COMMONWEALTH MEDICAL ASSOCIATION
24TH TRIENNIAL CONFERENCE 2016
14 – 16 OCTOBER 2016
Cinnamon Grand Hotel, Colombo, Sri Lanka
http://www.cma2016.org

Conference Proceedings

Sri Lanka Medical Association, Health Informatics Society of Sri Lanka & Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka

CO-ORGANISER
National Science Foundation of Sri Lanka

NATIONAL PARTNER
Information and communication Technology Agency of Sri Lanka

SUPPORTED BY THE
Commonwealth Secretariat, Commonwealth Foundation, Commonwealth Enterprise & Investment Council
Compiled by
Professor Indika Karunathilaka
Dr Roshan Hewapathirana
Dr Prasad Ranatunga
Table of Contents

PP-1: Pattern, prevalence and causative factors of injuries among Sri Lankan rowers ........................................ 11

PP-2: Attitudes and practices on management of hypertension among hypertensive patients at Teaching Hospital, Batticaloa ............................................................................................................... 11

PP-3: Development of neonatal ponderal index centile charts. – a preliminary study ....................................... 12

PP-4: Prevalence and correlates of psychological distress and depression among patients with Chronic Kidney Disease in the District of Anuradhapura ........................................................................................................ 13

PP-5: Risk perception regarding landslides among affected inhabitants in Meeriyabedda, Sri Lanka .......... 14

PP-7: Snakebite envenoming risk map for Sri Lanka ........................................................................................................ 16

PP-8: Self-medication practices among medical undergraduates in Rajarata University of Sri Lanka ......... 17

PP-9: Occupational health and safety in free trade zones in Sri Lanka: a study based on perceptions of employees ............................................................................................................................................... 18

PP-10: Retrospective study of the patient profile of endophthalmitis over a year (2015) at the National Eye Hospital .......................................................................................................................... 18

PP-11: The determination of genotoxic effect of betel quid and constituents using the UMU-Chromo Test® ................................................................. 20

PP-12: Factors affecting growth and nutrition in institutionalized children in Colombo .................................... 20

PP-13: The determination of genotoxic effect of monosodium glutamate using the UMU-ChromoTest® ....... 21

PP-14: An audit on use of analgesics in trauma victims presenting to a tertiary care hospital in Sri Lanka .... 22

PP-15: Knowledge and attitudes regarding use of insulin among diabetic patients who were on insulin therapy in five selected hospitals in Colombo District .................................................................................................................. 23

PP-16: Knowledge on and correlates of birth defects, risk factors and prevention and management of birth defects among pregnant mothers in Galle .......................................................................................................................... 24

PP-17: Analysis of methylenetetrahydrofolate reductase (MTHFR) polymorphisms (C677T & A1298C) in recurrent pregnancy loss ...................................................................................................................... 25

PP-18: Spirometric values of Sri Lankan Tamil adults in Jaffna District - a preliminary results .................. 25

PP-19: Innovative model for improving the hygiene standards of food trading establishments .................. 26

PP-20: Determination of antibacterial activity of herbs on Salmonella typhi .................................................... 28

PP-21: Household cost of Chronic Kidney Disease patients living in Anuradhapura district .................... 28

PP-22: Motorcycle related injury pattern within a suburb of Sri Lanka ......................................................... 29
PP-23: Prescribing patterns, availability, prices and affordability of medicines used in non-communicable diseases in Sri Lanka: an island-wide study ................................................................. 30

PP-24: Evaluating predictors of medical students’ performance at the final MBBS examination – a pilot study ........................................................................................................................................ 32

PP-25: Readiness for web based information sharing in state sector hospitals in Sri Lanka: Medical administrators’ perspective on sharing service delivery information ........................................................................................................... 33

PP-26: Assessment of access, use and their attitudes towards information technology among operation theatre nurses of Sri Lanka, 2013 ........................................................................................................................................... 34

PP-27: Using a simulation modelling approach to manage outpatient department waiting time at the National Hospital of Sri Lanka ........................................................................................................................................ 35

PP-28: Effectiveness of mHealth interventions targeting health care workers in improving pregnancy outcomes in low and middle income countries: a systematic review ........................................................................................................................................... 35

PP-29: Overcoming challenges and improving the efficacy of health educational returns ........................................................................................................................................... 36

PP-30: Strengthen cancer surveillance in Sri Lanka by implementing cancer registry informatics to enhance cancer registry data accuracy, completeness, and timeliness ........................................................................................................................................... 37

PP-31: Essential drug stock alert tracker: Provincial Directorate of Health Western Province, Sri Lanka ........................................................................................................................................ 38

PP-32: Developing a country wide PACS framework and implementation toolkit ........................................................................................................................................... 39

PP-33: Introduction of a new laboratory based e-surveillance system for dengue infection within the Western Province, Sri Lanka ........................................................................................................................................... 40

PP-34: Implementation of tailor made hospital information management system at state health care institutions in Sri Lanka ........................................................................................................................................... 41

PP-35: Development and piloting of an injury surveillance system based on free and open source software ........................................................................................................................................... 42

PP-36: Awareness of current child health development record and attitude towards mobile supported child health monitoring in urban Sri Lankan parents ........................................................................................................................................... 43

PP-37: Prevalence of overweight & obesity among participants in a non-communicable disease (NCD) screening programme: association with demographic characteristics and NCD risk ........................................................................................................................................... 44

PP-38: Women’s experiences of vaginal complaints in Estates communities in the Colombo District, Sri Lanka ........................................................................................................................................... 45

PP-39: Dialysis Outcomes in India: An online clinical outcomes registry for dialysis outcomes, lessons learned and opportunities for research partnership within Commonwealth Medical Association ........................................................................................................................................... 46

PP-40: Hybrid computer based simulator for heart and lung (SimHaL) disease diagnosis: The concept and implications in medical education ........................................................................................................................................... 47
Abstracts
PP-1: Pattern, prevalence and causative factors of injuries among Sri Lankan rowers
ADP Perera, Ariyasinghe A
1Department of Physiotherapy, Faculty of Allied Health Sciences, General Sir John Kotelawala Defence University, Sri Lanka
2Department of Physiology, Faculty of Medicine, University of Peradeniya, Sri Lanka
dperera85@yahoo.com

Background:
Rowing is a popular sport enjoyed at competitive levels and at recreational levels either on the water or with ergometer machines. As with any sport, extensive training results in injury.

Aim:
The aim of this study was to investigate the injury pattern and its causative factors among professional rowers in Sri Lanka in view to develop strategies to prevent further occurrence.

Methods:
A descriptive cross sectional study was conducted in the competitive period with 46 professional rowers in the Sri Lanka army in the age range of 20-33 years. An interviewer administered questionnaire was used to obtain information of demographic data, injury patterns and rowing techniques.

Results:
The prevalence of injury in male and female rowers was 68.8% and 57.1% respectively. The type of injury sites observed for female and male rowers were lower back (21.4%, 37.5%), knee (14.2%, 12.5%), hand and wrist (7.1%, 3.1%), hip (14.2%, 0.0%), shoulder(0.0%, 12.5%), ankle (0.0%, 3.1%) and chest (7.1%, 12.5%) respectively. The mean value for training volume of indoor and water training were 48 hours and 60 hours per month respectively. Both Sculling and sweep rowing techniques correlated significantly with certain injury sites for both male and female rowers (P<0.05).

Conclusion:
The prevalence of injury was significant in the Sri Lankan rowers. The anatomical sites most commonly affected were the lumbar spine and the knees. Injury is also directly related to the rowing techniques.

PP-2: Attitudes and practices on management of hypertension among hypertensive patients at Teaching Hospital, Batticaloa
Kisokanth G, Ilankoon IMPS, Arulanandem K, Goonewardena CSE, Sukunan G
1Department of Supplementary Health Sciences, Faculty of Health Care Sciences, Eastern University, Sri Lanka
2Department of Allied Health Sciences, Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Lanka
3Department of Primary Health Care, Faculty of Health Care Sciences, Eastern University, Sri Lanka
4Department of Community Medicine, Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Lanka
5Base Hospital, Kaluwanchikudy, Sri Lanka
kiso.1983@yahoo.com

Background:
Hypertension is on the rise worldwide and being a leading cause of mortality and hospitalization in Sri Lanka. Although hypertension is a treatable condition along with its preventable risk factors, it could result life threatening and serious complications in the absence of proper treatment. Changing patients’ attitudes and practices towards management of hypertension play an important role in prevention of its complications.

Objective:
The objective of the study was to determine the attitudes and practices on management of hypertension among diagnosed hypertensive patients attending medical clinics at Teaching Hospital, Batticaloa.
Method:
A cross sectional descriptive study was carried out at Teaching Hospital, Batticaloa among 424 diagnosed hypertensive patients attending medical clinics who were selected by systematic sampling technique and pre-tested interviewer administered questionnaire was used. The descriptive and inferential statistics were used for analysis by using SPSS version 15.

Results:
The study consisted of 174 (41%) males and 250 (59%) females. The mean age was 60.4 (SD± 9.6) years. Forty six percent of the participants had hypertension for the duration of 1 to 5 years. About 24% of participants did not agree to include green leafy vegetable in their daily diet that would help to improve their blood pressure control while approximately 95.0% of them disagreed upon their ability to manage hypertension. Eighty eight percent agreed with the statement of “avoidance of extra salt in your diet is good”. About 24% of them disagreed with the statement of “it is good to have fruits than sweets as deserts”. Thirty three percent disagreed that regular physical exercise is essential to control blood pressure. A Few (1.2%) mentioned that in addition to western medicine they used other treatment modalities like Ayurveda or herbal treatment. Majority of the participants (92%) have reported that they have never checked blood pressure at home and among those who check blood pressure, 52.8% checked once a month. Most of the participants (71%) had consumed vegetables and fruits frequently while nearly half of them (46.0%) consumed pickle occasionally.

Conclusions:
Understanding the patients’ attitudes and practices on management of hypertension is essential to develop effective strategies and interventions for their health improvement. Practices such as low salt intake, cessation of tobacco, body weight reduction, fruits and vegetables intake remain unsatisfactory among hypertensive patients in the present study. The health workers need to play an important role on educating the patients to avoid the risk factors for poorly controlled hypertension such as fatty food, alcohol and smoking. Patients need to be educated and encouraged on the importance of physical exercise.

PP-3: Development of neonatal ponderal index centile charts. – a preliminary study
de Silva R1, Tissera A2, Alawatta D3
1General Hospital, Trincomalee, Sri Lanka
2Teaching Hospital Mahamodara, Galle, Sri Lanka
3National Hospital of Sri Lanka, Colombo, Sri Lanka
rasikasagara@yahoo.com

Introduction:
Neonatal Ponderal index is an anthropometric measurement of a neonate that determines the severity of growth restriction in utero. It is calculated by birth weight (kg) divided by the cube of the birth length (m). Traditionally birth weight has been used to the purpose of determining the severity of growth restriction. Small for gestational age (SGA) is defined when birth weight lies under the 10th centile of the population. Many clinicians consider SGA as foetal growth restriction (FGR). However foetal growth restriction is a separate entity which is defined as the failure to achieve genetic growth potential by a foetus. Not all growth restricted foetuses are small for gestational age. Not all SGA foetuses are growth restricted. More than 40% of SGA foetuses are constitutionally small and are healthy. Ponderal index below 5th centile can be used to identify growth restricted neonates. Growth restricted neonates are vulnerable not only for short term morbidities but also to long term adverse effects and adulthood metabolic disorders. Accurate identification of FGR is therefore essential for proper management of short term and long term complications. Although
ponderal index centile charts are widely available for international populations it is lacking for Sri Lankan population. Using international ponderal index centile charts for Sri Lankan population may not be accurate.

Objective:
To construct preliminary ponderal index centile chart for Sri Lankan Population.

Method:
Prospective cohort study was done with 2788 neonates born during a calendar year in the unit A of teaching hospital Mahamodara, Galle. Neonates whose gestational age was not confirmed by first trimester ultrasound scan were excluded. Birth weight and length were recorded along the gestational age at delivery of the neonate. Ponderal index was calculated for each neonate accordingly. Ponderal index centiles were calculated for 40, 39, 38 and 37 gestational weeks. For each gestational week 5th, 10th, 50th 90th and 95th centiles were calculated and a centile chart generated for ponderal index value against the gestational age. For other gestational weeks sample size was inadequate to calculate ponderal index centiles.

Results:
Ponderal index values for 5th, 10th, 50th, 90th and 95th centiles for 40 weeks were 17.00, 17.77, 20.78, 24.49 and 25.56 kg/m\(^3\) respectively. For 39 weeks these values were 16.90, 17.76, 20.43, 24.18 and 25.53 kg/m\(^3\) respectively. Values for 38 weeks were 16.22, 17.34, 20.62, 24.14 and 25.5 kg/m\(^3\) respectively. For 37 weeks respective values were 16.83, 17.51, 20.40, 24.20 and 25.15 kg/m\(^3\). Centile chart was generated accordingly.

Conclusion:
The values observed differed significantly from international centile charts. Therefore it may more closely represent Sri Lankan population values. However a multicentre study with a large number of subjects is required before generalizing this chart for Sri Lankan population.

PP-4: Prevalence and correlates of psychological distress and depression among patients with Chronic Kidney Disease in the District of Anuradhapura
Senanayake SJ\(^1\), Gunawardena NS\(^2\), Palihawadana\(^3\), Bandara WMP\(^4\), Ranasinghe AW\(^5\), Karunarathna RH\(^6\), Priyantha Kumara GWG\(^4\)
\(^1\)Family Health Bureau, Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka
\(^2\)Faculty of Medicine, Colombo, Sri Lanka
\(^3\)Epidemiology Unit, Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka
\(^4\)North Central Provincial Directors Office, Anuradhapura, Sri Lanka
sjsenanayake@yahoo.com

Background:
Prevalence of Chronic Kidney Disease (CKD) is on the rise in Sri Lanka and of all the districts Anuradhapura district is known to carry the highest burden in the country. CKD is known to adversely affect the mental wellbeing. Among various psychiatric disorders, depression is the commonest psychiatric disorder among CKD patients which is frequently observed as renal functions deteriorate.

Objective:
The study aimed to screen CKD patients living in Anuradhapura district for depression and psychological distress and to assess their correlates.

Method:
A community based cross-sectional study included representative sample of 1174 CKD patients drawn proportionate to all the registered patients in all 19 Medical Officer of Health areas in the district of
Anuradapura. Trained para-medical staff visited the households and administered the locally validated Centre for Epidemiologic Studies Depression Scale and General Health Questionnaire–12, to screen for depression and psychological distress, respectively. Symptom burden and severity were assessed using locally validated Chronic Kidney Disease Symptom Index-Sri Lanka (CKDSI-Sri Lanka).

Results:
A total of 1118 CKD patients participated with a response rate of 95.2%. The mean age was 58.3 (SD 10.8) years and 62.7% were males. A majority were in CKD stage 4 (58.3%).

The screening revealed 75.0% (95% CI 72.5-77.5) to be psychologically distressed while 65.2% (95% CI 62.4-68.0) to be depressed. Prevalence of being depressed among females 70.5% (95% CI 66.1-74.9) was significantly higher (p<0.05) than males (76.7%; 95% CI 72.7-80.8). The median age of both depressed and psychologically distressed patients were found to be statistically significantly high (p<0.001) compared to those who were not depressed and not distressed. Regarding the educational status and employment status, highest prevalence of depression was seen among who did not have any formal schooling (75.6%; 95% CI 66.1-85.1) and least prevalence of both depression (51.7%; 95% CI 46.7-56.7) and psychological distress (61.2%, 95% CI 56.4-66.1) were seen in the currently employed group. The prevalence of depression among patients who were having comorbidities was 69.6% (95% CI 66.4-72.8) while the prevalence significantly (p=0.002) increased with advancement of the disease. Both depressed and psychologically distressed patients had a significantly (p<0.001) high symptom burden and symptom severity (p<0.001).

Significantly (p<0.001) high proportion of depressed and psychologically distressed indicated that their current kidney disease has affected their ability to do household work, social activities and religious activities.

Multiple logistic regression revealed being dialyzed (OR 5.64), advanced age (OR 1.01), being employed (OR 0.505), presence of comorbidities (1.02), having passed GGCE A/L (0.35) and overall symptom burden (1.12) be significant correlates of depression. Being dialyzed (OR 5.18), CKD stage 5 (OR 1.71), being employed (OR 0.48), overall symptom burden (1.16) and being engaged in religious activities (OR 2.05) were the significant correlates of psychological distress.

Conclusion:
Policy makers should be advocated on the likely high prevalence of psychological distress and depression among CKD patients and the need for specific mental health services to confirm the diagnosis of the conditions and to treat. The modifiable correlates identified should be considered in the design of a comprehensive interventional programme to promote mental well-being.

PP-5: Risk perception regarding landslides among affected inhabitants in Meeriyabedda, Sri Lanka
Swarnamala S1, Samaranayake D2, Rajakaruna S1, Neelawala H3
1Post Graduate Institute of Medicine, University of Colombo, Sri Lanka
2Faculty of Medicine, University of Colombo, Sri Lanka
3Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka
shyhewa@gmail.com

Background:
In Sri Lanka occurrence of landslides are on the rise. A large landslide occurred at Meeriyabedda in Badulla district of Sri Lanka in October 2014, directly affected around 330 inhabitants resulting in 12 deaths and 25
missing. There is a need to understand risk perception in victims and general population regarding natural hazards to implement successful disaster mitigation strategies.

Objective:
To assess risk perception and risk mitigation intentions regarding landslides among affected inhabitants of Meeriyabedda landslide.

Methodology:
A descriptive cross-sectional study was conducted in October 2015 in victims affected from Meeriyabedda landslide. Study sample was people over the age of 15years, who are currently residing in an abandoned tea factory until resettlement. An interviewer administered questionnaire assessing socio-demographic characteristics, risk perception, trust towards stakeholders, psychological vulnerability and risk mitigation intentions was used for data collection.

Results:
There were 103 responders out of the 158 who fulfilled the criteria according to records. Study sample of affected population mainly consisted of estate workers (42.7%, n=44) followed by unemployed (39.8%, n=41) and students (10.7%, n=11). Majority were educated up to grade 5 (44.7%, n=46) or not schooled at all (15.5%, n=16). Age varied from 15 to 75 years with the mean age of 41.4years and 54 (52.4%) of them were females. There were 53 (51.5%) people who had faced landslides before this incident. The impact of landslides (mean score=3.78 out of 4) was perceived more than the sense of controllability of a landslide (mean score=2.04 out of 4). Mitigation actions were clear for 40 (38.9%) subjects and 13 (12.7%) had a sense that landslides can be controlled. Only 60 (58.3%) victims trusted the capability of government for proper disaster management (mean score- 2.8 out of 4), also 77 (74.8%) of them believed the capability of experts to predict and 73 (70.8%) trusted the capability of media to convey a disaster situation. The psychological vulnerability of the study group is high and 97 (94.2%) of the population often worried about the threat of a landslide. There was a positive attitude towards mitigation intentions like alerting on hazard potential areas (85.4%, n=88) and information seeking (94.2%, n=97). But the victims were not ready to accept inconvenience (58.2%, n=60) or financial loss (60.2%, n=62) due to government’s mitigation plans or take mitigation actions in their own expense (73.8%, n=76). Only 47 (45.6%) were willing to relocate if it is affordable. Socio-demographic factors like age, gender, educational status, occupational status and personal monthly income and other factors like previous exposure to landslides are not associated with the mitigation intentions in this population.

Conclusion:
There is opportunity to carry out awareness programs effectively and community based disaster mitigation programs, as the sense of “perceived impact” of landslides is high in this study group after experiencing a fatal landslide. Even though people understand the importance of carrying out mitigation programs they are not willing to take mitigation actions on their own with the low socioeconomic background. Government should focus more on increasing the acceptability of disaster mitigation activities.

PP-6: Open Source as a sustainable option for tracking Tuberculosis patients in Sri Lanka
Pramil Liyanage1, Rangana Silva1, Roshan Hewapathirana2
1National Programme for Tuberculosis Control and Chest Diseases, Sri Lanka
2Health Informatics Society, Sri Lanka
pramiicl@gmail.com
Recently many changes were introduced to the local as well as global Tuberculosis control activities parallel to World Health Organization declared post-2015 TB Control Strategies aiming to end global TB epidemic. Tuberculosis control is also listed as one of the major target in Sustainable Development Goals by United Nations. In par with these developments, Sri Lanka has also launched new strategies aimed at elimination TB. Ensuring implementation of countrywide electronic recording reporting system is identified as one of the main objectives in this agenda.

To fulfil this objective National Programme for Tuberculosis Control and Chest Diseases (NPTCCD) launched an electronic system based on free and open source platform DHIS2. Using the Tracker Module, capturing patient information was initiated. Currently, the system is implemented in all 26 district chest clinics. Patient registration, DOTs provision arrangement, contact screening, sputum conversion details, treatment regime and outcome data of patients are recorded electronically. Further, recording of the patient location has enabled to minimize treatment interrupters and loss to follow-up cases.

Further development by integrating with a comprehensive LIMS module, drug stock management module and MDR-TB module is in the pipeline. To ensure sustainability, a support network was built with the inclusion of PGIM, HISSL, GFATM and the global DHIS2 community.

**PP-7: Snakebite envenoming risk map for Sri Lanka**

Ediriweera D1, Kasturiratne A2, Pathmeswaran A2, Gunawardena K3, Wijayawickrama B3, Jayamanne S3, Isbister G4, Dawson A5, Giorgi E6, Diggle P6, Laloo D7, de Silva HJ8

1ICT Centre, Faculty of Medicine, University of Kelaniya, Sri Lanka
2Department of Public Health, Faculty of Medicine, University of Kelaniya, Sri Lanka
3Department of Medicine, Faculty of Medicine, University of Kelaniya, Sri Lanka
4Clinical Toxicology Research Group, University of Newcastle, Australia
5Central Clinical School, Faculty of Medicine, University of Sydney, Australia
6Lancaster University Medical School, United Kingdom
7Liverpool School of Tropical Medicine, United Kingdom
dileepa@kln.ac.lk

**Background:**
Snakebite is a neglected tropical disease. There is little reliable data on snakebite, and this makes it difficult to estimate the true disease burden. Hospital based statistics often underestimate snakebite incidence because a significant proportion of victims seek traditional treatments. Since geospatial risk assessments of snakebite envenoming are rare, health care resources are distributed based on administrative boundaries rather than on a need analysis.

**Objective:**
The aim of the study was to develop a snakebite envenoming risk map for Sri Lanka.

**Method:**
Epidemiological data was obtained from a community-based island-wide survey. The sample was distributed equally among the nine provinces. 165,665 participants (0.8% of the country’s population) living in 1118 Grama Niladhari divisions were surveyed. Generalized linear and generalized additive models were used for exploratory data analysis. Model-based geostatistics was then used to determine the geographical distribution of envenoming bite incidence. The Monte Carlo maximum likelihood method was used to obtain parameter estimates and plug-in spatial predictions of risk. A predictive model was developed with natural and social environmental variables to construct an estimated envenoming bite incidence map and a probability contour map (PCM) to demonstrate the spatial variation in the predictive probability that local incidence does or does not exceed national envenoming snakebite incidence (i.e. 151 per 100,000).
Additional maps were developed to demonstrate envenoming bite incidence of -50 per 100,000 and +100 per 100,000 from the national envenoming bite incidence to identify cold spots and hot spots in Sri Lanka.

Results:
Envenoming bite incidence had a positive association with elevation up to 195 meters above sea level, with incidence dropping at higher elevations. The incidence of envenoming was higher in the dry zone compared to intermediate and wet climatic zones and decreased with increasing population density. Developed risk maps showed substantial within-country spatial variation in envenoming bites.

Conclusion:
The risk maps provide useful information for healthcare decision makers to allocate resources to manage snakebite envenoming in Sri Lanka. We used replicable methods which can be adapted to other geographic regions after re-estimating spatial covariance parameters for each region of interest.

PP-8: Self-medication practices among medical undergraduates in Rajarata University of Sri Lanka
Rathish D1, Wijerathne B2, Bandara S3, Piumanthi S4, Senevirathna C5, Jayasumana C6, Siribaddana S7
1Department of Pharmacology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
2Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
3Department of Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

rathishdeva@gmail.com

Background:
Self-reliance, convenience and low cost are some of the driving factors for self-medication. However, incorrect diagnosis, failure in seeking medical advice and increased risk of adverse effects can eventually result in inconvenience and high cost. Prevalence of self-medication among adolescents varies from 4% to 92% in different countries. It is observed to be high among health care workers and medical students.

Objective:
Our aim was to assess self-medication practices among medical undergraduates of Rajarata University of Sri Lanka.

Method:
A descriptive cross-sectional study was conducted among all consenting medical undergraduates. A pre validated self-administered questionnaire was used to collect data on demographic information, self-medication practices and antibiotic self-medication. Basic descriptive statistics were used to describe each variable. Ethical clearance was obtained from the Ethics Review Committee of the same institute.

Results:
Six hundred and ninety six students, out of a total of 902, participated in a study lasting for 3 months. Mean age of the participants was 23.2 (SD 1.6) and the male to female ratio was 1: 2.4. The majority of the participants was Buddhist (85%), from the district of Gampaha (15%) and was staying near the faculty (50%). Another 44% were staying near the teaching hospital and 6% were travelling from home. Most of their fathers employment belonged to the ‘professionals’ category (37%) whereas the mothers were housewives (60%).
Use of self-medication in the past one year (including over the counter drugs, herbal and homeopathic drugs, vitamins and minerals) was seen in 94% of the participants. They have predominantly obtained the drug from a pharmacy (86%) and continued using self-medication for one week or less (57%) if symptoms unresolved. 32% of the participants agreed with the fact “I want to play an active role in my health”. Drugs
from home pharmacy were mostly used according to the advice the doctor had given in the past when having similar symptoms (57%). With reference to safety of self-medication “using drugs with unknown substances in patients having liver and kidney disease is very dangerous” was considered very important by 61% of the participants.

Self-medication with antibiotics was seen in 16% (110/696) of the participants during the last one month and the commonest reason being prior experience of using the same antibiotic (89% - 98/110). Sore throat (46% - 51/110) was the commonest symptom for which an antibiotic was used as self-medication. Amoxicillin was the main self-prescribed antibiotic (56% - 62/110) and it was compatible with earlier studies.

Conclusions:
High prevalence of self-medication and increasing trend in use of antibiotic as self-medication warrants the need of counselling and tight regulation of drug dispensing.

PP-9: Occupational health and safety in free trade zones in Sri Lanka: a study based on perceptions of employees
Wijayaweera WKDKK1, Yapa YMMM1, Cooray MPNS1, Karunaratne WCD2
1Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka
2Faculty of Medicine, University of Kelaniya, Sri Lanka
kusalwijayaweera@gmail.com

The garment industry in Sri Lanka is based and evolved around Free Trade Zones in the country, of which Katunayake Free Trade Zone is the oldest and largest (BOI, 2014). This study was conducted in 2014 to produce empirical evidence of employee perceptions on level of Occupational Health and Safety in the Garment Industry within the Free Trade Zones. The research study was conducted by using both qualitative and quantitative research methods, covering a relatively large random sample of 600 Garment factory employees in the Katunayake Free Trade Zone in Sri Lanka. In addition, a survey of existing literature pertaining to Occupational Health and Safety in regional and national level was carried out.

Data collection through administering structured questionnaires was done using a team of trained research assistants, who conducted face-to-face interviews with respondents selected for the survey.

The majority of the respondents were females (62.7%) with a mean age of 26.7 years. 59.7% of respondents have obtained GCE/Ordinary level qualification. Majority of the respondents were permanent employees and belonged to the Machine Operator category. Results indicate that a significant majority (79.5%) does not possess a clear idea on occupational health, but most of them are aware about the hazards of operations in their line of work (83.5%), and believe that work place hazards can lead to illness (73.3%) and can cause injuries (79.7%). A statistically significant relationship is identified between the duration of work and the level of understanding of occupational health (Fisher’s Exact Test=11.089, p=0.024). Percentage of respondents who has had at least a single work related injury during the last 5 years of their career is 22.7%. This figure shows a higher annual rate of work related injuries compared to studies done in the region (Calvin & Joseph, 2007). Majority of workers (over 70%) perceived that key measures are in place to ensure workplace health and safety.

PP-10: Retrospective study of the patient profile of endophthalmitis over a year (2015) at the National Eye Hospital
Jayathilaka LD1, Kapila CRA2, Fonseka C1
1National Eye Hospital, Sri Lanka
2District General Hospital, Monaragala, Sri Lanka
dhanushi.jayathilaka@gmail.com
Endophthalmitis is an infrequent but nasty complication that can take place after ocular surgery, trauma or as a result of systemic infection. (1) The morbidity is noteworthy and return of sight is indefinite. “Endophthalmitis remains one of the most devastating complications faced by patients, and the most challenging for ophthalmologists to treat,” said lead study author Ronald C. Gentile, MD, Professor of Ophthalmology, Icahn School of Medicine at Mount Sinai and Chief, Ocular Trauma Service at NYEE.(2) To optimize visual outcome, early diagnosis and treatment are essential. Over recent decades, advances in hygienic standards, improved microbiologic and surgical techniques, development of powerful antimicrobial drugs, and the introduction of intravitreal antibiotic therapy have led to a decreased incidence and improved management of endophthalmitis. However, endophthalmitis still represents a serious clinical problem. (3) This study conferred patient profile of 35 diagnosed endophthalmitis patients in year 2015 at NEH. This was conducted, because even a single case of endophthalmitis is challenging and stressful to treat.

Keywords: endophthalmitis, Eye, Cataract

Objectives:
To identify the treated number of Endophthalmitis patients at NEH in year 2015
To explore age distribution of the treated Endophthalmitis patients at NEH in year 2015
To explore sex distribution of the treated number Endophthalmitis patients at NEH in year 2015
To explore previous reported interference to the affected eye
To explore aetiological distribution
To explore time of presentation (Acute, Delayed, Chronic)
To explore Visual Acuity on admission
To explore Length of stay of Endophthalmitis patient
To explore the patients comorbidities

Methodology:
Patients who were diagnosed and treated as endophthalmitis at NEH in year 2015 were included. Retrospective cohort study design was used. Data were collected from the bed head tickets.

Results:
During the year 2015 a total of 26809 patients were admitted to NEH. Out of that 35 were diagnosed with endophthalmitis. 20 cases of post-operative endophthalmitis were identified. From them 19 cases were post cataracts. 2 were after ocular trauma. 7 cases were acute onset (within 4 days), 10 were delayed presentation (5 -30 day) and 8 cases were chronic endophthalmitis. The age range was 30 - 88 years with Male predominance. The results of microbiological cultures were demonstrated as 2 fungal. 1 Pseudomonas arugenosa. 1 Staphylococcus aureus and 8 “no growth”. On admission visual acuity (VA) varied from Snellen NPL – 6/18. Final VA ranged from removal of the eye to 6/18.3 patients were suffering from Diabetes Mellitus, 5 with Hypertension, 1 with remission of Bipolar Disorder, 1 with Bronchial Asthma and 1 with Schizophrenia. Average length of stay of diagnosed endophthalmitis patient is 14 days.

Discussion and conclusion:
The limitations were its retrospective nature, unable to find full details from the BHT, and potential differences between the practices of different surgeons. eimmr was used to dual check the total number of diagnosed cases, age and sex distribution and hospital length of stay, which evidences the digital health interventions facilitate to improve research quality.
**PP-11: The determination of genotoxic effect of betel quid and constituents using the UMU-Chromo Test®**

Liyanage B, Kothalawela S, Amarasekara R  
BMS School of Science, Colombo, Sri Lanka  
zeebuddika@hotmail.com

**Background:**
Since time immemorial people have been conventionally consuming betel quid in Sri Lanka. However it is believed that betel quid and its constituents such as the betel leaves, tobacco leaves and areca nut may cause oral cancers.

**Objective:**
This study was carried out to determine the genotoxicity of the betel quid and its constituents using the umu-chromo test.

**Method:**
The umu genotoxicity assay measures the ability to induce the umu gene expression in Salmonella typhirium (TA1535) containing umuc-lacZ fused gene that induced in response to genotoxic compounds and is measured by β-galactosidase activity.

Betel leaf, Areca nut, Wild dried tobbaco, Areca nut with Dried wild tobacco (1:1), Areca nut with Betel leaf (1:1) and Betel quid were extracted with 30% Dimethylsulfoxide (DMSO) solution and was tested on the recombinant Salmonella typhirium bacterial culture. The growth factor and the β-galactosidase activity of the bacteria was calculated to obtain the Induction ratio.

**Results:**
The results showed that both betel leaves and wild dried tobbaco leaves are genotoxic. The wild dried tobbaco showed a strong genotoxic effect even at a low concentration of 28.84 mg/L, while betel leaves produced genotoxicity effect at a concentration of 86.7 mg/L. However areca nut and the constituents in combination as the betel quid remain negative for genotoxicity tested on Salmonella typhirium.

**Conclusion:**
Accordingly this study confirms that betel quid constituents such as betel leaves and tobacco leaves are genotoxic and may lead to mutagenic.

---

**PP-12: Factors affecting growth and nutrition in institutionalized children in Colombo**

Gamhewage N1, Mohideen A2, Liyanage G2, Perera R2  
1Lady Ridgeway Hospital, Colombo, Sri Lanka  
2Colombo South Teaching Hospital, Sri Lanka  
nimeshagamhewage@gmail.com

**Background:**
Child care institutions in developing countries provide care for orphaned, abandoned and abused children. The Department of Probation and Child Care Services (DPCCS) operates eight state-receiving homes, which are transit centres for children until adoption or adulthood. It also serves as the regulatory body for many more voluntary (private) foster care institutions in the country. DPCCS statistics in 2010 shows that there are 15,874 children residing in 374 child care institutions including state foster care centres in Sri Lanka. Malnutrition in children is one of a major problem in Sri Lanka. We realize that malnutrition also affects the children residing in institutions. There are only few studies published on institutionalized children. We did
this research to compare the nutritional status in between the national level data and our population in institutions and to find out the factors which governed.

Objective:
To describe the prevalence of stunting, wasting and under nutrition in institutionalized children. To describe the factors affecting the nutritional status of institutionalized children.

Methods:
This is a descriptive cross sectional study done on all (180) children from 8 foster care institutions which is randomly selected from 12 institutions. Some of the data were extracted from existing records, Child Health Development Record (CHDR) and anthropometric measurements measured according to the WHO (World Health Organization) guidelines. Nutritional status was assessed using WHO guideline. Ethical clearance was obtained from ethical review committee of University of Colombo.

Results:
Prevalence of stunting, underweight and wasting in our study population was 39.4%, 49.5% and 34.4% respectively. This is considerably higher than national level nutritional status. There is a statistically significant difference obtained in between sex, age of the child and wasting. Also significant difference obtained in between birth weight, duration of stay and stunting.

Conclusion and Recommendation:
There is a significantly higher percentage of malnutrition observed in institutions in Colombo. These children should be assessed carefully and properly managed in tertiary health care services.

PP-13: The determination of genotoxic effect of monosodium glutamate using the UMU-ChromoTest®
Amarasekara R, Logeswaran S, Kotalawala S
BMS, School of Science, Sri Lanka
ranmaleewa@gmail.com

Background:
The commercially produced and synthesized monosodium glutamate (MSG) is one of the most widely used flavour enhancers that increases the flavour of food used commonly in Asian cuisine and West African diets throughout the world. Thus besides its usefulness, excessive amount of MSG causes side effects including headache, dizziness, and vomiting. MSG causes cancer and other health problems. However this content is still debatable and yet to be proven scientifically.

Objective:
The aim of this study was to investigate the genotoxic potential (mutagenicity) of monosodium glutamate using a novel molecular genetic test.

Methods:
The genotoxic effect of five different concentrations (0.75 mg/mL, 0.90 mg/mL, 1.10 mg/mL, 1.40 mg/mL and 1.60 mg/mL) of MSG was tested on recombined strains of Salmonella typhimurium using the UMU chromotestTM kit. This kit utilizes the mechanism for the detection of genotoxic damage of the respective food samples.

Results:
The results of this study demonstrated that MSG concentration significantly increased the frequencies of
genotoxicity with an increased induction ratio of above 1.5. Thereafter the study showed that even a minimum concentration of 0.75 mg/mL of MSG to have a genotoxic effect. Concentrations higher than 1.10 mg/mL inhibited the growth S. typhimurium.

Conclusion:
The study confirmed that MSG causes genotoxicity (mutagenicity) even at very minute concentration of 0.75 mg/ml. MSG demonstrated to have a genotoxic effect on the recombined S. typhimurium bacterial strain. With relevant confirmation of the results, the study gives preliminary evidence that MSG is a mutagenic agent but further investigations and studies are recommended to determine the mutagenic potential of MSG in human health.

PP-14: An audit on use of analgesics in trauma victims presenting to a tertiary care hospital in Sri Lanka

Wickramaratne N\textsuperscript{1}, Rajakaruna S\textsuperscript{2}, Adikari S\textsuperscript{1}, Saleeth M\textsuperscript{1}, de Almeida M\textsuperscript{1}
\textsuperscript{1}Colombo South Teaching Hospital, Sri Lanka
\textsuperscript{2}National Hospital of Sri Lanka, Colombo, Sri Lanka
nilankawickramaratne@ymail.com

Background:
Pain management found to be inadequate in accident and emergency departments around the world. There is minimal emphasis on adequacy of pain relief in emergency and trauma care with no proper studies published up to now in Sri Lanka.

Objectives:
To assess the use of analgesics to patients presented to accident service of Colombo South Teaching Hospital during first hour of admission. Then identify short comings of pain management and institute a locally acceptable analgesia protocol.

Methodology:
This was conducted in three phases. During the first phase present analgesic practice was assessed. In the second phase instituted a locally acceptable analgesic protocol. In the last phase analgesic practice was reassessed to check the effectiveness of the programme. This programme was conducted over a period of three months in 2016.

Patients who were more than 6 years of age with skeletal fractures presented to the accident service within 4 hours of incident were included for the audit. The patients with GCS less than 15 and unstable patients were excluded. One hundred patients were assessed pre and post intervention using a preformed checklist.

Pain was assessed using visual analogue scale.

Results:
The pre and post intervention samples were of nearly equal characteristics. Patients were categorized to be having fractures involving arm or forearm (33 and 36), thigh or leg (28 and 25), hand or foot (19 and 17) and other (20 and 22).

In the pre intervention group 10 did not received any analgesics and 64 received only oral analgesics. None of the patients received intravenous (IV) opioids and 2 received intramuscular opioids. Considering the pain score 52 patients complained pain score of $\geq 9$, with the mean pain score of 7.65. After the intervention use of oral analgesics for fracture pain was significantly reduced to 26 cases ($p<0.001$). IV opioids have been used in 27 patients compared to none in the pre intervention group. Also higher use of regional blocks were observed after intervention ($n=18$), but with still 7 did not received any analgesics.
within first hour of presentation. Control group after intervention shown better pain control with mean pain score of 5.13 (p<0.001), but with 12 patients still having pain score ≥9.

Conclusion:
Interventions should be done to improve pain management practices during the initial management of trauma victims. Even after intervention there was a room for improvement highlighting the need of long term repeated programmes to improve management of acute pain.

PP-15: Knowledge and attitudes regarding use of insulin among diabetic patients who were on insulin therapy in five selected hospitals in Colombo District

Wijesinghe D¹, Pathirana R², Perera R²
¹Pharmacy Unit, Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Lanka
²Department of Biochemistry, Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Lanka
idalieyana@gmail.com

Key words: Diabetes mellitus, Insulin therapy

Background:
Diabetes mellitus has become a pandemic worldwide affecting both developed and developing countries. The goal of Insulin therapy in both types of diabetes is to achieve glycaemic control with a target HbA1c value and minimize complications. Improvement in knowledge and attitudes regarding Insulin therapy can be effectively used for better glycaemic control and adherence to Insulin therapy.

Objectives:
The study was conducted to assess the level of knowledge and attitudes regarding Insulin use among diabetic patients who were on Insulin therapy.

Method:
A cross sectional descriptive study was conducted among diabetic patients who were on Insulin therapy, aged 18 years and above, attending diabetic/medical clinic in five selected hospitals including three teaching hospitals, one base hospital and one divisional hospital in Colombo district. A pretested, interviewer administered, structured questionnaire was used to collect data. Data was analysed using SPSS version 20.0 software and Microsoft Excel 2010 software.

Results:
Data of 400 subjects was included in the analysis. From them 62.2% patients knew that diabetes cannot be cured but can only be controlled using Insulin while 27.2% said that diabetes can be cured using Insulin. There was a significant association between education level of the patient and the knowledge on reason for having Insulin therapy (p=0.000). Only 36.2% of the participants knew at least three symptoms of hypoglycaemia. The majority of the patients did not know most of the hypoglycaemic symptoms. But 96.0% of total study subjects knew home management of hypoglycaemia. From the total population only 17.8% knew about Hba1c test. Slightly more than half of the total population (55.5%) believed that diet control and exercises are essential for proper glycaemic control even though Insulin is started. Three fifth of the total population (59.5%) believed that Insulin is habit forming. From the study population 76.8% believed that bitter condiments such as bitter gourd, neem has an effect on lowering blood sugar levels. Nearly two third of patients’ (67.8%) attitude was that they can stop Insulin once their blood sugar levels are controlled. Though 61.0% of study
subjects were satisfied about their medical practitioner only 15.0% of study subjects were satisfied about their pharmacist regarding counselling.

Conclusion:
Although majority but not all have a good knowledge and attitudes in certain areas on Insulin therapy, still there are areas which need to be further improved. This calls for need of implementation of sound awareness programs regarding education and management of Insulin therapy by skilled healthcare providers initially and repetitively in follow up clinics.

PP-16: Knowledge on and correlates of birth defects, risk factors and prevention and management of birth defects among pregnant mothers in Galle

de Silva J1, Jayarathna K2, Amarasena S1, Perera B1
1Faculty of Medicine, University of Ruhuna, Sri Lanka
2Family Health Bureau, Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka
janithradesilva@gmail.com

Background:
Birth defects (BD) are considered a leading cause of infant and under 5 year child mortality and morbidity. Lack of knowledge on BD among people, especially among eligible females may bar the prevention of BD.

Objective:
To evaluate knowledge on BD, risk factors (RF) of BD and prevention/management of BD in pregnant mothers in Bope-Poddala health unit area and to examine correlates of such knowledge.

Method:
Three hundred and fifty (350) pregnant mothers attending antenatal clinics in Bope-Poddala health unit area were included in the analysis. A pretested, self-administered questionnaire was used to gather data. Knowledge on BD, RF and prevention/management of BD were assessed using 10, 21 and 7 questions and marks were assigned for correct responses. The total score obtained for each component was calculated and converted into percentages. Data were analysed using SPSS 20 and t-test was used. Level of significance was used as p<0.05.

Results:
The majority (n=313, 89.4%) were Sinhalese. Mean (±SD) age was 28.7±5.2 years (range 17-44 years). About 46% of the subjects had education up to advanced level, and 15% had completed higher education. Eighty two (23.4%) participants were employed.
The average score of knowledge on BD was 57.6% (95% CI= 52.3%-62.9%), on RF was 55.1% (95% CI=49.8%-60.4%) and on prevention/management was 58. 8% (95% CI=53.5%-64.1%). The average score on overall knowledge was 56.4% (95% CI=51.1%-61.7%).
The mean scores of knowledge on BD, RF and prevention/management were higher among employed compared to unemployed women (p<0.05) (for BD 68.3% vs. 54.3%; for RF 65.4% vs. 51.9% and for prevention/management 68.1% vs. 55.9%). The mean knowledge on BD and RF were higher among the women aged 35 years or above (61.5% and 59.9%) compared to those of aged 25-35 years (60.2% and 56.3%) and compared to those of aged <25 years (48.6% and 49.1%)( p <0.05). Further, women who had higher education had higher scores of knowledge on BD (74.5%), on RF (67.8%) and on prevention/management (68.9%) compared to others (54.7%, 52.9% and 57.1%) (p<0.05). The mean scores of knowledge on BD (75.0%) and prevention/management (76.2%) were higher among the women who frequently attended
clinics or consulted a health care professional compared to the other group (56.7% and 57.8%) (p<0.05).

Conclusions:
In this target group, the overall average knowledge on BD, their RF and prevention/management of BD among pregnant mothers seems to be unsatisfactory. Therefore, new educational interventions are needed to increase the knowledge of the eligible females on BD as the first step in preventing BD in the country. Mothers with higher education, engaged in jobs, and aged above 35 years are likely to have a higher knowledge on BD, RF and prevention/management of BD. In addition, attendees to a higher number of antenatal clinics and those who sought advises from health professionals had a better knowledge on BD, RF and prevention and management of BD. These factors should be considered in future BD prevention programmes.

**PP-17: Analysis of methylenetetrahydrofolate reductase (MTHFR) polymorphisms (C677T & A1298C) in recurrent pregnancy loss**

Balasubramaniam A, Amarasekara R, Kotalawala S,
BMS School of Science, Colombo, Sri Lanka
anujanbalasubramaniam@gmail.com

Recurrent Pregnancy loss (RPL) is a multifactorial disorder responsible for 15% of pregnancy failures. The underlying aetiology of RPL remains unknown and pathogenesis of RPL is complicated. Research studies suggest genetic factors to be associated with recurrent miscarriages. Literature suggests that MTHFR polymorphisms to be the primary genetic risk factors for RPL. However which polymorphisms of MTHFR gene are responsible for causing RPL is debatable. Accordingly aim of this study was to find out the frequencies of MTHFR C677T and A1298C MTHFR polymorphisms associated with RPL. Articles (n=35) published between the years 2005 to 2015, were selected for this review. Case control studies (30), meta-analysis (4) and a nested case control study were taken into account. From the eligible studies 17,780 cases and 22,346 controls were considered as study subjects. A positive MTHFR polymorphisms associated with RPL were seen in 75% (26/35) of the study (p = 0.002). Among the positive studies, 35% (9/26) had both C677T and A1298C polymorphisms. C677T polymorphism was the only polymorphism associated with RPL in 50% (13/26) of cases, while 15% (4/26) found A1298C polymorphism associated with RPL. Analysis also showed the prevalence of MTHFR-C677T polymorphism in the partners of women suffered from RPL.

The study confirms that the MTHFR C677T polymorphism is significantly associated with RPL (p = 0.043). Accordingly the C677T polymorphism could be used as a genetic marker for early diagnosis of RPL. Study further suggests paternal screening is equally important as maternal screening in the early diagnosis of RPL.

**PP-18: Spirometric values of Sri Lankan Tamil adults in Jaffna District - a preliminary results**

Balasubramaniam M¹, Wimalasekera S², Sivapalan K²
¹University of Jaffna, Sri Lanka
²University of Sri Jayewardenepura, Sri Lanka
mathu1481@yahoo.com

Background:
Prevalence of preventable chronic respiratory diseases increases worldwide and affects the quality of life of affected individual. Early diagnosis is important to reduce mortality due to respiratory diseases. Lung function test (spirometry) is an important tool used in assessment of respiratory function in clinical practice.
Spirometry provides quantifiable data of respiratory function and it is used in primary and secondary respiratory health care. Lack of ethnic specific reference values hinders the use of spirometry in Sri Lanka.

Objective:
To establish reference values for spirometric parameters of Sri Lankan Tamil adults.

Method:
A population based descriptive study was conducted among healthy Sri Lankan Tamil adults aged 20-60 years in Jaffna district. Age, standing height, weight, Sitting Height (SH), arm span and mid arm circumference were measured. Spirometry was carried out in COSMED Quark turbine spirometer as per the ATS guidelines. Data of 213 males and 212 females was analysed.

Results:
Mean age of study population was 39 years ±9 (SD) in males and 36±9 years in females. The mean ± SD of Vital capacity (VC), Forced Vital Capacity (FVC), Forced Expiratory Volume in the first second (FEV1) and FEV1 % in males were 3.4±0.4 L, 3.5±0.6 l, 2.9±0.5 L and 84.8±4.7% respectively. In females the respective values were 2.4 L ± 0.4 (SD), 2.5±0.4 L, 2.2±0.4 L and 87.7±4.6 %. Age had a significant negative correlation (p < 0.05) with VC (correlation coefficient -0.389), FVC (correlation coefficient -0.424) and FEV1 (correlation coefficient -0.476). Significant (p<0.05) positive correlations of VC have been found with standing height (0.582), weight (0.271), SH (0.509) and arm span (0.598) of males. In females the respective correlations were 0.468, 0.138, 0.458 and 0.484. FVC of males had correlations of 0.570, 0.238, 0.517 and 0.574 with the above anthropometric measurements respectively. In females the respective correlations were 0.444, 0.099, 0.451 and 0.463 with FVC. All of these correlations were significant (p<0.05). There was a reduction of 0.2-0.3 L VC and FVC for every decades of age in males and females. FEV 1 % did not have any marked reduction with age. Step wise regression analysis revealed prediction equations based on age, SH and arm span for VC and FVC.

Prediction equations for VC
VC (Males)= 0.03 SH (cm) + 0.03 arm span (cm) - 0.017 age (years) - 3.66
VC (Females) = 0.027 SH (cm) + 0.023 arm span (cm) - 0.015 age (years) - 3.007

Prediction equations for FVC
FVC(Males)= 0.036 SH (cm) + 0.036 arm span (cm) - 0.022 age (years) – 2
FVC(Females)= 0.025 SH (cm) + 0.023 arm span (cm) - 0.019 age (years) - 2.57

In males Mid FEF, MEF 75, MEF 50 and MEF25were 3.4±0.8 L/s, 6.8±1.4 L/s, 4±1.1L/s and 1.6±0.4L/s respectively. The respective values were 2.7±0.6L/s, 4.9±1L/s, 3.1±0.8L/s and 1.3±0.4L/s in females. Our results were very closer to values of Sri Lankan Sinhalese.

Conclusion:
This study provides useful information on spirometric values of Sri Lankan Tamils which was a deficiency in previous literature.

PP-19: Innovative model for improving the hygiene standards of food trading establishments
Kulatunga GGAK1, Alagiyawanna MAAP2, Pathirana ACA3, de Silva P2
1Division of Medical Education, Research and Innovations, Guy’s Campus, King’s College London, United Kingdom
2Health Promotion Unit, Health Education Bureau, Ministry of Health, Sri Lanka
3Postgraduate Institute of Medicine, University of Colombo, Sri Lanka

PP-19: Innovative model for improving the hygiene standards of food trading establishments
Kulatunga GGAK1, Alagiyawanna MAAP2, Pathirana ACA3, de Silva P2
1Division of Medical Education, Research and Innovations, Guy’s Campus, King’s College London, United Kingdom
2Health Promotion Unit, Health Education Bureau, Ministry of Health, Sri Lanka
3Postgraduate Institute of Medicine, University of Colombo, Sri Lanka
gumindu@gmailcom
Background:
Ottawa charter in 1986 identified multi-sectoral action and developing personal skills as important action areas of Health Promotion. This study focused on enabling people to enhance personal skills through multiple awareness and training programs conducted through community driven, inter-sectoral coordination about hygienic standards that should be expected at Food Handling Establishments (FHEs). This situation was expected to create an environment that motivates FHEs to maintain hygienic standards as the consumers will be empowered to identify food hygiene as a right and demand for same.
In Sri Lanka FHEs are categorized from grade ‘A’ to ‘D’ in a descending order of food quality that is not known to many citizens of Sri Lanka.
Use of information communication technology (ICT) offers potential to health education interventions and health behaviour change. It allows for greater reach to target groups and tailoring to specific needs within them. ICT will facilitate the active engagement of the learners and motivates them, promoting the adoption of healthy behaviours and healthy lifestyles.

Objective:
To evaluate the effectiveness of a low cost community driven empowerment program that can be utilized as a catalyst to improve hygienic standards of FHEs and to identify the feasibility of a bottom up approach to Health Promotion that can be advocated and mediated by the regional and central Public Health staff to achieve a synergistic effect.

Methods:
Quasi experimental study was conducted in 2012 to assess the effects of advocacy, training and community empowerment on improving the hygienic standards of FHEs in Kalutara and Rathnapura regions in Sri Lanka. A sample of 133 FHEs from Intervention Group (IG) and a sample of 140 FHEs from Control Group (CG) were selected from randomly selected seven clusters of village town centres in each study area. The Grading form of FHE was used as the evaluation tool and the FHE was taken as the study unit. Interventions included, strengthening inter-sectoral collaboration, advocating and training FHE owners and workers, empowering the community to self-evaluate FHEs through a graphical rating scale displayed at food outlets, educating public on food hygienic standards of FHEs via posters, bill boards, public address systems and group health education sessions. The CG continued the existing practices. FHEs in both communities were assessed for pre and post interventional ratings of FHEs. Post intervention was carried out one year after the baseline survey. Parallel inter-disciplinary social networking process with focus group discussions were made to identify cost effective method in disseminating the concept.

Results:
Significant improvements in hygienic standards of FHEs (p<0.001) were observed in the IG (51.1%) compared to the CG (26.4%) after the intervention. Hygienic standards were significantly increased (p <0.05) in the IG (51.1%) after the intervention when compared with that of pre intervention (26.3%). Hybrid methodology (combination of lectures and web based methods) was identified as most cost effective method to disseminate this new model.

Conclusion:
Quality categorization labelling based advocacy, training and community empowerment model was effective on improving the hygienic standards of FHEs. Multiple interventions to enhance public awareness on grading of FHEs may be used as a catalyst to enhance hygienic standards of FHEs. This model will be disseminated among public health staff using the forthcoming eLearning system in Health Education Bureau, Colombo.
PP-20: Determination of antibacterial activity of herbs on *Salmonella typhi*

Thavarajah A, Amarasekara R, Kotalawala S
BMS School of Science, Colombo, Sri Lanka
arunthusha1993@gmail.com

**Background:**
Since the discovery of the microorganisms and the pathogenic diseases, the researches were initiated to treat on the infectious diseases that are caused by microorganisms. The rapid emergence of infectious diseases is a big challenge to the human kind that has resulted in an enormous morbidity and mortality rate. Among these, bacterial diseases are one of the terrific threats to human. Infectious diseases are the leading cause of deaths throughout the world. This is all because of the synthetic antibiotic therapy which is failed to function as a result of the drug resistance of the bacteria. Despite of this, natural antibiotics can be developed from the herbs which possess antibacterial effect against bacteria.

**Objective:**
The purpose of this study is to compare the antimicrobial effects of selected six Sri Lankan herbs such as ginger, garlic, bee honey, neem, cinnamon and black pepper against *Salmonella typhi*. The aim of this particular study is to comparatively analyse the antibacterial activity of the mentioned herbs in order to screening the antibiotic sensitivity and the Minimum Inhibitory Concentration of the used herbs against the bacterial strain *Salmonella typhi* (ATCC 1306).

**Method:**
Herbal extracts of six Sri Lankan edible medicinal plants such as garlic (*Allium sativum*), ginger (*Zingiber officinale*), bee honey (*Apis mellifera*), black pepper (*Piper nigrum*), cinnamon (*Cinnamomum verum*) and neem (*Azadirachta indica*) were studied for their antimicrobial activity against *Salmonella typhi* (ATCC 1306). The herbal samples were powdered and then the concentrated solutions were prepared. *Salmonella typhi* was cultured on Mueller – Hinton agar plates. Antimicrobial activity of the concentrated herbal extracts was tested using the disc diffusion technique where antibiotic gentamycin was used as the positive control. Then, tube broth dilution was carried out to find the minimum inhibitory concentration.

**Results and Conclusion:**
Among these garlic and cinnamon showed strong antibacterial activity against *Salmonella typhi* and was found to be bacteriostatic. Thus, by further research, garlic and cinnamon can be used as natural therapeutics for the *Salmonella typhi* infections replacing the synthetic antibiotics.

**PP-21: Household cost of Chronic Kidney Disease patients living in Anuradhapura district**

Senanayake SJ1, Gunawardena NS2, Palihawadana P3, Bandara WMP4, Bandara S5, Karunarathna RH4, Priyanka Kumara GWG4
1Family Health Bureau, Ministry of Health, Nutrition and Indigenous Medicine, Colombo, Sri Lanka
2Faculty of Medicine, University of Colombo, Sri Lanka
3Epidemiology Unit, Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka
4North Central Provincial Director’s Office, Anuradhapura, Sri Lanka
5Institute of Policy Studies, Colombo, Sri Lanka
sjsenanayake@yahoo.com

**Background:**
Prevalence of Chronic Kidney Disease (CKD) is on the rise in Sri Lanka, and of all the districts, Anuradhapura district is known to carry the highest burden in the country. From an economic perspective, CKD creates a dual burden simultaneously on the household and the economy. Of which, a scientific assessment in terms
of household cost of CKD patients can bring effective policy solutions/decisions to mitigate the household cost burden.

Objective:
The study aimed to assess the household cost incurred by the diagnosed CKD patients in Anuradhapura district.

Method:
This is a cross-sectional study, conducted in Anuradhapura district in Sri Lanka. A sample of 1,174 CKD patients were chosen proportionately from all the registered patients in all 19 Medical Officer of Health areas in the district of Anuradapura. Trained para-medical staff collected data from households using a pre-tested questionnaire. Direct and indirect elements of hospital admissions, dialysis episodes and clinic visits were included in the questionnaire.

Results:
A total of 1118 CKD patients participated with the mean age of 58.3 (SD 10.8) years and 62.7% were males. A majority were in CKD stage 4 (58.3%). The majority of the participants (50.7%) were previously employed, while 34.6% were currently employed. Of the currently employed, 26.9% had their monthly income less than Rs.5,000. Of the total population, only 65.7% were receiving the government allowance of Rs.3000 at the time of the data collection.
In the study population a total of 59 (5.3%) patients have been admitted to the hospital during the last six months prior to the data collection. Nearly all had their immediate family visiting during the hospital stay and this was the highest cost element during the hospital stay (median 1500; IQR 600-3525). Total household cost for a single hospital admission was Rs.3,700 (IQR 1700-9000).
Of the study population, a total of 38 (3.4%) patients were on dialysis. The median direct cost per patient per dialysis episode was Rs.595 (IQR 415-995) while total household cost was Rs.705 (IQR 460-1123). The total cost incurred by the 38 haemodialysis patients per month was Rs.441,864.28. This was 23.3% of the total cost incurred by the total study population. The median total cost per month for a patient was Rs.6807.78 (IQR 4507.36-12935.00).
A total of 1,095 (98.0%) have attended a clinic at least once for their kidney disease during the last six months prior to the study. During the last government clinic visit, 40.1% of patients have spent for drugs, and the median cost was Rs.460 (IQR 300-800). Median cost for investigations was Rs.815 (IQR 252-1300). Total household cost for a single clinic visit per patient was Rs.500 (IQR 240-920).
The total cost incurred by patients per a month was statistically significantly high among those with advanced disease, high symptom burden and poor mental health status.

Conclusion:
CKD patients living in Anuradhapura district have significant economic hardships and it is worst among dialysis patients. Well planned interventions are warranted in order to improve their living and financial situation.

PP-22: Motorcycle related injury pattern within a suburb of Sri Lanka
Rajakaruna S1, Coorey H2, Samarajiwa2, Swarnamala S3, de Almeida M2
1National Hospital of Sri Lanka, Colombo, Sri Lanka
2Colombo South Teaching Hospital, Sri Lanka
3Post Graduate Institute of Medicine, University of Colombo, Sri Lanka
sanathrajakaruna@gmail.com
Background:
Motor vehicle accidents is the leading cause of death in the adolescent and young adult population of Sri Lanka. Motorcycle riders comprise the largest group contributing to motor vehicle accidents in Sri Lanka.

Objectives:
To study motorcycle related accidents and to assess the severity and identify injury patterns in patients admitted to hospital following these accidents.

Methods:
Descriptive prospective study was done in all patients admitted to the accident service of the Colombo South Teaching Hospital of Sri Lanka following motorcycle related accidents over a period of 10 weeks. A data collection sheet with interviewer administered component and clinical details was utilised for the study.

Results:
The total study population comprised 351 patients. Most were direct admissions (90.3%) with 9.7% of the patients were transfers from regional small hospitals. The age of these patients were varied from 1 year and 6 months to 86 years with a mean age of 32.3 years. Males were the most involved in these accidents comprising 86%. The most number of motorcycle related accidents took place during the peak rush hour from 3 pm to 4 pm, which accounted for 9.1%. The most injuries were due to single vehicle accidents (19.4%) followed by car or van (18.2%), trishaw (15.7%), pedestrian (14.2%) and motorcycles (10.5%). Most of the patients were motorcyclists (73.2%) followed by pillion riders (15.1%) and pedestrians (10.5%). The injury patterns identified, involved the lower limb (41.6%), the upper limb (23.7%) and head or face (19.1%) been affected as the most affected region in motorcyclists. Pillion riders also showed a similar injury pattern with the lower limb was most affected in 54.7% patients. In pedestrians, the most injured area was head or face which consists of 43.2%, followed by lower limb (37.8%) and thorax (8.1%). In motorcyclists and pillion riders mean maximum abbreviated injury score (MAIS) was 1.65 and mean injury severity score (ISS) was 3.76. Pedestrians had higher values with MAIS of 2.0 with ISS of 6.89. Considering all the patients presented after motorcycle related accidents most of the patients (83.2%) had ISS ≤5 with only 2.3% (n=8) patients having an ISS>15 and 2 of them died. There was no statistical difference in ISS when comparing the type of collision partner, between day and night time accidents, or between motorcyclists and pillion riders.

Conclusions:
The study concluded that majority of injuries sustained were less in severity. Although the injury pattern suggesting most injuries were distributed to the lower limbs in motorcyclists and pillion riders with head or face affected in most pedestrians. The loss of productive work days and the burden to the health services by these preventable injuries need to be addressed. The congested suburban road network and the lack of demarcation between pedestrians and motor vehicles is a possible reason for the low velocity injuries noted in our study population.

PP-23: Prescribing patterns, availability, prices and affordability of medicines used in non-communicable diseases in Sri Lanka: an island-wide study
Faculty of Medicine, University of Colombo, Sri Lanka
mailmythi@gmail.com

Background:
Ischemic heart disease, Hypertension, Diabetes mellitus and Bronchial asthma are leading Non
Communicable Diseases (NCDs) causing morbidity and mortality in Sri Lanka. Appropriate use, availability and affordability of NCD medications are essential in proving quality health care.

Objectives:
This study aimed to measure the prescribing patterns, availability, prices and affordability of medicines used in above NCDs in government and private sectors in Sri Lanka.

Methods:
Prospective cross-sectional study was conducted in 2015 in 32 government hospitals and 80 private pharmacies selected as per WHO/Health Action International (HAI) methodology representing all 25 districts based on population size. The prescribing patterns in the private sector were identified from data on thirty consecutive prescriptions collected from each private pharmacy. Twenty-six medicines used in NCDs were selected from the WHO core-list (5), South Asian Regional Core-list (6) and a supplementary list relevant for Sri Lanka (15). Availability, prices and affordability of these were analysed using field data from all the outlets. Data on lowest payment of government worker was obtained from the latest gazette (2016). Government procurement prices were obtained from Medical Supplies Division. Prices of innovators and lowest priced generics (LPG) were compared with International Reference prices (IRP) and Median Price ratios (MPR) were calculated. Affordability of one month’s supply of medicines for a lowest paid government worker was assessed.

Results:
Out of 2329 prescriptions in the private sector 971(41.7%) had medicines for NCDs. These contained 56 different medicines with 68.8% of the drugs from the Essential Medicines List (EML) and 63.5% of the drugs being prescribed in brand name. The most commonly prescribed ten medicines were atorvastatin(308; 31.8%), losartan(247; 25.4%), metformin(237; 24.4%), aspirin(196; 20.2%), clopidogrel(147; 15.1%), gliclazide(127; 13.1%), rosvastatin(73; 7.5%), diltiazem(69; 7.1%), furosemide(67; 6.9%) and metoprolol(63;6.5%). Overall availability of NCD medicines in the government sector was 71.6% and 83.3% in the private sector (p=0.11). Ten out of 26 NCD medicines(Aspirin, clopidogrel, simvastatin, amlodipine, hydrochlorothiazide, propranolol, gliclazide, glibenclamide, sitagliptin and salbutamol inhaler) were significantly less available in the government sector compared to private pharmacies(p<0.05). The government was procuring the NCD medicines at a cheaper price than the IRP at an average MPR of 0.41(range 0.025–2.03). Innovator brands of NCD medicines were sold at 8 times the IRP (MPR range 0.27–38.55) while the LPGs were affordable at an average MPR of 0.8. Average availability of LPGs in the private sector was only 15.8%. The most commonly available brands were sold at 1.2 times the IRP. The cost for months’ supply for most commonly used treatment regimens identified in prescriptions using LPGs was one days’ wage or less for the lowest paid government worker. However the lowest paid worker would have to work 11, 6 and 2 days respectively to pay for 1 month supply with innovator brands of atorvastatin, losartan and metformin.

Conclusion:
The government procures NCD medicines at a cheaper rate than IRP. The lowest cost generics were affordable but less available. The cost of most commonly available brands was higher than IRP. Innovators cost 8 times IRP. The lowest paid government worker pays one days’ wage or less for a month’s supply of LPG of NCD medicines.
PP-24: Evaluating predictors of medical students’ performance at the final MBBS examination – a pilot study
Ratnatunga K1, Hussain H2, Chandrasekera S2
1University Surgical Unit, Colombo South Teaching Hospital, Sri Lanka
2Department of Surgery, Faculty of Medicine, University of Sri Jayewardenepura, Sri Lanka
kesara7@yahoo.com

Introduction:
Selection criteria for medical courses is a current and contentious issue. Several studies done in Sri Lanka have revealed conflicting results, focusing primarily on performance indices used for medical school admission and their relationship to undergraduate performance. Given that GCE Advanced level (A ‘level) examination performance is the sole criterion used for selection into medical schools in Sri Lanka, it is pertinent that its utility is fully evaluated.

Methodology:
The most recent graduates from a Sri Lankan medical school were selected for the study. All those who were referred in one subject or more in the Final MBBS examination were excluded from the study. Demographic, secondary education performance, extra-curricular activity data was gathered using a questionnaire administered in an online format. All those who responded to the questionnaire were included in the study. The data regarding performance at undergraduate continuous assessments and major exams was obtained from the examinations department of the University. Comparison of undergraduate performance against parameters from the pre-university and undergraduate period was done using Student’s t test, Pearsons Chi-square test and Spearman’s correlation test using SPSS version 23. Significance was set at p<0.05.

Results:
A total of 79 students had responded at the time of writing of which 57 (72%) were female. There was no difference between the A ‘level Z scores or Final MBBS performance between males and females. A very significant relationship between Final MBBS performance and performance at the 1st and 2nd MBBS examinations (p<0.001) was seen.
Out of the 11 continuous assessments, only one showed a significant correlation to the A ‘level Z score. (r=0.31, p=0.006). Aggregate marks obtained for the continuous assessments was not significantly different among the Final MBBS performance categories.
The A ‘level Z scores of those obtaining passes, 2nd lower classes and 2nd upper classes in the final MBBS were compared against each other, but none of the comparisons showed a significant difference. A ‘level attempt on which entry to medical school was achieved was compared against Final MBBS performance, and none of the categories showed any significant association.
No significant relationship was seen when final MBBS performance was compared with Biology, Physics and Chemistry grades obtained at the A ‘level examination.
Final MBBS performance did not have any significant association to whether medicine was a first career choice or not, nor the reason for which it was selected.
Final MBBS performance was assessed against whether or not extra-curricular activities were engaged in during the school career (sports and aesthetics), but no significant association was found. Neither was it associated with whether leadership roles were carried out or not. English language proficiency could not be objectively correlated as all the students had obtained an A grade at the GCE Ordinary level examination.

Conclusion:
The 1st and 2nd MBBS examination performances appear to be the only significant indicator of Final MBBS examination performance. Neither performance at the A ‘level examination, nor extra-curricular activities are indicators of performance at the final MBBS examination.
Background:
Health services management requires real-time information for efficient and effective service provision. The Sri Lankan health sector is based on an established paper-based health information system. Due to the compartmentalised organisational structure and manual record keeping practices, timeliness and completeness of service delivery information is poor. This has led to non-incorporation of real-time information into evidence-based decision making and health care planning. Web-based information sharing culture would ensure timeliness of information and reduction of errors due to manual handling. Health administrators play a critical and vital role in sharing health information. Health administrators’ readiness for a technological advancement such as web-based health information sharing will depend on their knowledge, attitude and practices in information and communication technology as well as the facilities available to them at organisational level. To date this has not been reviewed in extant literature, hence this study focuses only on sharing service delivery information such as administrative, financial, logistics and resource management.

Objectives:
• To identify the knowledge, attitude and practices of state sector hospital administrators to implement a web-based management information system.
• To identify barriers for a successful implementation.

Method:
The official email list of The College of Medical Administrators was accessed through the college directory. Email addresses of the medical administrators currently practising in state sector hospitals around the country were selected. A self-administered online questionnaire link was sent to the designated email addresses. The survey was open to all medical administrators who had an interest in participating through peer referral.

Results:
The researcher was able to achieve a total response rate of 53.5%. Majority of the study population were from secondary care hospitals in urban areas and were in 2-5 years following their postgraduate qualification. 96% of the study population identified themselves as information technology literate. Over 80% of the participants acknowledged that they have an adequate infrastructure support from the organisation while only 61% thought they get sufficient technical support. A majority of the study population (87%) currently share health information electronically with other people although this process is not streamlined. Even though the majority of participants are satisfied with the quality of current service delivery information, they unanimously agreed to the fact that electronic sharing would further improve its quality. They found the lack of training, guidance, and ongoing support from the organisation as critical barriers for electronic service delivery information sharing. It was interesting to note that only a minority of participants thought that high cost in implementation of a digital system as a limiting factor.

Conclusion:
This survey results suggest the Sri Lankan Health Administrators are adequately skilled and motivated for web-based service delivery information sharing, do not see cost as a barrier, but require more support from
the organisation in infrastructure, motivation, guidance, and leadership to implement a web based service delivery information sharing system.

**PP-26: Assessment of access, use and their attitudes towards information technology among operation theatre nurses of Sri Lanka, 2013**
Sriyani PKM, Silva N
National Hospital of Sri Lanka, Colombo, Sri Lanka
pkadawatha@gmail.com

**Introduction:**
Incorporating the use of a computerized information system into everyday professional practice requires nurses not only to overcome any resistance to change, but also to become willing users and creative operators of Information Technology (IT). Managing the change process effectively, whilst implementing a Hospital Information System (HIS) within the critical care environment, may facilitate the efficient development of quality patient care. Attitudes of users have been found to be a key determinant of the effective use of computers in the work place.

**Objectives:**
1. To identify the extent to which nurses have access to and use information technology (IT)
2. To identify the purposes for which nurses use IT.
3. To identify the attitudes of nurses towards Information Technology.
4. To identify the readiness of nurses to participate in e-health initiatives intended to be implemented by the Ministry of Health.

**Methods:**
The research was conducted as a descriptive study. The selected population was theatre nurses of The National Hospital of Sri Lanka (NHSL), belonging to 16 theatres. Samples of 112 nurses were selected from all 16 theatres using a convenient sampling method. The nurses with a service period over 22 years were excluded. A self-administered questionnaire to assess the above objectives was distributed among them. Out of them 97 nurses responded.

**Results or Findings:**
According to the results, the nurses were highly confident in using computers, touch screen, internet and emails. Almost 80% of theatre nurses used computer technology for their work and personnel matters. However only 60% of the nurses had personnel email addresses. Furthermore, 79% of nurses believed that computers will reduce paper work. Also, most senior nurses were more likely to use computers, to consider continuing education as essential, and more likely to make life easier and improve access.

**Discussion:**
A majority of Operating Theatre nurses possess a positive attitude towards new advances in medical devices; Hospital Information System and IT base medical devices. This is mainly due to improve the accessibility to mention three categories at their work environment, which has added value in their day to day practice in the hospital. The knowledge component on the relationship between IT, IT base medical devices and HIS were poor simply due to the behaviour based on personal experience rather than properly organized training programmes.

**Conclusion:**
It is comforting to realize that nurses possess a positive attitude and accessibility to IT, Hospital Information
System and IT base medical devices in a highly technical unit such as Operating Theatre in a developing country. It is recommended to organize well customized training programme in the mentioned categories.

**PP-27: Using a simulation modelling approach to manage outpatient department waiting time at the National Hospital of Sri Lanka**

Silva N¹, Hewapathirana R², Jayatilleke A³
¹Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka
²Health Informatics Society of Sri Lanka
³Post Graduate Institute of Medicine, University of Colombo, Sri Lanka snishansilva@gmail.com

**Introduction:**
The Out Patient Department (OPD) at the National Hospital of Sri Lanka (NHSL) faces congestion due to overcrowding, leading to forming long queues and causing delays in patient care.

**Objectives:**
To identify an ideal resource allocation solution to reduce outpatient waiting time in Medical consultation, Phlebotomy and Dispensing processes at the NHSL OPD.

**Methodology:**
A process analysis was done using observations, interviews and a times study to evaluate the OPD process and the arrival and service times. A Discrete Event Simulation using the ARENA software was carried out to model the processes and to evaluate scenarios that can reduce the delays.

**Results:**
The most congested process in the OPD was the consultation and the most congested time was the weekday morning shift. The average inter-arrival time was 21 seconds at this time. The mean consultation time was 224 seconds and was considered a constant. For this process when the medical officers are increased from 12 to 15, the waiting time would reduce by 4 minutes and 30 seconds (66.1% reduction) and the patients in the OPD queue reduced by 25 (81.2%). Similarly when the doctors for the night shift was increased to 3, the waiting would reduce by 11.1 minutes (77.6%) and will shorten the queue by 80%. The Phlebotomy and the Dispensing processes did not contribute much to the delays.

**Conclusion:**
The process can be optimized by increasing the morning shift doctors, causing minimal disturbance and inconvenience to the administration and the workers.

**PP-28: Effectiveness of mHealth interventions targeting health care workers in improving pregnancy outcomes in low and middle income countries: a systematic review**

Amoakoh-Coleman M¹, Borgstein ABJ², Sondaal SFY², Miltenburg AS³, Verwijs M⁴, Grobbee DE², Ansah Ek⁵, Browne JL², Klipstein-Grobusch K²
¹School of Public Health, University of Ghana, Ghana
²Julius Global Health, Julius Centre for Health Sciences and Primary Care, University Medical Centre Utrecht, Netherlands
³Department of Community Medicine, Institute of Health and Society, University of Oslo, Norway
⁴International Institute for Communication and Development, The Hague, Netherlands
⁵Research and Development Division, Ghana health Service, Ghana menba19@yahoo.com
Background:
Low- and middle-income countries (LMIC) face the highest burden of maternal and neonatal deaths. Concurrently, they have the lowest number of physicians. Innovative methods such as the exchange of health-related information using mobile devices (mHealth) may support health care workers in the provision of antenatal, delivery and postnatal care to improve maternal and neonatal outcomes in LMIC.

Objective:
We conducted a systematic review evaluating the effectiveness of mHealth interventions targeting health care workers to improve maternal and neonatal outcomes in LMIC.

Methods:
The Cochrane Library, PubMed, Embase, Global Health Library and Popline were searched using predetermined search and indexing terms. Quality assessment was performed using an adapted Cochrane Risk of Bias Tool. A strength, weakness, opportunity, and threat analysis was performed for each included article.

Results:
Nineteen studies were included for this systematic review, 10 intervention and 9 descriptive studies. mHealth interventions were used as communication, data collection, or educational tool by health care providers primarily at the community level in the provision of antenatal, delivery and postnatal care. Interventions were used to track pregnant women to improve antenatal and delivery care, as well as facilitate referrals. None of the studies directly assessed the effect of mHealth on maternal and neonatal mortality. Challenges of mHealth interventions to assist health care workers consisted mainly of technical problems, such as mobile network coverage, internet access, electricity access, and maintenance of mobile phones.

Conclusion:
mHealth interventions targeting health care workers have the potential to improve maternal and neonatal health services in LMIC. There is however a gap in the knowledge whether mHealth interventions directly affect maternal and neonatal outcomes and future research should employ experimental designs with relevant outcome measures to address this gap.

PP-29: Overcoming challenges and improving the efficacy of health educational returns
Kulatunga GGAK¹, Alagiyawanna MAAP², de Silva P²
¹Division of Medical Education, Research and Innovations, Guy’s Campus, King’s College London, United Kingdom
²Health Promotion Unit, Health Education Bureau, Ministry of Health, Sri Lanka
gumindu@gmailcom

Background:
Health Education Bureau (HEB) is the centre of excellence in Sri Lanka for health education, health promotion and publicity of health information. There is a district level wide network of Health Education Officers (HEO) to coordinate HEB activities at the periphery. These HEOs have to send HEO quarterly returns reporting the activities they have carried out. It has been a long standing problem about the usability of the return formats leading in to poor return rates. Simplifications and automation of the return format will encourage the HEOs to send returns properly as well as will facilitate wide distribution of data within HEB and rest of sections in the Ministry of Health. This dissemination will help in the planning of future programmes.
Objective:
To identify and develop a cost-effective process to receive health education and health promotion returns from the peripheral level to the central level.

Method:
Descriptive need analysis was done among the HEOs throughout Sri Lanka. Interdisciplinary social networking process with brainstorming and focus group discussions to analyse and reconstruct HEO return format which will assist in automation.

Results:
All HEOs agreed current format is non-practical and needs to be changed. Almost all of them decided that it should be shorter than four A4 size pages from the current 10 page format. Abbreviating the return to maximum of 3 pages was decided effective in the following social networking process. Quarterly return (3 month) was the most effective time period for the return to be made. Although there is a deficiency of Information Communication Technology (ICT) infrastructure available for electronic returns, web-based return format was identified as the cost-effective method in making the final return. First phase pilot study will be done using the paper-based abbreviated format followed by the electronic format. Final web-based data entry format will be developed following second phase pilot studies using shareable common software such as MS office. Software requirements specifications (SRS) and programme objectives were developed for the web-based system. Specifications and sub-topics for the return document were developed through consultative meetings incorporating several specialities. Some important areas in quantitative data such as the number of health education programmes, health promotion settings, multi-sectoral activities, training and review meetings, behavioural change communication programmes, and active mother support groups/community support groups were included to the new format. Based on the report outcome, relatively less important quantitative data (e.g., socio demographic characteristics of the target group, program coordinator numbers) and qualitative data (minutes of the meetings, unhealthy behaviour patterns) were excluded in the new format.

Conclusion:
Providing the administrative needs of the health education staff in periphery remains a challenge. Simplified return formats can play a major role in improving efficacy. Simplified web-based return format represent a cost-effective, convenient option which produce more results when underlining basic ICT requirements are fulfilled at personal and institutional level. In long term this will improve health education information availability for the national level programme evaluation and implementation.

PP-30: Strengthen cancer surveillance in Sri Lanka by implementing cancer registry informatics to enhance cancer registry data accuracy, completeness, and timeliness

Seneviratne K
National Cancer Control Programme, Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka
kamalse1@gmail.com

Background:
A total of 13,635 new cancer cases had been diagnosed in 2007 with a crude cancer incidence rate of (CR) 68.0 per 100,000 population. There were 16,888 new cases diagnosed in 2009 with a CR of 82.6. It is evident that the cancer prevalence in Sri Lanka is on the rise. The National Cancer Control Programme (NCCP) of Sri Lanka was established in 1980 based on the recommendation made by WHO after a detailed study on mortality and morbidity of cancers in Sri Lanka. NCCP is the national focal point for prevention and control
of cancers in the country. Sri Lanka Cancer Registry (SLCR) plays a pivotal role in cancer control and is maintained by NCCP. The value of a cancer registry depends on the quality of its data. Cancer control planning without high quality cancer registry data from the cancer registry leads to misplaced emphasis and wasting of investment.

**Objective:**
Since a considerable number of private health care institutions and government hospitals have started diagnosis and treatment of cancer patients, the necessity of using information technology in cancer surveillance domain to solve the problems for collecting, storing, processing, and analysing of cancer registry information received from those institutions have become absolutely essential in order to improve the data quality, accuracy and completeness.

**Method:**
Cancer surveillance informatics is the systematic application of information and computer science and technology to cancer surveillance practices, research, and learning. It deals with the resources, devices, and methods required to optimize the acquisition, storage, retrieval and use of cancer surveillance information for above mentioned purposes. Thus, using emerging technology to incorporate automated process and electronic data exchange in cancer surveillance business is an efficient, fast and cost effective way to obtain quality, accurate and complete cancer registry data. Therefore the new web-based application replaces the current paper-based method which covers about 80% of data collection and a standalone database system which covers remaining 20% of data collection. The basic software infrastructure will be based on Free and Open Source Software with the two-tier client-server system architecture.

**Results:**
The system is able to capture real time cancer registry data from 09 provincial Oncology and Surgical Oncology units, 67 Histopathology and Haematology laboratories and 25 Oral and maxillofacial units. It will increases the efficacy in collecting, storing, processing and analysing of data, improving data quality, accessibility, timeliness and completeness, reducing data redundancy, time, and resource consumption.

**Conclusion:**
The system will ensure timely availability of cancer registry information that is needed for better improvement in cancer surveillance. Among the goals expected to achieve are: determine the incidence of cancers with respect to geographic and demographic characteristics, monitor trends and pattern of cancer incidence over time, identify high risk populations, provide data for epidemiological studies, and prioritize health resource allocations.

**PP-31: Essential drug stock alert tracker: Provincial Directorate of Health Western Province, Sri Lanka**
Ranwala RADLMK¹, Nanayakkara NKV², Sheriff MHR³
¹Regional Director of Health Services Office, Colombo, Sri Lanka
²Provincial Department of Health Services Office Western Province, Sri Lanka
³National Institute of Mental Health, Angoda, Sri Lanka
lasantha13@gmail.com

**Background**
The health status in Sri Lanka is well above the regional health indicators. However lack of pharmacy supplies in government health institutions especially in divisional hospitals is a major complaint from the general public.

Health care institutions under the provincial health ministry receive pharmacy items from the Regional
Medical Supplies Division (RMSD). Shortage of pharmacy items can be attributed to poor communication between RMSD and health institutions and mal-distribution of items at RMSD, but not merely due to the actual drug shortage. Non availability of real time drug stock information of each institution at the RMSD, regional or provincial health offices results in an inability to replenish stocks in a timely manner. Thus an essential drug stock alert tracker for 26 items based on the WHO 'Essential Drug List' has been developed.

Objective:
To create a method to make the health institutional heads and regional / provincial administrators alert regarding essential drug status and to enable effective mobilization of the available drugs.

Method:
The Essential Drug Stock Alert Tracker is a Web Based System and is designed with a simple user friendly data entry format. User dash board with a colour code system visualizes the available stock: Green (satisfactory), Yellow (below the reorder level), Red (zero stock). RMSD user receives all the details entered by the health institutions and also they can update RMSD stock. Regional users have access to hospital and RMSD drug status in the region. Provincial users can view the drug status of all the hospitals and three regional drug stores.

Several workshops were held to familiarize the relevant staff about using this system. Their queries and difficulties were addressed. Continuous monitoring and follow-up activities were carried out. Initially the system was implemented in Colombo district and subsequently it was implemented in Kalutara and Gampaha districts.

Occasions of availability of each drug in each divisional hospital were considered for analysis.

Results:
At the commencement in August 2015 in the Colombo district in 16.24% occasions drugs were at zero stock level and only in 55.56% occasions drugs were at satisfactory level. By June 2016 zero stock level has reduced to 1.28% and satisfactory level has increased up to 86.32%.

Eight months after the implementation of the system in Gampaha district a reduction of zero stock by 10.71% and an increase in satisfactory level by 17.23% have been observed. During the same period Kalutara district demonstrated a decline of 23.06% of zero stock which was the highest reduction compared with other two districts. However, satisfactory stock level has only increased by 0.88%.

Conclusions:
It is observed that the availability of drug stocks in institutions have improved with the implementation of the new system. Furthermore this system allows the hospitals to track the prevailing stock levels of surrounding hospitals enabling them to fulfil their drug requirements by exchanging among hospitals within a short time period. This unique feature helps to render an uninterrupted and timely service to the public.

PP-32: Developing a country wide PACS framework and implementation toolkit
Siriwardena N1, Dharmawardhana M2, Weerabaddana C3, Ranatunga P4
1National Cancer Institute Maharagama, Sri Lanka
2National Hospital of Sri Lanka, Colombo, Sri Lanka
3Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka
4Provincial General Hospital, Kurunegala, Sri Lanka
siriwardenanishan@gmail.com
Picture Archiving and Communications Systems (PACS) has become a required element of a hospital radiology department. Using PACS has shown to increase the efficiency by reducing the examination time, allow an opportunity for process improvements and workflow redesign leading to increase in operational efficiency (1). Even though the initial financial burden may be more in a PACS environment, PACS implementation true benefit go beyond simple financial measures. Increase of quality of care, immediate access to images, improved efficiency easily justify the higher cost for PACS (2).

Use of PACS systems within the hospitals in Sri Lanka has being limited. The increasing cost of Films and the need to improve the radiology workflow, the need to improve quality of care is pushing the country towards implementation of PACS. Yet, the expertise, experience for individual hospitals to acquire PACS systems are limited. PACS being mission critical and requiring large investment, it is best tackled through structured implementation, measurement approaches, and holistic evaluation methods (3). Yet, strategic planning approaches toward imaging technology and PACS are lacking, both in hospital administration as well as in scientific literature (4).

We present a country wide PACS framework and implementation toolkit for Sri Lanka. This framework utilizes the PACS Maturity Model (PMM) (5) with the objective of achieving enterprise wide PACS implementation and utilizes simple tools for the use of hospital administrative department and radiology departments to decide the best PACS implementation strategy for each hospital. It also supports re-evaluation of current PACS implementations allowing the hospitals to walk up within the PMM hierarchy. As the tools automatically align the procurement to the strategic framework and the PMM, achieving a seamless enterprise wide integration of the systems are envisioned for the future. In this paper, authors describe (a) the framework design (b) toolkit design (c) toolkit and framework integration and (d) alignment of framework with the PMM.

---

**PP-33: Introduction of a new laboratory based e-surveillance system for dengue infection within the Western Province, Sri Lanka**

Wedisinghe WAY¹, Ranwala RADLMK², Perera SK³

¹Office of the Provincial Director of Health Services, Western Province, Sri Lanka  
²Office of the Regional Director of Health Services, Colombo, Sri Lanka  
³Department of Community Medicine, Faculty of Medicine, University of Colombo, Sri Lanka

ywedisinghe@gmail.com

**Introduction:**

During the recent past, dengue fever and associated complications has been the most important concern for health policy makers of Sri Lanka. There have been 2977 reported cases of dengue in year 2015, with hospitalizations and 56 deaths. A rising trend has been observed and the numbers have increased remarkably over the past few years. It has been challenging how the epidemic could be effectively controlled. Rapid investigation of suspected/diagnosed cases and taking appropriate action to prevent further spread has been the most effective control strategy so far. Considerable delays in investigating cases and thus taking preventive action have been noticed in the current paper based notification system where the notification is done on clinical suspicion. A rising trend in dengue fever has been observed in Sri Lanka over the past few years. It has been challenging how the epidemic could be effectively controlled. Rapid investigation of suspected/diagnosed cases and taking appropriate action to prevent further spread has been the most effective control strategy so far. Considerable delays in investigating cases and thus taking preventive action have been noticed in the current paper based notification system where the notification is done on clinical suspicion.

**Objective:**
To introduce a new laboratory based e-surveillance system for notification of dengue cases within the Western Province, Sri Lanka.

Methodology:
A new laboratory based online e-notification system was established from April 2016, within Colombo District. The new system covers the laboratories of both the government and private sector. The process start at the laboratories by creating a new notification whenever a Dengue NS1 Antigen test result is detected positive. Hospitals or the laboratories create a new notification in the system with patient information. Viewing of notifications, organizing and directing to the attention of the relevant Medical Officers of Health (MOH) is done on the same day at the office of Provincial Director of Health Services. When MOH area is assigned to a new notice it appears in the MOH users view. The MOH user has 4 tabs namely “new notices” “pending for action”, “completed” and “unidentified”. Each new notice should be marked as “noted” by pressing the noted button at the end of the notice window. Noted notices are automatically appeared in the “pending for action” tab. After the Public Health Inspector takes an action to that notice it is updated to “completed” state. A dashboard visualizes the each notification status with a colour code. A colour coding system has also been introduced to improve the accuracy of witnessing the status of case detection/investigation. Notification will be forwarded to the relevant MOH area at the PDHS Office and MOH will update action implemented to complete the notification process.

Conclusion:
Salient features of the new e-surveillance system are the rapidity of notification/investigation process, user friendliness, providing access to multiple stake holders simultaneously, the involvement of the field staff from the first day of notification, and the ability to trace the cases using check lists and a colour coding system.

PP-34: Implementation of tailor made hospital information management system at state health care institutions in Sri Lanka
Siriwardena N, De Silva P, Ranatunga P, Wickramasinghe S
1National Cancer Institute, Maharagama, Sri Lanka
2Castle Street Hospital for Women, Colombo, Sri Lanka
3Provincial General Hospital, Kurunegala, Sri Lanka
4Teaching Hospital, Peradeniya, Sri Lanka
siriwardenanishan@gmail.com

Transformation of a live paper based health information system to a digital information management system is a difficult & time consuming. Moving form one’s own comfort zone to an unknown territory always brings uncertainty leading to suspicion & resistance from main stakeholders. Digitalization of Sri Lankan Health Information Management System requires rigorous collaborative work from many stakeholders. Major challenges includes protection of patient privacy & rights, concerns & resistance from health care trade unions, high cost of tailor made software development and long term maintenance.
A unique approach to address above mentioned challenges was initiated three years ago by group of Medical Officers qualified in Bio Medical Informatics attached to the Ministry of Health, academics from University of Kelaniya with support from medical administrators, clinicians & health care personnel from government & private health institutions. Design of electronic health information management system was done by said group of doctors with active participation from health care providers. System development done according to the prevailing industry standards by group of academics & students from University of Kelaniya. Main objective of this endeavour was to improve work flow management whilst maintaining cost of development at lowest possible level.
At present the Hospital Information Management System (HIMS) of the Ministry of Health is being successfully implemented at many state health care facilities with diverse levels of operational complexities. This paper describes the methodologies of development, implementation strategies, training of health care workers & long term maintenance

PP-35: Development and piloting of an injury surveillance system based on free and open source software
Ganewatta MN1, Jayatilleke AU2, Amarakoon PM1, Hewapathirana RH3
1Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka
2Postgraduate Institute of Medicine, University of Colombo, Sri Lanka
3Health Informatics Society of Sri Lanka
meghasl@gmail.com

Background:
Injuries are a major public health issue in low and middle-income countries where injury prevention efforts are hindered by the lack of quality information. Although injury surveillance could provide information required for action, these countries cannot afford to develop and use their own injury surveillance systems due to high costs. Several attempts to establish and sustain an electronic injury surveillance system failed in Sri Lanka in the past mainly due to excessive costs associated with the software solution. At present free and open source solutions are lacking. However, District Health Information Software version 2 (DHIS2) is a modular web based free and open source public health software framework which is widely implemented in more than 50 countries, providing a wide range of possibilities for building integrated health information systems for a range of public health issues.

Objectives:
To develop and pilot an injury surveillance system based on the free and open source software.

Methods:
The software framework was customised in to a functional injury surveillance system according to the requirements of the stakeholders based on the World Health Organisation guidelines. The DHIS2 tracker module was used to capture individual patient records and these data were later aggregated to generate customised reports. Some of the features that were lacking in the native DHIS2 application were improvised using JavaScript. The system was piloted at the National Hospital of Sri Lanka using the injury data collected at the Accident and Orthopaedic Service of the hospital during 2014.

Results:
A functional injury surveillance system was developed with the ability to collect aggregate, analyse and generate custom reports because of the flexibility of DHIS2 framework. DHIS2 further offered features such as data validation, handling missing information and allowed scheduled backing up of data. Information visualization module of DHIS2 allowed graphical representation of data as well as tabular report generation according to given criteria. The system was flexible enough to accommodate further modifications without the need for major re-work. However the complex user interfaces of DHIS2 increased the time of learning curve for new users and extended the time for data entry to some extent.

A total of 24,893 patient records were entered in to the system. Analysis of data revealed that 25.4% of cases were due to road traffic injuries, 14% due to violence 1.2% due to self-inflicted injuries while 59.4% due to other unintentional injuries such as falls (36.3%), trauma due to blunt/sharp objects (17.9%) and burns (1.4%).
Conclusion:
This study emphasizes the potential of DHIS2 to be used as an injury surveillance solution which would be sustainable in the resource constrained countries such as Sri Lanka due to its low cost of development and maintenance. The source code of the system is freely available to be customised and used by any country or organization according to the uniqueness of country/organisation specific injury surveillance requirements.

**PP-36: Awareness of current child health development record and attitude towards mobile supported child health monitoring in urban Sri Lankan parents**

Wijerathne J1, Hewapathirana RH2, Dissanayake VHW3, Mubin O4, Ahmad M4, Jarzabek S5, Wadhwa B6, Ginige A7

1Epidemiology Unit, Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka
2Health Informatics Society of Sri Lanka
3Faculty of Medicine, University of Colombo, Sri Lanka
4Western Sydney University, Australia
5Bialystok University of Technology, Poland
6National University of Singapore
7Western Sydney University, Australia
jayathriwijayarathne@gmail.com

Introduction:
Child Health Development Record (CHDR) is a paper based booklet to record and monitor child nutrition and development from birth, in Sri Lanka. CHDR is dependent on the frequent interactions of the Public Health Midwife (PHM) and the Mother. Due to the changing lifestyle of urban mothers this routine is very much challenged creating an information gap between the PHM and the mother.

Objectives:
Objective of the study was to identify the current CHDR usage practices and parents' and health workers' reaction to an e-CHR (electronic Child Health Record) prototype developed based on paper based CHDR and its work practice.

Design, setting and Method:
Mixed method approach was adhered with survey questionnaires and interviews to analyse the paper based CHDR. 290 parents were given the survey questionnaire and 15 other parents along with 20 health care workers (3 General Practitioner and 17 midwives) were interviewed on the perception towards the current CHDR and the e-CHR prototype together with an interviewer administered questionnaires.

Results:
The survey results revealed that 94% of parents knew the CHDR book was beneficial yet the interaction with the book was inadequate. Around 50% of parents experienced difficulties in understanding child's development using the CHDR alone. Lack of time to go through the book and not knowing how to monitor the growth of the child using the CHDR were among main reasons for difficulties. Less than half of the parents (49.3%) stated that they were always successful in recording developmental milestones, which had to be recorded by parents. Similarly only half of the parents (50%) revealed/mentioned that they always found the instructions were adequate to complete the developmental milestone checks (recordings) clearly. Only 66.9% had the habit of always carrying their child’s CHDR when they visit a doctor or while travelling. A substantial percentage (70%) of the study population was positive about an electronic version of the Child Health record. It was found that the mobile phone penetration was quite high among this urban group of parents than personal computers justifying the approach of mobile support. Out of the 285 answered 97.2% told that they own a mobile phone of some kind. 145 (50%) parents said they own smart phones. 164 (56.4%)
of the parents said that they were familiar with mobile applications. More than 90% of the parents expressed the need to add more explanations in graphical as well as audio format about developmental milestones via electronic version. 224 parents out of 290 were expecting interactive online assistance in caring their children. Around 80% of parents preferred if the growth and developmental history was available with the electronic version. The parents have highlighted the importance of using graphical presentation of information, notification system to remind about vaccination and appointments, ethical and privacy considerations.

Conclusions:
A mobile based electronic version of CHDR could be of assistance to parents immensely and they are positive on accepting one. However, the application design should be robust to address the dynamic nature of the requirements matching the child's age and the developmental status, educational and financial condition of the family and the mobile usage pattern of the parent. The study also revealed the need for the interactivity in providing such information and support to monitor child nutrition and development.

PP-37: Prevalence of overweight & obesity among participants in a non-communicable disease (NCD) screening programme: association with demographic characteristics and NCD risk

Wijesinghe C1, De Silva V1, Sirithunga S2, Sanjeewa U2, Wijenayaka R1, Aravinda NP1, Nethmini M1, Nanayakkara P1

1Faculty of Medicine, University of Ruhuna
2Regional Director of Health Services Office, Galle

cjw@med.ruh.ac.lk

Background:
Over nutrition is a major risk factor for chronic, non-communicable diseases (NCD). Previous studies have shown an increasing trend of overweight and obesity among Sri Lankan population with regional variations in prevalence. Identification of individuals with overweight/obesity is crucial in preventing NCDs and other associated health risks.

Objective:
To determine the prevalence and correlates of overweight/obesity and its association with selected health risks among participants of a NCD screening programme in Galle, Sri Lanka.

Method:
Data on basic demographic characteristics and selected NCD risk factors were obtained from 1301 individuals who participated in a screening programme. The programme was conducted by Department of Community Medicine, Faculty of Medicine, University of Ruhuna in collaboration with NCD Unit, Regional Director of Health Services Office, Galle, during medical exhibition ‘MedRu 2016’. Measurements of height, weight and blood pressure were taken in all participants using standard techniques and random blood sugar was measured in those aged 35 years or above. International cut off thresholds of Body Mass Index (BMI) for categorization of overweight and obesity (≥25 kg/m² and ≥30 kg/m² respectively) and corresponding cut off thresholds of BMI for public health action in Asian populations (≥23 kg/m² and ≥27.5 kg/m² respectively) were used to determine the prevalence of overweight/obesity. Association of BMI categories with the demographic characteristics, blood pressure and blood sugar levels was assessed using chi square test of significance. All analyses were done using SPSS statistical software.

Results:
The participants were predominantly female (56.9%), from rural areas (72.0%). Mean age (±SD) of the sample was 48.9 (±9.8) years and approximately 82% were aged between 35-59 years. Majority of the
participants were from Southern province (Galle 73.3%, Matara 13.0%, and Hambantota 4.8%). Remaining participants (8.9%) were mainly from Western, Sabaragamuwa and Uva Provinces. According to the international cut off thresholds, 37.7% and 9.1% of the participants were overweight and obese respectively. The corresponding figures based on cut off thresholds recommended for public health action were 45.0% for overweight and 23.3% for obesity. Prevalence of overweight/obesity was significantly higher among females compared to males (p<0.05), those aged 35-59 years compared to younger or older age groups (p<0.01) and urban residents compared to rural residents (p<0.01), based on both cut off thresholds. Having a random blood sugar of >140 mg/dl, a systolic blood pressure of >140 mmHg or diastolic blood pressure of >90mmHg demonstrated significant associations with overweight/obesity when the BMI cut off value for public health action (≥23 kg/m2) was used (all p<0.01). However, a significant association with these variables was not observed when overweight/obesity was categorized according to international cut off threshold (≥25 kg/m2).

Conclusions:
Prevalence of overweight/obesity is considerably high (approximately 47 - 68%) among individuals seeking NCD screening services. Females, middle aged persons and urban population appear to be more affected. The higher risk for diabetes and hypertension, observed among overweight/obese persons at lower cut off thresholds of BMI indicate necessity for early action towards weight management.

PP-38: Women’s experiences of vaginal complaints in Estates communities in the Colombo District, Sri Lanka

Ilankoon IMPS, 1Goonewardena CSE, 1Fernandopulle RC, 1Perera PPR
2University of Sri Jayewardenepura Sri Lanka
prasanthi@sjp.ac.lk

Background:
Vaginal discharge is an extremely distressful, a common complaint among women, which can result from a variety of pathological conditions. Women’s ability to differentiate normal and abnormal vaginal discharge is important in order to detect pathological vaginal discharge and to prevent associated complications. Women living in estate sector in Sri Lanka are considered as a socially marginalized community and are vulnerable for many unhealthy practices and lifestyles which lead to many health problems.

Objectives:
This study was aimed at describing knowledge and experience related to vaginal discharge among females aged 18 to 49 years living in estate communities in the Colombo District, Sri Lanka.

Method:
This community based cross sectional study was conducted in estates in the Colombo District. The samples of 550 females were selected by using multistage cluster sampling technique and data were collected using a self-developed, validated, pretested interviewer-administered questionnaire. Descriptive and relevant inferential statistics were used in analysis by using SPSS version 16.

Results:
The mean age of the participants was 33.8 (SD= 8.15) years and 78% of them were Tamil (n=428). The majority had studied below primary education level (n=332, 60.4%) and were employed (60.4%). The mean knowledge score on vaginal discharge was 27.01% (SD=8.61). Most of the participants (98%) had obtained <50% and only eight participants (1.5%) had a score between 50%-75%. There is a statistical significant association between knowledge score and family type of the participants (p=0.031).
Majority of the participants (n=405, 73.6%) stated that “any type of vaginal discharge is always normal” and 88% agreed that “a clear, non-offensive discharge that varies with the menstrual cycle is a normal physiological secretion”. Further, 77% agreed that “women aged between 15-49 years have a normal physiological vaginal secretion”, and 64% “vaginal secretions vary with menstrual cycle”. Majority of them (60.2%) were not aware whether “the most common cause of vaginal discharge is Sexually Transmitted Infections (STIs)”. Nearly 59% of the participants (n=234) mentioned HIV as a STI and very few of them mentioned other STIs.

High body temperature (64.7%) was mentioned as the main cause for excessive vaginal discharge. Nearly half of them reported that abnormal vaginal discharge has been a concern for them and only 30% had taken treatment from a general practitioner. There were statistical significant association between those who had excessive vaginal discharge with other accompanying symptoms, age of the participants and the health seeking behaviour (p<0.05). Majority (87.8%) stated that feeling difficulty in discussing with a male doctor was the main reason for not to seek medical advice for excessive vaginal discharge.

Conclusion:
Majority had poor knowledge on vaginal discharge and had inability to differentiate normal and abnormal vaginal discharge. Health education programme needs to be directed mainly for the young age group to empower women for recognizing abnormal vaginal discharge. There is a need of more supportive and comfortable environment at primary health care setting to help in improving health seeking behaviours of the present community.

PP-39: Dialysis Outcomes in India: An online clinical outcomes registry for dialysis outcomes, lessons learned and opportunities for research partnership within Commonwealth Medical Association


The George Institute for Global Health India

The George Institute for Global Health, The University of Sydney, Australia

PGIMER, Chandigarh, India

ojohn@georgeinstitute.org.in

Background:
There is limited systematic data on clinical outcomes and economic impacts of maintenance dialysis for end stage kidney disease (ESKD) in India and many other commonwealth countries where the burden of ESKD is high.

Objective:
Follow up patients commencing haemodialysis at two North Indian nephrology centres prospectively for 12 months using a cloud based open source electronic data capture tool to study the clinical and economic outcomes.

Method:
An electronic data collection template and project monitoring tool was developed using the OpenClinica platform. Baseline demographic and clinical outcome data were collected comparable to those recorded by established dialysis registries as well as data on direct, indirect costs and economic impact on the patient and family.

Results:
Here we present the technological design and implementation of the online data capture tool for establishment of the clinical outcomes registry and results of the 6 month interim analysis for over 100 subjects enrolled in the study.

A total of 119 patients (82 male, 37 female) have been enrolled thus far, 70 at a public hospital (Chandigarh) and 49 at a private hospital (Delhi). Median age at enrolment was lower at the public hospital compared to the private (37.5 yrs. cf 60 yrs.). Baseline Median monthly income was USD$90 at the public hospital and USD$377 in the private hospital. Of the 94 patients at the 6 month interim analysis, 18 (19%) have died, 19 (20%) have been transplanted, 47 (50%) remain on dialysis and 10 (11%) patients have discontinued dialysis. Median total monthly expenditure for dialysis was USD$231 in the public hospital and USD$1526 in the private hospital.

Conclusions:
Establishing a clinical outcomes registry for those on renal replacement therapy for end stage kidney disease is feasible and using electronic data capture tools allows real-time subject follow up, multicentre participation and centralized monitoring. Our study found that relatively young Indian dialysis patients have high mortality and dialysis discontinuation rates but also a high rate of transplantation. Costs were high relative to income and are likely to impact upon ongoing treatment decisions and survival. The high and ongoing nature of such costs pose particular challenges to how risk protection programs are designed, particularly given the limited capacity to pay of its beneficiaries. Our experiences and the tools developed could be shared within the commonwealth medical association partners many of whom face significant burden on the health system due to end stage kidney disease.

PP-40: Hybrid computer based simulator for heart and lung (SimHaL) disease diagnosis: The concept and implications in medical education
Karunaratne WCD, Chandrathilake, M
Department of Medical Education, Faculty of Medicine, University of Kelaniya, Sri Lanka
dilminikarunaratne@gmail.com

The use of simulations in medical education stretches centuries back, when clay and stone models were used for teaching different diseases. Its value and adoption in medical education has been growing ever since. Simulation Based Medical Education (SBME) has been identified as a valuable adjunct in the training of medical graduates across the healthcare education continuum globally. It provides a new training model beyond apprenticeship based training, enables standardization of educational opportunities, focuses more on patient safety, provide opportunities to learn from errors in a controlled environment and facilitate deliberate practice and mastery of learning.

SBME has progressed rapidly along many dimensions including the simulation technology used. These technology developments range from simple text based virtual patient case studies to use of part task trainers, simulated patients, computer enhanced manikin simulators, and screen based simulators (haptic devices) to advanced complex skills trainers. High fidelity medical simulators occupy one of the extreme ends of use of simulators for medical education. Despite its significant contribution to enhance medical education, it is not without weaknesses. The major limitations are the lack of human touch and human nature and the associated expenses unbearable for many of the developing nations.

Therefore the current project on the development of a hybrid-computer based simulator for heart and lung (SimHaL) disease diagnosis aims to bridge these gaps by enabling the use of a real human to mimic clinical signs of heart and lung diseases and is an affordable solution to many nations.