussion of indicators as the monitoring tool to be tagged along side each activities and strategies.

Discussion ended around deliberation of the actual implementation phase and what each has to do to ensure accurate implementation of what had been planned out. This is a shortened report of the actual Technical meeting that took place on the 19th-21st of July 2016, at the Hexagon Hotel in Nadi, Fiji. The author can be further contacted for further information on the same.

**References.**

1. Wellness Unit; Wellness April Consultation Report 2013, MOH Suva (Unpublished)
3. Wellness Unit; The Fiji Wellness Conceptual Framework 2013, MOH Suva (Unpublished)
5. The Social Determinants of Health; Ruth Bell; Tanja AJ Houweling; Sebastian Taylor; The Lancet, Volume 372, Issue 9650, 8–14 November 2008, Pages 1661-1669
Introduction

Fiji is one of the largest countries within the Pacific Island Countries (PICTs) and generally regarded as the gateway and travel hub for the Pacific region. Its population in 2007 was 837,271, of whom 57% were indigenous Fijians, 37% were Indo-Fijian and the remainder are other ethnic groups, mainly Chinese and Europeans. It was estimated that approximately 40% of the population were less than 20 years of age in 2007. It is a multi-cultural and multi-religious country and the adult literacy rate is 94%. Fiji is described as the most urbanized nation in the Pacific region with approximately half the population living in urban areas. Fiji’s main source of revenue is sugar, tourism, mining and agriculture and bottled water.

Poverty impacts about 30% of the population. It is both a cause and consequence of NCDs through reduced food choices and access to health care. NCDs can be catastrophic for families because adults of working age are most often affected by NCDs. NCDs not only lead to substantial social and economic costs to affected individuals and their families, but these conditions impose a major strain on fragile health systems and limit the development potential of the country.

It is generally accepted that progress on preventing and controlling NCDs is difficult in environments where there is substantial poverty and adverse socioeconomic conditions. Lack of impact on reducing the prevalence of NCDs and related risk factors could also be due to the lag time needed for interventions to have an impact. Furthermore, there are indicators that the level of investment in health care in Fiji is not meeting health care demands caused by NCDs. It is also worth noting that reliance on public health and primary care to promote health, prevent diseases and treat cases early has not made an impact on NCDs and other models should be considered. Experiences from several developed countries show that half of the decline in CVD mortality was attributable to clinical interventions and half from population-wide risk factor prevention. It was not possible to determine the extent to which proven clinical interventions, such as aspirin, was utilized in the country, although it is generally expected to be low.

NCDs and associated risk factors present the single most important public health challenge for the Fiji health system and nation. Cardiovascular diseases, diabetes, cancers and chronic respiratory diseases are responsible for substantial social and economic costs to individuals, their families and Fiji as a whole. The WHO estimated that 16% of hospital expenditure was on people with diabetes in the Western Pacific region.

NCDs are responsible for more than eight out of every ten deaths in Fiji. Cardiovascular diseases are responsible for about half of all deaths. Unlike declining CVD mortality patterns in other parts of the world, mortality from heart diseases in Fiji continues to rise. Much of the NCD burden information is based on the WHO STEPS survey from 2001/2002. The survey information is somewhat dated and a repeat STEPS survey was completed in 2011 with preliminary results showing a continuing gradual rise in the prevalence of major NCDs and associated risk factors.

The WHO Package of Essential Non-Communicable Disease Intervention (PEN) is an evidence based Best Buy that offers an opportunity for methodological presentation and management of Cardiovascular Risk in NCDs. It targets all clients age 40 years and over, including registered diabetic citizens, and calculates their 10 year individual prediction of suffering from a cardiovascular accident - heart attack or stroke.

The 10th Pacific Island Health Ministers’ meeting in Apia, Samoa affirmed the need for the phased implementation of PEN as part of its Apia Communiqué on Healthy Islands, NCDs and the Post-2015 Development agenda.

The WHO PEN package was introduced to Fiji in April 2012 and has been adopted as the primary health care tool in managing NCDs at the health center level. The package aims to screen all registered diabetic cases and the target population is approximately 100,000. There are 80 Health Centers in Fiji and a total of 71 Health Centers were trained.

In the current NCD strategic plan 2015-2019, in the area of Clinical & Public Health Services, its overall target is, by 2019:

• 50% availability of affordable basic technologies and essential medicines required to treat NCDs in public and private facilities (80% by 2025).
• Identify high risk populations for stroke and heart attack and treat 30% of them by 2019 (and 50% of them by 2025). With the targets noted above and the period of implementation, a review was conducted in April 2016 to identify issues that might affect PEN implementation. This paper discusses the success in implementing the PEN protocols, the challenges that might be faced while implementing PEN and recommendations on how the PEN Fiji system can be adopted smoothly into Fiji’s SOPD system.

Objective

• To determine the successes and challenges in implementing PEN in decentralized facilities
• To understand and describe the processes facilities use to implement PEN activities

Methods

The methods of data collection for the evaluation of training and the situational analysis are described below.

Facility-based Assessment

A rapid assessment was conducted on randomly selected Health Centers. It was a face-to-face interview covering 5 areas of project implementation:

1. Involvement: this area probes for their role, involvement, selection of prospective targets and how they classify the current implementation status of their PEN program.
2. Planning: how proper planning propagates the success of the PEN program in different facilities and what barriers appear to affect the planning of the programs.
3. Implementation: this section covers how proper planning bridged together with successful implementation to identify the challenges and probing more on the methods used to overcome barriers while implementing PEN.
4. Service Provision: areas of target in this area are the services able to be provided, using of guidelines to help service provision and the impacts the service is having on our clients.
5. Sustainability: mainly focuses on what type of support is needed, what barriers and how to overcome them to sustain the implementation of the PEN Model.
Facilitating Divisional PEN implementation Consultation Meetings
Representatives from the sub-divisional health facilities were in attendance to present and discuss how they have implemented PEN and share their experiences in implementing the program. Discussion was separated into 3 areas.
1. Identifying the successes/challenges and opportunities: participants were invited to share their experiences in implementing the PEN program.
2. How can general services in NCD prevention, management and the referral system be improved to support the implementation of the PEN program?
3. Discussion on the procedures and protocols that can be drafted to support the implementation of the PEN protocol.

The responses were captured, transcribed and were documented to highlight issues concerning the PEN improvement plan.

Table 1. MOHMS Facilities assessed under the PEN program Implementation

<table>
<thead>
<tr>
<th>Facilities assessed</th>
<th>Cadres Interviewed</th>
<th>Implementation Status</th>
<th>Training status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CENTRAL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sava SD</td>
<td>MO, Dietician, SOPD Nurse</td>
<td>Partially Functional</td>
<td>Trained</td>
</tr>
<tr>
<td>Raiwaqa H/C</td>
<td>MO, Dietician, SOPD Nurse</td>
<td>Partially Functional</td>
<td>Not Trained</td>
</tr>
<tr>
<td>Samabula H/C</td>
<td>SOPD Nurse</td>
<td>Partially Functional</td>
<td>Trained</td>
</tr>
<tr>
<td>Rewa SD</td>
<td>SOPD Nurse, Sister In-Charge</td>
<td>Partially Functional</td>
<td>Trained</td>
</tr>
<tr>
<td>Wainibokasi H/C</td>
<td>SOPD Nurse</td>
<td>Fully Functional</td>
<td>Trained</td>
</tr>
<tr>
<td>Nausori H/C</td>
<td>SOPD Nurse</td>
<td>Fully Functional</td>
<td>Trained</td>
</tr>
<tr>
<td><strong>NORTHERN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Macuatau SD</td>
<td>MO, SOPD Nurse</td>
<td>Fully Functional</td>
<td>Trained</td>
</tr>
<tr>
<td>Senaqa H/C</td>
<td>MO, SOPD Nurse</td>
<td>Fully Functional</td>
<td>Trained</td>
</tr>
<tr>
<td>Bua SD</td>
<td>SOPD Nurse</td>
<td>Partially Functional</td>
<td>Trained</td>
</tr>
<tr>
<td>Lekutu H/C</td>
<td>SOPD Nurse</td>
<td>Partially Functional</td>
<td>Trained</td>
</tr>
<tr>
<td>Cakaudrove SD</td>
<td>SOPD Nurse</td>
<td>Fully Functional</td>
<td>Trained</td>
</tr>
<tr>
<td>Savusavu SOPD</td>
<td>SOPD Nurse</td>
<td>Fully Functional</td>
<td>Trained</td>
</tr>
<tr>
<td><strong>EASTERN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lomaiviti SD</td>
<td>MO, Dietician, SOPD Nurse</td>
<td>Partially Functional</td>
<td>Trained</td>
</tr>
<tr>
<td>Levuka SOPD</td>
<td>MO, Dietician, SOPD Nurse</td>
<td>Partially Functional</td>
<td>Trained</td>
</tr>
<tr>
<td>Bureta H/C</td>
<td>NP, SOPD Nurse</td>
<td>Partially Functional</td>
<td>Trained (NP)</td>
</tr>
<tr>
<td><strong>WESTERN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sigatoka SD</td>
<td>MO, SOPD Nurse</td>
<td>Fully Functional</td>
<td>Trained</td>
</tr>
<tr>
<td>Lomawai H/C</td>
<td>MO, SOPD Nurse</td>
<td>Fully Functional</td>
<td>Trained</td>
</tr>
<tr>
<td>Nadi SD</td>
<td>MO, SOPD Nurse</td>
<td>Partially Functional</td>
<td>Trained</td>
</tr>
<tr>
<td>Nadi SOPD</td>
<td>MO, SOPD Nurse</td>
<td>Partially Functional</td>
<td>Trained</td>
</tr>
<tr>
<td>Ba SD</td>
<td>MO, SOPD Nurse</td>
<td>Partially Functional</td>
<td>Trained</td>
</tr>
<tr>
<td>Ba SOPD</td>
<td>MO, SOPD Nurse</td>
<td>Partially Functional</td>
<td>Trained</td>
</tr>
</tbody>
</table>

Figure 1.1 shows the inclusion and exclusion criteria used to identify health staff who should be interviewed during the facility assessment.

Results
Both data collection methods were effective and managed to highlight issues that affect the implementation of the PEN program.

Facility Assessment
Twelve facilities were selected from the 4 main divisions and covering 9 sub-divisions with 22 health officers interviewed in this process. One hundred percent of health staff (MO, Dietician, SOPD Nurse, and Nurse Practitioner) interviewed was introduced to the PEN program based on their role in their various clinics.

All facilities (100%-12/12) managed to categorise the existing cases into their CVD risks and colour coding. One-quarter (25%-4/12) of the facilities managed to operate guided by the protocols.

Following the inclusion and exclusion criteria (Figure 1.1) shows that 90% of staff practicing in SOPD clinics have been trained with the PEN program and haven’t been posted to other departments after training. Table 1.1 shows the facilities that were assessed, the cadres that were interviewed and the facilities PEN program implementation status and their training status.
Divisional PEN Consultation Meetings

Representatives from different facilities shared experiences in implementing the PEN program in their facilities. The participants actively engaged in discussions on how some facilities manage to implement the PEN program efficiently while sharing some of the challenges that health workers faced while trying to implement the program.

Discussions were also focused on how to improve NCD prevention, management and the referral and discharge system; points highlighted in this exercise gave an insight into the gaps between the current practice and what is expected in the SOPD system.

The last discussion included a mind-mapping exercise which included what should be happening at all decentralised SOPDs. This exercise built a platform on how the Operating Guide or the Operating Procedure for all decentralised SOPD clinics should be drafted and monitored accordingly. The participants were put into groups to map-out what service protocols are practical at all levels of the SOPD system in a decentralised setting, the responses were transcribed and compared collectively to represent the response from the four divisions. The discussions concerning the issues identified from the noted methodology can be seen in the discussion section.

Discussion

The following issues consolidate the responses from the Sub-Divisional Facility Assessment and the Divisional Consultation:

1. Health Information System
   a) Most facilities have multiple registers that focus on registering new cases, a register for bookings, a wellness register, a foot register, a register PEN and the SOPD register. The SOPD nurses and the medical officers shared their experiences that more time is focused on filling and updating the registers rather than focusing on planning intervention strategies as per risk categories. Duplication/double entry is more likely to happen in this system.
   b) The Public Health Information System (PHIS) does not capture most of the PEN program activities e.g., the classifications of their risks together with their controlled and uncontrolled status.
   c) Patient Information System (PATIS) is not accessible to most of the sub-divisions both in the outer peripheries and the central sub-divisions. The system is either not functional (down) or the sub-division doesn’t have access to PATIS.

2. Laboratory Services
   a) Most of the sub-divisional laboratories and facility labs (major or C) are not functional to conduct HbA1c and cholesterol tests, these tests are being processed in the divisional laboratory facilities.
   b) Functional lab equipment and reagent availability is always an issue that contributes to the functionality status of the facility/sub-divisional labs.
   c) Most facilities conduct laboratory referrals and results return late or never, so they have to send the client again for confirmatory tests.
   d) The time frame to receive the result is between 2 weeks to 1 month since they will receive their confirmatory results and their follow-ups which leads to a delay in intervention.

3. Pharmaceutical Supply
   a) All health facilities send their requisitions to and receive their supplies from the FPBS. Requisition forms have predetermined quantities for each drug listed and a justification should accompany the form if the health facility requests for additional amounts. However, despite justification, health facilities are seldom given the amounts above the predetermined allocation.
   b) A gap likely exists in the monitoring of medicine expiration dates as the physician in one health centre reported that he received a box of simvastatin near expiry so he promptly returned the drugs to the central pharmacy.
   c) Despite the centralized stock management system, the primary care physician cannot directly communicate with FPBS for the supplies he needs but must pass through the channels of communication following the chain of command in the health or gantzation, i.e. health centre to sub-divisional office to divisional office to central office. Due to the lack of response to requests, the physicians have given up on requisitioning and just advise patients to buy their medication from private pharmacies.
   d) Contrary to current CVD guidelines, aspirin is being given for primary prevention of CVD at the health facilities visited.

4. Monitoring and Evaluation Tools
   a) There is no standard monthly reporting template that is to be used for the NCD program which clearly highlights the number of cases seen, the new/old cases, their risk categories and their status (controlled or uncontrolled).
   b) There is no Operational Guide that clearly specifies the services and procedures that are supposed to be undertaken when a new case enters the SOPD system or be followed up and upon referral.
   c) Since there are no operating guidelines in place it will be difficult to produce a much-needed audit tool and conduct facility audits as highlighted in most of the sub-divisional and divisional business plans.
   d) The need to assess services from the patients point of view to conduct a patient satisfactory survey or assessment to gauge the level of competency practiced for PEN protocols per facility.

5. Integrated Approach to Holistic Care
   a) Health staff are not clear on what is to be the next step when going through the protocol and who conducts what in the facility.
   b) The approach is still program oriented rather than having the patient be the sole target as a patient centred approach.
   c) The referral and discharge mechanism is not very effective as most patients referred cannot be followed up by the health centre since the PATIS system is usually not functional and not all patients discharged from referral centres are being discharged with a full discharge summary so the primary care physician can only deduce from the patients’ prescriptions but would not be certain about the hospital diagnosis and the interventions given.
   d) Default tracing is being handled by the zone nurses during their zone visits and apart from visiting the defaulters, they have other services to provide like immunisation, dispensing of drugs and other essential services. Zone nurses must be multi-skilled while visiting the community and issues concerning making service delivery simple and effective that will lessen the work load of the nurses in the communities.

6. Human Resource
   a) The service areas should be friendly enough to run these essential services. Privacy and space is still paramount when it comes to best practice.
   b) Motivational interviewing, which is effective communication for behaviour change, is essential, health staff should be trained in basic counselling skills so that they can effectively communicate with the client.
7. General Operational Issues
a) Invest in using coloured smiles or coloured folders – cost effective strategy.
b) Standard supply of PEN folders to health centres and facilities who are being trained with PEN is inconsistent.
c) Standard supply of consumables that will be used to facilitate the PEN screening program to monitor patients’ health status is not sustainable.
d) Continuous capacity building is needed and IEC material that will support patient education. This includes more training should be conducted even though we still have a back-log on operational guidelines and operational framework. IEC materials should now move towards the use of flip-charts for patient education.

Recommendations
The following recommendation has been recommended to support the standardization of service delivery for the PEN program and the SOPD services as a whole:
1. A review of the current National PEN Steering Committee Terms of Reference that will be focused on the deliverables that can support the efficient delivery of SOPD services at decentralized facilities; issues concerning improvement of SOPD care should be discussed and included as part of the TOR.
2. Creation of mechanisms to closely coordinate care between the primary health care facility and the referral hospital. A referral protocol should be developed which clearly defines the referral criteria, procedures, staff and facilities involved and lines of communication. The staff in both referring and referral facilities should be trained on the protocol.
3. Develop the operational guidelines which describe the processes and procedures that the health staff will follow in service delivery and define the standards of care for NCD management. Train all health staff on the operational guidelines.
4. Development of audit or monitoring tools once performance targets and standards of care provision have been agreed on.
5. Upgrade all sub-divisional laboratory facilities to conduct NCD management blood tests and establish an efficient after sale services, supply of reagents and full biomedical support.
6. The pharmaceutical services should consider reviewing some policies that should address the problem of proper requisition/ordering, along with an updated facility essential drug supply based on the justified reasoning per health facility.
7. Streamline the health information system so that health workers collect the minimum data on the indicators that the country decides to monitor. Decisions have to be made so the SOPD registers will be used only to register new cases or to monitor their health status over a 12 month period to aid in decision-making concerning patient care and progress and on program management.
8. Introduce flip-charts to support patient education in clinics and in their group therapy sessions. This flip chart can also be used in public health awareness sessions in communities and other settings.
9. Pilot test some of the monitoring and audit tools introduced by the WHO to support host countries in monitoring the effectiveness of the PEN program.

The above recommendations have been identified as essential in addressing issues concerning the adoption and the implementation of the PEN program.

Conclusion
PEN Fiji can only be successful if the projects strengthen the laboratory services by supporting the upgrade of lab facilities and focusing on strengthening the pharmaceutical service processes in dealing with essential medication requests for NCDs. Improving the monitoring and evaluation system is fundamental and can capture surveillance of NCDs within the existing M&E framework.

This paper highlights the need to establish an operational framework that should mitigate policy change concerning best practice and functionality. Since NCDs are Fiji’s main killer, more support should be directed to it in order to have a healthy population and a booming economy.

References


World Health Organization. 2005 Avoiding Heart Attacks and Strokes: don’t be a victim - protect yourself. WHO: Geneva.


**Assessment of decentralized laboratory service targeted for NCD’s in Fiji - A facility based survey summary report**

*Ligain J 1,2, Padoyach P 1,2, Silatolu A M 3, Takana P 1*

**Keywords:** Laboratory services for NCD, Fiji.

**Introduction**

Fiji is currently in an epidemiological transition in terms of its morbidity trends over the years.

The overarching goal of the government for the health sector is to provide: quality, affordable and efficient health services for all. There are two strategic objectives flowing from this goal:  
- **Strategic objective 1:** Provide communities with adequate primary and preventive health services, thereby protecting, promoting and supporting their well-being.  
- **Strategic objective 2:** Provide communities access to effective, efficient and quality clinical health care and rehabilitation services. In addressing the goal and the strategic objectives of the health sector, the MoH emphasizes its strategic themes of: provision of health services, protection of health, promotion of health, productivity in health, and people in health.

The Ministry is planning to establish a health policy commission and to develop policy on health care financing, maternal and child health, reduction of non-communicable diseases and expansion of tertiary health care services. Improvements to the delivery of health services will continue to be pursued by the MoH and in partnership with key stakeholders, including the private sector and development partners. The Ministry will also continue with training of personnel to address critical staff shortages in health institutions, together with improved provision of pharmaceuticals and biomedical equipment, and the maintenance and upgrading of health facilities. The MoH is also considering how to improve services to the aged/elderly and those with chronic illnesses (Ministry of Health Corporate Plan, 2010).

Most diseases have some sort of microbiological explanation which relies heavily on laboratory results for verification of health conditions.

A survey of non-communicable diseases, the NCD STEPS Survey (Cornelius et al., 2002), gave the prevalence of hypertension as 19.1% and estimated that a third of all deaths, and half of the deaths in the 40-59 years age group, were due to circulatory diseases. It also highlighted the prevalence of NCD risk factors; around 65% of the population took one or less servings of fruits a day, 37% currently smoked tobacco, there was a low rate of physical activity (25%) and a high rate of binge drinking (77.3% of current drinkers). The survey also showed the prevalence of Type 2 diabetes in Fiji as 16% of the adult population, up from the earlier estimate of 12%, reportedly the third highest rate per capita of diabetes in the world. The incidence of diabetes stands at around 500 new cases per year (Cornelius et al, 2002). Recently published research reports that adult mortality in Fiji is two to three times higher than in Australia or New Zealand. The high levels of 18 premature adult mortality, coupled with an increasing proportion of deaths due to circulatory conditions, suggest that increasing cardiovascular disease is preventing improvements in life expectancy (Carter et al, 2010). The 2009 data presented in Table 1-6 shows that both morbidity and mortality are dominated by chronic diseases, with the exception of respiratory, intestinal and skin infections, which are a common cause of morbidity, especially among children. HIV does not rank in the top ten causes of mortality or morbidity in Fiji; the prevalence rate was less than 0.1% in 2010 despite relatively high rates of STIs.

Based on the 2014 census, Fiji has a total population of 903,207 with an estimated population growth rate of 0.8% yearly accommodated in more than 300 islands. The Ministry of Health divided these into 4 divisions, Northern, Western, Central and Eastern Divisions. The vision of the Ministry of Health is ‘a healthy population driven by a caring health care delivery system’, with a mission to ‘provide a high-quality health care delivery system by a caring and committed workforce working with strategic partners through good governance, appropriate technology and appropriate risk management facilitating a focus on patient safety and best health status for the citizens of Fiji’.

Values of equity, responsiveness, and respect for human dignity uphold the principle of universal coverage and equal access to health services for all Fiji citizens. The seven key outcomes of the Strategic Plan are:  
1. Reduce the burden of Non-Communicable Diseases;  
2. Begin to reverse the spread of HIV/AIDS and preventing, controlling or eliminating other communicable diseases;  
3. Improved family health and reduced maternal morbidity and mortality;  
4. Improved child health and reduced child morbidity and mortality;  
5. Improved adolescent health and reduced adolescent morbidity and mortality;  
6. Improved mental health; and  
7. Improved environmental health through safe water and sanitation.

The laboratory system in Fiji has a working capacity of 152 laboratory technicians with the coverage rate of 1.4 per 10,000 population. This paper will discuss facility based assessment results of service delivery based on human resource and functionality status of equipment with reference to testing NCD complication prevention and management.

**Objective**

1. To assess the laboratory services human resource distribution per area population.  
2. To identify certain tests that can be done in laboratory facilities that supports the prevention of non-communicable diseases.  
3. To identify certain challenges faced by the laboratory technicians in operating the designated laboratory facilities.

**Methods**

**Sampling Method**

Fiji has 20 operational health laboratory facilities under the Ministry of Health and Medical Services: 3 divisional, 15 sub-divisional and 2 specialized laboratories. Accidental sampling is used in this survey where facilities were issued with questionnaires within the 2 weeks data collection period. Since this study focused more on the potential of lab services at a decentralized level, we focused on the 15 sub-divisional laboratories.

**Data Collection Technique**

Due to a limited timeframe, a web based survey was conducted based on the fact that most health laboratory facilities have a computer connected to the internet. These modes of data collection were applied and were seen as cost effective and also had some level of confidentiality on a one off direct deliver and receive communication mode through personal and work emails.

1 Ministry of Health and Medical Services, Suva, Fiji  
2 World Health Organization, Suva, Fiji  
3 Address for correspondence: ligainj@who.int

Volume 6, Issue 1, 2017 59
All survey forms were delivered to all laboratory facilities through work emails and accidental sampling was done based on the responding laboratory officers.

Results

Results are based on the response from 9 lab facilities, which represents 60% of all health facilities; therefore, these results will not be generalized to represent all laboratory facilities in Fiji, but for each facility laboratory. Based on the responding facilities; 7 were from sub-divisional hospitals laboratory facilities, a health center level A and a level B health center, as noted below:

Table 1. Respondents Distribution

<table>
<thead>
<tr>
<th>Laboratory Facility</th>
<th>Sub-Division</th>
<th>Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taveuni Lab</td>
<td>Taveuni</td>
<td>Northern</td>
</tr>
<tr>
<td>Wainibokasi Lab</td>
<td>Rewa</td>
<td>Central</td>
</tr>
<tr>
<td>Navua Lab</td>
<td>Serua/Namosi</td>
<td>Central</td>
</tr>
<tr>
<td>Sigatoka Lab</td>
<td>Nadroga/Navosa</td>
<td>Western</td>
</tr>
<tr>
<td>Savusavu Lab</td>
<td>Cakaudrove</td>
<td>Northern</td>
</tr>
<tr>
<td>Nadi Lab</td>
<td>Nadi</td>
<td>Western</td>
</tr>
<tr>
<td>Rakiraki district lab</td>
<td>Ra</td>
<td>Western</td>
</tr>
<tr>
<td>Seqaqa Health Center Lab</td>
<td>Macuata</td>
<td>Northern</td>
</tr>
<tr>
<td>Valelevu Health Center Lab</td>
<td>Suva</td>
<td>Central</td>
</tr>
</tbody>
</table>

Demographic Coverage

As per laboratory facility, analysis was done based on service scope and the results were based on area population; as seen in table 1.2 below, the laboratory staff per population ratio is 1:20,000 per population with an estimated 40 samples processed daily.

Table 2. Demographic distribution per services

<table>
<thead>
<tr>
<th>Laboratory Facility</th>
<th>Number of staff in lab facility</th>
<th>Service scope</th>
<th>Samples received/processed daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taveuni Lab</td>
<td>1</td>
<td>17,000</td>
<td>20-30</td>
</tr>
<tr>
<td>Wainibokasi Lab</td>
<td>3</td>
<td>14,000</td>
<td>70</td>
</tr>
<tr>
<td>Navua Lab</td>
<td>1</td>
<td>30,500</td>
<td>35-40</td>
</tr>
<tr>
<td>Sigatoka Lab</td>
<td>2</td>
<td>54,084</td>
<td>80-90</td>
</tr>
<tr>
<td>Savusavu Lab</td>
<td>3</td>
<td>34,797</td>
<td>100</td>
</tr>
<tr>
<td>Nadi Lab</td>
<td>4</td>
<td>90,200</td>
<td>150</td>
</tr>
<tr>
<td>Rakiraki district lab</td>
<td>2</td>
<td>41,000</td>
<td>75</td>
</tr>
<tr>
<td>Seqaqa HC Lab</td>
<td>1</td>
<td>11,363</td>
<td>25-30</td>
</tr>
<tr>
<td>Valelevu HC Lab</td>
<td>2</td>
<td>60,000</td>
<td>56</td>
</tr>
</tbody>
</table>

Potential Laboratory Test coverage

Based on the findings of this survey, all of the participating facilities are able to do NCD related blood analysis.

Table 1.3: Facility laboratory available services

<table>
<thead>
<tr>
<th>Laboratory Facility</th>
<th>Laboratory Tests that can be done In-Facility Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hematology</td>
</tr>
<tr>
<td>Taveuni Lab</td>
<td>✓</td>
</tr>
<tr>
<td>Wainibokasi Lab</td>
<td>✓</td>
</tr>
</tbody>
</table>

Discussion

Operational Challenges

Challenges noted by each facility were categorized based on number of responses as per health facility and noted as follows:

Table 1.4: Responses to Operational Challenges

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Specific</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistency of supply</td>
<td>Inconsistent supply of consumables and reagents.</td>
</tr>
<tr>
<td>Equipment</td>
<td>Damaged equipment, equipment on loan to other facilities, still on repair (biomded).</td>
</tr>
<tr>
<td>Facility improvements</td>
<td>Extension and improving working environment for workers and improvement of sample keeping facilities.</td>
</tr>
<tr>
<td>Communication</td>
<td>No internet, no telephones, damaged CPU.</td>
</tr>
<tr>
<td>Demographic</td>
<td>Number of technicians will soon can’t cater growing population.</td>
</tr>
<tr>
<td>Sample</td>
<td>Transportation of samples and missing samples.</td>
</tr>
<tr>
<td>Human resource</td>
<td>Need more staff.</td>
</tr>
</tbody>
</table>

Conclusion

This paper briefly discusses the capability of the decentralized laboratory facilities in catering for the NCD laboratory test and identifies certain challenges with purposive recommendation. It is promising to see that these health facilities are able to conduct laboratory tests needed for the prevention and management of NCD complications. Therefore, inventory management is very crucial while running decentralized labs.

Recommendations

The following recommendations can be derived from the findings of this survey:

1. Improve supply chain of consumables and reagents.
2. Introduce laboratory technicians to prospective planning based on estimated daily sample processing rates cross calculated with the consumables and reagents needed.
3. Equipping and upgrade of laboratory facilities.
4. Awareness of the laboratory standards.
5. Improve and identify innovative ways of communication which is cost effective and readily available.

References


http://www.wpro.who.int/asia_pacific_observatory/hits/series/Fiji_Islands_Health_Systems_Review.pdf

http://www.wpro.who.int/health_services/service_delivery_profile_fiji.pdf
Diabetes and Fiji: A retrospective descriptive analysis of diabetes related admissions and mortality in Fiji’s hospitals between 2006 – 2015

Ligai F1,2,*, Veilavi P3, Silatolu A M1, Tukana I1

Keywords: Diabetes, Diabetes Admission, Diabetes Mortality, Fiji.

Introduction
Fiji is one of the largest of the Pacific Island Countries Territories and is generally regarded as the gateway and travel hub for the Pacific region. Its population in 2007 was 837,271, of which 57% were Indigenous Fijians, 37% were Fijians of Indian Descent and the remainder are other ethnic groups, mainly Chinese and Europeans. It was estimated that approximately 40% of the population was less than 20 years of age in 20075. Fiji is a multicultural and multi-religious country and the adult literacy rate is 94%5

Fiji is described as the most urbanised nation in the Pacific region with approximately half the population living in urban areas. Fiji’s main source of revenue is sugar, tourism, mining and agriculture and bottled water.

Fiji has made more progress in achieving the Millennium Development Goals (MDG) than many other Pacific developing member countries. Poverty remains a significant concern in Fiji despite the overall level of development and the moderately high average incomes. Poverty trends indicate that the national incidence of poverty declined from 35% in 2002–2003 to 31% in 2008–2009.

Since the mid-twentieth century, Fiji has experienced demographic and epidemiological transitions, including declines in mortality, particularly infant and under-five deaths, and a change in major causes of death from infection/undernutrition to noncommunicable disease [7,8]. Plateaux in life expectancy have occurred since the 1990s from increases in premature adult mortality [9–11], with cardiovascular disease (CVD) now the leading cause of death in Fiji [3]. Proportional mortality from CVD increased from around 20% in the 1960s to over 45% by 2010 [11].

Poverty is both a cause and consequence of NCDs through reduced food choices and access to health care. NCDs can be catastrophic for families because adults of working age are most often affected by NCDs. NCDs not only lead to substantial social and economic costs to affected individuals and their families, but these conditions impose a major strain on fragile health systems and limit the development potential of the country.

Lack of impact on reducing the prevalence of NCDs and related risk factors could also be due to the time lag needed for interventions to have an impact. Furthermore, there are indicators that the level of investment in health care in Fiji is not meeting health care demands caused by NCDs.

NCDs and associated risk factors present the single most important public health challenge for the Fiji health system and nation.3 Cardiovascular diseases, diabetes, cancers and chronic respiratory diseases are responsible for substantial social and economic costs to individuals, their families and Fiji as a whole. The WHO estimated that 16% of hospital expenditure was on people with diabetes in the Western Pacific region.4

This paper describes the distribution of diabetes related admission over the 10 year period from 2006 – 2015. It describes the mortality rate of diabetes between 2005 – 2015 based on ethnicity and the general distribution of diabetes related admissions to Fiji’s hospitals.

Methods
This is a retrospective descriptive study that mainly focuses on readily available data from the Health Information Unit of the Ministry of Health and Medical Services. Data collected from the unit is entered periodically by statistical officers from all hospitals. Specified data request forms were submitted to the unit which specifically requested data on diabetes in the last 10 years and its contribution to diabetes related mortality in this period.

Data sets that were given by the HIU in response to the request was basically based on the ethnic distribution on diabetes related mortality and diabetes related admissions over the review period in Fiji’s hospitals. Reference population was from the 2007 census.

These data were analyzed to give a projection of diabetes related admissions and diabetes related mortality over this study period.

Results
Mortality
From 2006 to 2015 approximately 3,495 I-Taukei, 3,682 Fijians of Indian Descent and 252 Fijians of Other Descent lives were taken due to diabetes. It is also shown that there was a steady increase in Diabetes Mellitus Type II mortality in this period. Based on the 2007 census, ethnic distribution showed that more Fijians of Indian Descent were dying from Type II diabetes than the other ethnic groups.

Figure 1.1 shows the ethnic distribution of Type II Diabetes related mortality rate 2006 – 2015.

In addition to the increased mortality rate, further analysis of the difference in mortality rates between 2006 and 2015 show the increase amongst the three ethnic groups. It can be seen that mortality rates for type 2 diabetes increased 2.5 times for Fijians of Indian Descent from 6 per 10,000 in 2006 to 15.4 in 2015, 2.2 times for the I-Taukei from 3.7 per 10,000 to 8.5 in 2015 and almost 4 times (3.7) for Fijians of Other Descent from 1.9 per 10,000 to 7 in 2015.

Table 1.1 shows the increase rate of Diabetes mortality in 2006–2015
Admissions
Admission to an inpatient facility provides the opportunity for a safe and secure environment where direct observation, regular monitoring and continuous therapeutic support are provided.

Based on ethnic distribution over the review years, more than 50% of diabetes related admissions are from Fijians of Indian Descent followed by I-taukei and then Fijians of Other Descent. Basically, diabetes admissions in hospitals increased from 2006, but gradually decreased from 2009.

Further analysis was conducted towards the causes of admissions from all the diabetes related admission and was identified that more than 50% of all diabetes admission was due to foot ulcer, followed by poor glycaemic control apart from the other highlighted diabetes related admissions.

Furthermore, more analysis was focused on the two common causes of diabetes related admission and it showed that more I-taukei are being admitted with diabetes foot ulcer accounting for almost 35% of all diabetes admission.

The study also showed that based on poor glycaemic control as a basis of diabetes related admission, Fijians of Indian Descent contributed to 70% of admissions based on poor glycaemic control, but gradually decreases over the review period while the I-taukei increases over time.

Figure 1.2 shows Diabetes admission based on ethnic distribution, 2006-2015.

Figure 1.3 shows specified DM II related admissions in Fiji’s Hospital

Figure 1.4 shows specified DM II related foot ulcer admissions in Fiji’s Hospital by Ethnic groups

Discussions
The Asia-Pacific Region is predicted to have a great increase in diabetes in the future. DM complication rates are high, and in most countries foot ulcers and amputations are major causes of disability. The 2002 Fiji STEPS survey revealed that 16% of the population was affected by DM.

This study shows that there was a dramatic increase in diabetes related mortality rates in 2006 – 2015. The number of diabetes related mortality has increased more than 2 times in all ethnic groups. Statistics also show more diabetes related mortality amongst Fijians of Indian Descent than the other ethnic groups, but all ethnic death rates increased, noted as for the I-taukei an increase of 2.2 per 10,000, Fijians of Indian Descent increased by 2.5 per 10,000 and 3.7 per 10,000 for the Fijians of Other Descent. The changes has suggested reasons as to what might be the contributing factors to the increase in diabetes related mortality rate amongst the Fijians of Other Descents as well as other ethnic groups in the Fiji population.

Findings also highlight the main causes of diabetes related admissions and statistics show that of all the 20 diabetes related causes of admissions, foot ulcer (66%) and poor glycaemic control (6%) contributed to over 70% of all diabetes related admissions in Fiji hospitals. Further analysis shows that 66% of the i-taukei admitted was because of foot ulcer and this finding correlates with more i-taukei having more foot complications than Fijians of Indian Descent. Due to admission by poor glycaemic control, Fijians of Indian Descent decreases in admission while I-taukei increases in the noted admissions. Further investigation should be directed as to what might be the contributing factor to the decrease in the number of admissions of Fijians of Indian Descent.

Some limitations of the study are that:
• The 2007 ethnic distribution census was used as a reference population for the mortality but not the total number of mortality in Fiji in this study period. If the total mortality was cross calculated then there could be a significant relation seen in the diabetes mortality rate contribution to the national mortality rate in this period and correlated with ethnic group distribution.
• The diabetes related admission rate cannot be calculated since the data set that was given limits the study to the number specifically focused on the diabetes related admission but doesn't give the extent of all admissions so it cannot be correlated with the ethnic distribution in this period.
• The data of diabetes related admissions has to specify those who have been admitted under diabetes for the first time and also for those who have being re-admitted for diabetes complications.

Therefore, data presented in this study is a descriptive overview of the diabetes phenomenon on admission and mortality of diabetes in Fiji's hospitals.

Conclusion
Based on the descriptive analysis conducted, this study suggests that more intervention should be directed towards the prevention of foot complications through foot assessment and management since it contributes to more diabetes related admission along with increased intensity on measures to improve glycaemic control. Further investigation should be done to confirm the relationship between the mortality rate and the number of diabetes admissions.

Reference


Fiji Bureau of Statistics, Fact Sheet, July, 2014


K. Kumar, W. Snowdon, S. Ram, S. Khan, M. Cornelius, I. Tukana, S. Reid; Public Health Action; Volume 4; Number 3, 2014.


NCD related deaths between 2012-2014: A retrospective descriptive study

Keywords: NCD, NCD Mortality, CVD, Fiji.

Introduction
In the past two decades, Non Communicable Diseases (NCD’s) have become the biggest killer in Fiji, causing thousands of deaths every year – many of those deaths premature and affecting the lives of many more in their social circle. (1,2)

NCDs develop over a long time as they progress slowly. There are four main types of NCD: Cardiovascular Disease (Heart disease such as heart attacks and stroke), Cancers, Chronic Respiratory Disease (Lung disease such as Asthma and COPD), Diabetes.

In Fiji (NCD’s) have now replaced infectious and parasitic diseases as the principal cause of preventable and premature mortality and morbidity in Fiji (WHO 2014).

NCD risk factors highlighted in the 2002 and 2011 NCD STEPS survey in Fiji showed that 85% of population were taking only one or less servings of fruit a day and the proportion of population who were overweight had increased by 8.74% from the previous 58.5% in 2012 and similarly for the obese proportion for an increase of 8.6% with the previous proportion of 23.6% (reference Steps survey).

NCD strategic plans for Fiji has been revised twice since 2004 when the Ministry of Health and Medical Services totally committed towards NCD intervention in commissioning an NCD Unit within its Public Health arm to cater for the rising epidemic.

It provided an excellent commitment from Government by providing a 100% increase in the national NCD budget in the first year (reference).

The plan has been reviewed twice over a ten year period and for one 2010–2014 has been formulated and currently 2015-2020 plan is currently being strategized.

Premature deaths or death before the age of 70 years is the most common concern about NCD and 41% of Fiji’s population are between the ages of 30 and 70 years old. Within this age bracket the World Health Organization (WHO) has predicted that the probability of dying from NCD’s is 51% for Fiji (reference).

More than 90% of premature deaths from NCDs occur in low and middle-income countries of which Pacific Island Countries (PICTs) are a part of. The Fiji Islands has the third highest rate of mortality in the PICTs with its 80% mortality due to NCD alone (WHO; 2014).

The total population of Fiji was estimated to be 895,825 people as of 1st January 2016 in an update provided by WHO. NCD tend to affect communities living under poverty. Townsend (1993:36) defined poverty as “relative deprivation” where a poor person “cannot obtain, at all or sufficiently, the conditions of life – that is, the diets, amenities, standards and services – which allow them to play the roles, participate in the relationships and follow the customary behavior which is expected of them by virtue of their membership of society”.

Fiji’s Bureau of statistics has estimated poverty as those earning less than US$2.00 per day and the country has 31% of its population in that category. In addition 52.2% of the population live in urban areas.

Fiji’s statistical profile showed that life expectancy at birth is 69 years and healthy life expectancy at birth is 60, which makes a difference of 9 years and translated as years of life lost through morbidity and disability.

In the same statistical country profile it is noted that the top 10 causes of death are all NCD related deaths. This paper describes the NCD mortality trend between 2012 and 2014 per Age, Ethnicity and area or place death and identifies the common causes of NCD mortality for the same year. It also outlines the percentage of pre-mature mortality against the total NCD mortality between the study periods.

Methods
This study combines desk review and descriptive data collection. Secondary data collection was followed and gone through ethical consideration by the Health Information Unit. A data request form was provided, filled and submitted to the Ministry of Health and Medical Services (MOHMS) Health Information Unit (HIU). NCD related mortality was collated so the proportion, percentage and rates is a representative of the NCD related mortality only and doesn’t reflect the total national mortality data.

Data verification was also conducted so that accurate cumulative data is represented for each causes of deaths. Based on disease burden the NCD mortality data was then further stratified on Age, Gender, Ethnicity, and Area then further classified into age brackets to compare the pre-mature mortality rate over this period.

Classifications of Study Factors
1. NCD mortality is classified as any NCD related disease that cause death or any mortality that is non-viral, non-parasitic or bacterial related and is classified by the Ministry of Health and Medical Services.

2. Grouping of Cardiovascular Disease (CVD) related deaths also being done grouping and deaths that involve any form of heart disease are grouped under CVD for analysis.

3. Other causes of mortality apart from any disease is classified as external cause of injuries.

4. Pre-mature mortality is classified as any NCD related mortality below the age of 60 years.

5. Age bracket are further divided into 5 years so that the mortality distribution over age can be easily calculated.

The primary data source is analyzed through Microsoft excel and results were presented through tables and graphs. Reference population is derived from the 2007 Census.

Results
1. General NCD Mortality
Between 2012 and 2014 a total of accumulated 15,475 NCD related mortality. 2012 - 5089 death, 2013 – 5232 and 5154 deaths in 2014. General distribution of NCD mortality as reflected with the 2007 census result as baseline population is: 2012 – 0.60%, 2013 – 0.62% and 0.61% for 2014. Therefore, it is shown that there is a fair distribution of NCD mortality with in this 3 years.

2. Common Cause of NCD Mortality

Between the study periods, it has been identified the most common cause of death is related with Cardiovascular Diseases (CVD) which is accounted to more than 50% of all NCD related deaths over the years, Diabetes about 25%, and then Cancer. Based on preliminary findings and through desk reviews it is proven through estimation from WHO, that the main cause of NCD mortality is CVD accounted for an estimated 3000 deaths either from CVD or Diabetes. As shown in the table for 2012,
cardiovascular disease contributes to 59% of pre-mature deaths. Diabetes contributes to 67% of pre-mature deaths, and Cancer contributes to 77%. In 2013, CVD accounted for 60% of pre-mature deaths, 67% for diabetes and 78% for cancers. Moreover in 2014, CVD contributes to 63% of pre-mature deaths, 50% for diabetes and 79% for Cancers.

There has been a decrease in the 3% of Diabetes related deaths and an increase of 3% of CVD related deaths. Moreover for cancers a gradual increase of 1% every year throughout the study period.

3. Pre-Mature Mortality

Pre-mature mortality is any death below 60 years. Pre-mature mortality distribution within this period 66% in 2012, 67% in 2013 and 68% in 2014. This shows that most death are pre-mature which also reflects the burden of diseases estimated in the WHO statistical report in 2012 shows that health life expectancy in both sexes was 9 years lower that the life expectancy at birth, this shows that this 9 years of full health was lost through morbidity and disability. After analyzing the NCD mortality numbers over the years, 2015 will most likely to have the same mortality distribution as of the study period.

The age distribution trend shows that a spike increase of NCD mortality is between the 35 years to the 50 years age bracket. Based on this finding intense preventative and behavior change intervention should be targeted to the 5-19 age bracket. Communication package that target this area should be develop in such a way that get the messages across and attract the attention of this age group. Programs should be developed that suit and compete with the major companies and based on strategic planning and practicing of policies, act and laws that currently cover the health fields.

4. Ethnic Distribution

Ethnic distribution of NCD mortality as shown on the table 1.4 shows that the I-taukei has gradually decrease over the study period the study period with 53% of NCD mortality in 2012 to 41% in 2014 but an increase of NCD mortality to the Fijians of Indian descent of 10% from 42% in 2012 to 52% in 2014.

Further analysis should be done to find the reason behind the increase in the NCD mortality of Fijian of Indian descent and the decrease in the I-taukei numbers.

5. Divisional Distribution

With four main division as of the MOHMS cohorts most of Fiji's population are in the Central and the western division. Therefore with this population distribution most of the NCD related mortality are from this two division. WHO statistical profile shows that 53% of Fiji's population are in urban areas which is relatively related to this divisional case distribution, which shows that most NCD related mortality are accumulated in the Central and the western division.

Discussion

After the analysis phase of this survey few areas has been highlighted for discussion; one of the main output of this report is to at least give brief description and propose actions to address
NCD pre-mature mortality.

The World Health Organization have a standard pre-mature mortality age of below 70 years (<70) but Fiji have a pre-mature mortality age of below 60 years (<60). This show that most of our population are dying younger with reference to national statistics. According to figure 1.3 a steady increase in pre-mature is accumulated between the 35 years and the 50 years age bracket. The crude death rate across all age groups between 2012 and 2013 show there has been a drop as per 1000 population from 7.52 in 2012 to 7.2 per 1000 population in 2013.

Fiji’s country profile by WHO clearly shows that the top 10 causes of deaths are NCD related with ischemic Heart disease killing almost 1300 of the population accounting to 21.8% of the total mortality and the probability of dying pre-maturely is around 31%.

Comparing people who are dying between 60yrs and 70yrs it actually show that from all NCD mortality more than 20% died between this age bracket (60-70). Findings show that over this study period the percentage of people dying above 60 years keeps on increasing 22% in 2012, 24% in 2013 and 27% in 2013. Also shown, even though the percentage of mortality between the 60yrs and 70 years increases the crude NCD pre-mature mortality rate remain static with 0.23% in 2012, 0.24% in 2013 and 0.23% in 2014. With this relative finding Fiji is actually not ready to adopt WHO definition of pre mature mortality as any death below 70 years old but if we have a gradual decrease over the next 3 years than we can adopt the WHO definition.

According to the morbidity data from the MOHMS Health Information Unit; shows that morbidity caused by endocrine, nutritional and metabolic disease actually dying from 7.2% (2012) to 9.5% (2013) and a decrease in circulatory system disease from 5.1% in 2012 to 4.4% in 2013.

The direct contributing factors to pre-mature mortality which are raised blood glucose, raised blood pressure, tobacco use and Obesity among the below 60 years old5. According to Fiji’s statistical profile reference for 2008 from WHO shows that 14.8% of the >25yrs have raised blood glucose, 31.1% have raised blood pressure and 31.7% are somehow obese. There are other contributing factors as shown in the Fiji Bureau of Statistics updates and include the increase in Family Budget on Food from 35.36% in 1993 to 40.29% in 2005, 6.13% (1993) to 5.42% (2005) spent on Alcoholic Drinks and Tobacco, An increase in family budget on transportation from 12.85% (1993) to 16.24% (2005) based on National income. Also according to the Local Production report there has been a dramatic drop in the production of butter from 3,343 tonnes (2012) to 3,174 (2013), a decrease in cigarette production from 424 tonnes in 2012 to 397 tonnes in 2013 and also with alcohol production from 32 mega liters in 2012 to 24 mega liters in 2013.

The system for NCD prevention seems to be working well with the local economy but when we look at our governments international trade report during the same period based on spend more on imported product that what it get in foreign exports. There has been an increase in beverages and tobacco imports in 2012 (31.8 million) and 2013 (36.1 million). Fiji’s economy is actually spending more on the imports on NCD contributing products than exporting them. Extensive lobbying concerning prevention of NCD can be conducted to minimize the spending of the government money in importing health risk products.

Overall these are direct and in-direct contributing factors that heavily contributes to Pre-mature mortality and in order to shift the age distribution curve against pre-mature mortality to the older age and let our population age with dignity not with extensive complications.

Conclusion

Extensive research can be conducted based on the contribution of geographical location to NCD mortality and also a rapid assessment of a sudden increase of 10% in NCD related deaths to the Fijians of Indian descent and also a decrease of 12% of NCD mortality to the Itaukei population. There might be some contributing factors that might hinder this sudden changes but based on the research findings there are more people dying >70 years which show the shift of the age distribution curve to the right. More study can be generated from this paper and can be extended to a study period of 10 years rather than 3 years to show the general distribution and trend can be used as reference estimations.

Reference

2012-2014 Mortality Data, Fiji Health Information Unit


Fiji Facts and Figures as at 1st July, 2014; Fiji Bureau of Statistics, 2014

Health Information Unit, Ministry of Health and Medical Services, 2012-2015


World Health Organization – Non-communicable Disease (NCD) Country Profile, 2014