National Health Systems Research Workshop: Programs and Abstracts

From the Workshop Participants

25th and 26th of June, 2009,Pacifika Campus,
Fiji School of Medicine Programmme

Day 1: 25th June, 2009	
8.00am – 8.30am	Registration
8.30am – 8.35am	Welcome
8.35am – 8.55am	Minister for Health – Dr. Neil Sharma
8.55am – 9.10am	WHO Representative in the South Pacific – Dr. Chen Ken
9.10 am – 9.40am	Pacific Health Countdown 2015 – Eliab Some
9.40am – 10.10am	Fiji Health Sector Situational Analysis 2009 - Sutton R, Roberts G and Lingam D.
10.10am – 10.40am	Patient Information Systems – Vicki Bennett
10.40am – 11.00am	Morning Tea
11.00am – 1.00pm	Group Case Studies
1.00pm – 2.00pm	Lunch
2.00pm – 3.00pm	Summary of Case Presentations
3.00pm – 3.30pm	The Renewal of Primary Health Care as an Approach to the Organization of Health Systems – Dr. Amelia Turagabeci
3.30pm – 3.40pm	Afternoon Tea
3.40pm – 4.10pm.	Long Term Impact of Exposure to Hazards from Ship Breaking on Worker's Health – Karim M, N. Faruqee M.H
4.10pm – 4.40pm	Ministry of Health Website Development – Rajneshwar Prasad

GROUP 1

1. Revalidation of Dental Practitioners in Fiji – A More Accountable and Responsible Practice – Clinical Audit, Professional Knowledge and Skills – Devika Ram
2. Cross – Infection Potential of Impression Compound – Arpana Devi
3. Revalidation of Dental Professional in Fiji – Working Towards Safety and Higher Standards in Dental Practice: CPD and Revalidation- Mr Naushad

GROUP 2

1. Rheumatic Heart Disease Control Program – S. Noonan T. Babitu, S. Coluhoun, J.Kado, W.May, K.Prasad, J.Carapetis
2. Underdiagnosis of Acute Rheumatic Fever in Primary Care Settings in Fiji– Tom Parks, Joseph Kado, Samantha Colquhoun, Jonathen Carapetis, Andrew Steer

GROUP 3

1. PICU Mortality Audit in Fiji – Ben Reeves, Monica Brook, Swastika Narayan
2. Evaluation of the Fiji School of Nursing Undergraduate Nurse Perceptor Training Program – Padma Prasad

GROUP 4

1. Effectiveness and Efficiency of Two Trolley Systems as an Infection Control Mechanism in the Operating Theatre – Viliame Tuisawana
2. Stress and Burnout among Fiji Surgeons – Rajeev Patel

Day 2: 26th June, 2009	
8.00am – 8.15am	Summary Day 1
8.15am – 8.45am	Pacific Human Resources for Health Alliance (PHRHA) – HRH Monica Fong
8.45am – 9.15am	Health Metrics Network – Mere Delai and Elenoa Bukasoqo
9.15am – 9.45am	Public Health Information Systems – Marica Kepa
9.45am – 10.15am	The Need for a Health Policy and Systems Research (HPSR) Capacity in the Pacific – Graham Roberts
10.15am – 10.30am	Morning Tea
11.00am – 1.00pm	Group Case Studies
1.00pm – 2.00pm	Lunch
2.00pm – 3.00pm	Summary of Case Presentations
3.00pm – 3.30pm	Abused Men: The Hidden Side of Domestic Violence in Fiji – Akisi Ravono
3.30pm – 3.40pm	Afternoon Tea
3.40pm – 4.00pm.	Closing PSH
4.00pm – 4.15pm	Voting of Thanks – Ms Laite Cavu

GROUP 1

1. Implementing Fiji's Health Management Reforms (1999 – 2004) – Audrey Aumua
2. Staffing the Fiji Health System. Sutton, Ross, Roberts, Graham & Lingam, Dharam.
3. Health Financing in Fiji – Lingam D and Roberts G.

GROUP 2

1. RHD Control Program – Ben Reeves, Joseph Kado and Monica Brook
2. Prospective Surveillance of Streptococcal Sore Throat in a Tropical Country. Andrew Steer, Adam Jenny, Joseph Kado, Michael Good, Micahel Batzloff, Graham Magor, Rosyln E, Kim Mulholland, Jonathan Carapetis

GROUP 3:

1. Changes in Food Eating Pattern in Fiji – Jimaima Schultz
2. Assessing Community Readiness for Obesity Prevention in Youths in the OPIC Project in Fiji – An Application of the Community Readiness Model – Waqa Gade, Roberts G.
3. Micronutrient Status of Women in Fiji – Penina Vatucawaqa

Fiji Health Sector Situational Analysis 2009. *Sutton R., Roberts G., and Lingam D.*

In preparation for further support to the Fiji health sector upon completion of the FHSIP in 2009, AusAID wanted to obtain good baseline data and analysis of the health sector situation, including progress towards achievement of the health related MDGs 4, 5, and 6.

It commissioned this Situational Analysis to inform a scoping and design team to come to Fiji sometime in mid-2009. The objectives of the Situation Analysis were:

1. To provide a 'snapshot' of the current status of the health sector in Fiji from health service delivery and systems levels;
2. To present and assess the state of health based on latest data and statistics, determine limitations of data and propose methodologies to enable tracking for MDGs and any future program support indicators;
3. To identify opportunities and gaps for future AusAID programming, including strategic objectives and likely areas of impact.

Summary of Findings

- **The existing health service delivery framework** was put in place to provide ready access to all and has been functioning for many years, but over recent years issues such as demographic and social change, improved transport and changing medical standards, the location and size of the building blocks requires review.
- **Workforce issues** are of major concern to both curative and public health departments of the Ministry with clinical areas most acutely affected with a serious shortage of senior medical officers, including specialists, as 36% of established senior positions are vacant. The continued shortage of specialist medical officers will, over time, lead to a serious deterioration of service levels.

- **Financial constraints** remain an ongoing problem. Although there has been an increase in the size of health budget in recent years, the per capita health expenditure has declined from $176 in 2005 to $163 in 2008 and the MoH budget as a percentage of GDP has declined from 4% in 1993 to 2.6 in 2008, representing a continuing and steady decline to the lowest percentage of GDP of all countries in the Pacific.
- **Progress on health indicators** has stalled or deteriorated since the mid 1990s. The Infant Mortality Rate was 16.8 in 1990 but had worsened to 18.4 in 2007. The Maternal Mortality Rate of 26.8 in 1990 had worsened to 31.1 in 2007. Both were well short of the MDG targets of 5.6 for IMR and 10.3 for MMR. Under 5 mortality, infant mortality and maternal mortality rates are not only worse than the commitment given in the MDGs in 2000, but are considerably worse than in 1990.
- **Other findings reveal** that old or non-functioning equipment impacts on service delivery, stock outs of essential drugs are still occurring despite some progress over the past 12 months, there is a need for more focused planning and better use of management information systems, there is a significant disconnect between the MoH's corporate plans and achievement of its KPIs, the health sector should be seen as being more than just the MoH – MoH should work more closely with its partners including the private sector, NGOs and the international agencies and there is a need for stronger evidence based approach to policy and planning that will require a dedicated program of operational research.

The Renewal of Primary Health Care as an Approach to the Organsiation of Health Systems. *Dr. Amelia Turagabeci.*

Introduction: It has been over 30 years since the Alma Ata Declaration, a historic event not only for health but the birth of Primary Health Care. What is now Almaty – Khazakistan, in 1978 representatives from 134 countries converged to Alma Ata the former USSR and declared that the key to delivering *Health for All* by the year 2000 was Primary Health Care [PHC]. Primary Care is the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community [IOM]. It is described as the first line of health service provided alternatively *primary health care* is the first level of contact of individuals, the family and community with the national health system bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process.

PHC uses a holistic approach which encompasses comprehensive, universal, equitable and affordable healthcare service for all countries. It appealed for universal coverage of basic services such as education on methods of preventing and controlling prevailing health problems; the promotion of food security and proper nutrition; safe and adequate water supply and basic sanitation; maternal and child health, including family planning; vaccination; prevention and control of locally endemic diseases; appropriate treatment of common diseases and injuries; and the provision of essential drugs. *Alma Ata* Health is a human right, and binding in terms that it is included in most national constitution [Kinney]; there is still a margin in terms of service accessibility, affordability and still provision of basic health care services are threatened by national insecurity [Mashal]. As economic development improves the incomes and standards of living in many developing countries, an increasing gap is opening up between the rich and the poor and this is associated with inequitable access to healthcare services [Hall].

National Health Plan Goals: To achieve our goal for *Health for All*, we redefine our objectives incorporating the Millennium Development Goals [MDG's]. Building on the heightened attention to global health issues, during the 1990s, the international community developed the Millennium Development Goals (MDGs), a set of ambitious targets to reach by 2015 with the overall goal of reducing global poverty and improving the health and welfare of the world's poor. Of the eight MDGs, three relate specifically to health issues with others interconnected/related to health and development through sanitation, education, and poverty alleviation.

PHC in Fiji: Fiji has over the years made great achievements in terms of Primary Health Care service delivery. Our own Fiji School of Medicine [FSMed] has a 124 year old history training health care professionals in the Pacific Region. Initially set-up to train vaccinators, the school has grown over the years, and currently has 5 departments namely Medical science, Health science, Public Health and Primary Care, Oral Health and Research department. Students are exposed to the Primary Health Care concepts and practices through various Public Health courses including practical attachments in the community.

The evolution of primary Health Care in Fiji can be dated back to the colonial era with the use of village health workers, and traditional birth attendants, the training of medical assistants. The term PHC was introduced to Fiji in 1977 way before it was ratified in Alma Ata with the decentralising of services to sub-divisional level and also because health care in Fiji was widely available and **free**. The National Health Plan seeks to address issue in PHC by addressing indicators of progress. For referral systems, although health systems should have a mix of primary (community based), secondary (district based) and tertiary (specialised) facilities and services to provide a continuum of prevention and care. On the policy view, Fiji health system is mostly community based driven. To decentralising of services, health care service was brought to the community doorstep by establishing rural nursing stations and having zone nurses' at the most local level. Community pharmacies were also established and located at the government health centres and sub-divisional hospitals, what was once only accessible through major hospitals and commercial outlets. A new cadre of community health workers [CHW] were also trained to deliver health care services at the community/village level. This was made possible with Ministry of Health and partners in health like the Fiji Red Cross society.

Impacts of PHC in Fiji: Since being introduced in 1964, and re-organisation of health structure, family planning user rate have greatly increased. Family planning services were available at community level through CHW. Disease specific initiatives have weakened health systems and limited efforts to improve maternal and child health and our ability to respond to new health and development crises. The threats posed by newly emerging infectious diseases, climate change, urbanization, and the rise of chronic diseases threatens to erase many of the gains we have achieved. Thirty years on, the concept of providing primary health care for all offers a possible roadmap to attain the MDGs by 2015 and create sustainable, long term investments in health. It is heartening to see that global health leaders have recognized the urgent need to create greater coherence among health initiatives and organizations, and focus funding and attention on basic health system investments to save millions of people every year that now perish needlessly from preventable diseases and find new tools to save *still* more lives.

The community, through its leaders, was to be involved in the planning and implementation of its own healthcare services through community Primary Health Committees. As the world reviews healthcare services beyond 2000, 23 work continues on reducing health inequities for poor people. Many research [on scaling up] questions needs to be addressed, to be embedded on large scale programmes requiring

collaboration between national policy makers, practitioners, public health researchers and funding/donor agencies. Integrated primary health care approaches are of central importance in tackling the growing of burdens of chronic diseases, irrespective of causes. This can also address issues of emerging and re-emergence of diseases. PHC is more effective when complemented with more effective public policies like tobacco control.

Long Term Impact of Exposure to Hazards from Ship Breaking on Workers Health.

Karim M.N., Faruqee, M.H.

Ship breaking Industry is an industrial sector with huge economic potential in Bangladesh. However, such alluring potential comes at a cost of serious environmental and public health degradation. Dismantling of ships is a dirty and dangerous occupation. Several types of hazards prevail in the area or work; most of them are derived from the content of the ship. Several of the chemicals used in ship building before 70s were banned worldwide due to their severe impact on human and environment. Those ships are currently at the age of retirement from liner service and contain biological and chemical hazards including Asbestos, Polycyclic Aromatic Hydrocarbons and heavy metals etc. Besides these, repetitive exposure to physical force and poor work environment also contribute to the toll of hazards. All these exposures pose risk of immediate and tardy health consequences. Most researches done in the issue encompassed the immediate impact of such occupation which actually represents only one slice of a bigger pie. The long term and even more debilitating impact like, Cancer, Heart, lung, Liver, kidney diseases and neurological effects are generally ignored, as most of these diseases have longer latent period. In some cases due to long latency, the link with such exposure is even ignored.

The focus of the current research is to explore long term impacts of the hazards involved. Our research will define exposure retrospectively to reduce the lead-time observation period and will focus on most chronic disease that are known to be derived from the hazards the workers exposed while working at the ship breaking yard. All males above 40 years of age, in a village among ten villages of Bagura district, known to be the residence of former and current ship breaking workers were recruited as cohort. Current morbidity is considered as outcome and the exposure is confirmed based on job history at ship breaking yard. Workers' whose employment at the ship breaking yard started at least 15 before the study and worked at least 2 years in the yard were included. In-built comparison will be sought between the workers and non workers in the cohort. The findings are expected to reveal association of the exposure with several of the chronic diseases and are also expected to unveil the missing link of higher incidence of some diseases with exposure to particular hazards in the cohort.

Key word: Ship Breaking, Retrospective cohort, Chemical hazard, Asbestos, Cancer, chronic disease

Ministry of Health Website. *Rajneshwar Prasad*

Introduction: For any organization to be effective and efficient, the organizations website should be customer friendly. It should be organized and presented in such a way that people get access to their particular areas of interest without any hardship. It is crucial for any organization to have a precise definition of their service. For instance, the ministry of health's website provides a vivid description of the services provided,

the upcoming events and any other health related issues that the public need to be aware of. This enhances each and every individual's knowledge and understanding about critical health issues.

Design Process: In order to design the ministry of health's website, the analysis of the website that was currently in use at that point in time was carried out. All the relevant information that could be of use to develop the website was gathered and analyzed. Moreover, the information was filtered. This was done because we had surprisingly gathered more than enough information and out of all we had; one had to outweigh the other and there were also that information that was confidential and could not be made public. Based on this we selected what we had to present in our website and what was irrelevant was eliminated. The website was then designed and was presented to the authorized people for their feedback. Taking all this judgments and opinions into consideration the website was redesigned and finally launched on 3rd December, 2008.

Usage of the Website: The website is particularly important and handy for everyone. On the website, information on public health, vacancies, etc are posted. It provides awareness on major disease outbreaks; for instance typhoid, dengue fever and others. It also provides tips on the necessary precaution that has to be taken. The website itself is a major source of interaction with outside countries. It gives foreigners an opportunity to interact and provide their views and suggestions via the website. Through the website the promotion of other resources is enabled as well, for example, Hinari, National food and nutrition centre, etc. The website is monitored regularly so that people accessing the website have access to accurate, timely and reliable information.

Cross-Infection Potential of Compound; A Reusable Impression Material In Dentistry.

Arpana A. Devi · Zac Morse · Sharon Biribo

Purpose: To determine the cross-infection potential of impression compound as used clinically in certain developing country settings.

Materials and Methods: Microbiological tests were conducted on impression compound that are reused at the Colonial War Memorial Hospital, Fiji Islands, to detect the presence of bacteria. Swabs of impression compounds were taken to identify the critical points at which bacteria may survive on the compound leading to the potential introduction of organisms into a patient's mouth. For plates showing growth, colonies were observed and identified using Gram staining, Microbact ™ identification kits and other biochemical tests.

Results: Transfer of viable organisms from patients mouths were found on the compound at all stages of the impression process. Improper disinfection and storage of impression compound and trays allowed for the introduction of hospital pathogens on the compound that were not initially present from the patients.

Conclusion: Financial constraints may tempt the reuse of impression compound; they should however not be reused on different patients and appropriate universal precautions must be followed to decrease the likelihood of cross-contamination.

Keywords: Impression compound; cross-infection; nosocominal infections; Fiji.

Revalidation of Dental Professional in Fiji: Working Towards Safety and Higher Standards in Dental Practice. CPD and Revalidation. *Md Naushad*

Introduction: According to the current Medical and Dental Practitioners Act of Fiji (cap 255, last revised in 1978) all graduate dental & medical professionals are registered for life owing to the fact that a revalidation system does not exist. The Act is a legal document encompassing the requirements and concerns regarding medical and dental practitioners in Fiji.

There is growing concern amongst patients in Fiji that dental care is not being provided to the highest standards possible and this is becoming a serious issue in Fiji. In the year 2006, the Fijian Parliament granted a review to be carried out on the Medical and Dental Practitioners Act which was to be funded by the AusAID. However, the funding was withdrawn by Australia due to the sudden overthrow of the government in place at the time. This review was proposed to include *Revalidation* and *CPD* as a new part of the Act.

Revalidation is a process by which a dental or medical practitioner is evaluated on his/her competency and knowledge and his/her practice could be assessed for its safety and standards in order to continue to practice. A key component of revalidation is *Continuing Professional Development* (CPD), which is the study, training, courses and other activities undertaken by the dental personnel to upgrade their knowledge in the advancement of professional development of dentistry or any area of profession. *Recertification* is another mode of assessing a dental professional on the basis of their level of knowledge and skills.

Aim: To explore *Continuous Professional Development (CPD)* requirements as a component of the *Revalidation* process for dentists and to contribute information and data towards current efforts by professional organisations in Fiji in reviewing the Medical and Dental Practitioners ACT along with the need for compulsory *CPD* and membership to a professional body

Objective: To gather information related to CPD to assist professional body initiatives towards the implementation of a revalidation process for dentists in Fiji and towards the review of the Medical and Dental Practitioners Act

Results: Sixty questionnaires were distributed among dental officers in all the three Divisions of Fiji and yielded a response rate of 41.7% (25) after the first distribution. Paid reply envelopes were included in the dissemination to encourage a faster and favorable response. Female dental practitioners made up 48% (12) of the responses while 52% (13) were males. In all, 76% of the dental practitioners have access to internet at their practice and at home leaving 24% without access to any internet service to update their knowledge. Responses based on journal access revealed that 46.2% of dental practitioners find reading dental journals very valuable in terms of gaining information and updating their knowledge. 23.1% of the dental practitioners find reading journals valuable, 15.4% find some either valuable or very valuable while 15.4% find it extremely valuable. The most common journal of choice amongst dental practitioners in Fiji is BDJ and ADJ followed by Hinari, JADA, Mediscope, NZDA, APDN, SCD and Clinical Perio. 48% of the dentists have dental books for reference on their practice premises as well as 80% said that they also have personal copies of dental books for reference outside of their practice. 18 dentists (72%) thought that life registrations as it currently exists should be changed while seven thought that life registration should continue. Various reasons given to change the registration scheme included: that the benefits through revalidation were found to be (a) the quality of dental services to the public will improve, (b)the public will feel safer when having dental

treatment done by dentists in Fiji, (c)there would be better treatment options available to the public, (d) there could be less complaints from the public about the quality of dental services, (e) it will increase the public's confidence about the dental profession. 36% of the dentists think that there are some disadvantages to revalidation giving reasons such as: they do not have time to continue their education as they have commitments with government clinics, there is no opportunity to update, the revalidation scheme does not assess how well the dental practitioner is performing and hence depends on the capacity budding of the dental professional, while 64% think that there are no disadvantages to revalidation. 84% of the respondents think that life registration should be replaced revalidation while 16 % think that it should not. There were also 4% of the dentists who thought that their career is at risk if revalidation is implemented reason being that they will not have enough time to do what is required as well as they do not understand the criteria and the standards being set for the revalidation process.

Conclusion: It can be concluded from this survey that there is a need to implement revalidation and recertification to revalidate dental professionals as well as include CPD as a requirement and that this scheme should be widely accepted as a legislation towards providing safer and higher standards of dental care to patients in Fiji.

Rheumatic Heart Disease Control Programme

S Noonan, T Babitu, S Colquhoun, J Kado, W May, K Prasad, J Carapetis

Rheumatic heart disease is a disease of children and young adults. It can be prevented with long-term, regular Benzathine penicillin G injections (secondary prophylaxis) following early identification and treatment of acute rheumatic fever.

The World Heart Federation supports RHD control in the Pacific. Dedicated control programmes are supported in Fiji, Samoa and Tonga, and technical support is provided to a number of other countries as required. Eighteen Pacific Island countries have attended RHD workshops in Fiji and are part of a network of clinicians and policy makers which is attempting to address RHD issues at a regional level.

In Fiji more than 1000 people have been identified with RHD and many have had heart valve surgery. Since 2005 the World Heart Federation has assisted the Fiji Ministry of Health to establish a national RHD programme which focuses on identifying and registering people with ARF and RHD and improving delivery of secondary prophylaxis to prevent recurrent ARF and to help reduce the burden of RHD in the community. This approach is based on international best practice.

Aim: The Fiji RHD Programme project aims to

- Standardise diagnosis and management of disease throughout Fiji;
- Screen children to detect RHD early;
- Record all known individuals onto a central register and use the information to improve long-term care;
- Raise awareness among health staff and the community to improve care
- Improve delivery of long-term preventative treatment.

Methods: The RHD programme started in the Central/Suva region and has expanded over 3 years to include all areas of Fiji. A computer database register was developed to record individuals with disease. This

register is able to produce automated reports which are sent out to health centres to provide information and retrieve updated information about patients. In collaboration with the Fiji Group A Streptococcus Project children at schools across Fiji are screened and those with confirmed RHD are referred to the programme. Delivery of long-term secondary prophylaxis has been standardised and the programme works with staff at health centres to ensure that patients receive adequate treatment to prevent recurrent ARF. Benzathine books have been distributed to all health centres where Benzathine injections are given to help standardise recording and monitoring of treatment. Doctors and nurses working in primary health care receive training on the diagnosis and management of ARF and RHD via two-day workshops which are held in Suva, Lautoka and Labasa, and posters and pamphlets have been developed in English, Fijian and Hindi to help increase awareness in the community. Patients receive specific education about ongoing management of disease during hospitalization.

Results: The Fiji RHD programme has identified and registered over 1300 adults and children with ARF and RHD over the last 3 years; many of these were already known to health services. More than 6600 people have been screened for RHD and almost 100 new cases have been identified and added to the register. More than 200 doctors and nurses across have attended workshops on RHD; one international publication resulted from the effectiveness of this training and workshop participants have received a copy of the World Heart Federation curriculum for diagnosis and management of RHD. Improvements in Benzathine penicillin injection delivery have been slow. As at December 2008 only about 46% of people requiring injections are receiving adequate treatment to prevent recurrent ARF.

Discussion: The profile and management of rheumatic heart disease has increased significantly throughout Fiji since the RHD programme was established in 2005; however there have been a number of limitations. Benzathine injection delivery must be improved if treatment is to have a sustainable impact on the burden of disease in the community. To help address this the programme is introducing a continuous quality improvement activity through which the RHD Programme works with individual health centres to review their own health service delivery and plan an individual and sustainable approach to improve health care and patient outcomes. This activity will be trialed in 3 health facilities; one each in the Central, West and Northern Divisions. Further screening activities are planned with the aim of increasing the number of RHD echo technicians who can undertake echocardiography screening in collaboration with school health teams.

Underdiagnosis of Acute Rheumatic Fever in Primary Care Settings in Fiji.

Tom Parks, Joseph Kado , Samantha Colquhoun , Jonathan Carapetis, Andrew Steer

Background: Echocardiographic screening programmes have revealed that rheumatic heart disease (RHD) may be considerably more prevalent amongst school children in the developing world than was previously thought. Acute rheumatic fever (ARF), the antecedent of RHD, may also be more common than was previously thought, but there are currently no epidemiologic data that confirm or refute this. We aimed to determine the incidence rate of ARF in two primary health care clinics, to characterise the clinical features of ARF and to assess the diagnostic evaluation of children presenting with features of possible ARF at two clinics in a region of Fiji where RHD is known to be endemic.

Methods: We reviewed 5 years (2003-2008) of primary health care records from 15,841 patients aged 4-20 years using a predetermined case definition for ARF. Detailed clinical data from 944 cases with features of possible ARF were reviewed.

Results: The crude incidence of first episodes of definite ARF in this setting amongst patients aged 4-20 years was 26.2 per 100,000 person-years. Joint involvement suggestive of a potential first presentation of ARF but not sufficient for a definite retrospective diagnosis was documented in a further 93 records. There were a further 529 cases of joint involvement less suggestive of ARF and 322 cases of unexplained fever with no evidence of localised infection. Patients presenting with potential features of ARF seldom had a diagnostic evaluation sufficient to exclude the diagnosis of ARF.

Conclusions: The incidence of definite ARF at these primary care centres in Fiji is twice as high as that previously reported in a hospital-based study, but is likely to represent only a fraction of the actual number of cases presenting to primary care. There is a need for better surveillance for ARF and to develop simple and practical approaches to diagnosing ARF in primary care in low-resource settings.

PICU Mortality Audit in Fiji. *Ben Reeves, Monica T. Brook, Swastika Narayan.*

Objective:

1. To carry out an audit of PICU mortality using currently accepted scoring systems employed in developed countries.
2. Compare mortality between Lautoka and CWM hospitals in Fiji.

Method: Data was collected from consecutive admissions into the Lautoka Hospital PICU over a period of ten months from 23/11/07 and into the CWMH PICU over a period of nine months beginning 12/12/07. The data included the duration of stay, diagnosis, ventilator days, inotropic support as well as the parameters of interest in PIM scoring (systolic blood pressure, inspired oxygen concentration, partial pressure of oxygen, base excess, underlying conditions etc.) as set out in the original articles and using the formulae as published. The data was first recorded on printed sheets and then transcribed onto Excel for analysis. Both written admission records and the electronic database were referred to in order to ensure that all admissions were captured for the study. Only the data from the first hour of admission was used to calculate the PIM score. The PIM scores were averaged and then compared to actual mortality.

Results: There were a total of 167 admissions into the Lautoka PICU over the ten month period and 227 admissions into CWMH PICU over the nine month period. Twenty (11.98%) of the 167 patients into the Lautoka PICU died and 44 (19.3%) of the 227 patients into the CWMH PICU died. The PIM score denoting expected mortality based on the severity of illness at admission was 7.48 for the Lautoka PICU and 7.14 for the CWMH PICU.

Conclusion: The difference in the results may be due to inaccuracies in the scoring system itself. However, it is also important to note that during this period significant changes in clinical care were undertaken in Lautoka and this may have contributed to the lower mortality. This audit has shown that Lautoka is getting patients who are just as sick as CWMH so that is unlikely to account for their higher mortality. Therefore,

an ongoing audit to monitor mortality is justified in our setting and could be used to gauge effectiveness of future attempts to improve the service delivery in Fiji.

Evaluation of The Fiji School of Nursing Undergraduate Nurse Preceptor Training Program. *Padma Prasad*

Objective: To assess the effectiveness of the nurse preceptor training program for quality improvement.

Method: The study focused on the first two levels of evaluation using the "Kirkpatrick's" four-level model. Level one was to find out the preceptors reactions towards the training program. Level two was to find out the amount of learning the preceptor acquired.

The sample consisted of registered nurses (n = 21) working in Colonial War Memorial hospital who had undergone Nurse Preceptor Training program.Data was collected through questionnaires after the training program.

Results: The reactions of the preceptors towards the training program was very positive showing that majority of the preceptors liked the training program. The findings determining the amount of knowledge gained from the training was also positive and showed that there was increased knowledge.

Conclusion: Findings suggest that preceptors value the knowledge they get from the training. However areas have been identified which needs improvement. Also identified is the need for a preceptors handbook to be provided by faculty and the need for continuous training.

Effectiveness and Efficiency of the Two Trolley System as an Infection Control Mechanism in the Operating Theatre. *Vuli Tuisawana*

Background: Infection control practise and policy is determined by various factors, examples are the function of the unit, traffic, age of the building and layout (Infection Control Manual of Fiji, 2002). Labasa Hospital is an old building where the layout and age of the building greatly challenges the implementation of current infection control policies. One of the challenges is the one way traffic for pre-operative and post-operative patients into and out of the theatre. The two trolley system is an old but simple method of infection control suitable for this type of scenario. The two trolley system, whereby an allocated 'outside trolley' transports patients from the ward to theatre. They are then transferred onto the 'inside trolley' which transports the patient to the operating table. As research have guided evidence-based practise, the two trolley system should be scrutinized as an infection control mechanism. The Infection Control Manual of Fiji (2002), stresses that a good hospital infection control prevents hospital-acquired infections. The prevention of hospital-acquired infection saves life, limbs, money and resources. Micro-organisms are found in everything but in a given environment it multiples to become pathogenic. The Royal Australian College of Surgeons (2008), emphases that in a surgical setting, the most common mode of transmitting infections is through direct contact from contaminated instruments or hands to the patient's tissue and bloodstream. Rainer and Russ (2005) identified that most microbes in theatre are from staffs and a few from patients. They found that a well ventilated theatre is more likely to pose a risk of direct contact transmission of infections from contaminated surfaces rather than air.

Aim: The aim of the study is to explore the effectiveness and efficiency of the two trolley system as an infection control mechanism at the Labasa Hospital operating theatre from 2006 to 2008.

Method: This is a quantitative research whereby data is gathered by literature review and past routine swab results of theatre by the Labasa Hospital Infection Control Nurse from 2006 to 2008.

The Setting: The study would be done on the operation theatre at the Labasa Hospital, involving the transportation of patients into and out of the operating theatre.

Swab Results: The swab taken inside theatre on (08/12/06) showed heavy growth of Estsobactirium Agglonerous. On (02/11/07), the theatre swab showed it's worst side with Acinetobacter Heamolyticus found in operating room 2 (O.R.2) air-conditioning outlet and the minor operation theatre (M.O.T.) suction tube. Acinetobacter baumanii was found in the suction bottle lid in operating room 2 (O.R.2) and Pseaudomonas maltophilia was found in the M.O.T. hand washing sink. The swabs taken on (23/01/08) showed no improvements as, Proteus retgen was found in O.R.1 operating table (mid-section). Acinetobacter baumanii was found in O.T.1 suction bottle, air-conditioning outlet, anaesthestic machine tube and O.R.2 operating table (mid-section).

Conclusion: WHO Guideline for Infection Control (2006), recommends that bacteriological testing of the environment should be reserved for outbreaks whereby the source of infection needs to be identified. The Fiji Infection Control Working Manual (2005) emphases the importance of regularly cleaning the environment and equipments in theatre but there is never a mention about using a two trolley system as an infection control mechanism for theatre. Lewis, et al (1990), recommends that the one trolley system can be used in theatre but it should be washed regularly, especially the wheels. Dharan and Pittet (2002), stressed that normal skin bacteria of patients and healthcare workers cause more than half all infection following clean surgery. Surgical site infection is the leading complication of surgery. Chan, et al (2007), emphases the importance of being vigilance in infection control by strict hand washing after contact transmission by personnel was suspected in an outbreak.

Examining the past swab results it be concluded that micro-organisms have being found in places that patient's body or a healthcare personnel hands come into contact with an equipment or environment. The floor was never swabbed for culture because procedures are conducted on an operating table, so the two trolley system is insignificant, if vigilant cleaning is practised. To continue the two systems reinforce a false sense of infection control because the basic of infection control such as, hand washing and through cleaning is reflected as 2nd priority.

Stress and Burnout Levels among Surgeons in Fiji. *Rajeev Patel, Collin Brook*

Job burnout is as an end product to a prolonged response to chronic emotional and interpersonal stressors on the job. Data of burnout levels among the health care workers in the developing Pacific Island countries is very limited to non-existent. This study aims to estimate the prevalence of burnout using Maslach Burnout Inventory (MBI) among Fiji surgeons. This is study currently underway .The results of this study would be presented to the hospital administrators and directors in Ministry of Health with a view of:mproving the working conditions for the surgeons, provision of more resources for surgeons to work with and provision of counseling services.

The Need for a Health Policy and Systems Research (HPSR) Capacity in the Pacific.

Roberts G.

Health policy and systems research (HPSR) has been defined as the production and application of knowledge to improve how societies organize themselves in order to achieve health goals.

Abstract: As Pacific nations continue to struggle with health sector development the lack of clear policies and weak policy development process are clearly evident to those who work in the health systems. The Situational Analysis of the Fiji Health Sector (2008) has identified "a need for stronger evidence based approach to policy and planning and this will require a dedicated program or operational research".

The Fiji School of Medicine is now teaching health policy within its Department of Public Health and will establish a *Pacific Centre for Health Policy and Systems Research* (PCHPSR) in 2009 with the intention to capitalise on the recent and rising interest in health policy initiatives in the region and globally.

WHO in the Western Pacific Region and The Alliance for Health Policy and Systems Research in Geneva are actively involved in supporting HPSR in low and middle income countries. In conjunction, WHO is developing an *'Observatory on Health Systems and Policies'* in the Asia/Pacific following the recognition that policy-makers have poor access to relevant evidence-based information in health systems, the dual needs for comparative analysis and information on health systems and to increase the capacity for country specific analysis, and due to rapid economic, demographic and disease patterns changes in the Region; and rising health care costs. The Observatory will develop a systematic approach to country health systems allowing country comparisons, provide analysis and policy briefs and dialogue, build capacity in health systems analysis & policy making and strengthen research network in health systems. Fiji is not yet an active member of the Observatory but it can be anticipated that the PCHPSR will begin to participate.

WHO through The Alliance is also developing the initiative of regional based *EVIPNet: Evidence Informed Policy Network for Better Decision Making* to encourage policy-makers in low and middle-income countries to use evidence generated by research. It is a collaborative network of researchers, policy makers and civil society to facilitate the use of high quality research evidence to improve policy decisions. EVIPNet has been set up in several regions, was started in Asia in 2005 (with teams in Laos, Malaysia, the Philippines, and Vietnam, and three teams in China), and in Africa in 2006 (with teams in Burkina Faso, Cameroon, Central African Republic, Ethiopia, Mozambique, Niger, and Zambia). Country teams are led by senior health officials from government, in partnership with representatives from national science and technology institutions and academia, among others. The relevance to Fiji can be seen in the EVIPNet brochure, which states *"health policies are not always informed by the best available evidence. Poorly informed policy-making is one of the reasons why services may not reach those most in need and why health indicators are off- track".*

Abused Men: The Hidden Side of Domestic Violence in Fiji. *Akisi Kasami*

This exploratory study examined the prevalence of domestic violence against males in a Fijian context and involved 216 married participants (males = 108, females = 108). The study investigated the different types of spousal violence men experience, the main circumstances that contribute to female violence and how men typically cope with their situation.

Results show that men also suffer from physical, financial, sexual, verbal and psychological types of abuse. Women being angry were identified to be the main causes of mens' experiences of violence whereby social obligations have been identified as a contributing factor. Most men react emotionally and would seek the assistance of a priest into their experiences. This study also found that most men experienced spousal abuse at home, where children normally act as witnesses into their experiences. This is contrary to the Fijian cultural values where men are viewed as heads of households and are supposed to be treated with respect. Finally, results of this study indicated that according to participants, the pressuring demands of living as a perfect couple has become a threat to their lives because they cannot get out of an abusive relationship. For these reasons, domestic violence continues and becomes a vicious cycle.

Implementing Fiji's Health Management Reforms (1999 – 2004). *Audrey Aumua*

The past thirty years have seen more than a third of the world's developing nations undertake some form of health restructuring activity (OECD 2004; Schou and Haug 2005). Reforms have varied in content and scope from country to country, but most share common features such as changes in the institutional configuration of the health care system, health financing and the role of the public and private sector in health care delivery (Berman and Bossert 2000). Health reforms involving institutional change have included the decentralization of policy decision-making and resource management to sub regional and local levels, and institutional changes have involved the relocation of people and changes in organizational structures. Several countries in the Pacific have implemented health reforms all of which have involved some form of institutional restructuring and service reorientation (Laramour and Qalo 1985;Kolehmainen-Aitken 1991; Aus Health International 1998; World Bank 2003; Ministry of Health Tonga 2004). The Republic of Fiji, similar to other developing island nationsin the Pacific, has struggled to maintain a balance between the growing burden of disease within its population, and the ability of its system to effectively respond. As part of a series of responses to these issues the Government of Fiji in 1999 conjointly with the Australian Government embarked upon a programme of health policy reforms entitled the Fiji Health Management Reform Project. (FHMRP). Its purpose to"improve the health outcomes of the people of Fiji" by decentralizing its health system.(Aus Health International 1998).

The bulk of health reform literature points to the lack of cohesive evidence and detail regarding the success of health reforms in developing countries. (Rondinelli and Shabbir 1983 Hutchinson and LaFond 2004) . According to Cassels (1995) two to three decades of health sector reform experiences in many countries appear to have done little to improve the stated problems of health system effectiveness, efficiency and responsiveness (Cassels 1995). Furthermore the literature does not point to one defining issue responsible for the lack of success, rather various studies point to a mixed bag of reasons for poor outcomes in health reforms (Cassels 1995; Bossert 2000; Gonzalez-Rossetti and Bossert 2000). Issues range from the inadequate capacity of policy reforming institutions, health worker issues, political and economic instability of the country, the role of policy makers, stakeholders, donor agency influence and in particular the complexity and design of reform models used in developing countries (Walt and Gilson 1994; Litvack, Ahmad et al. 1998). Health Reforms in the Pacific are a recent phenomenon. The central catalyst for many of the reform initiatives in the region have mostly been due to the influence of international funding organizations and regional aid donors who have, through their country specific aid programmes, enabled countries to embark on restructuring programmes. Tonga,Vanuatu, Fiji, Solomon Islands, Papua New Guinea and Samoa are most notably subsidized by the Australian Government (World Bank 2003; Aus Health International 2004; Australian Government 2004; Ministry of Health Tonga 2004; Bolger 2005).

Although very little evaluative work has been done on Pacific reforming nations and their success, there is evidence that health reforms in the region over the years hasbeen difficult and not resulted in the outcomes that they were designed to achieve (Kolehmainen-Aitken 1991; Ministry of Health Solomon Islands 2008; Ministry of Health Tonga 2008). No formal evaluation of the Fiji Health Management Reforms has taken place. In 2006 the Government of Fiji reported that it had now recognized a number of key issues emanating from the reform process that warranted a fuller review of the effectiveness of the health reform project (AusAid Review Team 2006).

This paper is based on a study undertaken to analyse the policy experience of Fijis health management reform project (FHMRP). 'The study utilised a health policy framework to answer questions related to the health reform implementation experience. The framework included recognition that while there are always technical complexities behind policy reform, the main factor in determining the degree of reform changes which are accomplished, is the relationship between the policy and the stakeholders and their influence on each other and the policy process. Analysts in this field assert that policy evolves not only from policy institutions under the control of bureaucrats and political leaders but also from a combination of activities by people, networks, and organizations and environmental factors most of which exist outside the policy institutions. (Considine 1994). Health policy analysis theory highlights the necessity of studying the wider contextual environment of a health system in order to understand what key drivers influence its implementation (Walt 1994).

Case Study Methodology: The methodological design of the study was an intrinsic case study as described by Stake (Stake 1995). This has been an empirical inquiry. It has utilised qualitative data collection methods. The study has analysed four key areas, the role of policy actors, the role of political institutions, the policy making culture of Fiji, and the political economy of the health reforms. Objectives of the research asked how these four key areas affected the implementation of the Fiji Health Management Reform Project (1999-2003) .

Results: Emerging results highlight that the development and implementation of the reform policy was problematic. Challenges related to the problem of the Ministry of Health's own internal capacity to have supported and implemented the reforms. Other issues that were detriment to the success of the reforms included an unsupportive public sector, public sector institutional culture, limited legislative framework to support policy change, external stakeholder resistance as well as problems with reform timing. An unstable political environment and complex social and cultural influences within the policy making environment further added to the myriad of implementation challenges. The policy reform model and the role of donors was an important aspect of the projects analysis.

Implications: Identifying how Fiji has developed health policy in recent years and continues to develop health policy into the future as it works towards developing a health system that is efficient and effective has been the underlying premise of this study.

Transferability of reform experiences to other small island nations in the Pacific is linked with the elements of political, social and economic influences. A review of international evidence shows that reform failures have little to do with the merits of the reform programme but rather it is reflective of the inadequate process of policy reform implementation and of the management of change. This study's contribution to policy theory and to Fiji, lies in the analysis of Fijis reform experience.

Staffing the Fiji Health System. *Sutton, Ross, Roberts, Graham & Lingam, Dharam.*

Staffing continues to be a major issue in Fiji and indeed throughout the Pacific. The serious nature of workforce issues, and especially the shortage of key staff such as specialist medical officers, is reflected in the recent creation of the Pacific Human Resources for Health Alliance (PRHRA). The Alliance is a network of representatives from individual Pacific island countries supported by regional training institutions and "interested parties" from universities and professional bodies in Australia and New Zealand. It aims to address continuing problems relating to human resource development in the Pacific. WHO currently provides the secretariat for PRHRA.

Within Fiji, we have found that workforce issues are of major concern to both curative and public health departments of the Ministry– although clinical areas are most acutely affected. In particular a shortage of key cadres of staff was reported to the team as being perhaps the single major issue facing the MoH – and it may worsen with the reduction of the size of the public sector workforce by 10% . These Issues of the adequacy of staff establishments and the difficulties to respond to emerging needs, graduate numbers in all health cadres, emigration of health personnel, remuneration, job evaluation, performance appraisal and career progression have been discussed and disputed in the Fiji health system for many years but without a concerted and coordinated response.

Unfortunately outward migration appears to have been accepted as an unavoidable phenomenon, resulting in the need to train more staff to fill vacant positions. However, the provision of newly trained staff to replace experienced staff is not an adequate response. Senior staff are leaving and being replaced by less senior level staff, thus potentially putting at risk the overall quality of the workforce. Unfortunately in the current economic climate, the potential to increase staff establishments is unlikely, although within-budget changes to the mix of staff should be possible.

Health Financing in Fiji. *Lingam D. and Roberts G.*

This paper provides an analysis of the Fiji Ministry of Health (MoH) budget for the last 46 years, its share of the national budget and annual percentage of GDP, its revenues, per-capita health expenditure, staff costs, and the association with key population health indicators. Despite annual budget increases, the proportion of GDP allocated to the national public health system has not approached the 8% of GDP considered necessary for the quality provision and upgrading of health services and has fallen from 4% to 2.6% over the last 15 years. We outline factors to be considered in Fiji, such as the need for public policy debate on the nature of the health system, the concept of 'public good', the revision of hospital charges, the need to protect the poor by strengthening means testing, and propose health insurance for the employed.
Recent interest in strengthening the private sector has arisen due to the public sector's inability to provide comprehensive services to the population, yet the fees for private services are well beyond the majority of the population.

In 1993 Cabinet agreed that the MoH undertake a review of its cost-recovery program. Fifteen years later this review has not yet been conducted while government continues to finance 98% of health costs and has a negligible cost recovery program of less than 2%. Cost-recovery is not a new feature in Fiji as the 'user pays' system has been in operation since 1978, however, the dollar value of these fees has not been revised

since 1980 despite an estimated 500% increase in costs. This paper identifies a progressive erosion of Fiji's health financing in recent decades, resulting from an apparent lack of policy activity to protect or improve the levels of government funding, whereby the 2008 government allocation is among the lowest in the world as a percentage of GDP and is significantly less than our neighbours Vanuatu and the Solomon Islands.

PICU Mortality Audit in Fiji. *Ben Reeves, Monica T. Brook, Swastika Narayan.*

Objective: To carry out an audit of PICU mortality using currently accepted scoring systems employed in developed countries.

1. Compare mortality between Lautoka and CWM hospitals in Fiji.

Method: Data was collected from consecutive admissions into the Lautoka Hospital PICU over a period of ten months from 23/11/07 and into the CWMH PICU over a period of nine months beginning 12/12/07. The data included the duration of stay, diagnosis, ventilator days, inotropic support as well as the parameters of interest in PIM scoring (systolic blood pressure, inspired oxygen concentration, partial pressure of oxygen, base excess, underlying conditions etc.) as set out in the original articles and using the formulae as published. The data was first recorded on printed sheets and then transcribed onto Excel for analysis. Both written admission records and the electronic database were referred to in order to ensure that all admissions were captured for the study. Only the data from the first hour of admission was used to calculate the PIM score. The PIM scores were averaged and then compared to actual mortality.

Results: There were a total of 167 admissions into the Lautoka PICU over the ten month period and 227 admissions into CWMH PICU over the nine month period. Twenty (11.98%) of the 167 patients into the Lautoka PICU died and 44 (19.3%) of the 227 patients into the CWMH PICU died. The PIM score denoting expected mortality based on the severity of illness at admission was 7.48 for the Lautoka PICU and 7.14 for the CWMH PICU.

Conclusion: The difference in the results may be due to inaccuracies in the scoring system itself. However, it is also important to note that during this period significant changes in clinical care were undertaken in Lautoka and this may have contributed to the lower mortality. This audit has shown that Lautoka is getting patients who are just as sick as CWMH so that is unlikely to account for their higher mortality. Therefore, an ongoing audit to monitor mortality is justified in our setting and could be used to gauge effectiveness of future attempts to improve the service delivery in Fiji.

Prospective Surveillance of Streptococcal Sore Throat in a Tropical Country

Andrew C Steer, Adam W J Jenney, Joseph Kado, Michael F Good, Michael Batzloff, Graham Magor, Roselyn Ritika, E Kim Mulholland, Jonathan R Carapetis

Background: Acute rheumatic fever and rheumatic heart disease cause a high burden of disease in Fiji and surrounding Pacific Island countries, but little is known about the epidemiology of group A streptococcal (GAS) pharyngitis in the region. We designed a study to estimate the prevalence of carriage of beta-hemolytic streptococci (BHS) and the incidence of BHS culture positive sore throat in school aged children in Fiji.

Methods: We conducted twice-weekly prospective surveillance of school children aged 5 – 14 years in four schools in Fiji during a nine month period in 2006, following an initial phase of pharyngeal swabbing to determine the prevalence of BHS carriage.

Results: We enrolled 685 children. The prevalence of GAS carriage was 6.0%, while the prevalence of group C streptococcal (GCS) and group G streptococcal (GGS) carriage was 6.9% and 12%, respectively. There were 61 episodes of GAS culture positive sore throat during the study period equating to an incidence of 14.7 cases per 100 child-years (95% CI 11.2 – 18.8). The incidence of GCS/GGS culture positive sore throat was 28.8 cases per 100 child-years (95% CI 23.9 – 34.5). The clinical nature of GAS culture positive sore throat was more severe than culture-negative sore throat, but overall was mild compared with that found in previous studies. Of the 101 GAS isolates that underwent *emm* sequence typing there were 45 *emm* types with no dominant types. There were very few *emm* types commonly encountered in industrialised nations and only 9 of the 45 *emm* types found in this study are *emm* types included in the 26-valent GAS vaccine undergoing clinical trials.

Conclusions: Group A streptococcal culture positive sore throat was more common than expected. Group C and group G streptococci were frequently isolated in throat cultures, although their contribution to pharyngeal infection is not clear. The molecular epidemiology of pharyngeal GAS in our study differed greatly from that in industrialized nations and this has implications for GAS vaccine clinical research in Fiji and other tropical developing countries.

Assessing Community Readiness For Obesity Prevention In Youths In The Opic Project In Fiji: An Application Of The Community Readiness Model.

Waqa Gade[1], Roberts Graham[1]

Background: The HYHC project is the Fiji arm of the Pacific OPIC project. The intervention area of Nasinu is peri-urban and includes seven secondary schools. The control area of Lautoka, Nadi and Sigatoka includes 11 secondary schools.

Introduction: The assessment tool of the Community Readiness Model provides the stages of community readiness of community-wide efforts to prevent overweight or obesity in adolescents within the Obesity Prevention in Communities (OPIC) project. The Pacific OPIC Study involves a series of analytical and intervention studies in young populations (ages 13-18) in Fiji, Tonga, New Zealand and Australia.

Method: Six dimensions of changes were identified and assessed and are used as a tool for diagnosing the community's needs for developing strategies that meet those needs. A summary score of the dimensions, made out of nine stages ranging from "no awareness" hence also no actions to a "High Level of Community Ownership" in relation to obesity prevention.

A sample of 40 participants from different background representing different parts of the schools and community settings were recruited and interviewed before the intervention programs in 2006 and after intervention in 2008. The interviews were recorded, transcribed and scored independently by two people before the final score was reached during discussion.

Results: Before interventions, at least some community members in the control communities recognized that obesity in youths is a problem with little recognition that it might be a local problem (second stage or resistance). However; most community members in the intervention area felt that overweight and obesity is a local problem, but there is no immediate motivation to do anything about it (third stage or vague awareness). At the end of the two years intervention programs, both communities reached the forth stage of community readiness (preplanning) out of the ninth stage (high level of community ownership). There is clear recognition that something must be done, there may even be a committee but efforts are not focused or detailed.

Recommendation: The community readiness model is a powerful tool for assessing the stages of community readiness for any health promotion programs that are anticipated for high level of community ownership. More awareness and community involvement are needed for more positive results.

Micronutrient Status of Women In Fiji. *Penina Vatucawaqa*

Background: This research aimed to determine the status of micronutrient deficiencies in women of childbearing age.

Methods: Data on serum ferritin, hemoglobin, serum retinol and dietary intake using 24 hour recall of women aged 15-44 years (n = 758) were extracted from the 2004 National Nutrition Survey.

Results: Overall, iron deficiency affected 23% of women, 40% were anaemic and 13% had vitamin A deficiency. Dietary patterns showed micronutrient deficient women consumed less micronutrient rich foods.

Conclusion: Anaemia is a public health problem in Fiji. Vitamin A deficiency exists in the country in certain segments of the population. Poor dietary intakes in micronutrient deficient women need to be addressed by strategies from relevant authorities.

Changes in Food, Diet and NCD. *Jimaima Schultz*

Food availability data from Food Balance Sheets and food consumption data from the 2004 National Nutrition survey were examined to determine the food and diet factors that have contributed to the increasing rates of NCDs in Fiji. This paper attempts to identify trends and the link between sources of food available nationally, and current consumption of specific dietary factors associated with higher and lower risks of NCDs in Fiji. A model to provide some understanding of the food and nutrition system in Fiji within the context of economic development and globalization is presented.

Suggestions are also made of potential solutions to reverse the current trend in food supply and availability which will impact positively on current diet.

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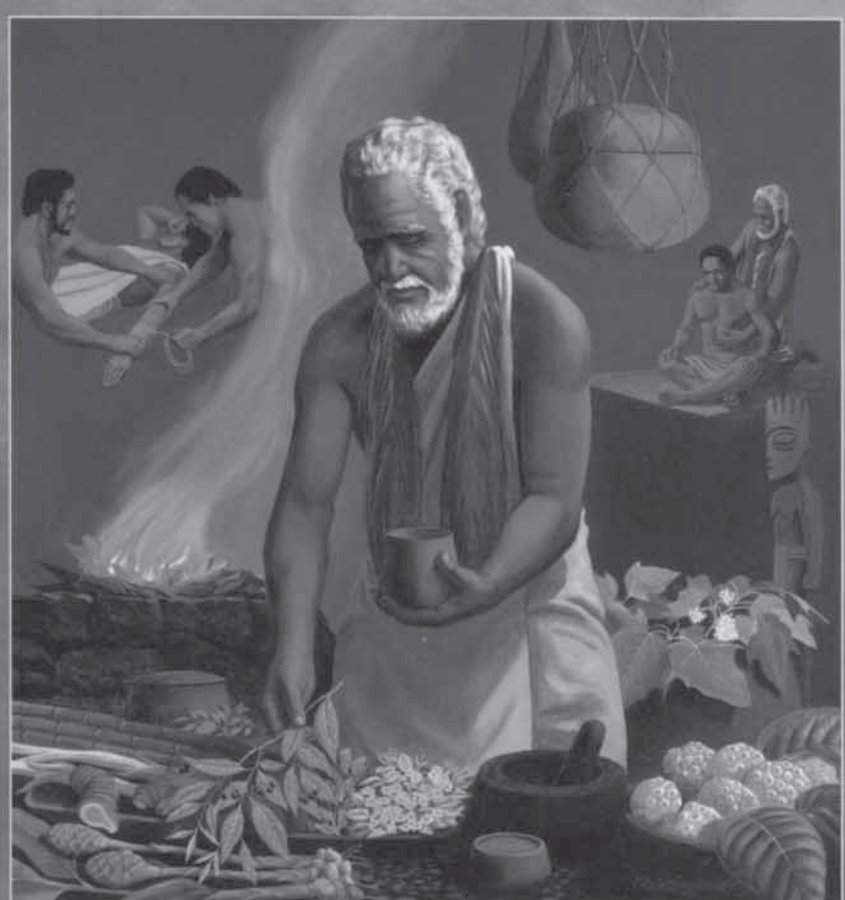

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