

## Welcome Letter

### Welcome

Dear Summit Delegates,

On behalf of organizing and scientific committee, we the Nepal Health Research Council (NHRC), wish to welcome you to "First Summit of Health and Population Scientists in Nepal". The theme of this summit is **"Health and Population Research for Informed Decision Making: Where we are?"** We would like to request to scientists, researchers, policy makers, scholars and practitioners from Nepal to be a part of this Summit, organized by the Nepal Health Research Council (NHRC) on the eve of 25<sup>th</sup> Anniversary Year - Silver Jubilee Year. Despite the gains made by the country in many health indicators in the last few decades, Nepal is still facing a numbers of health problems which need to be address through evidence informed decision making. Hence, it is a high time to organize a summit with a theme **"Health and Population Research for Informed Decision Making: Where we are?"** first time in Nepal.

Given the rich diversity of participants from academia, research institutes, government, I/NGOS and external developmental partners, we believe that the summit will be a productive, inspiring and simulating opportunity to share and exchange expertise and experiences that will be of value and promote innovation in all researches and policy making in Nepal.

We would like to thank our Organizing and Scientific Committee for bringing together an exciting summit programme.

Thank you.

**Dr. Khem Bahadur Karki**

Chair, Organizing Committee

Member-Secretary, NHRC

**Prof. Dr. Dharma Kanta Baskota**

Chair, Scientific Committee

Chairman, NHRC

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## Oral Presentation

### Plenary Session 01: Public Health Challenges

#### **PL01:01: Effects of social determinants of health in achieving universal health coverage in Nepal**

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**Background:** Social determinants of health are social, economic, cultural, physical environment and individual behaviours that affect the health of individual and communities. These are non-health conditions, but affect the health of individual and population. Social determinants of health can vary country to country on the basis of differences in national development. Social determinants of health if not addressed properly in any country they widen the health inequities.

Nepal is planning to undergo universal health coverage in near future and this study will examine what effects will be in the UHC of the social determinants of health. The main objective of this study is to analyze the effects of social determinants of health in achieving the universal health care in context of Nepal

**Material and methods:** review and analysis of the Government of Nepal policies, plans, interventions and other relevant studies.

**Findings:** Nepal being a developing country have many social determinants of health e.g. poor economic status, high unemployment rate, poor water supply and sanitation, unsecure food and nutrition, improving women empowerment etc. Nepal also has high smoking rate, high alcohol use, high indoor air pollution rate, and increasing accident and violence rate. These factors including other many social determinants of health can be crucial factors behind the success of the UHC scheme. The current achievements in indicators of maternal health, child health, and control of major communicable diseases are the results of improvement in health service delivery as well as the improvement in the social determinants of health as well.

**Conclusion:** improvement in the social determinants of health will make goal of universal health coverage a success with a sustainable health financing system and effective health care delivery system. SDH in general will also improve the health equity in Nepal.

#### **PL01:02: Climate change and public health in Nepal**

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**Introduction:** It is unequivocal that the warming of the climate system of the earth at an exceptionally high rate since the 1950s is mainly due to anthropogenic activities and is likely to have increased by 1.5-4°C at the end of the 21st century. The rate of warming in Nepal is much higher compared to rest part of the world. Hence, Nepal is most vulnerable to climate change because of its low economic development, dependence on climate sensitive sectors and complex topography. In this paper, we will present how climate change is affecting public health in Nepal.

**Methodology:** We systematically reviewed all research works carried out on climate change and health in Nepal including research works done by NHRC. Then, we summarized information comparing with global evidences on climate change and health.

**Results:** We found very few studies on climate change and health in Nepal. However, different studies shows that Nepal public health in Nepal is already affected by climate change which are mainly by direct impacts which relate primarily to changes in the frequency of extreme weather including heat, drought, and heavy rain, impacts mediated through natural systems, for example, disease vectors, water-borne diseases, and air pollution and finally by impacts heavily mediated by human systems, for example, occupational impacts, under nutrition, and mental stress. Climate change aggravates most of the health problem already existing in the poor communities who are far behind the economic growth.

**Conclusion:** Climate change is affecting public health in Nepal directly and indirectly and the poorest of poor people are the most vulnerable. Therefore, the public health system should be strengthened, intersectoral collaboration need to be promoted and more evidences need to generate to allocate limited resources in the most vulnerable groups of the society.

### **PL01:03: Status of ambient air quality in Kathmandu valley assessed by PM<sub>2.5</sub>**

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Nepal Health Research Council for the first time in Nepal initiated to assess ambient air quality situation of Kathmandu valley through monitoring of mainly ambient PM<sub>2.5</sub> levels. For the purpose three fixed monitoring stations were installed one each at the three districts of the valley. PM<sub>2.5</sub> levels were monitored continuously round the clock for one whole year starting from the beginning of the month of Fagun 2070 till the end of Magh 2071. The three fixed stations were installed at Putalisadak (Kathmandu), Mahalaxmasthan, Patan (Lalitpur) and Bhimsensthan (Siddhi Memorial Hospital, Bhaktapur). Monitoring results reveal high levels of ambient PM<sub>2.5</sub> during winter and dry months (Manshir-Chaitra) with monthly averages above 70 µg/m<sup>3</sup>, moderate or moderately high levels during pre-monsoon months (Baishak-Jestha) and Kartik with monthly averages in between 35 to 65µg/m<sup>3</sup> and low levels during rainy season and post rainy month (Ashad-Aswin) with monthly averages below 25 µg/m<sup>3</sup>. Comparison between stations averages show that on the average Putalisadak station recorded highest averages whereas Patan station recorded averages in between the two other stations and Bhaktapur station recorded lowest averages barring some exceptions. The within 24 hour variation cross examined for three hour interval showed that there exists a cyclic pattern in its variation during 24 hour period. Pollution levels are at low levels (below 40µg/m<sup>3</sup>) after midnight (0-3 AM) and hover around 40µg/m<sup>3</sup> during before dawn period (3-6 AM) and increases and reaches highest value (around 74µg/m<sup>3</sup>) in the morning (6-9 AM). Then it falls to around 66µg/m<sup>3</sup> during before noon period (9-12 noon) and again falls sharply to around 35 µg/m<sup>3</sup> during afternoon (12-3 PM). Thereafter, the average value rises slightly to 36 µg/m<sup>3</sup> during late afternoon period (3-6 PM) and rises again to around 56 µg/m<sup>3</sup> during evening time (6-9 PM) and then falls again to around 49 µg/m<sup>3</sup> during night (9-12 midnight). Altogether 207 days (56.7 %) recorded 24 hour average PM<sub>2.5</sub> exceeding the national ambient air quality standard of Nepal (40 µg/m<sup>3</sup>) during the monitoring year 2070/71 which demonstrates that the ambient air of Kathmandu valley is polluted by PM<sub>2.5</sub>. The analysis is based upon around 85000 recorded data consisting of 15 and 30 minute interval measurements.

## Plenary Session 02: Non Communicable Diseases

### PL02:01: The prevalence of metabolic syndrome in South Asia: a systematic review

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**Background:** Despite having increasingly high prevalence of metabolic risk factors (such as obesity, hypertension, dyslipidemia along with lifestyle factors such as smoking), there is a dearth of robust epidemiological evidence on burden of metabolic syndrome (MS) in South Asia region. This study sought to estimate the prevalence of MS and its individual components in South Asia region.

**Methods:** A search was conducted on PubMed, Scopus and OvidSP (MedLine and EMBASE) using the term 'metabolic syndrome', 'prevalence' and the name of each South Asian countries for the studies published on or after the year 2000. Eligibility criteria were mainly population based studies on both gender and healthy participants aged  $\geq 18$  years. Four definitions of metabolic syndrome were considered: the World Health Organization 1999, Third Adult Treatment Panel 2001 and its modified version 2005, and International Diabetes Federation 2005.

**Results:** The literature search yielded 16 relevant studies comprising 14515 males (44.1%) and 18390 females (55.9%). The weighted mean prevalence of metabolic syndrome was 14.0% (WHO), 26.1% (ATPIII), 29.8% (IDF) and 32.5% (modified ATPIII). Low levels of HDL and hypertension were prevalent in half of the study population. Overall, females had a high prevalence of MS under all definitions except WHO. Females were more likely to have low levels of HDL (68.8% vs. 37.9%) and central obesity (47.9% vs. 37.9%), whereas males were comparatively more hypertensive (42.3% vs. 38.1%).

**Conclusion:** Despite of high rates of metabolic risk factors, researches are extremely sparse in South Asia preventing to know actual burden. Along with the increased access to the clinical intervention, prevention strategies should be intensified with special attention to the females.

### PL02:02: The Burden and Determinants of Non Communicable Diseases Risk Factors in Nepal

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**Background:** World Health Organization (WHO) estimates for deaths attributed to Non Communicable Diseases (NCDs) in Nepal have risen from 51% in 2010 to 60% in 2014. This study assessed the distribution and determinants of NCD risk factors among the Nepalese adult population.

**Methods and Findings:** A nationally representative cross-sectional survey was conducted from Jan to June 2013 on the prevalence of NCD risk factors using the WHO NCD STEPS instrument. A multistage cluster sampling method was used to randomly select the 4,200 respondents. The adjusted prevalence ratio (APR) was used to assess the determinants of NCD risk factors using a Poisson regression model.

The prevalence of current smoking (last 30 days) was 19% (95%CI:16.6-20.6), and harmful alcohol consumption ( $\geq 60$  g of pure alcohol for men and  $\geq 40$  g of pure alcohol for women on an average day) was 2% (95%CI: 1.4-2.9). Almost all (99%, (95%CI: 98.3-99.3)) of the respondents consumed less than five servings of fruits and vegetables combined on an average day and 3% (95%CI: 2.7-4.3) had low physical activity. Around 21% (95%CI: 19.3-23.7) were overweight or obese (BMI $\geq 25$ ). The prevalence of raised blood pressure (SBP $\geq 140$  mm of Hg or DBP $\geq 90$  mm of Hg) and raised blood glucose (fasting blood glucose  $\geq 126$  mg/dl), including those respondents on medication were 26% (95%CI:23.6-28.0) and 4% (95%CI: 2.9-4.5) respectively. Almost one quarter of respondents, 23% (95%CI: 20.5-24.9), had raised total cholesterol (total cholesterol  $\geq 190$  mg/dl or under current medication for raised cholesterol).

The study revealed a lower prevalence of smoking among women than men (APR:0.30; 95% CI: 0.25-0.36), and in those who had higher education levels compared to those with no formal education (APR:0.39; 95% CI: 0.26-0.58). Harmful alcohol use was also lower in women than men (APR:0.26; 95% CI: 0.14-0.48), and in Terai residents compared to hill residents (APR:0.16; 95% CI: 0.07-0.36). Physical inactivity was lower among women than men (APR:0.55; 95% CI: 0.38-0.80), however women were significantly more overweight and obese (APR:1.19; 95% CI: 1.02-1.39). Being overweight or obese was significantly less prevalent in mountain residents than in hill residents (APR:0.41; 95% CI: 0.21-0.80), and in rural compared to urban residents (APR:1.39; 95% CI: 1.15-1.67).

Lower prevalence of raised blood pressure was observed among women than men (APR:0.69; 95% CI: 0.60- 0.80). Higher prevalence of raised blood glucose was observed among urban residents compared to rural residents (APR:2.05; 95% CI: 1.29- 3.25). A higher prevalence of raised total cholesterol was observed among the respondents having higher education levels compared to those respondents having no formal education (APR:1.76; 95% CI: 1.35-2.28).

**Conclusion:** The prevalence of low fruit and vegetable consumption, overweight and obesity, raised blood pressure and raised total cholesterol is markedly high among the Nepalese population, with variation by demographic and ecological factors and urbanization. Prevention, treatment and control of NCDs and their risk factors in Nepal is an emerging public health problem in the country, and targeted interventions with a multi-sectoral approach need to be urgently implemented.

**PL02:03: A snapshot of 1001 children presenting with cerebral palsy to a children's disability hospital**

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**Background:** Cerebral palsy (CP) has largely been an unaddressed problem in low and middle income countries (LMIC's). The purpose of this retrospective study is to provide a facility-based snapshot of CP in Nepal.

**Methods:** A retrospective chart review of 1001 patients diagnosed as having cerebral palsy, presenting to our institution from December 2008 to December 2011, was carried out.

**Results:** Majority of cases were found to be a result of birth complications and post-natal infections. Most children with CP were born at home, presented after walking age and came from socioeconomically unstable or borderline households. Less than 20% were attending school. Spastic diplegia was the most common presentation. Children with post-natal spasticity secondary to infection seemed to retain greater ambulatory potential.

**Conclusions:** In contrast to CP in developed countries, the etiology in LMIC's is largely related to birth-related complications and post-natal infections. There is an urgent need to address preventable causes of cerebral palsy in Nepal.

**Keywords:** cerebral palsy, Nepal, birth complications, asphyxia, infection.

**Parallel Session**

**Parallel Session 01: NCDs and Traditional Medicine**

**PA01:01: Urinary iodine excretion and thyroid function status in school age children of hilly and plain regions of Eastern Nepal**

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**Background:** Iodine deficiency is a major public health problem in many developing countries including Nepal. The present study was designed to investigate the urinary iodine excretion (UIE), thyroid function status and household salt iodine content (SIC) in school age children (SAC) and to establish the relationships between them.

**Methods:** A community based cross sectional study was conducted in selected schools of two topographically distinct districts, Tehrathum and Morang, lying in the hill and plain region of eastern Nepal respectively. A total of 640 SAC, (Tehrathum n=274, Morang n=366) aged 6-11 years, were assessed for UIE and

household SIC. Among them 155 blood samples (Tehrathum n=78, Morang n=77) were estimated for serum thyroglobulin (Tg), thyroid stimulating hormone (TSH), free thyroxine ( $ft_4$ ) and free triiodothyronine ( $ft_3$ ). UIE was measured by ammonium persulfate digestion method, Tg, TSH,  $ft_4$  and  $ft_3$  by immunoassay based kit method and SIC by iodometric titration method.

**Results:** In Tehrathum and Morang, 9.5% and 7.7% of SAC were iodine deficient, (UIE<100  $\mu$ g/L) while 59.5% and 41% showed excessive iodine nutrition (UIE>299 $\mu$ g/L) with median UIE of 345.65 and 270.36 $\mu$ g/L respectively. We found the overall medians to be for Tg 14.29 $\mu$ g/L,  $ft_3$  3.94pmol/L,  $ft_4$  16.25pmol/L and TSH 3.61mIU/L. A negative correlation between UIE and Tg ( $r=-0.236, p=0.003$ ) and a positive correlation with SIC ( $r=0.349, p<0.0001$ ) was observed. A relatively higher percentage of subclinical hypothyroid cases were found in Morang (19.5%, n=15) than in Tehrathum (16.7%, n=13). Iodometric titration showed only 6.4% (n=41) of the sample having SIC<15ppm.

**Conclusions:** The current iodine status revealed the iodine sufficient status (median UIE of 291.8 $\mu$ g/L) whereas the thyroid function status points towards iodine deficiency in the SAC from the two districts under study. Packaged salt use is significantly associated with the higher UIE values.

**Keywords:** Iodine status, Iodized salt, Thyroglobulin, Thyroid function, Nepal.

### **PA01:02: Prevalence of asymptomatic bacteriuria in adult diabetic patients attending Manipal Teaching Hospital**

Dr. Ajay Adhikari

**Introduction:** Asymptomatic bacteriuria (ABU) refers to the presence of bacteria in urine at levels often regarded as clinically significant in patients with no symptoms suggestive of urinary tract infection (UTI)<sup>1</sup> and is defined as isolation of a specified quantitative count of bacteria in an appropriately collected urine specimen from an individual without symptoms or signs of UTI.<sup>2</sup>

An increased prevalence of UTI and Diabetes Mellitus (DM) has been documented in various studies. However, clinical studies done with a view to determine association of ABU and DM have shown conflicting results. Many studies have shown an increased prevalence of bacteriuria in diabetics whereas almost an equal number of studies have failed to show a significant association. This study has been undertaken to investigate the prevalence of ABU among adult diabetic patients, to assess the associated risk factors including age, gender, marital status, duration of DM, glycaemic control and bacteriological profile along with antibiotic sensitivity pattern in those isolates.

**Methods:** This was a hospital based cross-sectional study consisting of 116 consecutive patients of DM. The cases were grouped according to age, gender, marital status and Body Mass Index (BMI). In addition, association of ABU was studied with the degree of diabetic control as determined by glycosylated haemoglobinA1c (HbA1c) and duration of DM. Urine samples from patients were collected with standard methods and inoculated in Mac-conkey agar and Blood agar plates followed by incubation at 37°C aerobically for 48 hours. Identification of the isolate was carried out by using standard microbiological methods. Semi-quantitative estimation of colony count was calculated by standard loop method. Antibiotic susceptibility testing of the isolate was performed on Mueller Hinton Agar by Kirby-Bauer disc diffusion method with antibiotic as per the National Committee for Clinical Laboratory Standards (NCCLS) guidelines depending on the types of isolate.

**Results:** The prevalence of ABU in DM in our study was 10.3%. A statistically significant higher prevalence of ABU was seen with increased duration of DM; being highest (29.4%) in cases with duration of DM > 10 years. Prevalence of ABU was found to be statistically significantly higher in patients with overall poor control of DM (19.44% of patients with HbA1c  $\geq 7\%$  as compared to 6.25% of patients with HbA1c < 7%). A

statistically insignificant higher prevalence of ABU was seen in female as compared to male patients (14.8% and 5.5% respectively). No association of ABU was found with age, BMI and glycosuria. The most common organism in ABU was *Escherichia coli* (75%) followed by *Klebsiellapneumoniae* (16.7%). All *Escherichia coli* were sensitive to Nitrofurantoin and Imipenem and 88.9% sensitive to both Aminoglycosides and Fluroquinolones. All *Klebsiellapneumoniae* were sensitive to Fluroquinolones, Co-trimoxazole and Imipenem and 50 % sensitive to Penicillin, Nitrofurantoin and Aminoglycosides.

**Conclusion:** The prevalence of ABU in DM adult patients in our study was 10.3%. A statistically significant higher association of ABU was seen in patients with longer duration of DM as well as in those with HbA1c  $\geq 7\%$ . ABU was found in higher percentage of female patients and also in those who were married as compared to male patients but the differences were not statistically significant. No association of ABU was seen with age, BMI and glycosuria.

The most common organism in ABU was *Escherichia coli* (75%) followed by *Klebsiellapneumoniae* (16.7%). All *Escherichia coli* were sensitive to Nitrofurantoin and Imipenem and 88.9% sensitive to both Aminoglycosides and Fluroquinolones. All *Klebsiellapneumoniae* were sensitive to Fluroquinolones, Co-trimoxazole and Imipenem and 50% sensitive to Penicillin, Nitrofurantoin and Aminoglycosides.

A small sample size is a limitation of this study. Association of ABU in DM with various risk factors reported in earlier studies do not match with regard to the inclusion criteria used and the results therefore are not strictly comparable. Further larger studies with uniform inclusion criteria are required to get comparable results.

**Keywords:** Asymptomatic Bacteriuria, Diabetes Mellitus, Glycosylated hemoglobin A1c, Urinary Tract Infection, *Escherichia coli*, *Klebsiellapneumoniae*.

### **PA01:03: Depression among patients with type 2 diabetes in nepal: an analytical cross-sectional study in clinical settings in Nepal**

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**Introduction:** Diabetes is one of the major public health concerns all over the globe, increasingly problematic in the developing country like Nepal. The co-morbidity of depression has been found in many chronic diseases, especially diabetes. Depression has been linked to high medical costs, ineffective adherence to diet and medication and poor outcome of disease. Hence, this study aimed to estimate prevalence of depression in patients with type 2 diabetes and identify factors associated with depression.

**Method:** It was a cross-sectional study consisting of 379 diabetic patients enrolled from three different clinic settings located in Kathmandu, Nepal. Patients having diabetes at least from last six months and having no previous history of any mental diseases were included in the study. Depression was assessed by using Beck's Depression Inventory-II and analyzed with SPSS V.16.0.

**Results:** The mean age of participants was  $54.7 \pm 10.6$  years. Majority of respondents had age more than 50 years (66.5%), from urban area (84.7%), with Newar caste (47%) and lower socio-economic level (73%). Depression was seen in 44.1% of respondents. Females ( $p=0.00$ ), housewives ( $p=0.00$ ), 61-70 aged respondents ( $p=0.01$ ), participants without formal education ( $p=0.00$ ) and lower social status ( $p=0.00$ ) had significantly higher prevalence of depression than others. Insulin use was also significantly related with

depression ( $p= 0.01$ ).

**Conclusion:** Our study estimated high prevalence of depression in patients with diabetes. Prevention, and early detection and treatment of depression are very quintessential for effective management of diabetes. Therefore, this study recommends for implementing proper measures for prevention and control of depression among study population.

#### **PA01:04: The effectiveness of karela compared with vijayasar in the management of madhumeha**

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**Background:** Vijayasar (*Pterocarpus marsupium*) has been mentioned in Charak Samhita, the classical ayurvedic text, as a remedy for madhumeha (Diabetes Mellitus). A study revealed that the hypoglycaemic effects of vijayasar are comparable to that of tolbutamide<sup>1</sup>. Karela (*Mormordica charantia*) is another drug used for madhumeha and it is a routinely used vegetable in Nepal. In this study we measured the effectiveness of karela in patients of madhumeha and compared with that of vijayasar.

**Materials and methods:** A total of sixty four patients diagnosed with madhumeha (Fasting Blood Glucose  $\geq 126$  mg/dl or Post Prandial Blood Glucose  $\geq 200$  mg/dl) were given either karela or vijayasar powder two times a day for one month, along with dietary and lifestyle advices and their blood glucose levels were measured before initiating treatment and after one month of treatment. Randomization of treatment was done and dosage was titrated on the basis of glycemic control and duration of madhumeha.

**Results:** The mean reductions in fasting blood glucose and post prandial blood glucose were 61.37 mg/dl and 79.36 mg/dl in karela treated group and that in vijayasar treated group was 47.75 and 92.59 mg/dl respectively. There was no effect on the body mass index in both groups while there was significant reduction in systolic and diastolic blood pressure in both groups.

**Conclusion:** Karela is a safe and effective medicine in the management of madhumeha and it is as effective as vijayasar.

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#### **PA01:05: Knowledge diversity and resources of traditional healers and healing practices in western development region of Nepal**

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**Introduction:** Traditional medicine (TM) and practices comprehensively refer both to TM systems such as Ayurveda, Arabic, Unani, Amchi, and to various forms of indigenous healing practices persist in our society. In spite of diversified knowledge, glorious history and large contribution to society, traditional healing practices are currently fighting with misconceptions, false labeling, bio-piracy and misappropriation. Therefore, Nepal Health Research Council aimed to analyze the situation and document knowledge diversity and resources of traditional healers and healing practices in Nepal.



**Method:** We conducted a cross-sectional study using qualitative method in Western Development Region between January and April 2015. Based on geographical and ethnic variations, firstly, we purposively selected six districts, followed by selection of single VDC and Municipality from each district. We applied aggregate scoring method for sleeting 60 respondents in total. Data were collected by in-depth interview.

**Result:** The majority of respondent was Janajati (30%), and was involving in farming (52%). They have been recognized in society as Jadibuti gyata, Fukfake, Pandit, lama, Baidya, Shoka and Moulana. Forefathers and Guru were the major sources of knowledge. They expressed their confident to treat 170 varieties of diseases and health conditions using 135 different herbs and mineral. Most of the participants (50 out of 60) were not doing anything for preserving their knowledge and 2/3 respondents did not have any training on traditional medicine. Most of the respondents (87%) replied that they were satisfied with their traditional healing practices. Nevertheless, 80 % of them were worried that young generation was not interested to continue the practice. Unavailability of medicinal plant was identified as the major problem faced by traditional healers.

**Conclusion:** The study finding indicates that vast diversity of traditional healing practices and resources persist in Western Development Region. However, lack of preservation, lack of interest to continue by young generation, delaying in recognizing, validating and upgrading knowledge pose a serious threat to traditional healing practices.

## **Parallel Session 02: Environmental Health and Tropical Diseases**

### **PA02:01: Clinical, serological and entomological features of dengue virus infection**

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**Background:** Dengue, the most common arboviral disease, ranks as the most important mosquito-borne viral disease in the world, is transmitted by mosquito of genus *Aedes*. It is an emerging vector borne disease in Nepal and serological and clinical features are important for early diagnosis of the disease.

**Materials and Methods:** A total of 273 serum samples were collected from clinically suspected patients of Chitwan and Dhading districts from August to November 2012. Enzyme immunosorbent was chosen as a reference assay. Hematological tests along with clinical profile of the patients were obtained. Entomological study was done to find out the preferred breeding habitat by *Aedes* mosquito.

**Results:** Out of 273 samples, 47 cases, a total of 17.2%, were positive for anti-dengue IgM antibody. Clinical features of dengue suspected febrile cases provided the information those patients bearing clinical symptoms like headache (Odds Ratio; OR=4.77), myalgia and arthralgia (OR=4.73) and nausea (OR=3.15) were more likely to possess anti-dengue IgM antibody by Mac-ELISA. Of the 47 seropositive cases, 10(21.3%) were leucopenic while 25(53.2%) were thrombocytopenic. Statistically, there was a significant

association between occurrences of Dengue fever with thrombocytopenia ( $p = 0.014$ ). The breeding preference ratio was highest for discarded tires lying outdoors in both Bharatpur municipality of Chitwan district and Dhadingbeshi of Dhading district.

**Conclusion:** Based on the various findings, the current study attempts to highlight the importance of clinical features along with hematological features to establish prognosis of Dengue Fever before commencing costly, time consuming and sophisticated serological and molecular tests of dengue.

**Keywords:** Dengue virus infection (DVI), IgM Capture ELISA, Clinical symptoms, Hematological features, BPR

### **PA02:02: Factors associated with the spread of dengue fever in Eastern Nepal**

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**Background:** Dengue has emerged as an important global public health problem. Of the 2.5 billion people around the world living in Dengue endemic countries, 1.3 billion live in 10 countries of the Southeast Asia. Nepal had major outbreak in 2006, 2010, 2012 and 2013. Jhapa was one of them. The objectives of this study was to assess the factors associated with the spread of Dengue fever in eastern Nepal

**Materials and Methods:** A community based case-control study was conducted in May 2013 to April 2014 in Jhapa after Dengue outbreak in 2012 and 2013. Data were collected using questionnaires and observations.

**Results:** The maximum (32.9%) cases were in the productive age group of 20-29 years. Almost 25% of Dengue cases had visited outside their residence 2 weeks before the onset of fever. The significant increased risk of Dengue was seen in those households who had bad drainage system (OR=25.29, CI=6.04-105.85), refrigerator and coolers (OR=4.19, CI=2.02-8.67), flower vases (OR=5.576, CI=2.287-13.597), flower vases having water holding plates (OR=28.876, CI=8.96-92.97), broken glasses, cups, trays, empty can, bottle and discarded buckets that collect water (OR=2.214, CI=1.216-4.033), uncovered overhead water-tank (OR=4.65, CI=2.24-9.65), uncovered water containers in the bathroom (OR=6.2, CI=3.06-12.54) and badly fitted plumbing connections (OR=5.779, CI=2.74-12.27). After multivariate analysis using conditional logistic regression, household having flower vases with water holding plate (OR= 25.985, CI=4.060-166.314), uncovered overhead water tank (OR=5.537, CI= 1.258-24.369) and uncovered water container in the bathroom (OR= 8.465, CI=1.933-37.070) were statistically significant ( $p$  value 0.005). The relationship of automobile tires, coconut shells, underground reservoirs, wells, litter bins could not be established with Dengue outbreak.

**Conclusions:** The significant risk factors after adjustment associated with dengue outbreak in eastern Nepal was found to be in households having flower vases with water holding plate, uncovered overhead water tank and uncovered water container in the bathroom.

### **PA02:03: Early Effects of Climate Change on Vector-borne Diseases in Nepal- a systematic review**

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**Background:** Although analyses of observed temperature and precipitation data are still limited in Nepal, the available studies indicate that its warming trend is more pronounced in the highlands than lowlands. Accordingly, a shift of disease vectors and disease transmission to higher elevations is predicted under both observed and future climate change scenarios. At least six major vector-borne diseases (VBDs), namely malaria, lymphatic filariasis, Japanese encephalitis, visceral leishmaniasis (kala-azar), chikungunya and dengue fever are endemic in Nepal, all caused by pathogens that are transmitted to or among humans by insect vectors that are sensitive to temperature and thus, ultimately, to climate change. Our objective is to determine whether the observed spatiotemporal distributions of VBDs in Nepal can be attributed to climate change.

**Methodology:** We systematically reviewed and summarized information on climate change and the distribution of VBDs in Nepal from the published and grey literature until December 2014 following PRISMA guidelines.

**Results:** We found a distinct shift of VBD incidences with an expansion of autochthonous cases to previously non-endemic areas including mountain regions. The distribution of the diseases and their vectors, which were previously believed to be confined to terai, is now observed to extend to the hills and mountain regions. We also found significant association between climatic variables and vector-borne diseases as well as their vectors abundance in short term studies. More importantly gender difference is found in the incidence of all VBDs.

**Conclusion:** Given the establishment of relevant disease vectors at altitudes of already at least 2,000 m above sea level, increasing trade and movements of people, a lack of vector control interventions and gender difference in diseases incidence, climate change can intensify the risk of VBD epidemics in previously considered non-endemic areas e.g., in the mountain region. Therefore, we recommend differential diagnosis of febrile illness and extending and scaling-up VBD surveillance, monitoring and control programs in previously considered non-endemic areas to protect the health of people.

#### **PA02:04: Knowledge and preventive practices related to avian influenza among poultry workers of Kamalamai Municipality, Sindhuli**

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**Background:** Avian influenza (AI) is currently a threat to global health. Prevention and control of Avian Influenza depends on the knowledge and preventive practices of the poultry workers as well as of general

population. This study aims to assess knowledge and preventive practices related to Avian Influenza among poultry workers of Kamalamai municipality, Sindhuli, Nepal.

**Materials and Methods:** This study has used a cross-sectional descriptive design using semi-structured interview questionnaires to assess the knowledge and preventive practices and checklists to observe the preventive practices of poultry workers. Sample size for this study was 132 which were generated by using Decision Analyst Stat 2.0. The list of 65 poultry farms operated in the Kamalamai municipality was obtained from district livestock services office, Sindhuli, which runs a registry of all farms that house more than 50 chickens. Forty-four poultry farms having three workers were selected randomly by using lottery method. On the day of data collection some respondents were absent so that only 122 respondents were interviewed by using semi-structured interview schedule. Collected data was entered in Epi-data version 3.1 and analyzed using SPSS program, version 20.

**Results:** Out of 122 poultry workers, most of the respondents (93.4%) had heard about the Avian Influenza. More than half (54.9%) of the respondents had a 'poor knowledge'; followed by 'average knowledge' (44.3%) and 'good knowledge' (0.8%) about Avian Influenza. Majority of them (93.4%) had 'average practice' for preventing Avian Influenza; followed by 'good practice' (4.9%) and 'poor practice' (1.6%).

**Conclusions:** This study found that more than half (54.9%) of the respondents had poor knowledge about Avian Influenza and 1.6% had poor practice regarding preventives measures of Avian Influenza. Thus, extensive health education and health promotion programs are recommended to prevent AI in poultry giving more emphasis on mass communication like electronic and print media.

**Keywords:** Avian Influenza; Knowledge; Practice

### **PA02:05: Knowledge and practice on safe use of pesticides among farmers in rural area of Kaski district**

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**Background:** Use of pesticide to increase crop productivity is common among farmers in recent decade. Hence safe use of pesticide among farmer has become challenging issue. The objective of this study was to assess knowledge and practice on safe use of among farmers in rural area of Kaski district.

**Materials and Methods:** Cross sectional study was conducted among 384 farmers in Six Village development committee (VDC) of Kaski districts. Farmers who had been using pesticides for any agricultural product were selected randomly. Knowledge and Practices were assessed by using Pearson chi-square test. Statistical Package for Social Sciences (SPSS) version 20 and Microsoft Excel was used for data analysis.

**Results:** Finding revealed that mean age  $\pm$  standard deviation (SD) of the participants was  $41.80 \pm 12.41$  years. The majority (66.4%) of the respondents were female. The mean participant scores for knowledge and safety procedures were  $15.48 \pm 6.41$  out of 41 and  $9.23 \pm 3.27$  out of 22, respectively. Nearly four fifth (79.2%) of the respondents knew about safe use of pesticide. Among them 98% knew about importance of safe use pesticide. But only 66.1% used personal protective equipment (PPE). Level of practice has statistically significant relationship with level of knowledge ( $P < 0.01$ ). Storage of pesticide at animal shed, disposal of unwanted pesticide by burning, not using adequate protective clothing and not reading label/instruction on pesticide container were identified as unsafe practices. Self-reported health problems due to pesticide exposure were headache (66.7%), eye irritation (32.3%) skin irritation (27.3%).

**Conclusions:** The results from present study revealed that level of knowledge and practice regarding safe use of pesticide is still poor among farmers in rural area of Kaski district. Behaviors change and communication

programs focusing on proper use of PPE, storage, disposal and reading label instruction on pesticide container should be conducted.

**Acknowledgement:** My heartfelt gratitude goes to my Co-Author MrNand Ram Gahatraj.

### **Parallel Session 03: Environmental and Occupational Health**

#### **PA03:01: Presence of toxic heavy metal in children's toys in Nepal**

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**Background:** Toys are part of a children's daily life depending on age and use pattern. Currently, toys found in market are made colourful with addition of life threatened chemicals that retard the physical, mental and intellectual development of children. It became an urgency to test and regulate chemical presence in Children Toys in Nepal and protect the children from poisonous chemical. The purpose of paper is to find the concentration of heavy metals in children toys and campaign for safe play.

**Materials and Methods:** 100 toys were purchased from nationwide markets like Footpath, Street vendors, Educational enterprises, Departmental Stores, etc. Concentration of heavy metal in toys was determined with the help of X-Ray Fluorescence at a laboratory of Nepal Bureau of Standard and Metrology, Government of Nepal.

**Results:** CEPHED 2013 study showed presence of Bromine in 40% toys ranging from 3.6 ppm to 3923 ppm, Lead in 28% of toys ranging from 12.4 ppm to 8305.8 ppm, Chromium in 14% of toys ranging from 9.6 ppm to 2052.2 ppm and Cadmium in 9% of toys ranging from 10 ppm to 433.3 ppm. Study showed the lack of awareness level in consumer regarding the presence of chemicals in toys and related certification during import, distribution and use of toys at household as well as in institutional level. Study revealed absence of relevant standard and guidelines along with mandated government bodies to regulate chemicals in children products.

**Conclusion:** Presence of toxic chemical toys illustrates sale of unsafe toys in market putting the children's health in risk. Study depicts the need of immediate attention and market intervention from citizen as well as concerned government bodies. Study recommends enacting policy, act, standard, labelling and certification system to regulate chemicals in children products, regularly monitor development process and develop chemical safety roadmap of the country.

**Acknowledgements :** This study would not have been possible without the support and guidance of Center for Public Health and Environment Development (CEPHED) and financial resource of Eco-Peace Leadership Program (EPLC), Yuhan-Kimberly University, South Korea. I would like to thank all the personnel's at Federation of Handicraft Associations of Nepal (FHAN) and Nepal Bureau of Standard and Metrology, Ministry of Industry, Government of Nepal (NBSM, MOI, GON) for the laboratory. Heartfelt thanks to Mrs. Juna Giri, and Ms. Puna Bhaila, program officers of CEPHED for their hard effort during questionnaire survey, toys purchase, coding and the coordination process throughout the study.

### **Reference**

Thapa M. & Sah RC. Study of Heavy Metal in Children's Toy and Campaign for Safe Play in Nepal. Kathmandu: Center for Public Health and Environmental Development; 2013 July. 34 p.

#### **PA03:02: Bio-monitoring of mercury contamination in human body and policy influence in Nepal**

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**Background:** Big amount and numbers of mercury, mercury based equipment, chemicals and products imported and used in Nepal increasingly becoming sources of dietary and occupational exposure among general people, especially to health workers, Doctors, Nurses, Fisher Folks, other vulnerable people with mercury filling in their tooth and female of child bearing age. Heavy pollution load to the environment, especially to the aquatic ecosystem has been resulted into mercury contamination in aquatic fauna like fish and thus depending fisher community. Aims of this paper is to share finding of bio-monitoring of mercury in human body especially of health care professionals and fisher folks and outcomes of these research based campaign for mercury-free healthcare services and mercury-free dentistry policy in Nepal.

**Materials and Methods:** Testing total mercury in hair samples done by using DMA-80 in US based Biodiversity Research Institute (BRI)'s laboratory.

**Results:** Bio-monitoring of mercury mainly among 50 dental Doctors including high level policy makers, assistants and with mercury tooth filling confirmed 100 % positive mercury contamination with concentration from 0.097 to 0.547 ppm (CEPHED and NDA 2013). Another 100% fisher folk's shows mercury contamination with about 53% (8 of 15) more than EPA reference dose of 1ppm (CEPHED, IPEN/BRI 2012).

**Conclusion:** Studies clearly proved high occupational exposure of mercury in Nepal. Based on these findings, a rooted advocacy campaign for mercury free health care services and dentistry of CEPHED's resulted Government of Nepal, Ministry of Health and Population to took praiseworthy, timely and visionary decision of banning '**Import, Purchase and Use**' of mercury based equipment, effective from 16 July 2013, needs to include mercury dental amalgam ban too and effective implementation by all concerned. This will help to improve oral health and early implementation of the Minamata Convention on Mercury is the best possible way and means to eliminate mercury use for safeguarding public health.

**Key words:** mercury, exposure, bio monitoring, health and environment

1. Bio-Monitoring of Mercury among Dental Health Care Professional in Nepal, Kathmandu, CEPHED and NDA 2013.

2. Bio-monitoring of Mercury Contamination in Nepal" A case study of Phewa Lake and Surrounding Fisherman and Health Community, Kathmandu, CEPHED, IPEN/BRI 2012, 23p.

### **PA03:03: Blood lead levels of primary school children in Kathmandu Municipality, Nepal**

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**Background:** Lead is a toxic metal which has contaminated our environment and created health problems around the globe. Children are vulnerable to lead as the intake per unit body weight is higher and even low levels can cause neurological damage. Nepal lacks data on sources of lead exposure and its health impacts; hence screening of blood lead is mandatory. This study has been conducted to determine blood lead levels,

its associated risk factors and impact on health in primary school children in Kathmandu municipality, Nepal.

**Materials and Methods:** A total of 218 school children between 6-16 years age from Kathmandu were included in the study undertaken from November 2012 to June 2013. Consents were taken from guardians and students. Questionnaire was used to acquire data followed by blood sampling. Lead was measured using atomic absorption Spectrophotometer, hemoglobin and serum calcium was measured using commercial kits. Intelligent Quotient was assessed using Seguin form board. Data was analyzed using SPSS version 20.

**Results:** Overall, 63% (137) had detectable blood lead level (BLL) and 54% (117) had  $BLL \geq 5$  ug/dl. 55% were male and 45% female. The median BLL (IQR) was 8(0-34) and 4(0-18) in males and females respectively. The mean hemoglobin and serum calcium was  $13.7 \pm 2.4$  and  $8.1 \pm 1.8$  respectively. The odds of having elevated blood lead level (EBLL) was significantly higher in children living in homes with chipping walls (p value 0.001), lower socioeconomic status (p value 0.001) and residing near traffic congested areas (p value 0.007). The median IQ was 73.5(66-91). EBLL showed significant negative correlation with IQ (p value 0.001). EBLL was identified as significant risk factor lowering IQ by 2.35 points per 10 ug/dl rise in blood.

**Conclusion:** Children living in homes with chipping walls, lower socioeconomic status and residing near traffic congested areas had significantly higher lead level. EBLL showed significant negative correlation with IQ.

### Acknowledgments

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### PA03:04: Dust and bio-aerosols exposures assessment of poultry farm workers in Kathmandu, Nepal

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**Background:** Poultry farming in Nepal is emerging and making significant contribution to the agricultural domestic product (AGDP). Relatively accessible parts surroundings the Kathmandu Valley have relatively large number of farmers involved in poultry. The poultry are mainly raised confinement in these places. This has resulted greater exposure of farm workers to dust and bio-aerosols. This dust and bio-aerosols could be detrimental to human health resulting to different respiratory diseases and allergies. Improper housing system and fewer measures taken to bio-security have further aggravated the problem. So, this study aims to assess the particulate matter and bio-aerosols exposures in poultry farm workers and also to determine the housing and productive systems conducive to farm worker's health hazard.

**Materials and Methods:** The data of particulate matter (PM) was done by using Haz dust for

the period of 24 hours in the farm in monsoon and autumn seasons of the year. The gravitational settling method was used for collecting bio-aerosols and further analysis was done in NAST research laboratory. Farm characteristics were collected by field observations by research team.

**Results:** The collected data showed that particulate matter was  $65\mu\text{g}/\text{m}^3$  and  $120\mu\text{g}/\text{m}^3$  for  $\text{PM}_{2.5}$  and  $\text{PM}_{10}$  respectively. *Aspergillus* spp was the abundant fungi and bacterial population found to be greater than 300 cfu/place. Major composition included *Micrococcus* spp, *Staphylococcus* spp and *Bacillus* spp.

**Conclusions:** The study concluded that PM concentration exceed the WHO standards. The fungal and bacterial status indicated to be hazardous conditions along with PM concentrations. The immediate preventive measures in order to protect the health of workers are required. Further epidemiological studies to assess the health status with large sample size, less biases are recommended to be carried out by multidisciplinary research team.

**Acknowledgements:** The authors are thankful to the NAST for funding support to conduct the study. The second author is thankful to first and third author for opportunity to present and write the research paper.

#### **Parallel Session 04: NCDs and Disability**

##### **PA04:01: Disability themed community diagnosis of rural population in Dhulikhel: a different standpoint**

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**Background:** Disability is any restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being. Disability could occur not only from musculoskeletal disorder but also from other causes such as dyspnea and urinary incontinence. This study was done to find out the prevalence of disability in three VDCs (Nala, Kuttal and Nayabasti) of Dhulikhel, Kavre.

**Materials and methods:** Standardized Nordic questionnaire and Nottingham questionnaire were adopted after translation and pre-testing for disability due to musculoskeletal disorder and dyspnea respectively. Pre-tested structured questionnaire was developed to identify disability due to urinary incontinence and disability ID card holders. Door to door survey method was used. Descriptive analysis was performed. Micro health program was conducted for physiotherapy interventions in the identified population. Sustainability and awareness program was organized to disseminate knowledge about need of physiotherapy in these conditions.

**Results:** Among 1265 people surveyed in these VDCs, the total number of people identified with disabilities was 218. Among them, 15.9% (n=110) from Kuttal (N=690), 22.4% (n=70) from Nayabasti (N=313) and 14.5% (n=38) from Nayagaun (N=262) were identified with various disabilities. Among the identified cases in all three VDCs, only 5.9% (n=13) had government disability ID card, with physical (3), hearing (2), speech (1), vision (2) and multiple disabilities (5). Apart from these people with disability card, there were disabilities caused due to dyspnea (16.5%, n=36), urinary incontinence (18.8%, n=41) and musculoskeletal problems (58.7%, n=128). The micro health program helped in improving the awareness among people about the disability and treatment through low-cost physiotherapy techniques.

**Conclusions:** The most common disabilities among population are due to musculoskeletal followed by dyspnea and urinary incontinence. The use of low-cost aids and physiotherapy treatments can be beneficial for the community.

**(Keyword:** Disability, Physiotherapy, Community diagnosis, Nepal)



**PA04:02: Alcohol consumption practice among married women of reproductive age in Nepal**

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Alcohol consumption among reproductive age women has become a significant public health problem worldwide. It is an established fact that drinking during pregnancy has detrimental effects to the fetus. A systematic literature review suggests even small to moderate doses of alcohol consumption during prenatal period may have an impact on fetal behavioral development. Although, current drinking by women in Nepal appears to be decreasing; 16.1% in 2007/08 and 7.1% in 2012/13, the proportion of harmful use of alcohol have risen over the 5 years. The use of alcohol in the rituals, cultural and social events are persist as a part of daily life in many communities. Thus this study intended to find out the prevalence of alcohol consumption by married women of reproductive age (MWRA) including pregnant and lactating women in Nepal. In addition, we also identified the alcohol concentration in home brewed alcoholic beverages (HBAB) from across the country.

A nationally representative cross sectional survey was carried out from April to August 2013 by taking 16 districts across all 15 eco developmental regions. We sampled 9000 women with proportionate distribution across three ecological belts. At the first stage, 100 VDCs were selected using probability proportionate to size from the selected districts, followed by random selection of 3 wards each from every VDCs. We interviewed MWRA using a semi structured questionnaire, major portion of which for measuring alcohol consumption was adapted from GENACIS questionnaire and WHO STEPS instrument for NCD risk factors. Prevalence of alcohol consumption ever was 24.7% (95% CI 21.7-28.0), last 12 months consumption 17.9% (95% CI: 15.3-20.7) and last 30 days (current drinking) 11.8% (9.8-14.1). The adjusted OR suggests elderly women, illiterate and women with non-formal education, dalit and janajatis, women whose husband drink and women from mountains drank more than women of young age, women with higher education level, terai caste and upper caste women, women whose husband did not drink and women from terai respectively. Median ethanol concentration in homebrewed alcohol was 14.0% (IQR: 10.0-19.0) ranging from 3% to 40% for distilled, and 5.2% (IQR: 3.5-9.8) ranging from 1% to 18.9% for non-distilled.

Alcohol consumption by women of reproductive age is substantial with more than 90% of them consuming home brewed alcohol. Women consider HBAB, specially the non-distilled type as food rather than alcoholic drinks and continuing its consumption during pregnancy and lactation. Since the ethanol concentration in homebrewed alcohol was not less than the commercial alcoholic beverages, the use of these HBAB among women may harm to the developing fetus and cause serious ill effects even after birth. Hence, the current finding suggests policy makers to implement a program to reduce alcohol consumption specially among high risk groups "women of reproductive age" and "pregnant women" to prevent alcohol related morbidity and mortality throughout the pregnancy to childhood as well as the mother.

### **PA04:03: Sdigoxin prescribing in tertiary heart care center of Nepal**

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**Background:** Digoxin is a purified cardiac glycoside extracted from the foxglove plant, Withering<sup>[2]</sup> in 1785. It is a narrow therapeutic index drug with complex pharmacokinetics and dose response relationship. It is inexpensive drug with high potential for drug interaction<sup>[3]</sup>. Though the drug has been used clinically for more than 200 yrs controversy exists as it has increased mortality by 41% in patients with atrial fibrillation<sup>[4]</sup> and 72% higher death rate among congestive heart failure cases<sup>[5]</sup>. The dosing adequacy of digoxin is determined either by therapeutic drug monitoring or by observing clinical response of a patient.

**Material & Methods:** A cross-sectional, observational study was conducted from July to September 2013 in Shahid Gangalal National Heart Center (SGNHC) to identify the main diagnosis of patient; obtain digoxin dosing information and study dosing adequacy of digoxin therapy. The semi-structured questionnaire was used after validation for data collection after getting informed consent. The data were analyzed using SPSS version 20.

**Results:** Altogether 107 patients were included in the study with 65.4% being female. The largest proportion of patients has never smoked (57.9%) and nonalcoholic (70.1%). Rheumatic Heart Disease was the main diagnosis without any co-morbid condition in 60.7% patients. One third of patients (35.5%) were on continuous digoxin regimen whereas two third of patients were on interrupted regimen (33.6% on one day digoxin holiday and 30.8 % on two day digoxin holiday). Digoxin dosing was not adequate among study patients; under dosing found in 51.5% patients on basis of clinical response.

**Conclusion:** Despite of controversies many clinicians still rely on digoxin therapy. However, practice of therapeutic drug monitoring (TDM) of digoxin should be made mandatory to assure the dosing adequacy of digoxin and to minimize the possible toxicity due to drug.

**Acknowledgement:** The cooperation, guidance and inspirations from faculty and all staffs of Department of Pharmacy, Kathmandu University; CIST college and Shahid Gangalal National Heart Center, Bansbari along with the participants of this study is highly acknowledged.

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### **PA04:04: Short term CVD risk prediction of 40-70 years aged population: a community based cross-sectional study in Nargarjun Municipality, Kathmandu, Nepal**

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**Background:** CVD risk assessment is effective tool for predicting people at low or high risk of CVD events. It is also useful for determining effective intervention. Patients with low risk are very unlikely to gain substantial benefit from pharmaceutical interventions than patients with high risk. Conversely, they will be benefited by lifestyle modifications. But, there is dearth of related study in Nepal. Therefore, this study aims to assess short term CVD risk in selected community in Nepal.

**Method:** we conducted a cross-sectional study in ward 4 and 5 of Nagarjun Municipality, Kathmandu between October and December, 2014. Households were selected by systematic random method. Total 166 participants were enrolled in study. We applied KISH grids for selecting a member within a household to be interviewed. Framingham Heart Study risk assessment tool and WHO/ISH chart were used to calculate 10-year risk of cardiovascular events.

**Results:** Median age of respondents was 51 years. The majority of participants were female (58.4%), homemakers (45.2%), from Newar caste (31.9%) and without formal education (32.5%). Smoking was present in 27.7% of respondents, diabetes in 19.9 %, high blood pressure in 21.7%. Mean of cholesterol was 175 mg/dl  $\pm$  29.5 mg/dl, HDL was 42.9 mg/dl  $\pm$  6.8 mg/dl. Lower than 10% risk was seen in 62.7% of respondents, 10% to 20 % risk in 24.1%, and >20% risk in 13.2%. Greater than 10% CVD risk was significantly associated with smoking (p = 0.00), high waist hip ratio (p = 0.001), high cholesterol level (p = 0.009), systolic hypertension ( p = 0.005) and diabetes ( p = 0.023).

**Conclusion:** Research findings indicate the study population is in high risk to develop CVDs in near future. Lifestyle modifications and pharmaceutical interventions to manage the risk factors among study population are highly recommended.

## Parallel Session 05: Diagnostic Tests

### PA05:01: Gastric aspirate shake test for prediction of Hyaline Membrane disease in preterm babies

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**Objective:** To evaluate whether Gastric Aspirate Shake Test in Preterm babies can predict the likelihood of Hyaline Membrane Disease.

**Method:** The Shake Test for prediction of Hyaline Membrane Disease was evaluated in 81 preterm newborns at NICU and Nursery, Patan Hospital. Over 0.5 ml of gastric aspirate was obtained within 1 hour of birth and mixed with an equal amount of normal saline for 15 seconds; 1 ml of 95% alcohol was then added and the mixture agitated for next 15 second. Then after 15 minute, the air-liquid interface was examined for bubbles.

**Result:** Among 81 neonates, 46 developed HMD. 56.8% (26/46) of neonates with negative shake test developed HMD which was statistically significant(p<0.05).The sensitivity, specificity, positive predictive value and the negative predictive value were 96.29%, 76.47%, 86.6% and 92.8% respectively.

**Conclusion:** Shake test on gastric aspirate is a rapid, simple and inexpensive procedure. It is of high utility

in a country like ours where advanced facilities are not available everywhere so early transfer to specialized hospital can be expedited.

**Keywords:** Shake test, Hyaline Membrane Disease

**PA05:02: Comparison of thin layer agar and Lowenstein-Jensen culture for diagnosis of tuberculosis**

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**Background:** Sputum smear microscopy has low sensitivity and conventional culture is slow and expensive technologies have created a situation of “new tool fatigue” for tuberculosis diagnosis in resource poor settings. The objective of our study is to evaluate thin layer agar method for diagnosis of *Mycobacterium tuberculosis* (MTB) in resource poor setting.

**Materials and Methods:** All tuberculosis suspects presenting at TB Laboratory, BPKIHS, Dharan from August 2012 to January 2013 were included in the study. Procedures of smear microscopy, Löwenstein-Jensen (LJ) culture, and biochemical tests for MTB detection were carried out following protocols of WHO. Thin Layer Agar (TLA) was performed as per guideline issued of Martin and Palomino (1). The sensitivity of both methods was evaluated against a composite reference standard (any positive culture for MTB or a 1+ to 3+ positive smear later confirmed as MTB). Statistical analysis was done on SPSS package version 20.0.

**Results:** Out of 1502 samples, 137(9.12%) were positive for MTB by composite reference standard. Sensitivity for TLA were greater than those observed for LJ (95.6%, vs. 90.5%, 95%). No significant differences between two methods ( $p=0.375$ ) was observed by McNemar’s chi-square test. Median time to detection of a positive culture was 12 days for TLA vs 45 days for LJ ( $p<0.001$ ). LJ and TLA detected MTB in 39 (86%) and 42(93.3%) smear negative cases respectively. Non Tuberculosis Mycobacterium was detected in both the methods [1.6% in LJ vs. 1.4% in TLA]. No extra-pulmonary cases were positive by microscopy while TLA and LJ both detected 4 (2.9%) cases. Higher rate of contamination was observed in LJ compared to TLA culture (6.5% vs. 3.6%).

**Conclusions:** Comparable sensitivity with LJ culture method along with rapid turnaround time, low level of contamination and requirement of low consumables has made TLA a valuable option for low income countries.

**Reference:**

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**PA05:03: Time interval between onset of abdominal pain and uncomplicated appendicectomy**

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**Background:** Appendicitis presents acutely and is the most common surgical emergency, and early surgical intervention improves outcomes. Peritonitis is the great threat of acute appendicitis and is likely to occur in delayed appendicectomy. The objective of this study was to determine the maximum time interval between onset of abdominal pain and appendicectomy without complications.

**Materials and Methods:** This prospective observational study was conducted from May 2014 to November 2014 among 100 cases of clinically diagnosed acute appendicitis in Bir Hospital, a tertiary level hospital of Nepal. Clinical diagnosis was based on Alvarado score. Data were collected on a structured proforma. Intraoperative finding of the appendix was noted and classified into different grades as G0 (Inflamed appendix with healthy base), G1 (Inflamed appendix up to the base), G2 (Gangrenous appendix), G3 (Perforated appendix), G4 (Early phlegmon) and G5 (Lump or periappendiceal abscess). Data were entered and analysed using Social Package for Statistical Sciences 17.0 software. The time interval between the onset of abdominal pain and the incision was calculated and analysed with the intraoperative findings of the appendix.

**Results:** When the time interval was <8 hrs, the risk of developing G0, G1, G2, G3, G4 and G5 was 100%, 0%, 0%, 0%, 0% and 0% respectively which changed to 84%, 4%, 12%, 0%, 0% and 0% respectively when the interval was 9-24 hrs and to 82.22%, 2.22%, 8.88%, 2.22%, 4.44% and 0% respectively when the interval was 25-48 hrs and to 44.82%, 3.44%, 31.03%, 6.89%, 10.34% and 3.44% respectively when the interval was 49-96 hrs. Time interval between incision for emergency appendectomy and the onset of abdominal pain >28 hrs is statistically significant (P = 0.042) for complicated appendix.

**Conclusion:** It is prudent to undergo appendectomy within 28 hrs of the onset of abdominal pain to avoid complicated appendicitis.

## Parallel Session 06: Biomedical Research

### PA06:01: *Streptococcus pneumoniae* and *haemophilus spp.* colonization in health care workers: the launch of invasive infections?

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**Introduction:** *Streptococcus pneumoniae* and *Haemophilus influenzae* are important human pathogens causing invasive diseases in susceptible individuals, often preceded by asymptomatic pharyngeal colonization. The risk of airborne and droplet-transmitted respiratory tract infections in healthcare workers (HCW) is substantial. No data are available on rate of colonization and transmission of *Haemophilus spp.* and pneumococci in HCW. The aim of this study was to determine the extent of oropharyngeal colonization with *S pneumoniae* and *Haemophilus spp.*, their antibiogram and risk factors of colonization in HCW at a tertiary care center, Western Nepal.

**Methods:** During three month period, 150 oropharyngeal swab specimens were collected from HCW of Manipal Teaching Hospital and non HCW from community and screened for *Haemophilus spp* and *Pneumococci* by standard techniques. Serotyping of *H. influenzae* type B was done by using specific antiserum. Antibiotic sensitivity pattern of isolates were determined by modified Kirby Baur disc diffusion method. Association between the groups were analyzed using the Pearson  $\chi^2$  test and Fisher exact test.

**Result:** Sixty five percent of HCW were colonized with *Pneumococci* and/or *Haemophilus spp* compared to 32% of non-HCW. Health Care Workers have Odd Ratio (OR) 3.946 [CI (1.916, 8.128)] times more tendency of colonization compared to non-HCW (P<0.05). There was significant association between smoking and *Pneumococcal* colonization (P<0.05). Amongst HCW, interns have higher rate of colonization (29.6%) followed by residents (18.5%), least being amongst the laboratory workers (8.6%).

**Conclusion:** The higher rate of colonization amongst HCW raises the possibility of occupational risk as well as horizontal spread of infections

**PA06:02: Determination of minimum inhibitory concentration of vancomycin to methicillin resistant staphylococcus aureus**

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**Background:** *Staphylococcus aureus* is a potentially pathogenic bacterium that causes a broad spectrum of diseases. It is naturally susceptible to virtually every antibiotic that has ever been developed. However, soon after penicillin was used in therapy, the first penicillin resistant *S. aureus* was observed in a hospital in 1942. Methicillin is semi-synthetic  $\beta$ -lactamase-resistant penicillin introduced clinically in 1959. The first clinical Methicillin Resistant *S. aureus* (MRSA) isolate was reported in England as early as 1961.

**Methods:** The clinical specimens were processed by conventional culture method. *S. aureus* were confirmed by positive catalase test and coagulase test. Penicillin resistance by  $\beta$ -lactamase production was determined by "penicillin disc zone edge test" and methicillin resistance was determined by **cefoxitin disc diffusion method**. Confirmed MRSA were subjected to determine the minimum inhibitory concentration (MIC) of vancomycin by agar dilution method.

**Results:** Altogether, 125 *S. aureus* were isolated. Of them, 47(37.6%) were MRSA and the remaining 78(62.4%) were Methicillin sensitive *S. aureus* (MSSA). Minimum Inhibitory Concentration of vancomycin to all the MRSA isolates showed that they are susceptible to vancomycin ranging the MIC from 0.125 to 1  $\mu$ g/mL. Among all the *S. aureus* isolates, 69(55.2%) were resistant to penicillin by  $\beta$ -lactamase production while the remaining 56(44.8%) were resistant to it by different mechanisms.

**Conclusion:** The study showed that there is an increasing rate of MRSA infection. However, none of the MRSA isolates were vancomycin intermediate-resistant (VISA) or vancomycin-resistant (VRSA). Similarly, resistance to  $\beta$ -lactam antibiotics like penicillin is mediated not only by  $\beta$ -lactamase production rather there are other mechanisms behind this.

**Key words:**  $\beta$ -lactamase, Cefoxitin, MIC, MRSA, Penicillin, *S. aureus*, Vancomycin

**PA06:03: Anemia, iron deficiency and iodine deficiency in Nepalese school children**

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**Background:** Micronutrient deficiency is a common problem in developing parts of world. Iodine and Iron are two important micronutrients whose deficiencies often coexist in many populations. This study was done to assess iodine and iron nutritional status and find their coexistence in Nepalese school children.

**Materials and Methods:** A cross-sectional, community based study was conducted in the year 2013 in the two districts; Ilam (hilly region) and Udayapur (plain region) of eastern Nepal. A total of 759 school children aged 6-13 years from different schools of study area were enrolled. Seven hundred fifty nine urine samples and 316 blood samples were collected. Urinary iodine concentration, hemoglobin level, serum iron and total iron binding capacity was measured and percentage transferrin saturation was calculated.

**Results:** The median urinary iodine excretion, mean hemoglobin level, mean serum iron, mean total iron

binding capacity and median transferrin saturation was 274.67 µg/L, 12.29±1.85 gm/dl, 70.45±34.46 µg/dl, 386.48±62.48 µg/dl and 18.97% respectively. Iodine deficiency, anemia and iron deficiency was 12.6% (n=96), 34.5% (n=109) and 43.4% (n=137) respectively. We found 30.27% (n=33) anemic and 26.27% (n=36) iron deficient children to be iodine deficient. A significant difference in iodine status was observed among anemic/non-anemic (p<0.001) and among iron deficient/sufficient children (p<0.001).

**Conclusion:** Iron deficiency and anemia seems to be the major problem in Nepalese children than iodine deficiency. Iodine deficiency is more common in the iron deficient and anemic children than in iron sufficient and non-anemic children.

**Key words:** Anemia, Iodine deficiency, Iron deficiency, Nepal, School children

### **Parallel Session 07: Nutrition, Communicable Diseases**

#### **PA07:01: Tracking implementation of Multi-Sector Nutrition Plan (MSNP) in Nepal**

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**Background:** The Government of Nepal's Multi-Sector Nutrition Plan (MSNP) was approved in 2012. It is critical to document the roll-out of the MSNP for learning and process improvement within Nepal and for multi-sectoral nutrition movements elsewhere. To support this, SPRING's "Pathways to Better Nutrition" (PBN) study is developing evidence on the MSNP influences priorities, coordination, scale-up, and ownership of nutrition programming; and how these factors are reflected in financing decisions.

**Materials and Methods:** The PBN is a two-year prospective, mixed-method study. Baseline national-level data were collected in June 2014 using key informant interviews, followed by observation of MSNP-related events, communication with stakeholders, and document review. Qualitative data were analyzed using NVivo 10. Quantitative data were extracted from national budgets using modified Scaling Up Nutrition (SUN) guidance and analyzed using Stata 13. Data will be collected from three districts in February-March 2015.

**Results:** Findings indicate that Nepal has succeeded in developing nutrition coordination structures and funding for nutrition has increased in recent years. However, baseline interviews indicated an inconsistent understanding of how the MSNP should align existing plans and actions. In particular, linking local and central-level planning for MSNP emerged as an early challenge. Furthermore, despite near-universal recognition that a multisectoral approach is needed to address undernutrition, many stakeholders felt coordination and collaboration could be improved. Finally, both government and nongovernment stakeholders stressed the need for government ownership, with unprecedented donor and INGO interest and investment in nutrition posing both opportunities and challenges to that end.

**Conclusions:** Nepal has demonstrated early successes in MSNP implementation and because it proposes a new perspective and working modality, it is crucial to address these early challenges in order to achieve its goals.

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**PA07:02: Energy drinks: knowledge & perception of consumers and quality parameters**

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**Background:** Food safety is a scientific discipline describing handling, preparation and storage of food in ways that prevent food borne illness. Energy drinks are claimed as non-alcoholic beverages containing caffeine, guarana, taurine, ginseng, inositol, carnitine, B-vitamins etc. as main ingredients that act as stimulants.

**Objectives:** The objective of study was to describe the chemical and microbiological parameters of energy drinks and find out the knowledge & perception of consumers towards it.

**Methodology:** It was a descriptive cross-sectional and experimental study conducted in different locations Kathmandu valley. Two hundred energy drinks users were interviewed to access the knowledge and perception of consumers. Ten different brands of energy drinks were analyzed for chemical and microbial content. The collected samples were evaluated for the compliance of regulatory requirements on labeling.

**Findings:** The survey finding suggests that 85% were unaware about the content, 54.1% has believed that it can be used with alcohol, 45% thought that all people should have energy drink, 40.8% thought that it provides energy, 43.1% think it is for refreshment. The major motivating factors were friends (36.2%) and advertisement (31.6%). About 55% responded that they had experienced side effects after using energy drinks out of which 67.7% had some mental changes. About three in four (73%) thought that the advertisement given was false and misleading. Out of 10 samples analyzed for the regulatory compliance, none of them fully complied with the regulatory requirements of Nepal. On laboratory testing, the amount sodium (197mg to 476mg), sugar (6-16%), carbohydrate (6-18%), and caffeine (0mg-43mg) were either more or less than the claim in eight samples. Other compounds detected in the samples were not uniform. Methyl amine was detected in nine samples out of ten. All the samples passed the limit of microbial count.

**Conclusion:** The energy drinks available in the market are having high content of sodium, sugar and caffeine; the composition is not uniform and the consumers are not aware about the usefulness of the energy drinks.

**Key words:** caffeine, energy drinks, microbial content, safety.

**PA07:03: HIV infection among wives of labor migrants in Nepal: A mixed-method study**

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**Background:** Risk of HIV infection is determined by the interaction between societal-level factors and individual's HIV-related knowledge and behavior, and the information about the risk factors at both levels and their interaction to determine HIV risk of Nepalese women is largely unknown. We assessed risk factors



and vulnerability for HIV infection among wives of labor migrants in Nepal.

**Methods:** We carried out a partially mixed concurrent mixed-method study based on a matched case-control study and a descriptive case study using two focus group discussions in January 2013. One hundred and twelve wives of labor migrants diagnosed with HIV (cases) and 112 wives of labor migrants testing negative for HIV (controls) were interviewed in the case-control study.

**Results:** We found that illiteracy and low socio-economic status contributed to poor HIV-related knowledge in women and men, and increased women's HIV risk through unprotected sex. Poor HIV-related knowledge in combination with gender inequality complicated the sexual negotiation process between women and their husbands and as such increased women's HIV risk through unprotected sex. Illiteracy and low SES among husbands, migration to India before marriage and alcohol consumption contributed to encounters with female sex workers and eventually increased women's HIV risk through unprotected sex. Both men and women feared disclosure of positive HIV status due to HIV stigma and were less likely to go for an HIV test, and increased risk of HIV transmission through unprotected sex.

**Conclusions:** Programs that are designed to reduce the transmission rates of HIV should consider the interaction between these risk factors, specifically when targeting the women and also when developing strategies that for the general population.

#### **PA07:04: Health related quality of life, anxiety and depression among tuberculosis patients in Kathmandu, Nepal**

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**Background:** Tuberculosis (TB) remains one of the major public health problems in Nepal. The objective of this study was to assess the Health Related Quality of Life (HRQoL) anxiety and depression of TB patients.

**Materials and Methods:** A cross-sectional study was conducted at Urban Direct Treatment Short Course (DOTS) center using 150 study populations. Questionnaires containing socio-demographic characteristics, Self Reporting Questionnaire (SRQ-20), Short Forms Health Survey (SF-36v2), Hamilton Anxiety Rating Scale (HAM-A), and Hamilton Depression Rating Scale (HAM-D). SPSS 20, SF-36 Scoring Software were used for data management and analysis.

**Results:** Majority of respondents (57.3%) were male belonging to 21-25 years age group and mean age was 29.10 years. Sixty three Percentages of respondents were from rural geography. Majority of respondents suffered from Extra Pulmonary Tuberculosis (EPTB) where gland TB was in higher prevalence (31.3%). A few respondents needed clinical intervention for anxiety and depression. Vast majority of respondents had not any other co-morbidity of diseases. HRQoL were found poor, only 1.4% female and 1.7% male's HRQoL was above the average. No correlation was found between anxiety, depression, Mental Component Summary (MCS) and Physical Component Summary (PCS) score in pulmonary Tuberculosis (PTB) patients unlike EPTB patients, where there was strong correlation between anxiety and depression ( $r=0.721$ ,  $p=0.000$ ). Negative correlation between PCS and MCS ( $r=-0.232$ ,  $p=0.037$ ) was found. There was no association between gender and PCS score on both types of TB patients. At majority of domain of HRQoL male had higher score than female. HRQoL were found poor, MCS was below in average in majority of respondents even though few needed clinical intervention. All respondents in the study exhibited anxiety and depression co-morbidities.

**Conclusion:** Co-morbidities of anxiety and depression in tuberculosis patients impact on health-related quality of life.

### **Parallel Session 08: Reproductive Health Morbidity**

#### **PA08:01: To determine the risk factors associated with ectopic pregnancy**

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**Background:** Ectopic pregnancy continues to be a common life threatening condition among the women attending gynecological emergency. The study aimed to determine the risk factors associated with ectopic pregnancy.

**Methods:** A descriptive study was done in the Department of Obstetrics and Gynaecology, Tribhuvan University Teaching Hospital and Paropakar Maternity and Women's Hospital Kathmandu from May to November 2013. Women diagnosed and operated for ectopic pregnancy were interviewed using semi-structured questionnaire after second post-operative day.

**Results:** Among 77 cases (44 from PMWH and 33 from TUTH) of ectopic pregnancy out of 13424 total deliveries during the study period (0.5%), the frequency of ectopic pregnancy was 1 in 79 deliveries in TUTH and 1 in 245 deliveries in PMWH. The most common presenting symptom was abdominal pain whereas history of amenorrhea and vaginal bleeding was found. The peak age group was 30-34 years (n=21). Most of them were multipara 30(39%) and 61% had first pregnancy between age group of 19-24 years, 33.8% of women had home delivery with only one patient who had cesarean section in the past. 33% of the women in the study gave history of abortion and among them almost equal number of women had spontaneous abortion (n=17) or induced abortion (n=16). History suggestive of PID was found in 14 women, infertility in 10 women, ectopic pregnancy in 7 women and pelvic operation in 7 women. History of emergency contraceptive taken within 45 days of presentation was present in 18 women. Majority of patients had taken emergency contraceptive before 29-30 days. History of current use of oral contraceptive was present in 4, Depo- Provera in 7 and Cupper-T in 6 patients.

**Conclusion:** Abdominal pain was the single most common clinical presentation of ectopic pregnancy. The most identified risk factors were abortions and emergency contraceptive followed by PID, infertility, Depo provera, IUCD, and previous ectopic pregnancy.

**Key words:** Ectopic Pregnancy, risk factor, prevalence, emergency contraceptive, temporary family planning

#### **PA08:02: Study on the chhaupadi and delivery system on misconceptions on menstruation and delivery and their effect on women's health in Bajura, district in Nepal**

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**Background:** Women are considered "unclean" during the menstrual period and are prevented from many normal aspects of their lives. There are clear cultural reasons for these taboos and practices.

**Methodology:** Cross-sectional descriptive study was conducted amongst 175 reproductive women in Bajura, Nepal, by using both qualitative and quantitative technique, for quantitative technique multistage random sampling technique for data collection.

**Finding:** Majority of the women, 38.9% were aged 20-29 years, in education illiterate were 23.4% and all are Hindu. Majority of women know about Chhaupadi system 91%, only 24% perceived menstruation to be Natural process, majorities of the respondent stayed in Chhaupadi hut for 5 days 73.7%, majority of respondents did not like this system 78.3%, majorities of Chhaupadi hut are less than 1 minute 89%. Women think that this system affects health of women 78.9%, majorities felt that this system affected physical health 74.9%, this physical effect are bleeding 40.6, infection 24% and cold related health problem 15.4%, mental health problem 35.4%. About delivery system majorities of women were delivery at home 71.4%, due lack of awareness 29.7%, women were stay more than 10 days in delivery hut

**Conclusion:** Larger proportion of women still believes in old unscientific tales, which lead to different health related problem. There is a need for education and awareness generation among women.

**Key Words:** Chhaupadi, Health, Misconception, Menstruation.

### **PA08:03: The role of reproductive health education in the occurrence of uterine prolapse among suburban Nepalese women**

Anjana Dhakal

**Background:** Uterine Prolapse (UP) also known as Pelvic Organ Prolapse (POP)<sup>1</sup> is a major maternal morbidity that affects 10% of total Nepalese women.<sup>2</sup> Women suffering the symptoms of UP rarely face severe morbidity or mortality, but it reduces the health related quality of life (QOL).<sup>3,4</sup> This maternal morbidity is a preventable and treatable condition.<sup>5,6</sup> However, women lack reproductive health education and awareness regarding uterine prolapse and its risk factors.<sup>7</sup> Also, women do not get timely treatment in poor country like Nepal.<sup>5,6</sup>

**Methods:** This is a cross-sectional study conducted in five Village Development Committees (VDCs) in the suburban Kathmandu. 150 participants of reproductive age group (14-49) were selected using a neighborhood random sampling method. Married women with at least one child prior to the study regardless of their prolapse state were interviewed. Sample size selection was done based on convenient sample.

**Results:** The prevalence of Uterine Prolapse was 11.3%. A statistically significant association was obtained between uterine prolapse and reproductive health literacy among suburban women adjusted for women's age, ethnicity, and monthly income (P-value=0.001). Heavy weight lifting during pregnancy and duration of post partum rest were also statistically associated to uterine prolapse (P-values 0.007 and 0.01), respectively. There was a high risk of uterine prolapse among women lifting heavy weight during pregnancy [OR = 5.2, 95% CI 1.4, 18.8].

**Conclusions:** Women in the suburban Nepal require awareness raising and behavioral change interventions. Also, women need education about the health care facilities that are made available by different public or private sectors to improve maternal health and well being in Nepal.

**Acknowledgements:** I would like to acknowledge all the 150 women participants for their valuable responses without which this study had been a complete failure.

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#### **PA08:04: Factors affecting post-partum amenorrhea in Nepalese women**

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**Background:** Postpartum Amenorrhea (PPA) is important method of birth control and birth spacing especially in developing countries. Following a live birth, a woman generally experiences a 6-week period of amenorrhea related to the hormonal concomitants of pregnancy but not much work has been done in Nepal regarding the effects of various demographic factors and socioeconomic statuses of women on their postpartum amenorrhea.

**Materials and Methods:** This study was based on the 2011 Nepal Demographic and Health Survey (NDHS) datasets. The duration of PPA was the response variable whereas key demographic and socio-economic variables of women and her children were explanatory variables. Since PPA period was not defined for some of women as they were still going through the PPA at the time of the survey, their data were censored. Therefore, survival analysis techniques: Life Tables and Semi-Parametric Hazard (Cox) Models were used.

**Results:** All the demographic and socio-economic variables except the sex of child had statistically different median PPA durations. The bivariate cox models also revealed similar result in terms of relative risk associated with the reference categories. However, multivariate cox model revealed breast feeding, parity, birth interval, survival of the child, education of the mother and wealth quintile of the mother influenced the PPA after controlling the effect of other variables.

**Conclusions:** This study revealed that longer the duration of breastfeeding; greater the delay in the return of menstrual cycle. Survival of child was the most important indicator for PPA among Nepalese women. The gender of the child and place of residence did not make any difference with respect to PPA. Mothers with birth interval of 3-4 years had lesser risk of return of monthly cycle.

**Key words:** Breastfeeding, NDHS, Postpartum amenorrhea, Survival Analysis.

## Parallel Session 09: Maternal and Child Health

### PA09:01: Scaling-up an evidence-based intervention for improving maternal and child health in Nepal

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**Background:** In spite of significant progress in improving maternal health, Nepal is one of the countries in South-East Asia where maternal mortality, 281 per 100,000 live births, is still unacceptably high. Similarly, neonatal mortality is stagnated at 33 per 1000 live births. Evidence-based policy formulation and implementation based on community initiated approach is needed to achieve sustainability of health activities. This should address socio-cultural, geographical, climatic, language diversity. The health policy and plans should infer according to changed scenario of demography, disease patterns, health issues, migrations, accessibility, etc. In this context, this study offers evidence for promoting maternal and child health in semi-urban areas of Nepal. Women-centered and community-based interventions were implemented for four years in the intervention area. The targeted population was encouraged for making best use of existing services, both from government and NGOs. The intervention included mother group education, social mobilization and support to outreach clinics.

**Materials and Methods:** A controlled-before and-after study was designed to measure the changes towards uptake of maternal and child health services. Three surveys were conducted at baseline (2008), midline (2010) and final (2012). In total 1,236 women of childbearing age, with their last child ( $\leq$ two years), were interviewed both from intervention and comparison area.

**Results:** The proportion of women who sought antenatal care at least once during their last pregnancy increased from 88.7% to 98.0% (OR=4.08, [95% CI 1.14-14.62]  $p < 0.05$ ). In addition, a greater proportion of women reported taking iron/folic acid during pregnancy 79.3% to 96.0% (OR=2.76 95% CI 1.01-7.56],  $p < 0.05$ ) as well as seeking postnatal care 73.8% to 85.9% (OR=2.01 [95% CI 0.98-4.10],  $p < 0.05$ ). Changes were also observed on essential newborn care practices and women's decision making for health care.

**Conclusion:** This evaluation showed a greater impact on the uptake of services during pregnancy, delivery and post-partum period including essential newborn care. Behaviour change is considered as a sustainable approach; however affected by several confounding factors. The approach is suggestive to expand in other settings and context and to incorporate into a national strategy for promoting health.

### PA09:02: Four ANC check-ups and Institutional Delivery in Nepal: The need for Small Area Estimates

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**Background:** In Nepal Health Sector Programme (NHSP)-2 the strategic focus of maternal health is on supporting the delivery of quality and integrated Maternal, Newborn, and Child Health (MNCH) services, and, in particular, reaching the underserved. The key activities to achieve this within NHSP-2 include: improving and expanding Emergency Obstetric and Neonatal Care (CEONC) services, ensuring all health posts as birthing centres, and increasing the accessibility of SBA services in remote locations and for the underserved.

**Materials and methods:** This small area estimates (SAE) technique was used to take advantage of the existing correlation between a set of common variables in the 2011 NDHS and the 2011 Population Census (age, number of children, urban/rural residence, education, water and sanitation, etc.) to predict values for four ANC and Institutional Delivery at the district level using regression models- backward elimination.

The coefficients for the regression model are obtained from the 2011 NDHS where data for institutional delivery available and applied to the 2011 Census Data to predict institutional delivery rate at the district level.

**Results:** study revealed high rate of four ANC coverage (>70%) in five districts, however the lower coverage (<48%) in 23 districts (Figure 1). Similarly, study found the high rate of institutional delivery (>60%) in 17 districts and lower rate (<37%) in 16 districts of Nepal (Figure 2).

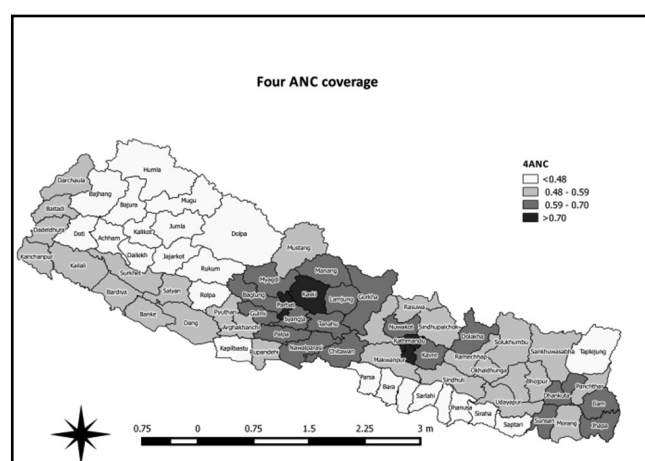


Fig 1: four ANC coverage district wise

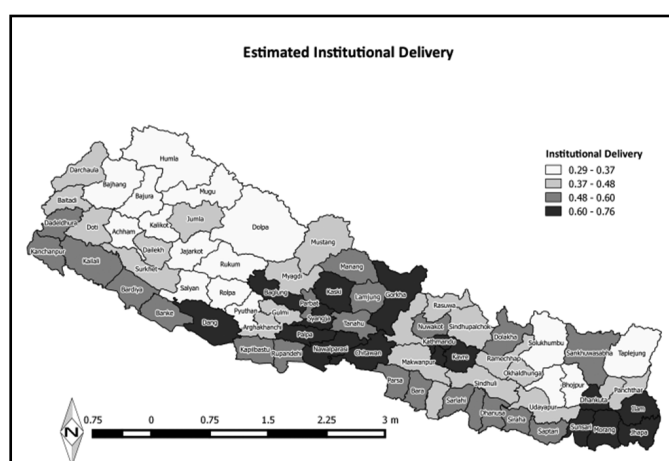


Fig 2: Institutional delivery rate district wise

**Conclusion:** The likelihood of having four ANC check-ups and having institutional delivery was more common among those resides in eastern terai, Kathmandu valley and western region. Those residing in mid-western hill and mountain districts, far-western hill and mountain districts and central terai districts were less likely received their four ANC check-up and institutional, compared other terai or hill districts.

**PA09:03: Paternal factors are associated in access to institutional delivery utilization in Nepal**

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**Background:** Nepal has achieved the target in dropping maternal mortality in the last years. Previous findings however specify that great variations exist among different part of the population. Male are the key

decision makers to increase the utilization of institutional delivery in developing countries. We have examined utilization of institutional delivery among Nepalese women in relation to social determinants with the aim to assess the associated paternal factors in access to institutional delivery utilization.

**Methods:** Data on institutional delivery utilization were resulting from a cross-sectional survey using multistage-cluster sampling among 2178 male in Kathmandu in 2010. Factor analysis was performed to get the male involvement factor. Institutional delivery utilization and associated paternal factor were depicted with path model through structural equation modeling (SEM). Overall goodness of fit of model was based on Root Mean Squared Error of Approximation (RMSEA), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI) and likelihood ratio of chi-square. Overall stability of the model and Wald test to establish for joint cause were analyzed.

**Results:** Low (39.9%) in institutional delivery care utilization endures in this study. Male involvement, income, education, number of children, and age were all significantly associated with institutional delivery utilization, independently and in synergy. Albeit all included structural determinants were closely related to each other or can cause jointly to utilization for institutional delivery. Analysis revealed a significant effect of income and male involvement in institutional delivery utilization with other determinants.

**Conclusions:** Age, income, number of children, education of the husband are common factors for the utilization of institutional delivery to their wife. Male involvement is crucial in maternal health service. More structured way to target unlike segments of the population, enchanting synergy effects among several social determinants into deliberations, are required in order to guarantee maternal health service for all Nepalese women.

#### **PA09:04: Predictors of incompleteness of immunization among the children residing in the slums of Kathmandu valley**

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**Background:** Around two-thirds of early child deaths are attributed to vaccine preventable diseases. In Nepal, as in most developing countries, infants are immunized with standard WHO recommended vaccines. However, 16.4% of children had not received complete immunization by 12 months of age. Study from different parts of the world revealed that partial immunization is even higher in slums. The objective of this study was to identify the predictors of incompleteness of immunization among children aged 12-23 months in slums of Kathmandu valley.

**Materials and Methods:** Unmatched case control study was conducted in randomly selected 22 slums of Kathmandu Valley. Sampling frame was first identified by screening, from which 59 incompletely immunized children as cases and 177 completely immunized children as controls were chosen randomly in 1:3 ratio. Data were collected with primary care-taker of the child using screening questionnaire (adapted from Nepal Demographic Health Survey 2011 and Immunization Coverage Cluster Survey-Reference Manual) and pre-tested structured questionnaire. Backward logistic regression with adjusted odds ratio (AOR) and 95% confidence interval was performed to identify the independent predictors.

**Result:** Twenty six percent of the children were incompletely vaccinated while 15.27% who received BCG were not vaccinated against measles. The significant predictors of incomplete immunization were teenage primary care-taker (AOR=4.10), those living on rent (AOR=2.69), primary care-taker with poor knowledge on benefit (AOR=10.21) and schedule (AOR= 3.67) of vaccination and negative perception towards vaccinating sick child (AOR=4.99), delayed vaccine schedule (AOR=29.40) and lost immunization card (AOR=4.87).

Birth in health institution was found to be protective factor (AOR=0.24).

**Conclusion:** Incompletion of immunization by 12 months of age is significant among the children in the slums. It should be addressed by increasing awareness about immunization and retention of card through educational and communication channels focusing especially among teenage care-takers and those living on rent.

**PA09:05: Choices, shift and continuation of temporary contraceptive methods among women of reproductive age in western development region, Nepal**

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**Background:** Global family planning programs have been in existence in the developing world. Modern techniques of temporary contraceptives have been proved to be useful tool for limiting births. This study is intended to identify the contraceptive use pattern, associated factors with the choice, shift and continuity of temporary methods of contraception.

**Materials and Methods:** This is population based descriptive cross-sectional study, incorporating qualitative aspects. Out of sixteen districts six were selected proportionately by using simple random methods from each ecological zone of the Western Development Regions, Nepal. Focus group discussion was accomplished among the different level family planning service providers and stakeholders.

**Results:** User of Depo-Provera and pills were seen more in comparison to other temporary contraceptive. The most commonly liked method of female contraceptive were Pills and Depo-Provera followed by Norplant and Copper-T. Reasons behind choosing of temporary contraceptive method were; Pills make regularity in menstruation, Norplant is useful for seven years, Depo-Provera is useful for three months and confidently used for a long time without any risk up to three months, easy to use, good for our body, motivated by friends and relatives, friends were using these without risk. Reasons in changing the contraceptive were; due to side effects, lack of availability, irregularity in menstruation, for choosing the best method, due to excessive bleeding, difficult to use, by the force of family and husband for birth, due to migration of husband, difficult to visit health centre, headache, not needed and family stress.

**Conclusions:** Depo was used by majority of reproductive age group of married women. For proper choice; promotion and education of modern contraceptive method is needed. There is a need for continuous enlightenment on contraceptives focusing particularly on the side effects and health care providers should be trained.

**Key Words:** Nepal, Contraceptives Depo, Pills Norplant



### Parallel Session 10: NCDs Risk Factors

#### PA10:01: Smoking susceptibility and intention to smoke among secondary school adolescents in Nepal

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**Background:** Smoking Susceptibility (SS) and Intention to Smoke (IS) are important to early stages of smoking career of adolescents. Several studies reveal that psychosocial factors play crucial roles in prevention of smoking initiation among adolescents. This study utilized the Global Youth Tobacco Survey (GYTS) 2011 data of Nepal with the main aim to correlate risk factors associated with SS and IS.

**Methods:** Nationally representative data on 2,878 school going Nepalese adolescents were collected through GYTS 2011 using two-stage cluster sampling. An anonymous and self-administered questionnaire was used to collect information on smoking related variables. We applied step-wise modeling of binary logistic regression to examine relationship between risk factors (background, environmental, motivating and programmatic variables) and SS and IS. Data were presented with adjusted odds ratios (AOR) and 95% confidence interval (CI). The level of significance (alpha) was set at 0.05.

**Results:** The prevalence of SS and IS was 27.24% (95% CI: 25.7; 28.9) & 15.2% (13.9; 16.5) respectively. Factors found associated with respect to different variables were as follows: SS - sex (AOR: 1.52; 95% CI 1.22, 1.89), friend smoking (2.00; 1.59, 2.52), offered free cigarettes (1.72; 1.33, 2.23), parental smoking (1.36; 1.10, 1.67) and exposed to smoking in outdoor public places (1.41; 1.08, 1.85); IS - sex (1.71; 1.31, 2.25), friend smoking (1.48; 1.11, 1.97) and offered free cigarettes (1.55; 1.14, 2.11).

**Conclusion:** Smoking susceptibility and intention to smoke is prevalent in Nepalese school going adolescents. Different factors are responsible to become susceptible and intention to smoke. An understanding of the influencing factors of adolescents provides important insight for comprehensive school based tobacco intervention programs.

#### PA10:02: Tobacco history, financial burden of tobacco and out-of-pocket health expenditure among smokers admitted to a tertiary care center in eastern Nepal

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**Background:** In Nepal, households at all income levels spend a significant amount on health care. Annual health care costs are higher for smokers, and the burden of these costs falls on families. With this in mind, a study was designed to understand the financial burden of tobacco use and impact of out-of-pocket health expenditure on family of a smoker.

**Materials and Methods:** A descriptive study was conducted among fifty patients who were tobacco users and admitted in the internal medicine unit of BP Koirala Institute of Health Sciences, Dharan, Nepal

from September 2013 to February 2014. The information was collected through face to face interviews with the help of a semi structured questionnaire prepared from literature review and WHO global adult tobacco survey. Ethical approval was taken from Institutional Ethical Review Board and informed written consent was taken all the study participants. The data was analyzed using IBM SPSS Statistics Version 20.

**Results:** More than one fourth, (28.0%) of the patients were current daily smokers and a large chunk (94.3%) had positive past history of daily cigarette smoking. The patients spent about three percent of their annual per capita income on tobacco and its products. Productivity losses of hospitalized smoker was for about ten days while the educational losses for children due to parent's illness was more than five days. A staggering 40 percent experienced catastrophic health care expenditure and on an average, a hospitalized smoker spent \$ 572.15 on a single episode of hospitalization and this amount was more than the average annual per capita income of hospitalized smokers.

**Conclusions:** There is a need to educate people regarding the economic ill effects of tobacco consumption. We need to develop affordable and accessible health financing schemes which will protect people from financial risks and catastrophic health care expenditure in the future.

**Key Words:** Health Expenditure, Tobacco

### **PA10:03: Tobacco use during pregnancy and its associated factors in a mountain district of eastern Nepal**

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**Background:** Overall prevalence of global tobacco use among men is declining slowly while use of tobacco among women is increasing rapidly and women from developing countries are at a higher risk. Tobacco using practice among women was more prevalent in Nepal as compared to other South-East Asian countries. Not only women health is affected but rather womb foetus health also deteriorate by using tobacco products while pregnancy. Currently, little is known about the tobacco use among women especially during pregnancy in Nepal. This study explored the tobacco use prevalence and its associated factors during pregnancy.

**Materials and methods:** A cross-sectional questionnaire survey was conducted in Sankhuwasava, a mountain district of eastern Nepal. Representative sample of 436 reproductive aged infant mothers were selected by stratified simple random sampling from September 2013 - February 2014. Data was collected by house to house survey. Data were analyzed with SPSS 16 version. The variables which were significant in the Chi-square test were further analyzed by using Binary logistic regression.

**Results:** The study revealed that the prevalence of tobacco use during pregnancy was 17.2 percent. Only one fifth of the respondents were asked for quit tobacco by health workers during last pregnancy. Multivariable analysis showed that tobacco use was associated with respondent education status, number of child, use of alcohol during pregnancy and respondent having tobacco user within family.

**Conclusion:** Tobacco-focused interventions are required for antenatal women to promote cessation among user and prevent initiation with focus on illiterates, high parity, alcohol user and women with tobacco user family member(s).

#### **PA10:04: Workplace interventions for reducing sitting at work**

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**Introduction:** The number of people working whilst seated at a desk keeps increasing worldwide. This has contributed to increased cardiovascular disease, obesity and diabetes. Therefore, reducing and breaking up time that people spend sitting while at work is important for health. The main objective of this study is to evaluate the effects of workplace interventions to reduce sitting at work compared to no intervention or alternative interventions.

**Methods:** We conducted electronic searches of MEDLINE, CENTRAL, CINAHL, OSH UPDATE, Embase, PsycINFO, Clinical trials.gov and WHO search trial portal. We included RCTs, cluster-RCTs, quasi-randomised controlled trials and controlled before-and-after studies. Two review authors independently screened studies for eligibility and completed data extraction and risk of bias assessment.

**Results:** We found very low quality evidence based on three studies (105 participants) that introduction of sit-stand desks reduced workplace sitting. When combined with information and counselling, sit-stand desks decreased sitting at work on average by 113 minutes per eight-hour workday. Introducing walking strategies had no considerable effect. One study found that guideline-based counselling by occupational physicians reduced sitting time at work by 28 minutes. However reduction in total sitting time was non-significant. There was an inconsistent effect of computer prompting on workplace sitting. One study reported a non-significant decrease of 18 minutes per work day at 10 days' follow-up and another study reported a significant reduction of 55 minutes per day at three months' follow-up. Mindfulness training induced a non-significant reduction in workplace sitting time at both six and 12 months' follow-up.

**Conclusions:** There is very low quality evidence that sit-stand desks can reduce sitting time at work but the effects of policy changes and information and counselling are inconsistent. There are many ongoing trials and this might change these conclusions in the near future.

#### **PA10:05: Demand and access to mental health services: A qualitative formative study in Nepal**

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**Background:** Nepal is experiencing a significant 'treatment gap' in mental health care. People with mental disorders do not always receive appropriate treatment due to a range of structural and individual issues, including stigma and poverty. This study aims to inform the development of a comprehensive mental health

care plan by investigating the perceptions of stakeholders at different levels of the care system in the district of Chitwan Nepal. It focuses specifically on issues of demand and access to care, and aims to identify barriers and potential solutions for reaching people with priority mental disorders.

**Materials and Methods:** This qualitative study consisted of key informant interviews (33) and focus group discussions (83 participants in 9 groups) at community and health facility levels. Data were analyzed using a framework analysis approach.

**Results:** As well as pragmatic barriers at the health facility level, mental health stigma and certain cultural norms were found to reduce access and demand for services. Respondents perceived the lack of awareness about mental health problems to be a major problem underlying this, even among those with high levels of education or status. They proposed strategies to improve awareness, such as channeling education through trusted and respected community figures, and responding to the need for openness or privacy in educational programmes, depending on the issue at hand. Adapting to local perceptions of stigmatized treatments emerged as another key strategy to improve demand.

**Conclusions:** This study identifies barriers to accessing care in Nepal that reach beyond the health facility and into the social fabric of the community. Stakeholders in PRIME's (Program for Improving Mental Health Care) integrated care plan advocate strategic awareness raising initiatives to improve the reach of integrated services in this low-income setting.

## Poster Presentation

### 1. A study on epidemiological profile of dengue cases in eastern Nepal

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**Background:** Dengue has emerged as an important global public health problem. Nepal had major outbreak in 2006, 2010 and 2012. The clinical features of Dengue are confused with other viral illness. The definite treatment and a licensed vaccine for Dengue are not yet available. The objectives of this study were to explore the epidemiological profile of Dengue cases in Eastern Nepal.

**Materials and Methods:** A case-control study was conducted in May 2013 to April 2014 in Jhapa district after outbreak. This is the part original research on factors associated with the spread of Dengue fever in eastern Nepal. Data was collected using questionnaire, observations and reviews of the case management documents.

**Results:** The days of illness varies from 5-30 days with a mean of 13.13 days. Thirty-four percent were treated on OPD while 1.43% cases were admitted for maximum of 11 days. Only 14% of them attended BPKIHS which is tertiary referral center of eastern Nepal. All cases had fever with maximum temperature of 105F, followed by headache (97.1%), myalgia (95.7%), anorexia (90%), arthralgia (84%), and retro-orbital pain (77%). The other common clinical features were pallor, cough, conjunctivitis and hemorrhagic manifestations. Almost 59% were diagnosed by NS1. Twenty-one percent of cases had a platelet count within normal range, 56 % had in the range of 100000 to 150000, 21% had in the range of 50000 to 100000 and 1 case had 32000. The range for direct cost was 500 to 115000 and for indirect cost was 0 to 25000.

**Conclusion:** The days of illness and hospital stay were varied and most common clinical features were fever, headache, myalgia etc. NS1 was major test for diagnosis and majority of them had platelet count below the normal range. Cost of management also varied from very few amounts to more than a lakh.

### 2. Problems faced by antiretroviral (arv) drug users in Kathmandu valley

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**Background:** Antiretroviral Therapy (ART) offers an opportunity to improve the prognosis and quality of life of People Living with HIV/AIDS. However, inability to achieve adherence even after three decades of antiretroviral drug introduction in Nepal is a matter of concern. Some efforts are to be applied in order to lend a hand to identify and minimize these problems. This study aims to assess the problems faced by antiretroviral drug users attending ART centers of Kathmandu.

**Materials and Methods:** A descriptive study was carried out in Sukraraj Tropical and Infectious Disease Control Hospital, Teku and Bir Hospital in 2071. Non-probability convenience sampling technique was used to recruit 82 sample respondents. Semi-structured questionnaire was used for conducting the interview.

**Results:** The overall problems faced by antiretroviral drug users include side-effects due to therapy (65.9%), long waiting time (24.4%), unsatisfactory service (4.9%), geographical barrier (68.3%), financial barrier (25.6%), etc. Few were turned off from social/religious (70.7%) and recreational activities (51.2%). Absence of disclosure of diseased status (14.6%), lack of spousal support (10.9%), humiliation (34.1%), etc. were also present among the respondents. Stigmatization materializes as having to lose job (8.5%), feeling of ashamed

(30.5%), feeling of isolation in groups (34.1%), etc. Adherence towards medicine was found to be 86.5%.

**Conclusion:** ART is a long term process and to achieve it rationally, a user has to cope with lots of problems, associated not only with own physical health but also with outcomes of psychosocial brutality because of stigma and discrimination. Further worsening of the situation is due to financial constraints. Identification and analysis of those problems is the only key to address them reasonably. Policy making, planning and delivery of services seek improvement in various steps. Awareness is another demand to end psychosocial discrimination to the ART users.

**Acknowledgement:** I acknowledge Ms. Jyoti Karki, the ex-student of Post Basic Bachelor Nursing Programme, Nepalese Army Institute of Health Sciences-College of Nursing, on behalf of whom I am going to present the research paper. My sincere thanks goes to the antiretroviral drug users who agreed to be interviewed without hesitation. I am deeply thankful to the NHRC for providing research grant to my student.

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### 3. Adolescents' opinions about cigarette smoking: a qualitative study in peri-urban area of Bhaktapur District, Nepal

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#### ABSTRACT

**Background:** Several theories and studies have described why and how psychosocial factors associate with smoking initiation among adolescents. In low-income settings like Nepal, most studies related to tobacco control are quantitative and focused on the prevalence of tobacco consumption. However, qualitative data exploring the possible impact of psychosocial factors on smoking initiation in Nepalese adolescents are scarce. Therefore, this study was carried out to explore the factors that may influence initiation of cigarette smoking among Nepalese adolescents.

**Materials and Methods:** We used content analysis process to assess eight focus group discussions conducted in April–May 2013 in the Jhaukhel-Duwakot Health Demographic Surveillance Site in the Bhaktapur district of Nepal. Our study included 71 adolescents after saturation from grades 8-10 at four secondary schools, including 36 girls aged 13–16 years.

**Results:** After extensive analysis process, four themes with categories and subcategories were emerged. The main results were followed: (i) knowledge about smoking: long and short-term risks, and addiction risks; (ii) belief and functional meanings of smoking: peer pressure, curiosity, discourteous behavior of teachers, and academic performance; (iii) skills to discourage smoking: refuse to smoke and resist peer pressure; (iv) vulnerable environments: convenience access to cigarettes, ineffective rules and regulation, exposure to network of smoking. Adolescents found experienced with long-term consequences to smoking but not for short-term consequences. Most of adolescents were in favor of strict rules that if it endorsed by school or government.

**Conclusion:** Our results suggest that psychosocial factors influence adolescent to initiate smoking. Curbing the tobacco epidemic needs a multi-faceted intervention that combines several psychosocial factors linked with smoking, and focus on preventing and controlling cigarette smoking among adolescents.

#### 4. Practice related to pesticide use and health hazards amongst pesticides user farmers in Gotikhel, Lalitpur

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#### ABSTRACT

**Background:** Pesticides are widely used throughout the world, especially in agriculture production. It has created minor to severe health hazards and developing as a major public health problems worldwide. Farmers use pesticides without full understanding of its health impact on human health and the environment. This study was conducted to identify the health hazards and protective practice during pesticide use among pesticide user farmers in Gotikhel, Lalitpur district of Nepal.

**Methods:** A cross sectional descriptive design, using semi-structured interview, was conducted among randomly selected 190 pesticide user farmers in Gotikhel, Lalitpur district of Nepal. The sample size was calculated by using stats 2.0 considering 5% absolute error and 95% CI level. Data was collected by interview techniques using pretested questionnaire. Data was entered in Epi-data and analyzed from SPSS.

**Results:** Out of 190 participants, most of the respondents (95.8%) had good practice and 4.5% had poor practice with respect to pesticides uses. Most of the participants use personal protective equipment. Most of the respondents (58.9%) read the label in bottles or package before application of pesticides in the field. Most of the pesticide users avoided eating, drinking or smoking while dealing with pesticides but majority (69.5%) of them had unsafe disposal practice. Although, more than half (57.4%) of the participants stored the pesticides in specific store for safer use in their farmland, only 3.2% of the total vegetable growers were trained in safe handling of pesticides. 23.5% respondents felt headache and dizziness due to application of pesticides in their field.

**Conclusions:** Most of the respondents were found to be felt their health being affected by pesticide use. Most of them have been observing multiple symptoms. Only (3.2%) of the participants received basic training

on safe handling. Thus, pesticide user farmers should be trained with essential skills through appropriate training and skill based programs. As the disposal practice, among most of the respondents, was unsafe; relevant authorities should show their concern to this issue as such unsafe disposal practice may be detrimental to others as well as to the environment.

**Key words:** pesticide, Practice, health hazards, Gotikhel VDC

### 5. Prevalence and antibiotic susceptibility test of *staphylococcus aureus* isolated from skin and soft tissue infection

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**Background:** *S. aureus*, being the major cause of mortality and morbidity have been growing burden on health care systems. This study was designed to determine prevalence of *S. aureus* including methicillin resistant *S. aureus* (MRSA) isolates in skin and soft tissue infections (SSTIs) along with their phenotypic characterization.

**Materials and Methods:** This study was carried out from February to October, 2014 at Shree Birendra hospital, Chhauni. *S. aureus* were isolated and identified following standard microbiological method. Antibacterial susceptibility test was performed by disk diffusion, for oxacillin and vancomycin minimum inhibitory concentration by broth micro dilution method and for vancomycin E-test strips. D test was performed to determine inducible macrolide-lincosamide-streptogramin-B (MLS<sub>B</sub>) resistance.

**Results:** Of 108 *S. aureus* isolates were analyzed, 40.7% were MRSA which comprised 22.73% of homogeneous MRSA and 77.27% of heterogeneous MRSA. Seventy percent of homogeneous MRSA were from inpatients and 30% were from outpatients. Of the 44 MRSA isolates, 11 were non-multiresistant oxacillin resistant *S. aureus* (NORSA), defined as being resistant to two or fewer antibiotics other than beta-lactams. Thirty-three were multiresistant oxacillin resistant *S. aureus* (MORSA) strains. D test showed that inducible MLS<sub>B</sub> resistance was 14.8%. Resistance to clindamycin and erythromycin were not associated with MRSA ( $p > 0.05$ ).

**Conclusions:** MRSA infections are still one of the most threatening infections in the hospitals. Therefore, regular surveillance of MRSA must be carried out in all hospital settings. D tests should be made mandatory in all *S. aureus* isolates as inducible MLS<sub>B</sub> resistance cannot be detected in routine susceptibility test unless erythromycin and clindamycin are placed 15-26 mm apart.

### 6. Does domestic violence matters use of family planning service in Nepal?

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**Background:** Violence Against Women (VAW) is increasingly recognized as a public health threat and a serious social problem. Empirical evidence provides the association of Domestic Violence Against Women (DVAW) and Family Planning (FP) outcomes. In the situation of stagnated FP in Nepal, it is necessary to evaluate the FP outcome, which is used to derive an appropriate policy intervention to promote FP service in Nepal. So, this research examines the relationship between DVWA and use of FP service in Nepal.

**Methodology:** This analysis is based on Nepal Demographic Health Survey (NDHS) 2011 data which collected the information of VAW in Nepal. The analysis is based on descriptive as well as multiple logistic regression models which determine the relationship between different types of DVAW and use of FP services.



**Results:** The descriptive statistics shows that there is a difference pattern of users of FP services for each category of DVAV. The logistic regression models shows that the net effects of DVAV on the use of FP services are statistically significant. Models also show that the use of FP services is significantly and negatively associated with DVAV, after controlling for other relevant factors. The regression coefficient for physical and sexual violence is -0.421 and highly significant ( $p=0.00$ ), which means that women subject to physical and sexual violence are less likely to use FP services holding constant all other variables included in the model.

**Conclusions:** The result show there is a strong negative relationship between DVAV and use of FP services. By gaining a greater understanding of this relationship, national and local efforts can more effectively address women's risk of violence and promotion of health services to improve their health and welfare. DVAV matters FP service in Nepal so it is argues for greater attention to DVAV to promote FP service in Nepal.

Key Words: DVAV, FP, Gender Based Violence, Nepal

## 7. Detection of parasites from the school going children under fifteen year's age of Lalitpur district, Nepal

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### Background

Intestinal parasitosis still constitutes one of the major causes of public health problems in the world, particularly in developing countries like Nepal. School-age children are particularly susceptible to parasitosis, often carrying higher burdens of parasites than adults. The greatest obstacle to effective control of parasites in at-risk populations is inadequate knowledge of the geographical distribution of infection and the demographic variables that influence the prevalence of infection<sup>1</sup>.

### Methodology

The study was conducted at Kantipur College of Medical Sciences and samples were collected from different schools of Lalitpur district from September 2012 to February 2013. A total of 409 samples were collected from five different government school of the Lalitpur valley with or without the symptoms of diarrhea. All the collected stool samples were transported to the laboratory by maintaining cold chain and upon arrival samples were processed according to the standard guide line.

### Result and Discussion

Of them 112 (27.38%) sample were positive for intestinal parasites. Of them parasites were seen to be higher in male (28.6%) ( $P<0.05$ ) and highest number of protozoans infestation (23.96%) were seen than helminthic infestation (3.4%). The formal-ether concentration technique yielded 112 (45.44%) samples positive for intestinal parasites whilst 109 (42.8%) were positive in the unconcentrated stool. Of them, 103 cases were i.e. of (25.1%) as single infection and 9 (2.2%) as mixed infections. The commonest intestinal parasite found was *Giardia lamblia* (40.1%) followed by *Entamoeba histolytica* (30.35), *Blastocystis hominis* (7.1%), *Cryptosporidium parvum* (6.2%), *Hymenolepis nana* (4.4%) where as the *Ascaris lumbricoides* and *Trichuris trichiura*, were found in same number holding (3.5%), similarly *Cyclospora cayetanensis* (2.6%) and *Strongyloides stercoralis* and *Entamoeba coli* holding (0.89%). The study also showed that there was mixed infection between protozoa and protozoa (5%) and protozoa and helminth (7.6%). The distribution of parasites was found to be highest in age group 6-10 yrs (33.3%). On the basis of drinking water and food habit the

highest prevalence of enteroparasites was seen in filter water user i.e. 30.4% and children whom consume vegetarian food i.e. 61.6% (69 out of 112). After treatment with antiprotozoal and antihelminthic drugs to the positive child on follow up after two months 5% cases were positive after treated with metronidazole for protozoans and 7.6% cases were positive for helminth after abendazole treatment.

### Conclusion

The study reveals the highest prevalence of intestinal parasitosis among school going children and highlight the need of prompt diagnosis and preventive actions should be taken by the government.

### Keywords

Intestinal parasitosis, school children, antiprotozoal drugs, antihelminthic drugs, Lalitpur, Nepal

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## 8. Domestic violence during pregnancy among women attending antenatal care clinic at tertiary level health care facility

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**Background:** Domestic violence during pregnancy is a public health problem which violates the human rights and causes an adverse effect to both maternal and foetal health. The objective of this study was to assess the proportion of domestic violence among women attending antenatal care clinic in a tertiary level health care facility, to explore the risk factors and to identify help seeking practices among the victim of domestic violence during current pregnancy.

**Methodology:** A descriptive cross sectional study was conducted using mixed method among 404 purposively selected pregnant women in third trimester. Pretested semi-structured questionnaire and in-depth interview guideline were used. Violence was assessed using questionnaire adapted from WHO Multi-country Study on Women's Health and Life Experiences. Relationship between domestic violence and the various factors was determined using binary and multiple logistic regressions with odds ratio and 95% confidence interval.

**Results:** More than one fourth (27.2%) of the pregnant women had experienced some form of violence. The most common form of violence was sexual violence (17.3%), followed by psychological violence (16.6%) and physical violence (3.2%). Husband was the main perpetrator in all types of violence. More than half (58.2%) of the victim of psychological violence shared their experiences whereas physical and sexual violence were shared by 30.8% and 10% of the victims respectively. Husband of age group 25-34 years (Adjusted Odds Ratio (AOR) =0.384), women married for 2-5 years (AOR=0.423), having one or two children (AOR= 0.316) were negatively associated with domestic violence whereas presence of husband's controlling behavior (AOR=1.880) and experience of violence before the current pregnancy (AOR=24.551) had increased odds of violence during pregnancy.

**Conclusions:** Domestic violence is common among pregnant women attending antenatal clinic indicating a need of routine screening during antenatal visit to identify and support victims thereby preventing them from adverse health consequences.

### 9. Prevalence and factors associated to sexual harassment among adolescent girls aged 15-19 years at N. R. Multiple College, Balaju, Nepal Tar, Kathmandu

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**Background:** Though many researches has been carried out within or outside the country regarding the prevalence and factors associated to sexual harassment at workplaces, transportation but still on adolescent girls researches carried out are insufficient. So, this study was carried out to know about the prevalence and factors associated to sexual harassment among adolescent girls so that the information obtained after research can be used to reduce sexual harassment and improve the health status of adolescent girls by designing and implementing the programme.

**Materials and Methods:** An institutional based cross-sectional study was carried out among 200 adolescent girls aged 15-19 years in 10+2 wing of N.R. Multiple College, Balaju, Nepal Tar, and Kathmandu. The simple random sampling technique was used and the samples were selected by the lottery method. The data collection technique and tool was self-administered semi-structured questionnaire and data was entered and analyzed into Statistical Package for Social Sciences (SPSS) version 16.

**Results:** Out of 200 respondents, 97.5 % faced some forms of sexual harassment either recently (within six months) or/and any time during their life (ever faced in life). Among various forms of sexual harassment the most common form was verbal harassment (96.4 %) followed by non-verbal (95.4 %) with least occurrence of physical harassment (72.8 %). Mostly the perpetrators were of 15-34 years age category and were literate having education up to Bachelor level. The age of the adolescent girls (middle vs. late aged adolescents) and prevalence of verbal harassment was shown to be significant ( $p=0.016$ ). Similarly, the significant association ( $p$ -value =0.014 and 0.000) was found between own house and market with the prevalence of physical harassment respectively.

**Conclusion:** More than nine out of ten respondents faced some forms of sexual harassment. Therefore, awareness program should be launched massively at mass level to protect them from perpetrators.

**Acknowledgement:** The author would like to thank University Grant Commission (UGC) Nepal for providing the mini-research grant to conduct this study.

### 10. Clients' perspectives on the quality of maternal and neonatal care in Banke, Nepal

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**Background:** Maternal and neonatal health is a crucial issue on public health and the morbidity and mortality rates related to safe motherhood remains challenging in Nepal. This study aimed to explore

expectations of mothers concerning maternal and neonatal care from the local health care facilities; to find out prevailing problems and suggestions for corrective measures for potential problems encountered.

**Materials and Methods:** Both Qualitative and quantitative study was conducted comprising 24 mothers from three Primary Health Care Centers (PHCCs), Eight Health Posts (HP) and eight Sub-Health Posts (SHP) of Banke district Nepal. The respondents were selected using the purposive sampling techniques and a thematic analysis was employed. The SPSS-16 statistical software was used to analyze the data collected in 2010.

**Results:** The majority of mothers agreed Auxiliary Nurses Midwives (ANM) having adequate maternal and neonatal knowledge and being able to properly use safe delivery kits. But less than half of the mothers had proper understanding about the primary health care outreach clinic services, similarly eight (33%) of the mothers preferred institution delivery. Mothers emphasized the importance to improve the quality of maternal and neonatal health care through the process of timely services(54%), provision of cost-effective medicines (54%), separate delivery room(71%), adequate staff and accountability of staff (58%), provision of transportation(42%), need to be responsive in their behaviour (46%), and need for support from the local government(29%).

**Conclusions:** To react to these experiences and to address these expectations, there should be effective communication system between ANMs and mothers about the service but also provision of adequate resources, establishing credibility, good monitoring, and supervision system. Health policy and guideline implementation should be enhanced also at the local service level.

**Key words:** Client perspective, satisfaction, maternal care, quality of care, Nepal.

### **11. Knowledge, attitude & practice of family planning methods among married women of reproductive age of Kakani VDC, Nuwakot**

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**Background:** CPR of Nuwakot district is less than that of National level. The Objectives of the study was to assess the knowledge, attitude and practice on family planning methods among married women of Kakani VDC.

**Methods:** Descriptive cross-sectional study design was used. Likewise, PPS sampling procedure was done for sample size calculation. Similarly, simple random sampling was done for the selection of 109 respondents. Structured questionnaires and interview technique was used to obtain necessary information. Data was entered and analysed through SPSS, and computed mean, standard deviation, tables, cross tabulation and chi - square.

**Results:** More than one fifth of the respondents (23.9%) were of age group 28-32 years and more than half of the respondents (51.4%) had marriage at the age of 15-19 years. Similarly two third of the respondents (70.6%) had followed Hindu religion, and majority of them (63.3%) were literate whereas 36.7% were illiterate. Almost all women (93.6%) had reported that Family planning is used to maintain small family. Likewise, Depo-Provera was the device known by all respondents and Implant was the least known (71.6%) device. However, more than half (56.9%) MWRAs had good knowledge on family planning. Similarly, more than half (51.38%) of respondents were currently using family planning devices and among them more than one third had (37.50%) used Oral Pills. Furthermore, attitude towards family planning was positive in most of the MWRAs.

**Conclusion:** The study population had good knowledge and positive attitude towards family Planning devices; however the use of family planning devices was low. It was mainly due to husband being abroad and side effects of the devices.

## 12. Community-based study of home injury risk assessment in rural Nepal

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**Background:** Globally, injuries are among the leading causes of death and disability among the children with the greatest impact on those living in Low and Middle Income Countries (LMICs). Unintentional home injuries in developing countries are a major public health problem, accounting for approximately a third of all injuries. However, there is a lack of studies specially focusing on physical environmental associated with child injury in LMICs.

**Materials and Methods:** A community based cross-sectional study is planned with the objective to explore the environmental risks associated with unintentional injuries among children aged 0-59 months in Makwanpur district of Nepal and also to explore the potential for environmental change at a community level to prevent injury occurrence. This study will collect both quantitative (household survey) and qualitative information (focus group discussion) in order to get the comprehensive understanding of the child injuries problem in Nepal. Information will be collected through a community-based household survey to identify household risks for child injuries and the focus groups for community views. In addition, systematic review will also conducted to summarize and appraise current published and unpublished evidence of the effectiveness of environmental change interventions to prevent unintentional child injury in LMICs.

**Results:** The major outcome of this research is to measure prevalence of home injury hazards for childhood injuries and the number of children in the household with an unintentional injury. In addition, the literature reviews will establish what risks have already been identified and whether interventions have been shown to be effective in the prevention of child injury.

**Conclusion:** These findings will be used to recommend culturally appropriate interventions for environmental behaviour change and strategies for future development and evaluation.

## 13. Antibiogram of *Staphylococcus aureus* Isolated From Different Clinical Samples From Tertiary Care Hospital, Kathmandu, Nepal

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**Background:** *Staphylococcus aureus*, especially Methicillin resistant *Staphylococcus aureus* (MRSA) and Vancomycin resistant *Staphylococcus aureus* (VRSA), is a major cause of nosocomial and community acquired infections. The emergence and spread of antimicrobial resistance constitutes a major risk for human health by limiting the success of these agents in the therapy. The most probable reason is the widespread use of antibiotics and often choosing an inappropriate drug. The widespread uses of antibiotics, together with the length of time over which they have been available, have led to major problems of resistant organisms contributing to morbidity and mortality. Prudent and rational use of antimicrobial is possible by forming local, national and global wide antibiogram. Knowledge of etiological agent and its sensitivities to available drugs is of immense value to the rational selection and use of antimicrobial agents and to the development of appropriate prescribing policies. Keeping all these facts in view, the present study was carried out at KMC Teaching Hospital, Kathmandu, Nepal to prepare local antibiogram of *Staphylococcus aureus* (*S. aureus*) isolated from different samples and to discuss general issues related to antimicrobials use.

**Methodology:** A retrospective study was conducted at KMC Teaching Hospital, from April to September 2014. Laboratory data were collected from hospital Microbiology Laboratory unit registration books,

Samples had been inoculated into agar medium, incubated for 24hrs and identified on the basis of colonial morphology, gram staining character and biochemical tests. Antibiotic sensitivity testing was carried out on Muller Hinton Medium by Disc Diffusion Method following Kirby Bauer method. Data were analyzed using SPSS version 20 software.

**Results:** Out of 847 samples processed, growth was seen in 247 samples. *S.aureus* was predominant isolate 88(73.9%) followed by *Klebsiella spp*(39.5%). 80.7% of *S. aureus* isolated from Pus sample. Our study revealed 64.7% of the *S.aureus* isolated were MRSA whereas 23.1% were VRSA. The rate of multi drug resistance (MDR) was 54.54% MRSA, 0% MSSA, 75% VRSA and 25% VSSA. 3.4% isolates were resistant to both Oxacillin and Vancomycin, among these 66.6% were MDR. *S. aureus* was most resistant to Amoxicillin(82.5%), Cotrimoxazole(58.7%); moderately resistant to Piperacillin/Tazobactem(50%), Ofloxacin(50%), linezoline(50%), and Azithromycin (48.1%); least resistant to Tetracycline (8.5%), Cloxacillin (11.3%), Gentamycin (12.5%), Ceftriaxone (18.8%) and Imipenem (20.0%). MRSA isolates showed high resistance to Amoxicillin (77.8%), and Erythromycin (63.3%) while VRSA Showed High resistance to Ciprofloxacin (70%), Amoxicillin and Linezolin (66.7% both) and showed full resistance to Ofloxacin.

**Conclusion:** The results of the study conducted demonstrated an alarming prevalence of MRSA and VRSA. Considering the antibiotic susceptibility testing, cost, side effects and many other factors; Tetracycline, Cloxacillin, Gentamicin, Ceftriaxone and Imipenem should be preferred drugs for *S. aureus* infection isolated from pus. Given the ability of MRSA to spread from person to person, it may cause serious medical issue hence importance of strict antibiotic policies, evidence-based empirical therapies and rigorous surveillance programs to prevent the further spread is essential.

#### 14. Reproductive health knowledge, attitude and health services utilization among adolescents in Kaski district of Nepal

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**Background:** The concern about adolescent on reproductive health has grown due to unprecedented increasing rates of early pregnancies and sexually transmitted Infections and they do not have adequate awareness and knowledge about it. Access to these services as well as information about them is therefore crucial for adolescents to utilize and benefit from sexual and reproductive health services. Objective of the study was to assess the reproductive health knowledge, attitude and health services utilization among adolescents in rural and urban areas of Kaski district.

**Materials and Methods:** A community based descriptive cross-sectional study was conducted among adolescents (10-19 years of age) in rural and urban areas of Kaski district, Nepal. The period of data collection was October to November, 2014. Altogether 419 participants were taken for the study.

**Results:** The mean age of the respondents was 15.86 and standard deviation was  $\pm 2.305$ . More than half (58.7 %) of the respondents were females and 41.3 % were males. Out of 419, majority (78.8%) of the respondents were known about family planning, among them only 70 % of respondents were aware about family planning methods. Fifty one percentages of the respondents were aware about the sexually transmitted diseases. Before giving a birth there is need to consult with partner with this fact 68.7 % of the respondents were agree, 23.6 % of the them were neutral and very few (7.6%) of them were disagree. Nearly twenty six percentage of the respondents were faced the reproductive health problems within one month. Out of 107

respondents, 57.9 % were did not utilize reproductive health services because of different reasons.

**Conclusions:** The overall level of knowledge towards reproductive health among adolescents was found low. However, levels of attitude towards different reproductive health components were found favorable. Only 42.1% of the respondents were utilized reproductive health services among those who was faced the reproductive health problems within one month which was low coverage of reproductive health services utilization.

### **15. Relationship between cognitive function impairment and social adjustment among head injury patients**

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**Background:** Traumatic brain injury or TBI is considered as one of the most serious worldwide public health problems that can lead to death and disability especially among male adolescents and young adults (15 - 24yrs), among elderly people (75 years and older) and Children (5yrs and younger) are at high risk for TBI.

**Objectives:** The objective was to study the relationship between cognitive function impairment and social adjustment among head injury cases.

**Methodology:** Descriptive and cross-sectional method was applied. The cognitive function of patient admitted in Tribhuvan University Teaching Hospital (TUTH) with diagnosis of head injury was tested with Mini-Mental State Examination (MMSE) scale for adult participants and Modified Mini-Mental State Examination scale for younger participants. Modified Social Adjustment Scale (SAS-M) was employed to study the level of social adjustment during their post-discharge follow-up.

**Results:** The study consists of 102 respondents, 70 (68.6%) males and 32 (31.4%) females receiving treatment as inpatients in TUTH. The largest numbers of respondents were young adults. Most of respondents 77 (75.5%) had mild and 5 (4.9%) had severe head injury. Where, 61 (60%) respondents had mild and 4 (3.9%) respondents had severe cognitive function impairment. The highest number of respondents diagnosed as Frontal lobe and occipital lobe injury was the lowest in number. Among mildly impaired, all mean social adjustment scores were slightly impaired than average and better than moderate and severe scored group. Furthermore, all mean social adjustment scores were slightly impaired than mild and better than severe group in moderately impaired group. Obviously, all mean social adjustment scores were at the range of poor social adjustment among severely impaired group; and affecting their role at work/school work, marital, parental and family units.

**Conclusions:** Higher the cognitive function impaired greater the social adjustment is affected.

### **16. Prevalence and risk factors associated with hypertension in adults living in Nasikstansanga VDC, Kavrepalanchowk**

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**Background:** Hypertension today, is regarded as major public health problem in both developed and developing countries. It is a one of the major causes of morbidity and mortality in modern times. There is very limited community based research being done on hypertension issues in Nepal. The main aim of this study was to assess the prevalence of hypertension and to identify risk factors associated with hypertension among adults living in NasiksthanSanga VDC, Kavrepalanchowk.

**Materials and Methods:** It was cross sectional study, conducted among adults aged 25 to 69. A sample of 329 participants aged 25-69 years were selected through systematic random sampling method. Blood pressure of respondents was measured twice and the mean of the two measurements was calculated and recorded. The participants' anthropometric measurement (height and weight) was taken excluding pregnant women and people under medication of hypertension. A pretested questionnaire was also used. Both bivariate and multivariate logistic regression analysis were done to identify the association of possible exploratory variables with hypertension. The study obtained ethical approval from Nepal Health Research Council.

**Results:** The analysis of the current research is ongoing with preliminary analysis showing high prevalence of hypertension. Majority of the respondents (69%) were found to be pre-hypertensive and hypertensive [41% Pre-hypertension (SP 120-139 or DP 80-89), followed by 20% with Stage 1 (SP 140-159 or DP 90-99) and 8.5 % with Stage 2 (SP 160 and above or DP 100 and above) hypertension]. Only about 31% were with normal and/or low hypertension.

Interesting aspect of the research was to identify the sample population in different stages of changes for three key risk factors of hypertension: tobacco use, alcohol intake and excess salt intake. For tobacco use and excess salt intake, majority of the population were found to be pre-contemplation stage thus emphasizing on need for awareness raising campaigns as per the Transtheoretical model. Interestingly, for alcohol intake, majority of the population were in contemplation stage indicating that people are aware of the ill effects of alcohol but there is lack of conducive/enabling environment which discourages the consumption of alcohol.

Currently the authors are conducting logistic regression analysis as well as qualitative information analysis. The authors will complete the analysis by January and share the findings in the Summit.

**Conclusion:** The preliminary analysis suggested that the situation of non-communicable diseases was rising in VDCs as well. The research will not only indicate various factors associated with hypertension in rural Nepal but will also provide evidences about segmenting the "at risk" population into various attitudinal segments. This has very important implications for evidence based health communication and promotion efforts and the research findings would definitely contribute to fulfill gaps in evidences for non-communicable disease prevention in Nepal.

## 17. Knowledge, attitudes and practices of avian influenza among poultry workers of Chitwan district

Binita Subedi

**Background:** Avian influenza is a considerable threat to global public health. Prevention and control depend on awareness and protective behaviors of the general population as well as high risk-groups. The main objective of the study is to determine the knowledge, attitudes and practices relating to avian influenza among poultry workers.

**Methods:** A descriptive cross-sectional study was adopted, study area were registered poultry farms of Chitwan district. Purposive sampling technique with structured interview questionnaire was used to collect the data. SPSS software was used for analysis.



**Results:** Most of the respondents don't know about the causative agents of avian influenza, 97% of the respondents have knowledge that avian influenza can be transmitted by eating uncooked meat whereas 47% have knowledge that poultry workers are at risk for transmission of AI. Literate respondents were more aware about causes of AI as well as trained respondents were more aware about causes of AI. Whereas Majority of the respondents agreed that AI is a preventable disease whereas almost all of the respondents knew that AI is a serious disease. Most of the respondents use outer garments for the protection of AI whereas only 6% of the respondents use eye protection measures. Notifying DLSO in case of sick and dead poultry is a common norm. Treatment and burial were common in case of sick and dead poultry.

**Conclusion:** Knowledge regarding causes in relation to AI was found to be very poor while knowledge regarding modes of transmission and signs and symptoms was found satisfactory. The prevailing practices regarding use of PPE and bio-security were found relatively lacking. Transmission of AI from poultry to humans may be prevented by improvement in risky practices. This can be achieved through relentless behavior change efforts. Because lack of knowledge is not a single factor, intervention programmes must include feasible options for resource-poor settings that have limited materials for personal protection (water, soap, gloves and masks) and must offer poultry workers alternative methods to safely work with poultry on a daily basis.

### 18. Chemicals in cosmetic products in Nepal, urgent call for actions

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**Background:** Cosmetics are being used from the early historical era by both men and women. First ever study carried out by CEPHED in Nepal, 2012 about chemicals in cosmetic products like Lipsticks and Skin Whitening creams to inform the general users about the level of contamination and associated health impacts.

**Materials and Methods:** Studies were done in very popular and most commonly used popular brand of eight Lipsticks and seven Skin Whitening Creams products. The lipsticks were tested for lead (Pb) at Nepal Environmental and Scientific Services (P) Ltd, Kathmandu, Nepal by AAS method. The skin whitening creams were tested for total mercury at Delhi Test House (DTH), New Delhi, India by ICP MS method.

**Results:** The results of Lead in all lipstick brands in Nepalese market found to be high. The lowest amount was 30 ppm, 300 times higher and highest value were 145 ppm, 1450 times higher than USFDA guidelines of 0.1 ppm. The average value of lead was 90.12 ppm<sup>i</sup>. Similarly, the result of mercury in skin whitening creams in Nepalese market ranges from below 0.025 mg/kg (instrument detection limit) to maximum of 0.521 mg/kg<sup>ii</sup> all below than 1 mg/Kg standard value of Philippines and USA. There are no any act, regulation, standard and even responsible government agencies to regulate the import, quality, sale and distribution of cosmetics in Nepalese market. There is no proper labelling of ingredients in the cosmetic products especially regarding heavy metals.

**Conclusion:** Highly toxic cosmetics imported, produced, sold and used in Nepal in absence of required legislative and institutional frameworks. Therefore, there is an immediate need to formulate standards of toxic chemicals in cosmetics and allocate institutions with prime responsibility to regulate overall chemicals in products. The mass awareness about the chemicals in products especially in cosmetics widely needed.

**Key words:** mercury, lead, cosmetics, exposure and health.

I Sah, R.C. Poisonous Cosmetics, the Problem of Lead in Lipstick in Nepal, CEPHED;2012, 6p.

II Sah, R.C. Poisonous Cosmetics, the Problem of Mercury in Skin Whitening Creams in Nepal, CEPHED; 2012, 7p.

### 19. Dengue awareness and practice among the people living in Haraincha VDC of Eastern Nepal

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**Background:** Dengue is global emerging public health problem. Almost half of world's populations are at risk. In Nepal, first Dengue case was reported in 2004, since then major epidemics occur in the year 2006, 2010 and 2012. Awareness is vital to prevent and control it. The objectives of this study was to assess Dengue awareness and practice among the people of Haraincha VDC of eastern Nepal

**Materials and Methods:** A community based cross-sectional study was conducted in 1<sup>st</sup> September to 15<sup>th</sup> November 2013 in Haraincha VDC of Morang District. The data was collected from households by means of interview using a semi structured questionnaires and observations.

**Results:** The majority (30.3%) were belongs to age group of 31-40 years. Among them 2.5% had history of Dengue contracted outside the country. Almost half had heard something about Dengue. Every four in five respondents cited all age group may be the victim. Six out of 10 cited there was no human to human transmission. Only 2% rightly said that the mosquito was day biter. The common symptoms cited were fever (80%), headache (50%), myalgia (36%), retro-orbital pain (7%). Almost 92% were aware that Dengue is preventable. The common methods of control were use of spray (51.77%), coil (38.41), window-door screen (38.41), prevent water stagnation (85.17%), use of bed nets (81.83%), covering water container (30.06%) etc. Common risk factors observed were poor drainage (32%), paddy field nearby (51%), containers (44%), and big plant near house (31%), and flower vases (26%). Only 19% were using bed nets during both day and night. Use of smoke to drive away mosquitoes (39.34%), use of coil (21.21%), and use of spray (10.66%) were commonly practiced.

**Conclusion:** The awareness regarding dengue was found to be low. The known risk factors were present and some preventive practices were noticed.

### 20. Factors associated with patients' satisfaction in the hospitals of Morang district Nepal

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**Background:** Patients' satisfaction is a multidimensional aspect, represents a vital key marker for the quality of health care delivery and becoming an internationally accepted factor which needs to be studied repeatedly for smooth functioning of health care systems. The objectives of the study was to identify the factors associated with the patients' satisfaction and also compare the level of satisfaction in public and private hospital.

**Materials and Methods:** Cross sectional comparative study was conducted in two hospitals of Morang District i.e. one public hospital and one private hospital selected purposively. Consecutive sampling method was used and exit interview was performed to those discharged from Inpatient Department. Sample for the study was 220 i.e. 110 from each hospital collected from 11<sup>th</sup> Nov to 1<sup>st</sup> Dec 2013. Written consent was taken prior to interview. Data was collected using five points Likert scale questionnaires. Chronbach's Alfa was calculated for ensuring reliability of tools and found 74.06%. Coding, entry and analysis was done in SPSS version 16. The level of patients' satisfaction was categorized as good satisfied versus poorly satisfied. A median score was used as the cutoff point for classifying the level of patients' satisfaction.

**Results:** Nearly half (49.5%) of patients were good satisfied by overall services in hospitals which was 61.8% in Public and 37.27% in Private hospital. Type of hospital, religion and ward admitted were also found to be significantly associated with level of patients' satisfaction. Patients in public hospital were nearly 3 times (OR=2.831, CI 95%:1.227-6.531) more likely to be good satisfied than those in private hospital. Moreover, patients in public hospital were good satisfied with overall cost of health services (OR=30.83, CI 95%:13.014-73.05), laboratory and registration facilities (OR=2.805, CI 95%:1.628-4.833) and other facilities of hospital (OR=8.35, CI 95%:4.31-16.196) as those in private hospitals.

**Conclusion:** Patients at public hospitals were found to be more good satisfied. High cost of health services seems to be most determining factors for low level of patients' satisfaction in private hospital.

### **21. Antibigram of methicillin resistant *staphylococcus aureus*(mrsa) and vancomycin resistant *staphylococcus aureus*(vrsa) isolated from different clinical samples from tertiary care hospital, Kathmandu, Nepal**

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**Background:** *Staphylococcus aureus* (*S. aureus*) especially Methicillin resistant *Staphylococcus aureus* (MRSA) and Vancomycin resistant *Staphylococcus aureus* (VRSA) is a major etiology of nosocomial and community infections. Its mainly due to hapazard use of antibiotics. This study guides to prepare local antibiogram of *S. aureus* isolated from clinical samples and to discuss general issues related to antimicrobials use.

**Material and Methods:** A retrospective study was conducted at KMC Teaching Hospital, from April to September 2014. Data were collected from hospital registration books and analyzed using SPSS version 20 software.

**Results:** Out of 847 samples processed, growth was seen in 247 samples. *S. aureus* was the predominant isolate 88(35.6%). Among 88 isolates, 52(59.0%) were MRSA and 12(23.0%) were VRSA. *S. aureus* was most resistant to Amoxicillin(82.5%), Cotrimoxazole(58.7%); moderately resistant to Piperacillin/Tazobactem (50%), Ofloxacin(50%), linezoline(50%), and Azithromycin (48.1%); least resistant to Tetracycline(8.5%), Cloxacillin(11.3%), Gentamycin(12.5%), Ceftriaxone(18.8%) and Imipenem(20.0%). MRSA isolates showed high resistance to Amoxicillin(77.8%), and Erythromycin(63.3%) while VRSA Showed full resistance to Ofloxacin(100%) and high resistance to Ciprofloxacin(70%), Amoxicillin and Linezolin(66.7% both).

**Conclusion:** The result demonstrated an alarming prevalence of MRSA and VRSA. Given the ability of MRSA and VRSA to spread, it may arise a serious medical issue so the importance of strict antibiotic policies, evidence-based empirical therapies and rigorous surveillance programs to prevent the further spread of resistant bacteria cannot be overstated.

### **22. Methicillin resistant *staphylococcus aureus* (mrsa) nasal carriage among health care workers in hospital**

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**Background:** Nasal carriage of methicillin-resistant *Staphylococcus aureus* (MRSA) plays a key role in the epidemiology and pathogenesis of nosocomial infections and has been a major cause of morbidity and mortality around the world. Moreover, MRSA are normally resistant to most of the antibiotics used in clinical practice. It is therefore reasonable to expect that testing for nasal MRSA colonization could provide guidance in the choice of empirical therapy for infections. Present study aimed to isolate MRSA from the nasal swab of health care workers (HCWs) and to determine their susceptibility pattern.

**Materials and Methods:** A total of 252 nasal swabs were collected from health care workers of Kathmandu Medical College and Teaching Hospital, Kathmandu and processed by using standard microbiological and biochemical methods.

**Result:** The study found that 46 (18.25%) samples were culture positive for *S. aureus* and 19 (41.30%) were MRSA. The higher rate of *S. aureus* isolation observed for age group 15-25 years (45.70%) whereas higher carriage rate of MRSA was observed in age group 36-45 and 26-35 years (44.44%). *S. aureus* was observed higher in male (25.42%) but MRSA was higher in female (51.61%). In this study, *S. aureus* was found high in nurse (47.8%) and MRSA in laboratory personnel (10.52%). On ward wise distribution, the maximum nasal carrier rate of *S. aureus* and MRSA were found in Operation Theater (21.70%) and Post Operative Ward (14.28%) respectively. Antibiogram of 46 *S. aureus* strains showed that Amikacin (100%) and Vancomycin (100%) were most effective drug in vitro, and all MRSA isolates showed 100% resistant to penicillin and ceftriaxone. All 19 MRSA isolates, confirmed by cefoxitin disc diffusion method were also confirmed by MIC method.

**Conclusion:** Higher rate of *S. aureus* nasal carriage among health care workers shows the need of regular surveillance and also shows the need of monitoring of antimicrobial susceptibility pattern and formulation of a definite antibiotic policy may be helpful. Approaches to decolonization like the use of systemic and inhalation antibiotics, antiseptic washes, and topical antimicrobials lead to elimination of the isolates from the nares thus contributing to the low prevalence of nosocomial infections.

**Key words:** *S. aureus*, Nasal carrier, Health care workers, MRSA

### 23. Self medication practice among undergraduate pharmacy students in Kathmandu valley, Nepal

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**Background:** Self-medication is practice by a pharmacist or lay person to treat minor health problem or symptoms without prescription. The study was conducted to evaluate the medication pattern, behaviour, practice and attitude among undergraduate pharmacy students on self-medication.

**Methods:** Descriptive cross sectional questionnaire based study was conducted among 175 pharmacy undergraduates in different institutions within Kathmandu valley, Nepal using prevalidated, five sectional and structured questionnaires.

**Results:** Non steroidal analgesic, anti-inflammatory and antipyretic drugs (n=235, 38.29%) were mostly preferred for the treatment of fever (n=94, 55.29%) and headaches (n=89, 52.35%), mainly paracetamol (n=144, 23.8%). Community pharmacies (n=136, 80.00%) and pharmacist recommendation (n=76,

44.70%) were main sources of obtaining and selecting particular medicine and its dose (n=108, 63.54%) while friends and family (n=75, 44.11%) remained main source of information. 128(75.29%) always checked up the information on package label or insert, mainly date of manufacturing (n=96, 56.47%). 70(41.17%) respondents fully and 71(41.76%) of them partly understood the information. 161(94.30%) respondent always checked the expiry date before medicating. Significant proportion perceived it as unacceptable practice with main reasons of being unsafe (n=64, 37.64%) and potential adverse reaction (n=21, 12.35%). 52(30.58%) of them faced adverse reactions or side effects. Allopathic system (n=114, 67.05%) was preferable medication system for self-medication.

**Conclusion:** Most common drugs were NSAIDs, primly paracetamol, cough and cold reliever and GI infection ailments. Students and their profession interrelationship were predominant shaping their attitude and behaviour on self medication.

**Key words:** Self medication, pharmacy, undergraduate students, questionnaire.

#### 24. Situation analysis of maternal mortality in Banke, Nepal

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**Background:** Maternal Mortality Ratio (MMR) declined steeply, still high maternal death is remaining as major problem in Nepal. The objective of the present study is to describe the situation of maternal mortality in Banke District, Nepal.

**Materials and Methods:** The retrospective descriptive study was carried out from July 2012 to June 2014 by using Annual report and Verbal autopsy record from DPHO and Maternal Death Review form, Case sheet and Maternity register from health facilities. All 40 cases were studied through the desk review technique. The Data was entered in EPI info and analysis was done by using SPSS 19.

**Results:** The study found MMR of Banke district was 146 per 100,000 live birth. About 22% of deaths among the high risk age group. Majority of death from illiterate, Multiparus, Madhesi and Dalit. Highest deaths were found at health facilities (62%), and 8% on the way while referral from health facility to health facility. Most of the deaths occurred within 24 hours of hospital admission (76%). Highest deaths were seen during post partum period (55%). Anemia was found the main contributory cause of death. Haemorrhage (62%) was the first leading direct cause of death. Majority of deaths were found due to delay in decision making (50%), 32.5% delay in health facility and 22% delay in transportation. Only 29.7% were visited four times of ANC visits.

**Conclusion:** It was seen that most of the women with complications arrived at the facility in a critical condition having inadequate ANC visit. These findings indicate the balance of the contributory factors to maternal deaths is moving to include more supply side factors, so that efforts to further reduce maternal mortality must focus on improving quality of care, complete referral system in all levels and awareness.

**Keywords:** Maternal Mortality, Post Partum Haemorrhage, ANC, Banke, Nepal.

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## 25. Knowledge regarding community based newborn care practice among health workers of sub-health posts, Sunsari, Nepal

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**Background:** Every year, an estimated 3.6 million infants die worldwide in the first month of life and around 75% of these deaths occur within the first week of life. The health workers are thus required to have adequate knowledge in newborn care to efficiently and effectively care and manage newborns in order to meet the MDG 4 by the year 2015. The main objective of this study is to assess the existing knowledge of CB-NCP practice among health workers of sub-health posts of Sunsari, Nepal.

**Method:** Descriptive cross sectional design was adopted. A total of 49 health workers (AHWs and ANMs) from sub-health posts of Sunsari district, were interviewed by total enumeration technique. Data were collected using a semi-structured questionnaire and analyzed using Independent sample t-test, One Way ANOVA and correlation test at 95% confidence interval.

**Result:** There were (57.1%) ANMs and (42.9%) AHWs who achieved mean score of knowledge (54.00±6.77) and (41.14±9.56) respectively. The existing knowledge regarding the CB-NCP practice was significantly higher ( $p < 0.001$ ) among female health workers as compared to male health workers. The knowledge was found higher among secondary level, upper caste, married, who received CB-NCP training >2 years period and additional training in concerned area and inversely correlated with the increase in age, family size and increasing years of experience. The total achieved percentage mean score of knowledge was 66.27 ± SD 14.44.

**Conclusion:** The study concludes the positive correlation of number of handling of PSBI and asphyxia newborns with the knowledge.

**Key Words:** CB-NCP, Sub-health post, knowledge, practice, health worker

## 26. Do socio-demographic factors have relationship with KAP of diarrhea among mothers in Eastern Nepal?

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**Background:** Diarrhea is among top ten diseases of Nepal accounting for morbidity. The study aimed at determining the association between socio-demographic factors of mothers with their knowledge, attitude and practices about diarrhea and its management.

**Materials and Method:** This was a cross-sectional survey carried out between March and June 2011, involving 395 mothers from four randomly selected government's local health institutions of Morang district, Nepal. The detailed information about the subjects was collected from the health institutions. The subjects were approached at their households and interviewed by a trained interviewer according to the survey questionnaire. The subjects were informed about the survey and their written consents were obtained before conducting the interview. The responses were coded, entered and verified before analyzing the data using Statistical Package for Social Science (SPSS) version 11.5 for windows, Chicago Inc.

**Results:** About 90% of the mothers were young aged (16-30 years) and engaged mainly in farming as labors. Illiteracy was predominant among the mothers. More than two dozens of ethnic castes were encountered during the survey. The major fraction of the mothers belonged to Terai Madhesi Dalit caste (47%). In about 90% of the cases, the total household monthly income was above 5,000 but less than 10,000 Nepalese rupees. The median and inter-quartile range of knowledge, attitude and practice scores were 14(12-15), 7(6-8) and 6(5-7) respectively. There were positive relationships of KAP with household's monthly income ( $p=0.007$ ), mother's educational status ( $p<0.001$ ), ethnicity ( $p<0.001$ ) and occupation ( $p=0.038$ ).

**Conclusion:** Socio-demographic factors including mother's education, ethnicity, occupation and household's monthly income play an important role about diarrhea and its management at home.

**Keywords:** Demography, Diarrhea, Mothers, Nepal

### **27. Effects of climatic factors and vector-control interventions on malaria and Kala-azar incidence in Jhapa district, Eastern Nepal**

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**Background:** Climate change is emerging as an issue of public interest because of its health implications. Malaria and visceral leishmaniasis also known as 'kala-azar' are one of the climate sensitive diseases endemic to Jhapa district of eastern Nepal. This paper aims to assess the effects of climatic factor and vector-control interventions on the incidence of malaria and visceral leishmaniasis in Jhapa district, eastern Nepal.

**Methods:** This was a retrospective study. Generalized additive mixed models was fitted to analyse data.

**Results:** Rainfall was positively associated with both the diseases. Overall, a 100mm increase in rainfall increases malaria incidence by 8% (RR= 1.09, 95% CI =1.01-1.15). Climatic factors such as minimum, maximum and mean temperature and relative humidity were not significant predictors of malaria. In the case of kala-azar, a 100mm increase in rainfall increases kala-azar incidence by 18% (RR=1.2, 95% CI =1.09-1.3) and, a 1% increase in relative humidity decreased kala-azar incidence by 4% (RR= 0.96, 95% CI= 0.93-0.99). Analysis of LLINs distribution and IRS coverage data shows decrease in malaria and kala-azar case only with the introduction of LLIN since 2006.

**Conclusion:** It can be concluded that malaria and kala-azar case are influenced by climatic factors and vector-control interventions mainly LLINs. Therefore, LLINs coverage should be scaled up for outweighing the role of climate change for malaria and kala-azar transmission in the district.

### **28. Mothers' perception about their children's diet and physical activity: findings of focus group discussions from a peri-urban community of Nepal**

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**Background:** Non-communicable diseases accounts for 50% of all deaths in Nepal, 25% of which is attributed to cardiovascular diseases (CVDs)(1). Previous Nepalese studies indicate a high burden of behavioral cardiovascular risk factors (2-4). Knowledge, attitude and practice/behaviour regarding cardiovascular health is also poor (5). In this regard, it is well known that developing healthy lifestyle for prevention of CVDs should start from early childhood (6-8). This qualitative study aimed to explore mothers' perception regarding diet and physical activity of their young children in the suburban community.

**Materials and Methods:** Six Focus Group Discussions (FGDs) with 61 women were conducted in the Jhaukhel-Duwakot Health Demographic Surveillance Site (JD-HDSS) in the Bhaktapur district of Nepal. Women with children aged 5-10 were allocated in to different groups according the mothers' education status: no formal education, up to secondary level or grade 10, and higher than grade 10. Qualitative content analysis was undertaken. All ethical aspects were followed.

**Results: Different themes came out from the data, including mother's** perception regarding healthy and unhealthy food, **perception about** their children's diet and physical activity, self- ability to control children's behavior, and barriers and facilitators for healthy lifestyle. Mothers had misconceptions regarding what is healthy diet. They reported rampant consumption of unhealthy food by their children. Moreover, they did not prioritize children's physical activity. The mothers had low level of perceived control over their children regarding diet and physical activity as well. Finally, they recommended various intervention strategies to increase their knowledge regarding healthy lifestyle.

**Conclusions:** Lack of knowledge and misunderstandings regarding the role of healthy diet and physical activity for prevention of cardiovascular diseases were found in the community. The findings shall help to develop health education programs to improve cardiovascular health knowledge, attitude and behavior of the mothers to prevent cardiovascular disease among their children.

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#### **29. Prevention of cervical cancer through screening using visual inspection with acetic acid (via) and treatment with cryotherapy among plhiv women of shakti milan samaj members in Kathmandu**

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**Backgrounds:** Cancer of the cervix is the second most common cancer among women worldwide, with about 500,000 new patients' diagnosed and over 250,000 deaths every year. It is a major cause of morbidity and mortality among women in resource-poor settings, especially in Nepal and among PLHIV women's. Recent studies have demonstrated that visual inspection with acetic acid (VIA) is a sensitive screening method. It is cheap and non-invasive, and can be done in a low-level health facility like a health center. The specific objective is to create awareness about cervical cancer, its effects and the availability of prevention services. And to assess the acceptability of cervical cancer screening is using VIA, and treatment of precancerous lesions using cryotherapy at people living with HIV people (PLHIV) women.

**Methodology:** The 7-days screening camps was conducted in FPAN among the 44 people living with HIV people. After the screening, questionnaires, as well as structured interviews, Key in-depth interview and focus group discussions with screened people living with HIV people to capture the health status. To make the respondents feel ease and express freely on the little discussion issues of visual inspection with acetic acid (VIA) and treatment with cryotherapy in closed well ventilated room. And verbal consent was taken from the respondent.

**Results:** From the study, the median age of PLHIV women was 37 Years with lower age 16 to 68 year higher age. The median age of age of first intercourse was 19 year. Almost all the PLHIV women were aware about cervical cancer and its effects. Out of 44 PLHIV women, of these, 44 (100%) were screened. Of those screened, 5(11.36%) had lesions suspicious of cancer; 1 (2.27%) were VIA positive. From the focus group discussion participants may have refused to go to a referral facility (because of time, cost or distance), or no treatment information was available from cancer facilities for the project participants, because of lack of communication between the services. As expected, the VIA-positive rate was highest in the middle age group (30-39 years).

**Conclusions:** Although VIA is a useful alternative to cytology in low-resource setting. The test positively and the detection rate of lesions has to be carefully monitored to maintain satisfactory performance. As VIA is an entirely provider-dependent screening method, definitive standards need to be set for identifying precancerous lesions requiring therapeutic intervention. As VIA is a relatively new public health approach.

**Key Words:** Cervical cancer, People living with HIV, Screening, Visual inspection using acetic acids.

### **30. Effect of alternate nostril breathing exercise on experimentally induced anxiety in healthy volunteers**

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**Background:** A number of randomized and nonrandomized controlled trials have tested yoga as an intervention with respect to anxiety and anxiety disorders. A recent study showed that alternate nostril breathing (ANB) exercise produced better cancellation task scores as measured by the effect on P300 auditory event related potential. This was thought to be due to lower anxiety, as anxiety is associated with a general inability to maintain an attentional focus. The objective of our study was to determine the effect of ANB exercise on experimentally induced anxiety using the simulated public speaking model in healthy young adults.

**Method:** 30 consenting medical students were equally divided into the test and control group. The test group performed alternate nostril breathing exercise for 15 minutes while the control group sat in a quiet room without performing any physical activity before participating in the simulated public speaking exercise. Visual analog mood scale (VAMS) consisting of 16 items was used to measure the mood state which was

serially recorded at five different phases before, during and after the simulated public speaking exercise.

**Results:** All the students completed the exercise. There was no significant difference between the two groups in the mean VAMS scores at baseline. Repeated measures ANOVA showed a significant effect of phase ( $p < 0.05$ ) but group and gender did not have any statistically significant influence on the mean anxiety scores. However, the test group showed a trend towards lower mean scores for the anxiety factor.

**Conclusions:** Alternative nostril breathing did not have any statistically significant influence on the mean scores for anxiety as measured by the visual analog mood scale. However, considering the trend seen towards lower anxiety in the test group further study is warranted to explore the potential anxiolytic effects of ANB.

### **31. Light emitting diode (led) fluorescent microscopy: an alternative to screen tuberculosis in Nepal**

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**Background:** The inadequate ability to rapidly and accurately diagnose active tuberculosis (TB) in developing countries remains a major obstacle in global control of the disease. TB, a global health emergency, presents a significant health threat with 9 million new cases and 1.5 million deaths each year. If not treated and controlled, another 1 billion of people globally will become infected and 36 million will die by 2020. In Nepal, 45% of total population is infected with TB of which 60% are in the productive age group. Screening of TB patients and laboratory diagnosis of causative agent plays a significant role to control and eradicate TB. There is an urgent need for an appropriate TB diagnostic tool that is simple, rapid, sensitive and specific and can be made widely available so that 3 million missing TB cases and new cases as well as relapse cases can be detected.

**Materials and Methods:** A cross sectional study was conducted using the suspected 325 tuberculosis samples in the German Nepal Tuberculosis Project (GENETUP) laboratory. A comparative study of Ziehl-Neelsen (ZN) staining and LED fluorochrome staining of acid fast bacilli (AFB) was performed to screen TB. Data generated were analyzed using SPSS version 16.

**Results:** Out of 325 samples, 97 were AFB positive by ZN microscopy and 102 by LED fluorescent microscopy. Culture showed 121 positive results while 7 cultures were contaminated. Considering culture as gold standard for tuberculosis, sensitivity of ZN and LED fluorescent microscopy were 70.8% and 72.5% respectively and specificity were 94.9% and 92.4% respectively.

**Conclusions:** LED fluorescent microscopy is potentially more suitable for laboratories to screen TB in resource-limited settings and countries like Nepal where the TB burden is comparatively high. From time and labor point of view, LED fluorescent microscopy was found to be very easier and faster than the conventional technique.

**Key words:** Tuberculosis, Ziehl-Neelsen microscopy, Light Emitting Diode fluorescent microscopy, Acid fast bacilli

### 32. Risk factors associated with low birth weight in Bharatpur hospital, Chitwan

Kamal Prasad Kandel

**Background:** Babies with a birth weight of less than 2500 grams, irrespective of the period of their gestation are termed as Low Birth Weight (LBW) babies.<sup>1</sup> Despite consistent efforts to improve the quality of maternal and child health, more than twenty million low birth-weight (LBW) babies are born every year throughout the world. Though, the health situation of Nepal has improved substantially over the years, the low birth-weight (LBW) rate still high. The present study was to explore the effects of various maternal risk factors associated with low birth-weight of institutionally delivered newborns.

**Methods:** A cross sectional hospital based study was conducted in Obstetrics and Gynaecology ward of Bharatpur hospital, Bharatpur, Nepal from September 17<sup>th</sup> to 4<sup>th</sup> October, 2013). Altogether 480 respondents were taken and respondents were mothers who have delivered newborns in hospital.

**Results:** A total of 500 birth occurred during the study period (September 17<sup>th</sup> to 4<sup>th</sup> October, 2013), of which 480 met the study criteria. Among which (9.4%) were low birth weight (LBW) and (91.6%) were normal birth weight (NBW). Overall mean birth weight was found to be  $2.75 \pm 0.639$  kg. Out of total 9.4% newborns were weighing less than 2.50 kg and mean birth weight was  $1.96 \pm 0.409$  kg.

**Conclusions:** This study suggests that there are several factors interplaying which lead to LBW babies. Socio-demographic factors (maternal age, educational level, hyperemesis gravidum, maternal anthropometry and economic status) and antenatal care are more important.

**Keywords:** antenatal care, low birth weight, maternal and child health services, maternal risk factors, newborn.