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Primary Health Care: 40 Years after Alma Ata Declaration

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Abstract Book

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Message from the Executive Director

*Ethiopian Public Health Association (EPHA) comprises over 7,000 ever-registered members of diverse public health disciplines and professional experience. EPHA has been involved in bringing change in the health care and developing a healthy and wealthy society through active engagement of its members. EPHA's mission is "promoting better health for the public and maintaining professional standards through advocacy, active involvement of its members, networking and evidence generation" One of the magnificent tasks taken care of by EPHA is organizing Annual conference that creates a platform of a Scientific forum to members working in Public Health and research institutions both government and Non-government and the Academia. EPHA conducts its 29th Annual Scientific Conference and General Assembly Meeting that will be held 26-28 February 2018 at the United Nations Conference center (UNCC) in Addis Ababa. The main theme of the 29th Annual Scientific Conference is: **"Primary Health Care: 40 years after Alma Ata Declaration"**.*

This year research topics that have covered a wide range of issues such as Health Management and Policy, Health Economics, Human Resource for Health, Behavioral Science and Communication, Health Information System, Maternal Health, Demography and Population Studies, Environmental and Occupational Health have been submitted, reviewed and made ready for presentation. A total of 163 scientific papers of which 79 oral and 84 poster abstracts have been selected through a series of review process. Moreover, moderated panel discussions will be held under four sub-themes: The Alma Ata Declaration and Its Contributions to Public Health, Strengthening Human Resources for Health to Attain Universal Health Coverage, Adolescent and Youth Health in the Context of Universal Health Coverage: Myths and Realities; Urban Health: Movement to Create Healthy Cities in Ethiopia

Finally, EPHA would like to extend its heartfelt thanks to all scientific paper contributors, reviewers and to those who have accepted the invitation to serve as Moderator and speaker of the moderated panel sessions.

Last but not least, EPHA would like to extend its sincere appreciation to all who have exerted all sorts of efforts to make the 29th Annual scientific conference and General Assembly Meeting a reality.

*Alemayehu Mekonnen (MD, MPH, Associate professor of public health)
Executive Director, EPHA.*

Oral Presentations

Health Systems and Policy

Abs. 1

Primary Health Care Systems: Case Study from Ethiopia. *Kiddus Yitbarek, Sudhakar Morankar, Fira Abamecha, Abraham Tamirat, Mirkuzie Woldie* ¹, *Yitbarek K.², Abamecha F.¹, Tamirat A.¹, Woldie M.²* ¹*Department of Health Behavior and Society, Public Health Faculty, Jimma University* ²*Department of Health Economics, Management and Policy, Public Health Faculty, Jimma University.*

Introduction: The Alma-Ata Declaration on Primary Health Care (PHC) and its call for “Health for All” by 2000 was welcomed by the Ethiopian Government from the very beginning. The implementation had various challenges at the beginning. However, the current structure and function of primary health care in Ethiopia is contributing for remarkable achievements in population health.

Methods: The case study was conducted using both quantitative and qualitative data collection methods through secondary document review, 4 focus group discussions and 31 key informant interviews. Key sources for quantitative data were published papers, policy documents, plans; and grey literatures: policy guidelines, and official reports from different levels in the health system. Respondents for qualitative data were drawn from different segments of the community and health managers at different levels of the health system to maximize variability. The key informant interviews and focus group discussions were digitally recorded, transcribed verbatim and analyzed thematically

Results: Ethiopia’s health service is structured into a three-tier system: primary, secondary and tertiary levels of care. The PHC services are rendered at the primary tier. The primary health care unit (PHCU) is comprised of five satellite health posts and a referral health center. This is the point where PHC services are delivered with active involvement of paid community health workers known as health extension workers (HEWs). The PHCU is further supported by a network called health development army in which up to 30 households are included. This is a result of the so called one to five network(s) used for various development initiatives. The PHC system gets fund from various sources. Nearly 15% of the Ethiopian total health expenditure is spent for PHC units. The health human resource (HR) allocation in Ethiopia is based on the demand and the case load of facilities. In fact, there are shortages of HR especially in some clinical specialties and the nursing specialty. In addition to the absence of national HR strategy, in equitable distribution of HR between urban and rural areas and shortage of budgetary allocation for HR by the regions are basic problems.

The Ethiopian health system was led by four consecutive health sector development plans. The PHC was given due attention in all of these plans and the current health sector transformation plan continues the initiative of improving access to essential health services to all segments of the population. The plans were implemented with 16,440 HPs, 3,547 HCs and 311 hospitals constructed over the past 20 years. Information relevant to facilitate monitoring and evaluation activities are generated through the existing PHC system.

Conclusion: Although the PHC system of Ethiopia has been successful in improving several of the key health indicators the achievements were not without challenges. Critical shortcomings in the PHC system include shortage, high turnover and lack of motivation of HEWs; lack of commitment from leaders of health development team and one-to-five networks; lack of quality of health professionals; inequitable distribution of health professionals; lack of decentralized planning; limited supplies; problems of capacity for monitoring and evaluation.

Key terms: Primary health care, Ethiopia.

Medication Administration Error and Associated Factors among Nurses Working in Public Hospitals of Harari Region, Eastern Ethiopia

Aseb Arba Kinfu.

Introduction: Medication administration errors are among the recognized challenges in the hospitals with deleterious consequences on patient, family, health professionals and health institution. Nurses are foremost in giving medication to patients so that conducting study on among nurses have great importance to identify its magnitude and take action to reduce and prevent factors affecting medication administration practice.

Objective: To assess magnitude of medication administration error and associated factors among nurses working in Public Hospitals of Harari Region, January- February, 2017.

Methodology: Hospital-based cross-sectional study design was conducted from January-February, 2017. Observation and interview were done on all nurses working in HFSUH and Jugal hospitals and involved in medication administration. Data was entered to Epi-data and exported to SPSS software version 20 for analysis. Variables with $p < 0.25$ in bivariate analysis became candidate for multivariate analysis. Adjusted odds ratios with 95% CIs and p-value of 0.05 and less from multivariate logistic regression, were used to measure associations and as well for interpretation.

Results: Magnitude of medication administration error was 41.5%. Wrong time and wrong documentation accounted for 58.4% and 26.7% of medication administration errors respectively. Factors that significantly associated with occurrence of medication administration error were not using pocket books during medication administration, [AOR=2.3, 95%CI (1.043, 5.172)], nurses with bachelor degree qualification level [AOR=3.714, 95%CI (1.38, 9.98)], and working in Emergency unit [AOR= 6.172, 95%CI (1.728, 22.042) and ICU units [AOR=5.994, 95%CI (1.264, 28.423)].

Conclusion: Medication administration error was high among nurses working in public hospitals of Harari regional state. Wrong time and wrong documentation take great share among these errors. Not using pocket books for reference during medication administration, bachelor level of qualification, working in Emergency and Intensive Care Units were factors independently associated with medication administration error. This calls for immediate attention to take corrective actions through designing right follow up and actions before adverse consequences occur.

Implementation of Evidence-Based Medicine and Associated Factors among Health Care Providers Working in Public Hospitals, Northwest Ethiopia, 2017

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Introduction: Despite the fact that evidence-based approach practice results in a multitude of improved health, safety, and cost outcomes studies continue to prove that medical practice is still not based on the best available evidence due to different challenging factors. Therefore, this study will provide information on better identification of the problem with evidence utilization.

Objective: To assess implementation of evidencebased Medicine and associated factors among health care providers working in public hospitals, Northwest Ethiopia, 2017.

Method: we conducted a cross sectional study of 415 randomly sampled health care providers using stratified sampling technique. Data were collected using structured self-administered questionnaire. The collected data were analyzed using SPSS version 23. We used bivariate and multivariate logistic regression models to identify associated factors for evidence based practice implementation.

Result: Study revealed that 45% of health professionals were found to have low level of evidence based Medicine implementation. The factors found to be significantly associated with low level of evidence based practice included the health care providers' marital status (AOR 2.25, 95%CI: 1.16, 4.36), longerhealth care providers' work experience (AOR 2.72, 95%CI: 1.31, 5.67), and poor health care providers' skill (AOR 2.91, 95%CI: 1.70-3.00).

Conclusion: We found that significant proportion of health professionalshave low evidence basedMedicine implementation. The longer the Work experiences with increasing age, the poor health professional skill were the major contributing factors for low evidence based practice implementation. Therefore,multi-sectorial approaches are needed to increase the level of evidence based practice implementation and address the major contributing factors.

Keywords: Evidence based practice; health professionals; implementation

Level of Pastoral Health System Responsiveness for Improved Uptake of Skilled Birth Attendance in Pastoral Communities of Afar Region, Ethiopia, 2017 *Nejimu Biza Zepro.*

Background: Health system responsiveness (HSR) is the non-health enhancing aspect of care relating to the environment and the way healthcare is provided to clients. It relates specifically to the interactional dimensions of patient experience rather than to health-related or technical aspects of care quality. It contributes to enhanced utilization of delivery services, especially in settings where people might choose not to use available services because they feel that they are not treated according to their inherent expectations. It is measured on eight domains of patient reported experiences: dignity, autonomy, choice, communication, confidentiality, prompt attention, quality of basic amenities, and social support. This study evaluated the degree of institutional delivery care service responsiveness and associated factors with an effort to address unresolved issues related to low SBA in hard to reach communities of Afar region.

Methods: Institution linked community based cross-sectional study design was employed to assess the responsiveness of intra-partum care received by pastoral mothers in the last six months of delivery. Self-modified and extensively contextualized (WHO) responsiveness measurement tool was used to collect data on eight responsiveness domains. Robust method called, Canonical correlation analysis (CCA) was used to assess multivariate sets of variables effect on responsiveness level of the skilled delivery services.

Result: A total of 280 women were interviewed with age range of 15 to 40 years. The mothers surveyed generally perceived pastoral SBA to be highly unresponsive with overall responsiveness level of unsatisfactory (4.70 out of a maximum 10.0). The three lowest scoring domains were dignity, choice of provider and social support. Major determinant set of factors affecting responsiveness of delivery care were age, income, availability of functional maternity waiting homes, being attended by female midwives and perceived cultural acceptable care.

Conclusion: SBA uptake is very low and never again attitudes are highly emerging from unresponsive care provisions. The responsiveness level was fully unsatisfactory and it needs to be improved by offering greater concern for dignified care domains. Responsiveness care training, modeling, re-enforcement and hiring female delivery care providers may play a role in improving responsiveness and SBA.

Keywords: Health system responsiveness; Skilled Birth Attendance; Canonical correlation analysis; pastoralist community; Afar; Ethiopia.

The Association between Community-Based Health Insurance Enrollment and Health Services Utilization in Northwest Ethiopia

Asmamaw Atnafu Ayalneh.

Background: Many low and middle-income countries (LMICs) have been seeking ways to attain the goal of universal health coverage (UHC) through pre-paid health care financing mechanisms. Since 2010, the Ethiopian government has introduced various activities to implement Community-Based Health Insurance (CBHI) to reach and cover the very large agricultural society. The aim of the study is to examine the association between CBHI enrollment and different health service utilization measures in Northwest Ethiopia.

Methods: The study utilizes a cross-sectional case-comparison study design of CBHI enrolled and unenrolled households to measure the association between CBHI enrollment and the use of adult outpatient, inpatient, and sick children healthcare services. Three independent bivariate-probit regression analysis were employed to account for the endogenous nature of insurance enrollment and healthcare visits.

Results: The results showed that CBHI enrollment has a positive association with adult outpatient, inpatient, and sick children health-care utilization measures. CBHI membership shows a 0.50 (50 %), 0.22 (22 %), and 0.44 (44 %) points more chance of healthcare visits for adult outpatient, inpatient, and sick children healthcare services for the member households than unenrolled households in the study area.

Conclusions and recommendations: This study revealed that the Ethiopian CBHI has a promising positive effect on adult outpatient, inpatient, and sick children health services utilization. Therefore, policy measures to expand benefit packages and supply-side interventions are essential to enhance the effects of CBHI on different health service utilization.

Keywords: Adult outpatient, bivariate probit model, CBHI, Inpatient healthcare, health service utilization, low and middle-income country, Sick child, Universal health coverage

Clinical Chemistry Reference Intervals of Healthy Adult Populations in Gojjam Zones of Amhara National Regional State, Northwest Ethiopia

Yakob Gebregziabher Tsegay

Background: Reference interval is crucial for disease screening, diagnosis, monitoring, progression and treatment efficacy. Due to lack of locally derived reference values for the parameters, clinicians use reference intervals derived from western population. But, studies conducted in different African countries have indicated differences between locally and western derived reference values. Different studies also indicated considerable variation in clinical chemistry reference intervals by several variables such as age, sex, geographical location, environment, lifestyle and genetic variation.

Objective: This study aimed to determine the reference intervals of common clinical chemistry parameters of the community of Gojjam Zones, Northwest Ethiopia.

Method: Population based cross-sectional study was conducted from November 2015 to December 2016 in healthy adult populations of Gojjam zone. Data such as, medical history, physical examination and socio-demographic data were collected. In addition, laboratory investigations were undertaken to screen the population. Clinical chemistry parameters were measured using Mindray BS 200 clinical chemistry autoanalyzer as per the manufacturer's instructions. Descriptive statistics was used to calculate mean, median and 95 percentiles. Independent sample T-test and one way ANOVA were used to see association between variables

Results: After careful screening of a total of 799 apparently healthy adults who were consented for this study, complete data from 446 (224 females and 222 males) were included for the analysis. The mean age of both the study participants was 28.8 years. Males had high ($P < 0.05$) mean and 2.5th-97.5th percentile ranges of ALT, AST, ALP, creatinine and direct bilirubin. The reference intervals of amylase, LDH, total protein and total bilirubin were not significantly different between the two sex groups ($P > 0.05$). Mean, median, 95% percentile values of AST, ALP, amylase, LDH, creatinine, total protein, total bilirubin, and direct bilirubin across all age groups of participants were similar ($P > 0.05$). But, there was a significant difference in the value of ALT ($P < 0.05$). The reference intervals of ALT, total protein and creatinine were significantly ($P < 0.05$) high in people having monthly income > 1500 ETB compared to those with low monthly income. Significant ($P < 0.05$) higher values of the ALT, ALP and total protein were observed in people living in high land compared to low land residences.

Conclusion: The study showed that some of the common clinical chemistry parameters reference intervals of healthy adults in Gojjam zones were higher than the reference intervals generated from developed countries. Therefore, strict adherence to the reference values generated in developed countries could lead to inappropriate diagnosis and treatment of patients. There was also variation of reference interval values based on climate, gender, age, monthly income and geographical locations. Therefore, further study is required to establish reference intervals for Ethiopian population.

TB and HIV

Abs. 7

Molecular Epidemiology of Mycobacterium Tuberculosis Isolates, Eastern Ethiopia. Abiyu Mekonnen^{1, 2}, Beyene Petros², Matthias Merker³, Abraham Aseffa⁴, Desalegn Addise^{5,6}, Gobena Ameni⁷, Jeffrey Collins⁸, and Stefan Niemann^{3, 9 1} Haramaya University, College of Health and Medical Sciences, Ethiopia² Department of Microbial, Cellular and Molecular Biology, Addis Ababa University, Ethiopia³ Molecular Mycobacteriology, Research Center Borstel, Borstel, Germany⁴ Armauer Hansen Research Institute, Addis Ababa, Ethiopia⁵ Ethiopian National Tuberculosis Reference laboratory, Ethiopian Public Health Institute, Addis Ababa, Ethiopia⁶ University of Bonn-Medical Center, Institute for Hygiene and Public Health, Germany⁷ Aklilu Lemma Institute of Pathobiology, Addis Ababa University, Ethiopia⁸ Division of Infectious Diseases, Department of Medicine, Emory University School of Medicine, Atlanta, Georgia⁹ German Center for Infection Research, Partner Site Borstel, Borstel, Germany

Background: Information about genetic background of the strains circulating in a specific geographic location can help to understand the prevalence and transmission dynamics of tuberculosis. Genetic lineages of *M. tuberculosis* strains have been associated with resistant to specific drugs and pathogenicity. The emergence of drug resistant tuberculosis hampers the TB control program in the world. The present study was intended to identify the genotypic characteristics, transmission dynamics and drug resistant patterns of MTBC strains circulating in the eastern Ethiopia.

Methods: A cross sectional study was conducted among community in the eastern part of Ethiopia. MTBC strains were collected from smear positive individuals identified in four hospitals. Drug Sensitivity Testing (DST) was conducted at the National TB reference laboratory, Addis Ababa, Ethiopia. DNA was extracted and transported to Research Center Borstel, Division of Molecular Mycobacteriology, Borstel, Germany for molecular characterization of the MTBC strains using Spoligotyping and 24- loci MIRU-VNTR. Data were entered in to excel, exported and analyzed using SPSS version 23. The study was conducted from May 2016 to April 2017.

Results: A total of 188 *M. tuberculosis* isolates were initially analyzed for molecular genotyping. Based on combined application of MIRU/VNTR 24-loci profile and Spoligotyping patterns, the clustering rate was found to be 63.8%; and the Recent Transmission Index (RTI) was 50.6%. The predominant genotype was Ethiopia_3 (29.4%), followed by Delhi/CAS (22.2%), and Ethiopia-H37Rv-like (12.8%). Furthermore, the Beijing strains isolated were only from local community in Dire Dawa. There was a statistically significant association between clustering of genotypes and gender, residence, previous diagnosis of TB etc. ($p < 0.05$). Forty-eight (30%) of the study participants were resistant to any First Line Anti-TB drug.

Conclusion: We have revealed the predominance of the sub-lineage Ethiopia_3 with evidence of a high rate of recent transmission among the study participants in eastern Ethiopia. Implementation of proper TB control strategy in the study area is crucial. Further Characterization of Ethiopia_3 sub-lineage using whole genome sequencing is recommended.

Keywords: MIRU-VNTR 24 loci, Ethiopia_3 sub-lineage, High clustering rate, Recent Transmission Index

Potential Risk Factors for Multi-Drug Resistant Tuberculosis in Oromia Region, Ethiopia, 2017: A Case Control Study. *Alemayehu Getahun Wakjira, Teferi Lemu, Regea Dabsu.*

Background: In Ethiopia, multidrug resistant tuberculosis has been increasing from time to time. Hence, in the years to come, given increasing availability of improved diagnostic facilities, the rate of multidrug resistant tuberculosis is more probably increasing resulting in stretched Ethiopia's Tuberculosis (TB) cure, control and prevention programme which could be attributable to human factors. The aim of this study was to determine potential risk factors of multidrug resistant tuberculosis (MDT-TB) among multidrug resistant tuberculosis patients in Oromia, South West Ethiopia.

Methods: A facility based case control study was conducted in Oromia, Ethiopia, from January 1-30, 2017. Ninety six cases were included from all health facilities providing multidrug resistant tuberculosis treatment services and 288 controls were selected at random from similar facilities by using simple random sampling technique using computer generated method. Data was collected using interviewer-administered structured questionnaire. The multivariate logistic regression models used to identify the potential risk factors of Multidrug Resistant Tuberculosis at 95% confidence level and alpha (α) =5% cut off point was applied.

Results: Among 384 respondents, 219(57.03%) were males and 165(42.97%) were females. The mean age with standard deviation of cases was 30.64 ± 11.26 and that of controls was 33.40 ± 12.56 . Low monthly income, living without marriage partner, drinking alcohol while on previous time anti-TB treatment, interruption of previous time anti-TB treatment, lack of information on anti-TB drugs side effects, poor knowledge on MDR-TB, and duration of previous time anti-TB treatment below five months & above seven months were significantly and positively associated with MDR-TB .

Conclusion: Duration of previous time TB treatment less than five months and above seven months and anti-TB treatment interruption while on previous TB treatment were the most significantly associated potential risk factors. Besides, poor knowledge on MDR-TB, presence of Diabetes Mellitus (DM), low family monthly income, living without marriage partner and total duration of previous time TB treatment less than 5 months and above 7 months were significant potential risk factors of MDR-TB

Keywords: MDR-TB, potential risk factors, case-control

Hepatitis B Virus (HBV): Prevalence, Co-Infection With Human Immune Deficiency Virus (HIV) And Risk Factors For Hbv Among Visitors Of Voluntary Counseling And Testing Center (VCT) In Nigist Eleni Memorial Hospital, Hossana, Southern Ethiopia. *Mekuria Asnakew Asfaw.*

Background: Hepatitis B virus infection is a serious public health problem and it can lead to chronic hepatitis, liver cirrhosis, and hepatic carcinoma. HBV and HIV co-infection is common due to shared routes of transmission and is an emerging concern in the clinical management of patients because of increased mortality, accelerated hepatic disease progression, and the frequent hepatotoxicity caused by antiretroviral therapy. Little is known about the magnitude of HBV, its risk factors and co-infection with HIV among individuals visiting VCT center in Ethiopia, particularly in the study area. The aim of this study was to determine the magnitude of HBV, its risk factors and co-infection with HIV among individuals visiting Nigist Eleni Memorial Hospital VCT center.

Methods: Institution based cross-sectional study was performed from February 1, 2016 to April 30, 2016 among 331 individuals visiting Nigist Eleni Memorial Hospital VCT center. Data on socio demographic and HBV risk factors was collected by face-to-face interview using structured questionnaires and blood samples were collected and screened for hepatitis B surface antigen (HBsAg) and HIV by commercially available rapid test kits. Both descriptive and inferential statistics were used for data analysis. I used multivariable logistic regression model to identify predictors of HBV among 331 individuals visiting Nigist Eleni Memorial Hospital VCT center.

Results: Overall, the prevalence of HBV in this study group was 8.8% at the study area and HBV/HIV co-infection was 3.6%. Previous history of surgical procedure, invasive procedure and multiple sexual partner were independent predictors of HBV infection. Individuals with history of multiple sexual partner [AOR = 10.3: 95% CI, 3.71 - 28.83], previous history of invasive procedure [AOR = 10.88: 95% CI, 3.84 - 30.86] and history of surgical procedure [AOR = 9.2: 95% CI, 3.1 - 27.88] were identified as independent predictors of HBV infection. The two infections were strongly associated with each other ($P=0.000$).

Conclusions: In conclusion, high proportion of HBsAg and HBV/HIV co-infection was found in this study. Previous history of surgical procedure, invasive procedure and multiple sexual partners were identified as independent predictor of HBV infection. HBV screening should be integrated in HIV prevention and control program at VCT centers for early management of HBV in HIV patients.

Keywords: Hepatitis B virus, Co-infection, Hosanna.

Arginase Activity and Frequency of LDGs in the Blood of Treatment Naïve, Treated and Follow up VL/HIV Co-Infected Patients

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Background: Visceral leishmaniasis (VL), known as kala-azar, is a neglected parasitic disease caused by different species of obligate leishmania parasite. It is transmitted by the bites of infective female *phlebotomine sandflies*. Co-infection of VL patients with HIV results higher mortality, treatment failure and frequent relapse. And it's associated with significant immune suppression. Arginase, an enzyme with immunosuppressive properties, significantly much higher in VL/HIV patients. Low density granulocytes (LDGs) are degranulated Neutrophils found together with peripheral blood mononuclear cells (PBMCs). The higher frequency of this cells predominantly expressing arginase which has suppressive effect on the immune system.

Objective: It is to measure the level of arginase activity and frequency of LDGs in the blood of visceral leishmaniasis treatment naïve, treated and follow up VL/HIV co-infected patients.

Methods: Crosses sectional study of VL/HIV co-infected patients from University of Gondar Hospital was recruited. Arginase activity and the phenotype of arginase expressing cells were measured in the plasma and PBMCs respectively in the blood of visceral leishmaniasis treatment naïve, treated and follow up VL/HIV co-infected patients.

Results: The frequency of LDGs was significantly higher in the treatment naïve patients compared with non-relapsed follow up patients ($12.00\% \pm 2.643$ and $1.34\% \pm 1.348$ respectively with $p=0.0019$). Furthermore, there was a significant increase in the level of arginase activity in the plasma of treatment naïve patients compared with non-relapsed follow-up patients ($960.0 \pm 116 \mu\text{u/ml}$ and $405.9 \pm 81.13 \mu\text{u/ml}$ respectively with $p=0.0147$). Moreover, expression level of CD63 and activation marker in LDGs was significantly increased in treatment naïve patients compared with non-relapsed follow up patients (14.5 ± 4.161 , 6.83 ± 1.097 respectively with $p=0.0119$). The level of CD3 ζ expression in CD4+ and CD8+ T-cells had no significant difference between naïve, TOC, NRF and RF (195.1 ± 30.85 , 178.4 ± 15.59 , 269.1 ± 33.44 , 145.0 ± 22.37 respectively, $p=0.1288$) and (198.7 ± 13.75 , 183.5 ± 25.81 , 252.7 ± 30.46 , 123.0 ± 20.08 respectively, $p=0.0954$).

Conclusion: The results suggest that the increased frequency of LDGs and arginase activity in the plasma of treatment naïve and relapsed follow up patients might contribute to the poor disease outcome and increased rate of relapse of VL in VL/HIV co-infected patients.

Recommendation: Further studies with more sample size and following a patient from the time of diagnosis thought the time of follow up are required to maximize the accuracy of the finding

Keywords: Visceral leishmaniasis, Arginase, Lower Density Granulocytes and HIV/AIDS.

Health Related Quality of Life and Associated Factors Among People Living with HIV/AIDS Attending Anti-retroviral Therapy at Public Health Facilities, Western Ethiopia: Comparative Cross Sectional Study

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Background: Though HIV/AIDS has multidimensional consequences on quality of life, there is a gap in measuring and monitoring health related quality of life of HIV/AIDS patients. Hence, this study intended to measure health related quality of life domains and associated determinants among people living with HIV/AIDS in western Ethiopia.

Methods: A comparative cross-sectional study was conducted among 520 HIV/AIDS patients on anti-retroviral therapy in public health facilities in West Shewa Zone, Western Ethiopia from April to May, 2016. Participants were selected using simple random sampling method. Quality of life was measured using WHOQOL-HIV BREF and depression was assessed using Beck Depression Inventory, Second Edition (BDI-II). Data were analyzed using SPSS version 22. Independent sample t-test was used to compare quality of life domains between men and women and logistic regression analysis was carried out to determine independent predictors of Quality of life domains.

Results: Females had significantly lower quality of life in physical, psychological, independence and environmental domains as compared with males, except social relationship and spiritual domains. Depressed HIV patients had significantly lower quality of life in all domains as compared with HIV infected patients without depression; psychological (AOR=4.1(95%CI: 2.4, 7.1) and Physical (AOR= 3.8(95%CI: 2.4, 6.1) domains. Malnutrition and Anemia were significantly associated with poor QOL in physical, psychological, independence and environmental domains. TB/HIV co-infected patients had poor QOL except spiritual domain; physical (AOR=2.5, 95%CI:1.2-5.8) and psychological (AOR=2.4, 95%CI:1.3-5.7). Family support, education and occupation were also independent significant predictors of Quality of life domains.

Conclusions and Recommendations: The findings of this study indicted poor socio-economic status and co-infections significantly associated with poor quality of life among HIV/AIDS patients. So, due emphasis should be given to improve socio-economic status and enhance integrated early detection and management of undernutrition, depression, tuberculosis and anemia among HIV/AIDS patients in Ethiopia

Non-Communicable Disease and Mental Health and Substance Use

Abs. 12

Global Prevalence of Diabetes Mellitus in Patients Infected with Hepatitis C Virus: a Systematic Review and Meta-analysis Protocol

Sintayehu Ambachew.

Background: The ever-increasing global Hepatitis C infection is fuelling the burden of diabetes mellitus. Many studies have reported that hepatitis C virus infection is an important risk factor for the development of diabetes mellitus. These intensify for various complications and millions of death unless the effective strategy is implemented. This review aims to estimate the global prevalence of diabetes mellitus in patients infected with Hepatitis C virus.

Methods and analysis: This systematic review includes original articles of cross-sectional and cohort studies of populations regarding patients diagnosed with Hepatitis C infection that have reported the prevalence of diabetes mellitus, published between 1990 and 2017. Two reviewers in five databases searched. Random-effects meta-analysis model were used to obtain an overall summary estimate of the prevalence of diabetes mellitus among hepatitis C infected patients. Sensitivity analysis was conducted to check the stability of summary estimate. Heterogeneity was assessed by using I^2 statistic. Funnel plots analysis and Egger's test were used to investigate publication bias. Results from sub-group analysis were presented by continent.

Results: We identified 22 eligible articles reporting data from 10949 study participants. The findings of this meta-analysis revealed that the pooled prevalence of diabetes mellitus among hepatitis C infected patients was 22.17% (95% CI: 15.66, 25.67%). The subgroup analysis showed, pooled prevalence of diabetes mellitus among hepatitis C infected patients is 28.59% in Africa, 26.14 % in Europe, 19.34 % in Asia, and 15.66% in North America.

Conclusion: Despite high heterogeneity, this study observed the high prevalence of diabetes mellitus among hepatitis C infected patients compared to the general population. The pooled prevalence from Africa region was prevalent compared to Asia and North America.

Key terms: Diabetes Mellitus, Hepatitis C Virus, Prevalence

Prevalence and Determinants of Antenatal Depression among Pregnant Women in Ethiopia: A Systematic Review and Meta-Analysis

Abriham Zegeye.

Background: antenatal depression is more prevalent in low and middle income countries as compared to high income countries. It has now been documented as a global public health problem owing to its severity, chronic nature and recurrence as well as its negative influence on the general health of women and development of children. However, in Ethiopia there are few studies with highly variable and inconsistent findings.

Methods: A systematic review and meta-analysis was conducted to determine the prevalence of antenatal depression and its determinants in Ethiopia. We exhaustively searched several databases, including PubMed, Google Scholar, Science Direct and Cochrane Library. To estimate the pooled prevalence, studies reporting the prevalence of antenatal depression and its determinants were included. Data were extracted using a standardized data extraction format prepared in Microsoft excel and transferred to STATA 14 statistical software for analysis. To assess heterogeneity, the Cochrane Q test statistics and I^2 test were used. Since the included studies exhibit high heterogeneity, a random effect meta- analysis was used to estimate the pooled prevalence of antenatal depression. Finally, the association between determinant factors and antenatal depression were assessed.

Results: The result this meta-analysis revealed that the overall prevalence of antenatal depression in Ethiopia was 24.2% (95% CI: 19.8, 28.6). The subgroup analysis of this study indicated that the highest prevalence was reported from Addis Ababa region with a prevalence of 26.9% (21.9-32.1) whereas the lowest prevalence was reported from Amhara region 17.25(95% CI: 6.34, 28.17). Presence of previous history of abortion (OR: 3.0, 95% CI: 2.1, 4.4), presence of marital conflict (OR: 7.2; 95% CI: 2.7, 19.0), lack of social support from husband (OR: 3.2: 95% CI: 1.2, 8.9), and previous history of pregnancy complication (OR: 3.2: 95% CI: 1.8, 5.8) were found to be determinants of antenatal depression.

Conclusion: In conclusion, the pooled prevalence of antenatal depression in Ethiopia was significantly high. Presence of previous history of abortion, presence of marital conflict, lack of social support from husband, presence of previous history of pregnancy complications were the main determinant for antenatal depression in Ethiopia.

Keywords: Prevalence, Antenatal depression, determinants, Ethiopia

Evaluation of the Antidiabetic and Antidyslipidemic Activities of Hydromethanolic Seed Extract of *Calpurnia Aurea* (AIT) Benth. Subspecies *Aurea* (FABACEAE) in Mice *Eshetie Melese Birru.*

Background: As currently available antidiabetic medications have limitations in terms of safety, efficacy and cost, it is important to investigate medicinal plants for new drugs that can lead to effective, safe and less costly pharmacotherapy. The present study was undertaken to evaluate the antidiabetic and antidyslipidemic activities of 80% methanolic seed extracts of *Calpurnia aurea* (Ait.) Benth.(Fabaceae) in mice.

Method: Blood glucose lowering activity of the three doses (2.75 mg/kg, 5.5 mg/kg and 11 mg/kg) of the hydromethanolic *Calpurnia aurea* seed extract (CASE) was studied in four animal models; normoglycemic mice, oral glucose loaded mice, single dose treated diabetic mice and repeated dose treated diabetic mice. Additionally, the effect of the seed extract on body weight and serum lipid profile was studied in the repeated dose treated diabetic mice. Blood glucose level was measured using a glucose meter; whereas serum lipid levels were measured using an automated chemistry analyzer. Data were analyzed using one way ANOVA followed by Tuckey's post hoc multiple comparison test.

Result: In the normoglycemic model only 11mg/kg CASE dose treated group showed significant ($p<0.05$) reduction in BGL compared to the vehicle treated group at the 6th h post-exposure. Similarly, CASE doses at 5.5 and 11mg/kg reduced BGL of oral glucose loaded mice at 120 min of post-exposure significantly ($P<0.05$). However, in case of single dose diabetic model both 5.5 and 11mg/kg doses of the extract reduced BGL significantly compared to both the negative control and their respective pretreatment levels. The extract improves body weight loss and diabetic dyslipidemia in diabetic animals after 14 days of treatment compared to negative control($P<0.05$).

Conclusion: This study revealed that hydromethanolic extract of *Calpurnia aurea* seeds has a significant antidiabetic and antidyslipidemic activity justifying the traditional use of the plant for diabetes mellitus.

Keywords: Diabetes mellitus, *Calpurnia aurea*, Streptozotocin, Mice.

Predictors of Persistence and Incidence of Perinatal Depressive Symptoms: a Population-Based Study in Rural Ethiopia

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Background: Perinatal depression is a major public health challenge of mothers and new-born. Though antenatal depression was known to be a risk factor for postnatal depression, there is scarcity of studies prospectively investigating the predictors of persistence of antenatal depressive symptoms into the postpartum period. This study aims to prospectively investigate the magnitude of and predictors of antenatal depressive symptoms persisting to postpartum.

Method: A population-based prospective study was conducted in Sodo district, southern part of Ethiopia. A locally validated version of Patient Health Questionnaire (PHQ-9) was used to screen depressive symptoms at two time points for 1240 women: during the second and third trimesters of pregnancy and at a median of 8 weeks after childbirth. Binary logistic regression was used to investigate the predictors of antenatal and postnatal depressive symptoms. Multinomial logistic regression was used to investigate the relative risk of persistence and incidence of depressive symptoms with reference to women without and depressive symptoms.

Result: Antenatal depressive symptoms persisted to postpartum in 38.8% of women who had depressive symptoms during pregnancy. Rural residence [adjusted Relative Risk Ratio (aRRR)=3.68, 95% CI: 1.05, 12.88], higher score in intimate partner violence (aRRR=1.13, 95% CI: 1.06, 1.21), increased number of life threatening events (aRRR=1.17, 95% CI: 1.02, 1.35), increased number of chronic medical conditions (aRRR=2.13, 95% CI: 1.56, 2.91) and pregnancy complications (aRRR=4.32, 95% CI: 2.73, 6.81) were associated with increased risk of persistence of depressive symptoms into postpartum. Higher score in intimate partner violence (aRRR=1.08, 95% CI: 1.01, 1.16) and having pregnancy complications (aRRR=1.62, 95% CI: 1.09, 2.40) predicted new incidence of depressive symptoms during postnatal period.

Conclusion: Intervention strategies that address intimate partner violence during pregnancy may be the most important intervention with double role of addressing both antenatal and postnatal depressive symptoms at a time since antenatal depressive symptoms persisting to postnatal period accounted for half of prevalence of postnatal depressive symptoms.

Prevalence of Common Mental Disorders and Associated Factors among Adult HIV Positive Patients Enrolled in ART Clinics at Harar.

Gari Hunduma Bayisa.

Background: The impact of mental illness on quality of life among HIV/AIDS affected people is reasonably well documented in developed and high-income countries. However, there are limited studies about prevalence of mental illness in HIV/AIDS treatment settings in developing countries like Ethiopia. The presence of HIV/AIDS increases the risk of developing mental disorders and this comorbidity complicates help-seeking, diagnosis, quality of care provided, treatment and its outcomes, and adherence. Despite the fact that developing countries carry more than 90% of the burden of HIV/AIDS, little information about the interaction between HIV/AIDS and mental health is available from low and middle-income countries. The findings of this study would add to the limited body of knowledge about the prevalence rate of mental illnesses and associated factors among HIV/AIDS infected patients in Ethiopia. It might help to improve the quality of care for people with HIV/AIDS who are also suffering from mental illnesses.

Methods: The institution-based, cross-sectional study was conducted at Harar town in Hiwot Fana specialized University Hospital and Jugal Hospitals in January 2016. Data were collected from 420 adult HIV/AIDS patients by a face to face interview using a standard questionnaire which consists of socio-demographic characteristics, HIV/AIDS and medical related questions and Self-Reported Questionnaire-20 for common mental disorders and analyzed by SPSS-16 software. The association between Common Mental Disorders and independent variables were determined using bivariate and multivariate logistic regression analyses.

Results: A total 420 patients, with response rate of 100 % were participated in the study among 26.0% of the respondents were males and 71.0% were age less than 40 years. The result revealed that (28.1%; 95%CI: 26.14, 30.06) of HIV/AIDS patients had common mental disorders. In the final model of multivariate logistic regression analysis stage 4 HIV/AIDS (AOR 2.95, 95%CI: 1.1, 7.93) and current drinking alcohol (AOR 6.03, 95%CI: 2.45, 14.85) were found having statistically significant association with Common Mental Disorders.

Conclusions: This study showed that common mental disorder is the main problem of many adults living with HIV/AIDS. HIV/AIDS stage and drinking alcohol were the main identified associated factors of common mental disorders. These factors are important for the hospitals and other concerned bodies for providing prevention and appropriate intervention of common mental disorders among HIV/AIDS patients.

Keywords: prevalence, associated factors, common mental disorders, HIV/AIDS, Adult patients, Ethiopia

Nutrition and Food Science and Behavioral Science and Communication

Abs. 17

Do Pastoralist Women are Highly Affected by Anemia? Finding of a Community Based Cross Sectional Study in Pastoralist Setting of Ethiopian Somali Region *Solomon G/Tsadik Bereka.*

Background: In Ethiopia, anemia prevalence among women age 15-49 increased to 24% in 2016 from 17% in 2011. Where the highest burden has been observed in Somali region, 60% of the women were anemic in 2016. This study was aimed at assessing the prevalence and associated factors of anemia among women of reproductive age in Fafan zone, Somali regional state of Ethiopia.

Methods: The community based cross sectional study using a sample of size 400 was conducted from Nov 2016 –Jan 2017. Pretested structured questionnaire consisting the socio-demographic and economic characteristics, 24 hours recall on food diversity, two weeks recall on illness, household food insecurity, hemoglobin level measurements, and other nutrition related characteristics used for the interview. Binary logistic regression was used to determine associated factors of anemia.

Results: Prevalence of anemia was 65.2% (95%CI: 60.35, 69.91) where 33.2%, 28.25% and 3.75% were mildly, moderately and severely anemic respectively. Pastoral community (AOR=19.03, 95%CI: 6.59, 54.95), normal body weight (AOR=0.21, 95%CI: 0.10, 0.41) and using any kind of toilet (AOR=0.39, 95%CI: 0.18, 0.82) were significantly associated with anemia status at 5% level of significance.

Conclusion: Anemia is a major public health problem in the study area. More efforts should be applied on pastoralist in order to reduce the burden of anemia.

Keywords: anemia, prevalence, associated factors, women, dietary diversity, pastoralist, agro-pastoralist, Somali, Ethiopia

Partner's Characteristics May Affect Anthropometric Indices of Lactating Mothers, Jimma Zone, Ethiopia: a Community Based Study.

Kalkidan Hassen Abate.

Background: Many studies focused on the negative attributes of partners such as violence on health and nutritional outcome of mother and children. Yet, methodologists argue on the importance of looking on positive attributes of a father, as pragmatic. This study was conducted with the aim of assessing associations of partner's characteristics on anthropometric indices of lactating mothers in Jimma Zone, South West Ethiopia.

Methods: Multi-stage stratified sampling was used to select 736 lactating mothers in three coffee producing sub-districts of Jimma zone, Ethiopia. Domains of maternal Autonomy were measured by a tool adapted from demographic health survey. A model for determination of paternal involvement in childcare was employed. Length and weight measurements were taken in duplicate using standard techniques. Data were analyzed using SPSS for windows version 21. A multivariable linear regression was used to predict maternal BMI after adjusting for covariates.

Results: The median and mean (sd) of maternal age was 25 and 26.6 (5.4) respectively. Nearly a quarter 24% of the mother were found undernourished while 10% of them were overweight/obese. The results of multi variable linear regression analysis showed that, mothers who had educated partner had higher BMI by 0.11 compared to mothers who had partner with no formal education. Similarly a mothers of BMI who had a partners engaged in child care was higher by 0.042 compared to partners did not. In addition, BMI of the mothers who lived in household which consumed higher food frequency were higher by 0.036 compared to mother living in household which consumed with lower food frequency.

Conclusion: The study points to the need to support simultaneously paternal attributes and dietary improvement. The results may imply the need to promote co-parenting, where both parents participate, support each other to keep a better child rearing environment where maternal nutritional status can be upheld

Effect of iron-folic acid supplementation on change of Hemoglobin among visceral Leishmaniasis patients in northwest Ethiopia: a retrospective follow up study. Zegeye abebe Abitew.

Background: An individual with visceral Leishmaniasis (VL) commonly present with anemia and one of the VL treatment center in northwest Ethiopia has been recommended iron-folic acid supplementation to these patients. But there is no documented evidence whether iron-folic acid supplementation improves the hematological profile of patients. Therefore, the study aimed to assess change in hemoglobin and its determinant factors among VL patients with and without iron-folic acid supplementation in northwest Ethiopia.

Methods: A retrospective cohort study was conducted from January 2015 to December 2016. Data were entered into Epi-Data version 3.1 and transferred to Statistical Package for Social Science (SPSS) version 20 for analysis. Independent sample T-test and linear regression were to compare the change in hemoglobin and identify factors associated with a change in hemoglobin, respectively. A 95% confidence level and p-values less than 0.05 were used determine statistically significant.

Results: From a total of 602 VL patients, 300 (49.8%) were from University of Gondar hospital. The mean (\pm SD) change of hemoglobin from baseline to end of treatment was 0.99(\pm 1.64) and 1.61(\pm 1.88)g/dl with and without iron-folate supplementation, respectively, with mean difference 0.62, 95%CI (0.34, 0.90) and a p-value of <0.0001. In multiple linear regressions, combination therapy of sodium stibogluconate-paromomycin (SSG-PM) was positively associated with the change of hemoglobin (β [SE, p]: 0.710/0.15, <0.0001). Whereas age (-0.030/0.009, 0.001), nasal bleeding (-0.261/0.123, 0.035), baseline white blood cell (-0.139/0.044, 0.002) and hemoglobin (-0.513/0.031, <0.0001), end of treatment spleen size (-0.059/0.015, <0.0001) and iron-folic acid supplementation (-0.574/0.163, <0.0001) were negatively associated with the change of hemoglobin.

Conclusion: Iron-folic acid supplementation during the active stage of VL does not help for hemoglobin improvement. A combination therapy of SSG-PM, age, nasal bleeding, baseline white blood cells and HG, and iron-folic acid supplementation were the determinants of change of hemoglobin. Therefore, avoiding iron-folic acid supplementation and strengthening VL treatment with a combination of SSG-PM and, and early identification of complications is recommended for a better outcome.

Status of Nutrition Component of the Primary Health Care Program in Rural Ethiopia: the Case of IYCF. Zeweter Abebe¹, Gulelat Desse², and Kaleab Baye^{1,1}

Center for Food Science and Nutrition, College of Natural Sciences, Addis Ababa University, Ethiopia² Botswana College of Agriculture, Gaborone, Botswana.

Background: Little is known about the performance of the nutrition component of the Ethiopian primary health care program (Health extension program). Particularly, there is paucity of data on how the knowledge and knowledge sharing effectiveness (KSE) of health extension workers' (HEWs) affect maternal knowledge of optimal infant and young child feeding (IYCF) and their child's nutritional status.

Objective: the objective of this study was to investigate the status of the nutrition component of the health extension program, through mothers' and HEW's knowledge of key IYCF practices evaluation and through studying mothers' knowledge and HEWs' KSE association with stunting in young children (aged 12 -23months).

Methods: This cross-sectional study used face-to-face interviews to assess the IYCF knowledge of HEWs (n = 96) and mothers of 12 to 23month old children (n = 122) in Mecha district, West Gojam, Ethiopia. The association between HEW's KSE and children's length-for-age z scores (LAZ) was investigated.

Results: Stunting (50%), underweight (34%), and wasting (10%) were highly prevalent. Less than half (45%) of the mothers had access to nutrition education through the health extension program, but those who had, had better knowledge of IYCF practices and thus lower rates of stunting ($p < .001$). However, key IYCF practices were not well understood by the HEWs and this affected their KSE. The gap in KSE was negatively associated with LAZ ($r = .475$, $p < .00$) and remained significant after adjusted for maternal height, socioeconomic status, and maternal education ($r = .423$, $.002$).

Conclusion: Health extension workers' KSE is associated with child stunting. Future functioning of primary health care, with respect to nutrition, would benefit from training of HEWs, emphasizing not only on the content of the IYCF messages but also the process of delivery while increasing their counseling skills.

Keywords: Primary health care, Health extension program, IYCF, Stunting, health extension workers, complementary feeding, breastfeeding, nutrition education,

Nutrition Education and Counseling Improves Knowledge and Dietary Practice of Pregnant Women: a Cluster Randomized Controlled Trial in Urban Setting Of Ethiopia. *Afrah Mohammedsanni Omer.*

Background: The first 1,000 days of life, from the first day of pregnancy until the child is 24 months old is a critical window of opportunity for health and development. It is essential for pregnant women to have adequate knowledge in order to achieve optimal nutritional status during pregnancy. Antenatal care is a key unit for provision of nutrition information for pregnant women. It is critical for health care providers to have adequate knowledge and skill necessary to be able to provide sufficient nutritional information for pregnant women. However, studies show lack of adequate knowledge and skill among health care providers.

Objective: To evaluate the effectiveness of nutrition education and counseling in improving knowledge and dietary behavior of pregnant women.

Method: We conducted a cluster randomized controlled trial in Addis Ababa, Ethiopia. Health centers were allocated to intervention and control arms using a matched-pair randomization scheme. 40 health care providers from intervention arm were trained on pregnancy nutrition and counseling skills. 683 pregnant women (347 from intervention and 336 from control) were included from 20 health centers. We estimated deference in deference (DID) impact of intervention using mixed-effect linear regression with health center catchment area as random effect.

Result: Pregnant women's knowledge on food groups, use of iron folic acid supplement, benefits of balanced diet and consequence of under nutrition showed a significant improvement ($P < 0.001$). Pregnant women of intervention arm were observed to have a significantly higher knowledge on using iodized salt (difference in proportion (DP) 24.3% vs 1.7; DID 23%), duration of iron folic acid supplementation (DP 70.9% vs 3.4; DID 68%) and having one additional meal (DP 54.3% vs 4.3; DID 49.9%). Significant improvement was also observed on dietary diversity (DP 39.0% vs 4.5; DID 32.3%) and having one additional meal to the diet (DP 36.7% vs 24.7; DID 12.8%). Pregnant women of intervention arm improved their consumption of dairy per week (DID 1.2). Intake of iron folic acid supplement has shown an improvement of 3 more days per week (D 4.9 vs 1.6; DID 3.2). However, effect of knowledge on initiation of breast feeding ($P = 0.089$) and dietary frequency of grains ($P = 0.067$) appears to be statistically insignificant.

Conclusion: Nutrition education and counseling improves pregnant women's nutritional knowledge and dietary behavior in urban settings.

Human Resource for Health

Abs. 22

Health Professionals' Commitment towards Increasing Uptake of Institutional Delivery Services and Associated Factors at Government Health Facilities in Jimma Zone, Southwest Ethiopia. *Yibeltal Siraneh¹, Shimelis Ololo¹, Gebeyehu Tsega¹, Kiddus Yitbarek¹, Ayinengida Adamu¹, Belay Erchafo², Meaza Hailu³, Mirkuzie Woldie¹* 1-Department of Health Economics, Management, and Policy, Faculty of public health, Jimma University, Ethiopia. 2-South Nation Nationality People Regional State, Department of public health, Wachemo University, Ethiopia. 3- Oromia national regional state, health bureau, primary health care quality assurance expert

Background: Professional commitment is beyond a commitment for a particular organization and implies the individuals' perspective towards their profession and the motivation that they have to stay in their job. It refers to one's loyalty to the profession and the willingness to strive and uphold the values and goals of the profession. Hence, our objective is to assess professional commitment and associated factors in government health facilities of Jimma zone, Southwest Ethiopia.

Methods: A facility based cross-sectional study design used from March 01-20, 2016. A sample of 442 health professionals were studied from randomly selected 7 districts and respective 47 health facilities that fulfill inclusion criteria. Eligible health professionals were requested to fill self-administered questioner. After checking its completeness, the data entered in to EPI data version 3.1 and exported to SPSS version 20 for statistical analysis. Factor analysis conducted to identify the measurement scales and factor scores to fit multiple linear regressions ($P < 0.05$) after checking all assumptions of linear regression and principal component analysis (PCA).

Results: The response rate was 93.21%. The percentage mean score of professional commitment was 72.71 % (SD21.88). The percentage mean score for perceived maternal health goal scale was 68.37% with the total variance explained 69.68%. Perceived staff interaction (B:0.089;CI:0.010,0.168), work-life balance (B:0.147;CI:0.020,0.172), affective organizational commitment (B:0.151;CI=0.071,0.230), normative organizational commitment (B:0.238;CI:0.159,0.318), personal characteristics (B:0.307;CI:0.200,0.414) and perceived maternal health goal (B:0.154;CI:0.050,0.259) were independent predictors of professional commitment.

Conclusion: The percentage mean score of professional commitment was medium. Hence, we recommend health managers to communicate and update the new maternal health indicators of sustainable development goal. Health professionals' should foster a more high level of professional commitment to increase uptake of institutional delivery services.

Keywords; Professional commitment, health professionals, Institutional delivery services uptake

Magnitude of Turnover Intention and Associated Factors among Health Professionals Working in Public Health Institutions of North Shoa Zone, Amhara Region, Ethiopia. *Aster Ferede Gebremedhin.*

Background: Health workers are one of the most important building blocks of the health system. High turnover rate contribute to the shortfalls and unbalanced distribution of health personnel in the health workforce. Turnover intention is the strongest predictor of actual turnover.

Objective: To assess the magnitude of turnover intention and associated factors among health professionals working in public health institutions of North Shoa zone, Amhara region, Ethiopia

Methods: A health facility based cross sectional study was conducted from March -April 2016, on 612 health professionals working in public health institutions of North Shoa zone, Amhara region, Ethiopia, using a multistage stratified sampling technique. Data were collected using a pretested self-administered structured questionnaire. The data were entered using Epidata version 3.1 and analyzed using SPSS version 22 software. Descriptive statistics were conducted to summarize the sample characteristics. Backward stepwise logistic regression model was fitted and AOR with 95% CI was calculated to identify the associated factors. P-value <0.05 was taken as a cut off point for statistical significance. Ethical issues were addressed.

Results: Among the 568 health professionals who responded to the questionnaire, 348 (61.3%) of them reported to have the intention to leave their current workplaces. The results showed that being a male [AOR=1.496 (95% CI: 1.016, 2.204)], Medical doctor [AOR=0.318 (95% CI: 0.122, 0.824)], unsatisfied with the work nature [AOR=1.822 (95% CI: 1.206, 2.753)], unsatisfied with the incentives [AOR=1.668 (95% CI: 1.105, 2.517)], unsatisfied with the supervision [AOR=1.916 (95% CI: 1.274, 2.881)] and having low normative commitment [AOR=2.176 (95% CI: 1.482, 3.196)] were significantly associated with turnover intention.

Conclusions: The magnitude of turnover intention was high among health professionals working in public health institutions of North Shoa. Health service managers and policymakers should develop evidence based retention strategies considering the determinants of health professionals' intention to leave.

The Link between Human Resource Management Practices, Employee Performance and Patient Outcomes in the Sub-Saharan Africa: a Systematic Review. *Philipos Petros Gile, Higher Education Institutions' Partnership, A.A, Ethiopia & Erasmus School of Health Policy & Management (ESHPM), Erasmus University Rotterdam, The Netherlands.*

Background: Many studies found that human resources management (HRM) is key for improving quality of care and strengthening health system globally. Sub-Saharan Africa (SSA) is confronting problems related to HRM practices and a high burden of disease in the world but performs a disproportionately low quality of health care. Poor HRM practices and low performance of health workers are among the major causes for this gap. Closing this gap requires bundles of HRM interventions for improving employee outcomes, patient outcomes and organizational outcomes. Although SSA is confronting the burdens, there is scant documentation on the link between HRM and performance in healthcare sector, health professionals' and patient outcomes in hospitals. This calls for the present study which is the first at its kind in the region. The study aims to review literature on "how the human resources management-in the broad sense- related to employee outcome, patient outcomes, and hospital performance in general, *in sub-Saharan Africa?*"

Methodology: We searched seven data bases (Embase, Medline Ovid, Web of Science, Cochrane, PubMed, CINAHL & Google Scholar) for all relevant papers using detailed search strategy and terms, which resulted in 2251 hits of titles and abstracts. In-depth screening and judgment was made for meeting the eligibility for being selected using PRISMA diagram by three researchers as per the inclusion and exclusion criteria. We extracted, collated and synthesized data on participants, interventions, outcomes, methods and settings. Data abstraction table was developed to summarize each selected papers to answer the research question which was defined using PICO frame.

Results: The research resulted in 354 full texts, of which 111 papers met all inclusion criteria were included and analyzed. Despite variations among studies, dimensions of HR practices, in a single or bundles form of skills-enhancement, motivation-enhancement- and empowerment-enhancement practices (e.g. training, salary, team work, task shifting, employee autonomy and engagement, work life balance, job description, moonlighting, scheduling shifts or routine practices, financial and non-financial incentive schemes, performance appraisal, supportive supervision and feedback/communication practices), and many aspects of performance outcomes (e.g. quality of care, job satisfaction, employee retention, reducing waiting time, clinical outcome, reducing staff shortage, moonlighting, patient safety, patient experiences/satisfaction) were identified. The overwhelming majority of studies shown variations in implementing HRM practices which led to variations in performance of employees (individually or teams) and patient outcomes among hospitals within and among the countries. Almost all studies identified some kind of link between HRM practices and performance.

Conclusions: Despite variations were reported across studies, evidences show that effective HRM practices are instrumental for better capacity of employees and hospitals to deliver quality healthcare. The study also identified that poor HRM practices led to poor performance skills of employees, patient outcomes were not found according to the international standards. There is a room for improvement of HRM practices, which intern requires interventions to improve employee performance in hospitals and ultimately enhance patient outcomes. Therefore, policy makers and health systems planners should design and implement sound HR policy and adapt contextualized

HRM model or practices to enhance employee outcomes and improve patient and organizational outcomes in hospital sector in sub-Saharan Africa. For better generalization and understanding, we strongly suggest empirical study of examining the association between HRM practices, employee performance, patient outcomes and hospital performance in a selected country/ies of Africa.

Survival Analysis to Measure Turnover of the Medical Education Workforce in Ethiopia. *Tsion Assefa Beyene.*

Background: Until recently, there were only a few medical schools in Ethiopia. However, currently, in response to the apparent shortage in physician workforce, the country has made huge progress with respect to the expansion of medical schools, by adopting the so-called flooding strategy. Nevertheless, the effectiveness of the intended strategy also relies on physician accessibility and turnover. Therefore, the aim of this study was to examine the distribution of physicians in the medical schools of Ethiopia and to quantify the magnitude and identify factors associated with physician turnover.

Methods: This organizational faculty physician workforce survey was conducted in seven government-owned medical schools in Ethiopia. Longitudinal medical workforce data set of about 6 years (between September 2009 and June 2015) were retrospectively collected from each of the medical schools. The observation time begins with the date of employment (time zero) and ends at the date on which the physician leaves the appointment/or the data collection date. Kaplan-Meier survival method was used to describe the duration of stay of physicians in the academic health care settings. A Cox proportional hazards (CPH) model was fitted to identify the risk factors for physician turnover.

Results: In this study, a total of 1258 faculty physicians were observed in seven medical schools which resulted in 6670.5 physician-years. Of the total, there were 198 (15.7%) turnover events and the remaining 1060 (84.3%) were censored. The average turnover rate is about 29.7 per 1000 physician-years of observations. Multivariate modeling revealed no statistical significant difference in the rate of turnover between males and females (adjusted hazard ratio (AHR), 1.12; 95%CI, 0.71, 1.80). However, a lower rate of physician turnover was observed among those who were born before 1975 (AHR, 0.37; 95%CI, 0.20, 0.69) compared with those who were born after 1985. Physicians with the academic rank of associate professor and above had a lower (AHR, 0.25; 95%CI, 0.11, 0.60) rate of turnover in comparison to lecturers. In addition, physicians working in Jimma University had 1.66 times higher rate of turnover compared with those working in Addis Ababa University. However, the model showed a significantly lower rate of turnover in Mekelle (AHR, 0.16; 95%CI, 0.06, 0.41) and University of Gondar (AHR, 0.46; 95%CI, 0.25, 0.84) compared with that of Addis Ababa. Physician turnover in the remaining medical schools (Bahir Dar, Haromaya, and Hawassa) did not show a statistically significant difference with Addis Ababa University ($P>0.05$).

Conclusions: This study revealed a strong association between physician turnover with age, academic rank, and workplace. Therefore, the findings of the study have important implications in that attention needs to be given for the needs of faculty physicians and for improving the work environment in order to achieve a high level of retention.

Keywords: Ethiopia, Health workforce, Medical education workforce, Specialist, Faculty physician/physician, Physician turnover/retention, Physician migration, Survival analysis

Health System Response for Physician Workforce Shortages and the Upcoming Crisis in Ethiopia: A Grounded Theory Research. *Tsion Assefa Beyene.*

Background: a rapid transition from severe physician workforce shortage to massive production to ensure the physician workforce demand puts the Ethiopian health care system in a variety of challenges. Therefore, this study discovered how the health system response for physician workforce shortage using the so called '*flooding strategy*' was viewed by different stakeholders.

Methods: the study adopted the grounded theory research approach to explore the causes, contexts and consequences (at the present, in the short and long-term) of massive medical student admission to the medical schools on patient care, medical education workforce and medical students. Forty-three purposively selected individuals were involved in semi-structured interview from different settings: academics, government health care system and non-governmental organizations (NGO). Data coding, classification and categorization was assisted using ATLAS.ti qualitative data analysis scientific software.

Results: in relation to the health system response eight main categories were emerged: 1) *reasons for rapid medical education expansion*; 2) *preparation for medical education expansion*; 3) *the consequences of rapid medical education expansion*; 4) *massive production/flooding as human resources for health (HRH) development strategy*; 5) *cooperation on HRH development*; 6) *HRH strategies and planning*; 7) *capacity of system for HRH development*; and 8) *institutional continuity for HRH development*.

The demand for physician workforce and gaining political acceptance were cited as main reasons which motivated the government to scale up the medical education rapidly. However, the rapid expansion was beyond the capacity of medical schools' human resources, patient flow and size of teaching hospitals. As a result, there were potential adverse consequences in clinical service delivery, and teaching learning process at the present: *"the number should consider the available resources such as number of classrooms, patient flows, medical teachers, library..."* In the future, it was anticipated to end in surplus in physician workforce, unemployment, inefficiency and pressure on the system: *"...flooding may seem a good strategy superficially but it is a dangerous strategy. It may put the country into crisis, even if good physicians are being produced; they may not get a place where to go..."*

Conclusion: massive physician workforce production which is not closely aligned with the training capacity of the medical schools and the absorption of graduates by the health system will end up in unanticipated adverse consequences.

Keywords: Flooding strategy, Grounded theory, Medical education expansion, System response/continuity

Non-Communicable Disease, Mental Health and Substance Use

Abs. 27

Habitual Khat (*Catha Edulis*) Chewing is Risk for Common Mental Disorders in Khat Cultivating Community. *Habte Belete*^{1*}, *Yeshambel Agmas*², *Fantahun Biadgilegne*³, *Tilahun Ali*⁴, *Solomon Yimer*⁵, *Eyaya Misgan*⁶, *Yihun Mulugeta*², *Asmamaw Getnet*⁷, *Getasew Legas*.

Introduction: Now a day, use of psychoactive substances such as, khat leaves (*Catha edulis*), has become one of the growing public health concerns in East Africa. Khat chewing is become one way of spending time in the lives of many young people in Ethiopia.

Methods: A comparative cross-sectional study conducted from January to February 2017 among 222 Khat chewers and 441 non- Khat chewers in Mecha Demographic Surveillance and Field Research Center (MDSFRC). Common mental disorders assessed by using self-reporting 20 questionnaires. Chi-square (X²) test and P-values less than 0.05 used to decide the statistical significance.

Results: The magnitude of common mental disorders is higher among khat chewer than non khat chewer. Common mental disorders were 17.6% (39/222) among Khat chewers while only 6.1% (27/441) among non-khat chewers. Marital status of divorced/widowed/separated [AOR=2.37, 95%CI: (1.03, 5.46)]; living area [AOR=4.55, 95%CI: (1.67, 12.44)]; Khat chewing [AOR=3.10, 95%CI: (1.74, 5.55)]; and cannabis use [AOR= 8.00, 95%CI: (3.75, 17.10)] were factors statistically affect the probability of existing of common mental disorders in the participants.

Conclusion: Common mental disorders significantly higher among Khat chewers than non-khat chewers. Increase community awareness about a risk of khat for mental disorders is mandatory.

Keywords: Common mental disorders; Khat Chewing; Risk factor; Ethiopia

Suicidal Behavior among Epilepsy Patients: a Multi-Center Comparative Cross Sectional Study. *Tesfa Mekonen, Wubalem Fekadu.*

Introduction: Every year more than 8 hundred thousand people take their own life in which, every 40 seconds a person dies by suicide somewhere in the world. Epilepsy is consistently seen to be related with substantial reduced life expectancy. Even in remission, people with epilepsy are still more than twice as likely to die earlier than those in the general population. For this premature mortality of people with epilepsy, suicide is probably one of the commonest causes, and it is multi factor associated.

Objective: The aim of this study was to assess and compare suicidal behavior and associated factors among people with epilepsy and general population comparative groups in Northwest Ethiopia, 2017.

Methods: Multi-center comparative cross sectional study was conducted in Northwest Ethiopia (Debre-Tabor Hospital, Felege-Hiwot Referral Hospital, Finote-Selem Hospital, and Debre-Markos Hospital) on 773 participants (292 from individuals with epilepsy and 481 from the general population). Data were collected by pretested interviewer administered questionnaire, and suicidal behavior was assessed by the Suicide Behaviors Questionnaire-Revised (SBQ-R) which is a four items scale with 93% sensitivity and 95% sensitivity and has excellent ability to identify those with and without the risk. Logistic regression was implemented to look for associations between predictors and dependent variables and to control for confounding. The strength of associations was indicated by OR with 95% confidence interval. Variables with P values < 0.05 were considered as statistically significant.

Results: The overall prevalence of suicidal behavior, consisting of suicidal ideation, plan and attempt was 12.3%. The prevalence was significantly higher in epilepsy sample (17.1%) as compared with the community sample (9.4%), $p = 0.001$. Life time prevalence of suicidal ideation or attempt was 17.7% which was also higher in the epilepsy sample (21.9) as compared with the community sample (15.2%). The current suicidal behavior was 15.8% (12.5% in the community sample and 21.2 in the epilepsy sample; $p = 0.001$).

Variables with significant association towards suicidal behavior were; Lower educational status (AOR=2.5, 95% CI: 1.2, 5.1; $P=0.01$), stress full life events in the last one year (AOR=1.8, 95% CI: 1.1, 2.9; $P=0.02$), reported headache (AOR=4.7, 95% CI: 2.9, 9.4; $P=0.000$), Depressive symptoms (AOR=2.3, 95% CI: 1.3, 4.3; $P=0.01$), and poor social support (AOR=2.7, 95% CI: 1.1, 6.8; $P=0.03$).

Conclusion: This research revealed a significantly high prevalence of suicidal behavior among people with epilepsy as compared with the community sample. Stressful life events, higher depressive symptoms, reported headache, lower social support, and lower educational level were common for both samples to predict suicidal behavior. Screening for potential suicide is necessary in the epilepsy management.

Effects of Surgical Repair of Obstetric Fistula on Severity of Depression and Anxiety in Ethiopia. *Bekele Tefera.*

Background: Obstetric surgical repair can address the physical symptoms, may not end the psychological challenges that woman with fistula face. Hence, this study aimed to determine the effects of surgical repair of obstetric fistula on the severity of depression and anxiety.

Method: This study employed repeated measurement of longitudinal study design to detect changes among 219 women with obstetric fistula who admitted at six fistula hospitals in Ethiopia in the six-month cohort. A structured questionnaire was used to obtain socio-demographic and medical history data. Depression and anxiety measures were obtained using PHQ-9) and GAD_7 scales, respectively. Data were entered into a computer using EpiData and then exported to SPSS for analysis. Mann-Whitney_U test and Paired t-test was performed to measure effects used to set at $p < 0.05$.

Result: Initially 219 women interviewed, but only 200 participants completed their follow up. On admission, the prevalence of depression was (91%) and anxiety was (79%). After surgical repair the prevalence of depression and anxiety symptoms was 27% and 26%, respectively. The differences in prevalence of screen-positive women were statistically significant ($P < 0.001$).

Conclusion: The study concluded that the severity of depression and anxiety symptoms appears to decrease; however, women with continued leaking have more psychological distress than those who are fully cured. Fistula clinicians should seek to address psychosocial problems in their patients through targeted integrated mental health interventions to address the mental health needs.

Hyperuricemia and Metabolic Syndrome in Type 2 Diabetes Mellitus Patients at Hawassa University Comprehensive Specialized Hospital, South West Ethiopia. *Shiferaw Bekele Woyesa, Shiferaw Bekele Woyesa.*

Background: Metabolic syndrome is a cluster of the most dangerous heart attack risk factors such as diabetes and prediabetes, abdominal obesity, high cholesterol and high blood pressure. Hyperuricemia is a condition in which the serum uric acid concentration is greater than 5.5 mg per deciliter for child and greater than 7.2 and 6.0 mg per deciliters for male and female adults respectively.

Methods: A cross-sectional study was conducted to determine the magnitude of hyperuricemia and associated factors among type 2 diabetes mellitus patients at Hawassa Comprehensive Specialized Hospital (HCSH) from February 28 to May 30 /2017. A random sampling technique was used to include 319 study subjects and a signed consent had been provided by each study subject before running any data collection. An interviewer administered structured questionnaire was used to collect socio-demographic and some clinically useful data. In addition to this, we reviewed the records of the study subjects to obtain other useful clinical data. Five milliliter blood specimen was collected from each study subjects after overnight fasting. A25TM Bio-System Random Access chemistry analyzer was used for blood sample analysis. All data were checked visually, coded and entered into epi-data version 3.4 and statistical analysis was performed using SPSS version 20.0 software. Bi-variate and multivariate logistic regressions were used to determine the association between explanatory and the outcome variables.

Results: The prevalence of hyperuricemia and metabolic syndrome among type 2 diabetic patients in the study area were 33.8% (n = 106) and 70.1% (n = 220) respectively. Having age greater or equal to 45 years (AOR: 1.9, CI: 1.-3.2, P value = 0.015) and having metabolic syndrome (AOR: 2.6, CI: 1.5–4.7, P value = 0.001) were the determinant variables for hyperuricemia among type 2 diabetic patients.

Conclusion: There was high prevalence of hyperuricemia among type 2 diabetic patients with high prevalence of metabolic syndrome. Therefore, regular health information about life style modification, early diagnosis and treatment for hyperuricemia and metabolic syndrome are essential to reduce hyperuricemia and metabolic syndrome in type 2 diabetic patients.

Keywords: Hyperuricemia, Metabolic syndrome, Hawassa, Ethiopia.

Incidence of Post-traumatic Stress Disorder and Risk Factors among Road Traffic Accident Survivors in Bahir Dar, Ethiopia. Baseline Report. *Wubalem Fekadu Mersha.*

Introduction: Post-traumatic Stress Disorder (PTSD) is a stress which occurs after exposure to actual or threatened death, which is a common phenomenon among Road Traffic Accident Survivors (RTAS). Car accident is a common problem in Ethiopia. So, studying the incidence and risk factors will help to develop intervention strategy.

Aim: To determine incidence of post-traumatic stress disorder and risk factors among road traffic accident survivors at orthopedic settings in Bahir Dar, Ethiopia.

Methods: Six month follow up study was conducted at orthopedic inpatients of Bahir Dar town hospitals. A total of 594 patients was followed for six months. Three phases (base line, after a month and at the 6th month) of data was collected. Data were collected from patient chart and interview with pretested PTSD Checklist (PCL), Patient Health Questionnaire (PHQ-9), World Health Organization Quality of Life-BREF (WHOQoL-BREF), Oslo social support scale (OSSS) for and other standard tools to assess risk factors. Data was checked for completeness and entered to Epi info 7 and analysed with stata 14.2. Descriptive statistics and Generalized Estimating Equation (GEE) was conducted to identify risk factors. The strength of the association will be presented by relative risk with 95% C.I. P-value <0.05 is considered as statistically significant

Results: Three hundred forty one (59.8%) participants had PCLS score of 44 and above, which is a probable case of PTSD. From the responses in each symptoms the most frequent severe symptoms are having repeated, disturbing memories, thoughts, or images of a stressful experience from the past and feeling jumpy or easily startled while, feeling emotionally numb or being unable to have loving feelings for closed once and avoiding thinking about or talking about a stressful experience from the past or avoid having feelings related to it are rare severe symptoms. The magnitude of alcohol dependence, hazardous alcohol consumption and harmful use were 7.9%, 15.1% and 4.7% respectively. Being female, single, long duration before first treatment, sleep problems and history of alcohol consumption were risk factors which significantly associated with the incidence of the outcome. Quality of life is grossly diminished in two-third of the survivors which was significantly associated with current social support.

Conclusions and recommendation: Car accident survivors are prone to stress disorder and their quality of life is affected in almost all dimensions of life. This symptoms will also interfere with the prognosis their physical health. This implies that clinicians need to focus on stress management in addition to the physical health restoration. This can be done consultation liaison.

HIV and TB

Abs. 32

Incidence and Predictors of Mortality among Children on Anti-Retroviral Therapy in Public Health Facilities of Arba Minch Town, Gamo Gofa Zone, Southern Ethiopia; Retrospective Cohort Study.

Negussie Boti Sidamo.

Background: Evidence shows that earlier access to Anti-retroviral Therapy helps to increase survival of children by delaying the progression to AIDS. However its long-term effect on mortality has remained unanswered in Ethiopia especially in the study area.

Objective: To assess incidence and predictors of mortality among Children on Anti-retroviral Therapy in Public Health Facilities of Arba-Minch Town, Gamo Gofa zone, Southern, Ethiopia.

Methods: Institution based retrospective cohort study was employed among 421 HIV-positive children enrolled on anti-retroviral therapy from January 1st 2009 to December 30th 2016. The data on relevant variables was collected from patients' medical cards and electronic database by trained data collectors. Data was entered and cleaned by Epi Info version 7 and analyzed by STATA version 11. Life table was used to estimate the cumulative survival of children and Kaplan Meier survival curve together with log rank test was used to compare survival between different categories of covariates. Cox proportional-hazard regression model was used to identify independent predictors of mortality.

Findings: Overall, 15.4% of children (n=65) died over a follow-up period of 21,175 person-months of observation. The mortality rate of this cohort was 3.07 deaths per 1000 person-months. The cumulative probability of survival after 96th month of treatment was 73.9% (95% CI=63.2-81.9). During the multivariate analysis of baseline variables, we observed that the delayed and regressed developmental milestone (AHR=4.42, 95% CI=1.99-9.75), (AHR=6, 95% CI=2.68-13.45), opportunistic infection at baseline (AHR=1.93, 95% CI=1.03-3.64), tuberculosis co-infection at base line (AHR=2.28, 95% CI=1.23-4.22), low hemoglobin level (AHR=3.32, 95% CI=1.83-6.04), absolute CD4 below threshold (AHR=2.08, 95% CI=1.15-3.77), fair and poor adherence to ART were (AHR=2.17, 95% CI=1.12-4.79), (AHR=2.05, 95% CI=1.02-4.13), isoniazid preventive therapy (AHR=0.38, 95% CI=0.22-0.68) and Co-trimoxazole preventive therapy (AHR=0.26, 95% CI=0.15-0.46) were independent predictors of mortality.

Conclusions: Mortality was high especially during the first sixth months following anti-retroviral therapy initiation. Therefore, higher priority should be given to HIV-infected children with tuberculosis co-infection further intervention like isoniazid preventive therapy and co-trimoxazole preventive therapy as well close follow should be given to all children after start of anti-retroviral therapy.

Does Southwest Ethiopia Meet the UNAIDS 90-90-90 targets?

Hailay Abrha Gesesew, Paul R Ward, Kifle Woldemichael Hajito, Lillian Mwanri.

Background: Ethiopia has pledged to the UNAIDS 90-90-90 targets of ending HIV/AIDS by 2020. How the target is progressing was not assessed. We assessed HIV care continuum outcomes as surrogate markers for the 90-90-90 targets.

Methods: Data were collected from a 13 years retrospective cohort from anti-retroviral therapy (ART) clinic at Jimma University Teaching Hospital, Southwest Ethiopia. For measuring the UNAIDS diagnosis target, prevalence rate of delayed HIV diagnosis was considered as a surrogate marker. For the treatment target, number of people on pre-ART, number of people who discontinued from ART or transferred out, and number of people who had fair or poor adherence were used as surrogate markers. For the viral suppression target, number of CD4 counts and/or WHO clinical stages were used to assess immunological, clinical and treatment successes and to further show the extent of viral suppression. Summary statistics, trends and estimated survival time reported.

Results: 8172 patients were enrolled for HIV cares in the period 2003-15. For the diagnosis target, 34.5% patients knew their status early (43%-children, 33%-adults). For the treatment target, 65% patients received ART, 1154 (21.9%) patients discontinued from ART, 1015 (19.3%) patients on ART transferred out to other sites, 916 (17%) of patients on ART had fair or good adherence. For the virological suppression target, 80.7, 80.3 and 65.8% of patients had immunological, clinical and treatment success displaying an estimated 66% of patients achieved the target.

Conclusions: The finding reflects that an estimated 35% of patients knew their status timely, 65% of diagnosed patients received treatment and 66% of patients on ART achieved viral suppression. This is very far from the UNAIDS 90-90-90 targets underscoring the need for rigorous innovative methods such as unmanned aerial systems (or drones) for transporting laboratory specimens, immediate or same day ART initiation, community distribution of ART, runaway packs during conflict, and use of GenXpert for HIV viral load testing would significantly help to hit the target.

Keywords: ART, 90-90-90 targets, HIV care continuum, delayed HIV diagnosis, Ethiopia

Late ART Initiation among Adult HIV Patients at University of Gondar Hospital, Northwest Ethiopia. *Degefaye Zelalem Anlay.*

Background: early diagnosis and initiation of treatment are needed to maximize benefit from anti-retroviral therapy (ART). On the other hand, late initiation of ART poses a challenge of low immunologic response, increase morbidity, mortality and hospitalization of the patient. Therefore, this study was aimed to assess the prevalence, trends and factors associated with late ART initiation in Northwest Ethiopia.

Methods: Institutional based cross-sectional study was conducted among 410 adult HIV patients started antiretroviral therapy between January/2009 to December/2014. Simple random sampling technique was used to select patient records. Data were collected by using pretested and structured data abstraction tool prepared from the existing record. Bivariate and multivariate logistic regression model was fitted to identify factors associated with late ART initiation among Adult HIV patients. An adjusted odds ratio with 95% confidence interval was computed to determine the level of significance.

Result: The prevalence of late ART initiation among adult HIV patients was found to be 67.3% (62.7 %-71.7%). The proportion of patients with late ART initiation decreased over time from 77.78% to 52.94% ($p < 0.001$). The overall median CD4 count at initiation of ART was 162.5 cell/ μ l (90.5-235.5). Age between 35-44 years (AOR=3.85; 95% CI 1.68-8.82), duration between HIV testing and enrollment to HIV care below one year (AOR=2.19; 95% CI 1.30-3.69), secondary education (AOR=2.59; 95% CI 1.36-4.94), tertiary education (AOR=3.28; 95% CI 1.25-8.64), being married (AOR=1.88; 95% CI 1.13-3.03), base line functional status of bedridden and ambulatory (AOR=4.68 95% CI 1.49-14.68), taking medication before ART initiation (AOR=2.18; 95% CI 1.07-4.44), starting ART between 2009-2010 (AOR=5.94; 95% CI 2.74-12.87) and starting ART between 2011-2012 (AOR=2.80; 95% CI 1.31-5.96) were significantly associated with late ART initiation.

Conclusion: The overall prevalence of late ART initiation was found to be high. The median CD4 count at initiation of ART over time is increased. Accordingly, the proportion of late ART initiation decreased over time. However, significant proportion of HIV patients started ART lately till. Therefore, strategic interventions to enroll HIV diagnosed patient to care earlier and prompt follow up of HIV patients for earlier initiation of ART is Crucial.

Keywords: Associated factors, Late ART initiation, HIV Patients, North West Ethiopia.

The Prevalence of Tuberculosis in Ethiopian Prison Settings: a Systematic Review and Meta-Analysis. *Addisu Melese.*

Background: Tuberculosis is a chronic bacterial disease transmitted through respiratory droplets. The disease is severe in congregate settings like prisons where both infected and uninfected inmates live together. Except individual studies with varying prevalence rates, there are no national studies conducted in prison settings in Ethiopia. Therefore, this systematic review and meta-analysis was designed to pool the results of individual studies and estimate the prevalence of tuberculosis in prison settings in Ethiopia.

Methods: MEDLINE/PubMed, Cochran library and Google scholar databases were searched for potential studies on the prevalence of tuberculosis among prisoners in Ethiopia. A total of 177 titles were identified and 10 studies met the inclusion criteria. Descriptive and quantitative data of the included studies were presented in tables and forest plots. Potential sources of heterogeneity across studies were assessed using the Cochrane's Q and I^2 tests. The MetaXL (version 5.3) was employed to compute the pooled prevalence of TB using the random effect model and 95% confidence intervals.

Results: Based on the ten studies included in the meta-analysis, about 4,086 prisoners were infected with tuberculosis (TB). The pooled prevalence of TB among prisoners was therefore 8.33% (95% CI: 6.28%-10.63%) and the pooled point prevalence was estimated at 888 per 100,000 prison population (95% CI: 531-1,333). The prevalence of TB using microscopy alone was 6.59% (95% CI: 3.96-9.50%) whereas the prevalence of TB when microscopy is combined with either culture or molecular tests was 8.57% (95% CI: 4.94-12.6%).

Conclusion: The pooled prevalence of tuberculosis among prisoners in Ethiopia is expectedly higher than in the general population. This could explain the spread of TB within prisons and between prisoners and various communities. Attention should be given to prisons to prevent the transmission and emergence of drug resistance TB both in inmates and general population. Evidences are not found on the status of latent TB and evidences on the effect of HIV on the occurrence of TB were conflicting.

Time to Sputum Smear and Culture Conversions in Multidrug Resistant Tuberculosis at University of Gondar Hospital, Northwest Ethiopia.

Agumas Shibabaw, Baye Gelaw, Baye Gelaw, Shu-Hua Wang, Baye Gelaw, Belay Tessema, Shu-Hua Wang, Shu-Hua Wang, Belay Tessema, Belay Tessema.

Background: Monthly sputum smear and culture are used to monitor treatment efficacy in multidrug resistant tuberculosis (MDR-TB), and smear and culture conversion from positive to negative is an important interim indicator of the efficacy of MDR TB treatment. As to our knowledge, there is no report on sputum smear and culture conversion of MDR-TB patients in Ethiopia.

Objective: To evaluate sputum smear and culture conversion rate and factors influencing the time to culture conversion.

Methods: Retrospective review of culture positive rifampicin resistant (RR)/MDR-TB patients from September 2011 to August 2016 was conducted at University of Gondar Hospital. Sputum cultures were taken monthly and conversion was defined as two negative cultures taken at least one month apart. Data were entered using EpiData and exported to SPSS software for analysis. Cox proportional hazard model was used to determine the predictor variables for culture conversion.

Results: Overall, 201/235 (85.5%) of patients with baseline positive cultures converted in a median of 72 days (interquartile range: 44-123). More than half (61.7%) of patients achieved culture conversion in three months. Majority of patients (89.2% had 54 days (interquartile range: 31-72) of median time to smear conversion. The median time to culture conversion among 61 HIV/MDR-TB co-infected patients was 67 days (95% CI, 55.4 –78.6), which is significantly shorter than HIV negative patients, 77 days (95% CI, 63.9-90, $P= 0.005$). Independent predictors of significantly longer sputum culture conversion time were underweight (aHR= 0.71, 95% CI, 0.52 – 0.97), HIV negative (aHR= 0.66, 95% CI, 0.47 – 0.94) and treatment regimen composition (aHR= 0.57, 95% CI, 0.37 - 0.88). Years of treatment started in 2015 (aHR= 1.86, 95% CI, 1.1 – 3.14) and 2016 (aHR= 3.7, 95% CI, 1.88 – 7.35) revealed significantly high rate of culture conversion as compared to those started in 2011.

Conclusions: Majority of patients achieved culture conversion in three months and smear conversion in two months. Patients with identified risk factors were associated with longer time to initial sputum culture conversion during MDR TB treatment, and these factors should be considered during MDR-TB patient's management.

Keywords: MDR TB, Time to culture conversion, Time to smear conversion, Predictors

Occupational Health

Abs. 37

Biochemical Effects of Working in Garage: a Comparative Study in Harar Town, Eastern Ethiopia. *Zerihun Ataro, Abraham Geremew, Fekadu Urgessa.*

Background; Occupational exposure to chemicals causes a wide range of biological effects depending upon the level and duration of exposure. In Ethiopia, garage workers in small scale auto garages are exposed to chemicals. However, preceding studies did not explore the body biochemical effect of working in garage. Therefore, this study focused on measuring some of the body biochemical parameters for future reliable protection measures in the workplace.

Objective: To determine the differences on biochemical parameters of Garage workers and occupationally non exposed participants, Harar, Eastern Ethiopia, May 2016.

Method: A comparative cross sectional study was conducted in Harar town, Eastern Ethiopia. Thirty (30) garage workers were selected and compared with 30 age and sex matched comparison group of teachers and students. Demographic and occupational data were collected by using structured questionnaire by trained data collector. Biochemical parameters were measured by automated clinical chemistry analyzer (Autolab 18, Boehringer-Mannheim Diagnostics,USA). Data was analyzed using STATA Version 13.

Result: All of the garage workers included were male and majority of them did not implement effective preventive and control measures for workplace chemical exposure. A statistically Significant increase were found in alanine aminotrasferase (ALT) (35.60 ± 7.93 Vs 19.17 ± 0.91 U/L; P-value<0.0440), aspartate aminotrasferase (AST) (47.23 ± 4.89 Vs 27.03 ± 1.13 U/L; P-value=0.0002), Total protein (85.83 ± 1.16 Vs 76.40 ± 0.86 g/l; P-value<0.0001), Uric acid (7.34 ± 0.29 Vs 5.19 ± 0.21 mg/dl; P-value <0.0001), Glucose (85.13 ± 3.92 Vs 75.60 ± 2.40 mg/dl; P-value=0.0425); Total cholesterol (199.40 ± 13.11 Vs 140.37 ± 3.81 mg/dl; P-value=0.0001) and Triglyceride (143.40 ± 5.79 Vs 110.60 ± 8.98 mg/dl; P-value=0.0033) in garage workers compared to comparison group. On the other hand, a statistically significant decrease were found in Albumin (39.37 ± 1.78 Vs 46.37 ± 0.56 g/l; P-value=0.0004) and Urea (21.63 ± 1.04 Vs 27.60 ± 1.69 mg/dl; P-value=0.0039) among garage workers compared to the comparison group. There was no significant difference on the value of creatinine and alkaline phosphatase (ALP) between the two groups.

Conclusion: Our finding indicate that working in garage increased the level of ALT, AST, glucose, total cholesterol and triglyceride and uric acid; and decrease in albumin and urea compared to the unexposed comparison group. Therefore, appropriate and effective safety measures need to be implemented to prevent the possible chemical exposure during routine work in the garages.

Health-Care Workers' Compliance With Infection Prevention Guidelines and Associated Factors in Hadiya Zone, Southern Ethiopia □ Hospital Based Cross Sectional Study. *Tadele Yohannes Hehena.*

Background: Infections in Health care facilities have become a major health problem especially in the health institutions located in developing countries. However, limited evidences are available with regard to the level of compliance of healthcare workers with infection prevention guidelines and its associated factors in the country in general and in the study area in particular.

Objectives: The objective of this study is to assess Health-care workers' compliance with Infection Prevention Guidelines and factors that influence compliance in Hospitals of Hadiya Zone, Southern Ethiopia, 2017

Methods: A hospital based cross-sectional study was conducted from May to June 2017. To draw a total sample of size 279 simple random sampling technique was used. Data were entered using Epi-Data version 3.1 and exported to SPSS version 20 for analysis. Results was summarized and presented by tables and graphs. Binary logistic regression analysis was used to see significance of association between the outcome and independent variables. Odds ratios at 95% CI were computed to measure the strength of the association between the outcome and the explanatory variables. P-value <0.05 was considered as a statistically significant.

Results: The findings of this study showed that the overall compliance of HCWs with infection prevention guidelines was 15.0% (95%CI: 11.0%, 19.0%). Female health care workers were about 3 times more compliant to infection prevention guidelines as compared to males (AOR: 2.962, 95%CI: (1.342,6.535)). Respondents who had positive attitude towards IP guidelines were 3 times more likely to had compliance with IP guidelines as those who had negative attitude (AOR: 3.130, 95%CI: (1.192,8.224)). The odds of having compliance to IP guide lines was 2.5 times higher on those health care workers who had access to IP guidelines as those who had no access to IP guidelines (AOR: 2.820, 95%CI: (1.076,7.389)). Health care workers who had training on IP guidelines were 2.3 times more likely to comply with IP guidelines as compared to those who had no training (AOR: 2.262, 95%CI: (1.008,5.078)).

Conclusion: In this study the overall compliance level of the health care workers to infection prevention guide lines was very low. Being female, attitude towards infection prevention guidelines, accessibility of personal protective equipments and training on IP guidelines were factors significantly associated with compliance with IP guidelines. Continuous training on infection prevention guidelines to health care workers, mainly for males and accessibility of infection prevention materials and equipments in the hospitals should get due attention.

Keywords: Compliance, Health care workers, Factors, Hospital, Hadiya zone.

Infection Prevention and Control Practice of Healthcare Workers in Amhara Region Teaching Hospitals, Ethiopia.

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Background: Infection prevention practice is a serious concern for health care workers; it is a major risk for the transmission of infections in the hospital. Infection prevention practice is low and not well explored in developing countries. The aim of the present study is to assess the infection prevention practice in teaching hospitals of Amhara region in Ethiopia.

Method: A cross-sectional study was conducted among healthcare workers in Amhara Region teaching hospitals, Ethiopia. . Data were collected from March to April 2015. A total of 422 healthcare workers were included in the study. Systematic random sampling was employed to select the study participants. The collected data were cleaned, coded and entered in to Epi-Info version 3.5.3 software and analysis was done using STATA 13. Multivariable binary logistic regression analysis was conducted. $P < 0.05$ was considered as statically significant.

Result: Four hundred thirteen healthcare workers participated in the study. Twenty-six questions were asked to answer infection prevention practice. The total composite score showed that 55% [95% CI: (50.1-59.6)] of the healthcare workers practice infection prevention control in their activities. For the past one year 234(56.7%) and 150(36.3%) healthcare workers exposed to blood or body fluids and sharp or needle injury, respectively. The odds of infection prevention control practice among Nurses is 2.09 [(95% CI: 1.27-3.43)] times higher than among physicians

Conclusion: Infection prevention and control practice were low in the study setting. High proportions of healthcare workers were exposed to risk factors. Nursing professionals practice better than physicians. Infection prevention and control practice need attention for the control and prevention of hospital acquired infection in the study area.

Keywords: Healthcare workers, Infection prevention and control, hospital, Ethiopia.

Adolescent and Youth Health

Abs. 40

Comparative Study on the Utilization of Reproductive Health Services and Factors Affecting it among Students with and without Disabilities in Public Universities in Addis Ababa, Ethiopia.

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Background: Reproductive health services and health education are fundamental human rights. However, utilization of reproductive health services among adolescents and youth is low. Particularly, people with disabilities have lower knowledge on reproductive health related issues and their service utilization. Therefore, this study tries to find out the status of reproductive health services utilization among students with disabilities and compare their level of service utilization to that of their counterparts.

Methods: Institution based comparative cross-sectional study was carried out in two public universities in Addis Ababa from Sep 2016 to Jun 2017. Multi-stage sampling method was used to select a total of 548 respondents (274 each group). Structured and self-administered questionnaire was used. STATA version 14 software was used for data analysis. Odds ratio, 95% CI in conditional binary logistic regression was used to identify associated factors with RHS utilization in both groups.

Results: The RHS utilization among students with and without disabilities were 40.5% & 69.1% respectively ($p < 0.05$). RHS inaccessibility and lack of awareness were the main reasons for not utilizing RHS among students with disabilities while religious and cultural barriers were the most common factors to deter RHS utilization among students without disabilities. Those students without disabilities were [3.11: 95%CI(1.86, 5.19)] times more likely to utilize RHS than those students with disabilities. For students with disabilities those who knew RHS providing facilities [4.9: 95% CI (1.47, 16.2)], who ever had discussed RH issues with any one [3.59: 95% CI (1.6, 7.9)], who were exposed to any type of mass media in the last 12 months [2.9: 95% CI (1.03, 8.1)] and who had a nearby health facility other than the university clinic [4.36: 95% CI (1.01, 18.7)] were more likely to utilize RHS compared to their counterparts. For students without disabilities those students who were in the age group of 25 and above and those students who ever had a girl/boyfriend were [5.01:95% CI (1.19, 21.2)] and [6.65:95% CI (3.2, 13.2)] times more likely to utilize RHS than those who were in the age group 15-19 years and those who had never had a girl/boyfriend respectively.

Conclusion & Recommendation: RHS utilization among students with disabilities is low compared to students without disabilities. Awareness on RHS providing facilities, discussion on RH issues, mass media exposure in the past 12 months, availability of other HFs than University clinic were found to have significant positive association with RHS use among students with disabilities while age and having a boy/girl friend were the most common predictors of RHS use among students without disabilities. Therefore, The FMOH, the universities' administrations and other non-governmental organizations should consider the RH needs of student with disabilities and make RH services readily available, accessible and favorable for them. Acronyms: reproductive health (RH), reproductive health service (RHS), Health Facilities (HFs), Federal Ministry of Health (FMOH).

Ayfhhs to Promote the Participation of Youth in the Protection of Their Own Health in Areas Particularly Affected by the Migratory Movements in Ethiopia.

Andualem Assefa Mengistu, Desalegn Worku Desalegn, Desalegn Worku Desalegn, Hailu Gebremichael Hagozom, Hailu Gebremichael Hagozom, Alessandro Guarino, Alessandro Guarino, Micol Fascendin, Micol Fascendi.n

Introduction: The project was part of an *Emergency Initiative*, financed by the *Italian Agency for Cooperation and Development* and aimed at mitigating the causes of irregular migration in Ethiopia, by supporting income generating activities among local communities and potential migrants; improving their living conditions through the provision of multi-sectorial essential services (wash, health and education); and organizing informative campaigns about the migratory movements. Integrating with the work of other Italian NGOs, *Comitato Collaborazione Medica* (CCM) contributed to the initiative by addressing the goals pertaining the health and education of adolescents and youth, a large group of the population particularly vulnerable for the rapid physical, psychological and social development it is facing.

Intervention: The project, carried out in Bale (Oromia Region) and Eastern zone (Tigray Region), aimed at improving the availability and accessibility of sexual and reproductive health (SRH) services to the youth, by establishing Adolescent and Youth Friendly Health Services (AYFHS) in 6 health facilities and directly involving the youth in the education of their peers. A Needs Assessment at the beginning of the action allowed identifying the gaps in services delivery (in terms of infrastructure, human resources, equipment, supplies and information system) and supported the local authorities in the decision-making and planning process. AYFHS were established in Robe Hospital (Bale zone) and 5 Health Centres across Eastern zone, with two dedicated staff each providing SRH services to the youth 5 days a week. Health workers were trained on the AYFHS National Guidelines, to ensure the consistent application of service standards. Particular attention was given to the client-provider relationship, essential for the adolescent and young clients that are reluctant to access the health system for the limited trust and confidence they have in the health care providers, especially when dealing with SRH issues. Groups of youth were trained as peer-educators, to promote the discussion of SRH issues among their peers and encourage the accessibility to the established services. Over the first quarter of operation, above 2,700 accesses were recorded across the 6 AYFHS, with documented increment in the access to the Family Planning and Safe Abortion Care services in particular.

Lessons Learnt: The AYFHS were established in accordance with the National Health Development plans and in line with the National Standards, allowing their sustainability in the long run. The strategy employed allowed a high participation of the youth, leading to excellent results in the accessibility and acceptability of the established services.

Recommendations: The only ten months of project implementation limited the effective and adequate supervision of project activities and gave short time to the health workers to fully and confidently own the newly established AYFHS. Close monitoring and supervision of the services should be carefully carried on by the local health authorities, to ensure problems are promptly discussed and addressed and national standards always respected.

Assessing Factors Affecting Utilization of Family Planning Methods Among Adolescents Aged 15-19 Years in Ethiopia. *Abebaw Addis Gelagay, Dr. Abebaw Gebeyehu Worku, Yohannes Ayanaw Habtu.*

Background: A significant number of adolescents are sexually active with risky sexual behaviours including early sexual initiation, sex with multiple partners, without condom and after alcohol/substance use which makes them liable for obstetric risks, STI including HIV. According to the 2011 EDHS report, about 33% of adolescents aged 15-19 had unmet need for family planning. Therefore, knowing the current status family planning utilization, barriers, and enabling factors are important to design and implement appropriate strategies.

Objectives: This study aimed to determine the current proportion of met and unmet need and identify associated factors, the barriers and enabling factors for FP use.

Methods: A community based cross-sectional study using mixed method was used to assess the research objectives. Both quantitative and qualitative data were obtained from each regions and city administrations considering in-school and out-of-school adolescents. A total of 8447 respondents with representative sample from the regions was proposed for the quantitative study. A total of 22 focused group discussion and 55 key informant interviews were conducted.

Multistage sampling techniques for quantitative data and purposive sampling technique for qualitative data were used to select respondents. Both descriptive and analytical statistical procedures were utilized. Odds ratio were used to determine the associations between independent and outcome variables.

Results: A total of 8447 respondents for the quantitative data with a response rate of 99.1% and the mean age of the respondents was 17.13 years (SD +1.24 years). More than one-fourth (28.90%) of the study participants had ever had sexual experience and the mean age for first sex (n=1729) was 16.09 years (95% CI: 16.03, 16.15).

Among sexually active adolescents, the current modern contraceptive prevalence rate (CPR) and unmet need for contraceptives were 38.24% (95% CI: 26.98, 50.91) and 56.30% (95% CI: 43.46, 68.33) respectively.

Both quantitative and qualitative results showed the main barriers of modern contraceptive use were: fear of drug side effect (47.82%), inconvenient working hour (25.54%), fear of families (24.30%), and lack of privacy/inconvenient location/ (20%). On the other hand, service accessibility (47.47%), availability of method of choice (47.07%), and partner involvement (17.16%) were the main factors that enable adolescents to use contraceptives.

The multivariate analysis indicated that being out of school 1.29 (95%CI: 1.06,1.59), having good perception towards family planning methods [AOR 95% CI: 1.47 (1.02, 2.11)], having regular boy friend/ Husband [AOR 95% CI: 3.39 (2.46, 4.69)], visiting health facility for any other service [AOR 95% CI: 3.51 (2.56,4.79)], having lessen frustration of families/relatives [AOR 95% CI: 5.98 (3.29,10.86)], Perceived convenient service delivery place [AOR 95% CI: 1.65 (1.01, 2.74)],

Perceived convenient working hours [AOR 95% CI: 5.13 (2.96,8.89)] were significantly associated with modern contraceptive use among adolescents.

Conclusions: Uptake of modern contraceptives among sexually active adolescents was low where as the unmet need for contraceptives was very high. Barriers and enabling factors for adolescents contraceptive use were mainly linked with individual perceptions and behaviours, family influence/none approval, and convenience of facilities. It is important to design strategies and to take multi-level interventions consistently.

Teenage Pregnancy and its Associated Factors among School Adolescents of Arba Minch Town, Southern Ethiopia. *Aleme Mekuria.*

Background: Teenage pregnancy has long been a worldwide social, economic and educational concern for the developed, developing and underdeveloped countries. Studies on adolescent sexuality and pregnancy are very limited in our country. Therefore, this study aims at assessing the prevalence of teenage pregnancy and its associated factors among school adolescents of Arba Minch town.

Methods: Institution- based, cross-sectional study was conducted from 20-30 March 2014. Systematic sampling technique was used to select a total of 578 students from four schools of the town. Data were collected by trained data collectors using a pre tested, self administered structured questionnaire. Analysis was made using the software SPSS version 20.0 statistical packages. Multivariate logistic regression was used to identify the predictors of teenage pregnancy.

Results: The prevalence of teenage pregnancy among school adolescents of Arba Minch town was 7.7%. Being grade11 student(AOR=4.6;95%CI:1.4,9.3),grade12 (AOR=5.8;95% CI:1.3,14.4), not knowing the exact time to take emergency contraceptives(AOR=3.3;95%CI:1.4,7.4), substance use(AOR=3.1;95%CI:1.1,8.8), living with either of biological parents (AOR=3.3;95%CI:1.1,8.7) and poor parent-daughter interaction (AOR=3.1;95%CI:1.1,8.7) were found to be significant predictors of teenage pregnancy.

Conclusions: This study revealed high level of teenage pregnancy among school adolescents of Arba Minch town. A Significant number of adolescent female school students were at risk of facing the challenges of teenage pregnancy in the study area. School based reproductive health education and strong parent-daughter relationships are recommended.

Keywords: Adolescent, Teenage pregnancy, Risk factors, Arba Minch, School, Southern Ethiopia

Impacts of Emergency Contraceptive Pill Use on Condom Utilization among College Students, Western Ethiopia. *Edao Sado Genamo.*

Background: Emergency contraceptive pill (ECP) is a type of hormonal contraceptives which prevents pregnancy after unprotected sexual intercourse. The impact of ECP use on the condom utilization is known among young students. Thus, the study was conducted to assess awareness, utilization, and attitude towards the use of emergency contraceptive pill, and its impact on condom utilization.

Methods: The study was conducted on the 400 female students pursuing their education in the private colleges. A female student was selected by simple random sampling after the number of students was proportionally allocated to three colleges. Data were collected by using self administered questionnaire and entered into EpiData 3.1 version, and analyzed by using SPSS version 20. We applied both bivariate and multivariate analysis techniques, to identify the impacts of ECP use on condom utilization. We used p-value less than 0.05 as cut off point for significance.

Results: A total of 381 students completed the questionnaires making a response rate of 95.25%. It was found that almost half (48.8%) of the students have ever had sexual intercourses and heard of ECP. About one third (30.2%) of the students have ever used ECP. More than half (61.7%) of students were willing to use ECP whenever they need. Students who ever used ECP were 3 times less likely to use condoms as compared to those who did not ever use ECP (AOR = 0.322, 95% CI 0.164, 0.632). On the other hand, students who believed that ECP cannot prevent STD were 2 times more likely to use condom as compared to those who believed ECP can prevent STD (AOR= 2.217 95% CI 1.070, 4.593).

Conclusion: The findings from the study showed that there is moderate awareness and positive attitude toward utilizing ECP. ECP use has negative impacts on the condom utilization. Promotion of condom use with ECP is needed to prevent STD in line with preventing unwanted pregnancy.

Keywords: *Emergency contraceptive Pill, Condom utilization, Sexual transmitted disease, Female students.*

Maternal Health

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Determinants of Pre-Eclampsia/Eclampsia among Women Attending Delivery Services in Selected Public Hospitals of Addis Ababa, Ethiopia: a Case Control Study. Teklit Grum¹, Abiy Seifu², Mebrahtu Abay¹, Teklit Angesom¹, Lidiya Tsegay³¹*School of Public Health, College of Health Sciences, Aksum University, Aksum, Ethiopia* ²*School of Public Health, College of Health Sciences, Addis Ababa University, Addis Ababa, Ethiopia* ³*School of Nursing, College of Health Sciences, Aksum University, Aksum, Ethiopia.*

Background: Pre-eclampsia is a pregnancy-specific hypertensive disorder usually occurs after 20 weeks of gestation. Unlike deaths due to direct causes, pre-eclampsia/ eclampsia related deaths appear to be increasing and linked to multiple factors, making prevention of the disease a continuous challenge. The aim of this study is to assess determinants of pre-eclampsia/eclampsia among women attending delivery services in selected public hospitals in Addis Ababa, Ethiopia.

Methods: Hospital based unmatched case control study design was employed. The study was conducted in Addis Ababa among women attending delivery services in two public hospitals from December, 2015 G.C. to February, 2016 G.C. with sample size of 291 (97 cases and 194 controls). Women with pre-eclampsia/eclampsia were cases and women who had not diagnosed for pre-eclampsia/eclampsia were controls. Case-control incidence density sampling followed by interviewer administered was conducted using pretested questionnaire. The data was entered in Epi Info 7 software and exported to STATA 14 for cleaning and analysis. Descriptive statistics were used to display the data using tables compared between cases and controls. To compare categorical variables between cases and controls Chi-squared test was used. Both Bivariable and multivariable logistic regression analyses were computed to identify the determinants of pre-eclampsia/eclampsia.

Results: Factors that were found to have statistically significant association with pre-eclampsia or eclampsia were primigravida (AOR: 2.68, 95% CI: 1.38, 5.22), history of preeclampsia on prior pregnancy (AOR: 4.28, 95% CI: 1.61, 11.43), multiple pregnancy (AOR: 8.22, 95% CI: 2.97, 22.78), receiving nutritional counseling during pregnancy (AOR: 0.22, 95% CI: 0.1, 0.48) and drinking alcohol during pregnancy (AOR: 3.97, 95% CI: 1.8, 8.75).

Conclusions and recommendation: The study identified protective and risk factors for pre-eclampsia/eclampsia. To promptly diagnose and treat pre-eclampsia, health workers should give special attention to women with primigravida and multiple pregnancy. Besides, health care providers should provide nutritional counseling during ANC, including avoiding drinking alcohol during their pregnancy.

Prevalence of Hepatitis B Virus Infection and Associated Factors among Pregnant Women Attending Routine Antenatal Clinics - West Hararghe Zone, Oromia Region, Ethiopia, August 2017. *Belay Mamuye Cherine.*

Background: Globally, about 350–400 million peoples are chronically infected with hepatitis B virus (HBV), with over 65 million in Africa. Mother-to-child transmission (MTCT) is responsible for more than half of chronic infections. If infected at birth, a child has a 90% chance of becoming a chronic carrier. Administration of the hepatitis B vaccine birth dose followed by timely completion of the vaccine series is 70%–95% effective in preventing MTCT. In Ethiopia, routine infant vaccination against hepatitis B was begun in 2007; however the birth dose and prophylaxis has not yet been introduced in almost all ANC health institutions. The objective of the study was to estimate hepatitis B virus seroprevalence and associated factors among pregnant women attended antenatal clinics in West Hararghe public hospitals and to recommend ways to reduce the risk of perinatal transmission.

Methods: A cross-sectional study was conducted among 363 pregnant women attended routine antenatal care clinics in West Hararghe public hospitals from April-May, 2017. A systematic random sampling method was used to enroll participants. A structured questionnaire was used to collect information on risk factors. Blood sample were collected and tested for HBsAg by Enzyme-linked immunosorbent assay (ELISA). Data were entered using EpiData Version.3.1 and exported to SPSS Version 23.0 for analysis. Descriptive statistical tests and binary logistic regression was used for analysis.

Results: The overall seroprevalence of HBsAg was 22/363(6.1%; 95% CI 3.9-8.5) among pregnant women. History of abortion (aOR= 4.32, 95% CI 1.28-14.95), traditional tonsillectomy (aOR=4.36, 95% CI 1.07-17.82), history of admission to health facility (aOR=4.41, 95% CI 1.15-16.89), having multiple sexual partners (aOR=6.30, 95% CI 1.69-23.44) and history of liver diseases among family members (aOR=8.24, 95% CI 2.07-32.83) were independent risk factors associated with hepatitis B virus infection among pregnant women.

Conclusions: The prevalence of hepatitis B virus indicates a high-intermediate epidemic. Scaling up screening of pregnant women for hepatitis B virus in all antenatal clinics, proper counseling, care and treatment of hepatitis B virus should be recommended. Strategies to prevent mother-to-child transmission of hepatitis B virus, including availability of prophylaxis and birth dose vaccine should be adopted.

Keywords: Hepatitis B virus, Sero-prevalence, Hepatitis B surface Antigen (HBsAg).

Predisposing, Enabling and Need Factors Associated with Skilled Delivery Care Utilization among Reproductive Aged Women in Kersa District, Eastern Ethiopia. *Gezahegn Tesfaye Girma, Deborah Loxton, Catherine Chojenta, Roger Smith.*

Background: Skilled delivery care utilization in Ethiopia is still very low compared with the goal set by the global community for countries with the highest maternal mortality. As a result, the country is overburdened with high maternal mortality and morbidities. The aim of this study is to assess the predisposing, enabling and need factors associated with skilled delivery care utilization among reproductive aged women in Kersa district, Eastern Ethiopia.

Methods: A community-based quantitative cross-sectional study was conducted from June to August, 2017. A total of 1294 eligible women participated in the study. The respondents were selected using systematic sampling technique. An interviewer-administered structured questionnaire was used to collect the data. Data were collected using IPADs that were installed with electronic survey tool loaded with the questionnaire. Resident Kersa Health and Demographic Surveillance System (HDSS) interviewers were involved in the data collection process. Summary statistics were used to describe the data. Bivariate and multivariate logistic regression analyses were carried out separately for predisposing, enabling and need factors to elicit the association of the explanatory variables with skilled delivery care utilization. Odd ratios and its 95% confidence interval were calculated and statistical significance was declared using p-value <0.05.

Results: More than a quarter (30.8%) of the women utilized skilled delivery care for their last birth regardless of the place of birth. Whilst 384(29.7%) of the births were assisted with skilled health workers at health facilities. Significant predisposing factors were: husband's educational status (AOR, 2.44; 95% CI: 1.04, 5.71), absence of educated family member (AOR, 0.30; 95% CI: 0.16, 0.54), previous use of skilled delivery care (AOR, 0.07; 95% CI: 0.04, 0.12) and best friend's use of maternal care (AOR, 0.34; 95% CI: 0.20, 0.59). Place of residence (AOR, 16.38; 95% CI: 10.20, 26.31), type of kebele (AOR, 0.66; 95% CI: 0.49, 0.90), and social support (AOR, 0.50; 95% CI: 0.30, 0.82) were found to be significant enabling factors for skilled delivery care utilization. The significant need factors associated with skilled delivery utilization were history of infant death (AOR, 0.56; 95% CI: 0.40, 0.78), pregnancy intention (AOR, 0.59; 95% CI: 0.43, 0.79), experience of delivery complication (AOR, 0.47; 95% CI: 0.29, 0.74) and ANC attendance for the recent pregnancy (AOR, 5.15; 95% CI: 3.89, 6.82).

Conclusion: The result of the study highlights the need for collaborated effort from maternal health programmers and women health advocates in the country to establish community-based peer education programs and improve uptake of antenatal care to increase skilled delivery care utilization. Moreover, the study recognized the need to improve the quality of delivery care and strengthen family planning services backed by an equitable distribution of health resources to urban and rural areas.

Women's Knowledge about Obstetric Danger Signs in Ethiopia (Women's Kode): a Systematic Review and Meta-Analysis.

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Background: Every pregnant women are at risk of obstetric complications and 15% of all pregnancies actually end in some forms of obstetric complications. Globally, obstetric complications claimed the life of 10.7million mothers since the last two decades. In 2015 alone, an estimated 303,000 mothers died of obstetric complications. Almost all of these deaths happened in developing countries and more than half of the deaths occurred in sub-Saharan Africa where majority of women lack knowledge about obstetric danger signs. The Ethiopian Demographic and Health Survey (EDHS) 2016 indicated that the current maternal mortality rate was 412 per 100,000 live births. These deaths could be prevented if women are able to recognize obstetric danger symptoms and are timely accessed to emergency obstetric care. In Ethiopia, though a number of research has been conducted to assess women's knowledge about obstetric danger signs, to date, no systematic review has been conducted. Therefore, this systematic review is aimed to synthesize existing literature about women's knowledge of obstetric danger signs to produce more concise information for evidence based maternal health management.

Methods: The protocol of this review was registered in the International Prospective Register of Systematic Reviews (PROSPERO). We systematically searched for articles from Medline, CINAHL, Embase, Web of Science, Scopus, Google Scholar and Maternity and Infant Care databases using appropriate search terms in consultation with a faculty librarian expert. Two reviewers conducted screening of the articles and data abstraction independently. The articles that met the inclusion criteria were assessed for quality using the adapted Newcastle Ottawa Scale for cross sectional studies. The finding of this review was reported following the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) statement.

Results: From the 215 articles initially screened by abstracts and titles, 12 studies fulfilled the inclusion criteria. All of the studies reported women's knowledge of obstetric danger signs during pregnancy, ten articles reported level of knowledge during delivery and eight studies reported it during the postpartum period. The pooled random effect-meta analysis level of women's knowledge of obstetric danger signs during pregnancy, delivery and postpartum were 48%, 43% and 32% respectively. Subgroup analysis showed great regional variation in knowledge of women about obstetric danger signs. Articles were included from five different regions and the level of women's knowledge about obstetric danger signs during pregnancy was found to be lowest (32%) in Ethiopian Somali Region and highest (72%) in Tigray Region. Maternal age, education, income, health service use and women's autonomy were reported to affect women's knowledge about obstetric danger signs.

Conclusions: Women's knowledge of obstetric danger sign in Ethiopia was very low. Poor knowledge of obstetric danger signs hampered access to obstetric care when women encountered obstetric complications. Therefore, to improve access to health service, factor-specific interventions should be designed to improve women's knowledge of obstetric danger signs.

Keywords: Women's health, Pregnancy, Knowledge, Obstetric danger signs, Ethiopia.

Association between Past Hormonal Contraceptive Use and Preeclampsia among Pregnant Women in Gojjam Zones, Amhara Region, Ethiopia, 2017: a Case Control Study. *Abiyot Wolie Asres, Abigiya Wondimagegnehu Tilahun, Sisay Teklu Waji, Adamu Addissie.*

Background: Preeclampsia is a common problem of pregnancy which leads to significant maternal and fetal complications. Those women with a history of preeclampsia have a higher risk of developing preeclampsia in subsequent pregnancies but the effect of commonly used hormonal contraceptives on blood pressure is still not clear. This study was conducted to assess the association between past hormonal contraceptive use and preeclampsia among pregnant women in the selected public hospitals.

Methods: Institution based unmatched case control study design was conducted in in Amhara Region, Ethiopia from August 2016 to October 2017. Women who were diagnosed as having preeclampsia considered as cases and women without preeclampsia were controls. Cases and controls were selected consecutively in the selected public hospitals. The case to control ratio was 1:2. The total sample size was 330 (110 cases and 220 controls).The data was obtained through reviewing women's record, taking some measurements and face to face interview using pretested questionnaire. The data was entered into EPI info and transferred to STATA. Descriptive statistics were calculated and finally the data was analyzed by logistic regression model using STATA version 14.

Result: There was non-significant association between history of past hormonal contraceptive use and preeclampsia except implant. Independent risk factors of preeclampsia were family history of hypertension (COR= 3.04, 95% CI [1.13-8.23]), history of abortion (AOR= 3.17, 95 CI: [1.31-7.70]), change of paternity (AOR= 3.16, 95%CI: [1.47-6.83]) and multiple pregnancies (AOR= 2.68, 95%CI: [1.10-6.58]. On the other hand, using of implant (AOR=0.41, 95%CI: [0.18-0.93]) and fruit during this pregnancy (AOR = 0.36, 95% CI [0.18-0.72]) were found to be preventive factors for preeclampsia.

Conclusion: History of past hormonal contraceptive use was non-significantly associated with preeclampsia except implants. History of abortion, change of paternity and multiple pregnancies were risk factors whereas fruit intake and implant use were preventive factors for preeclampsia.

Recommendation: Researchers better to do further study on this maternal complication by using large sample size. Health workers better to give attention for pregnant women who have history of abortion and multiple pregnancies. It is better to encourage them to use implant as priority choice of contraception before their pregnancy.

Keywords: Hormonal contraceptive use, preeclampsia, pregnancy

Diet and Pre-eclampsia: A Prospective Multicentre Case–Control Study in Ethiopia. *Mulualem Endeshaw Bogale.*

Introduction: Pre-eclampsia is one of the most commonly encountered hypertensive disorders of pregnancy that accounts for 20–80% of maternal mortality in developing countries, including Ethiopia. For many years, diet has been suggested to play a role in pre-eclampsia. However, the hypotheses have been diverse with inconsistent results across studies, and this has not been studied in Ethiopia.

Objectives: The objective of this study was to determine the effect of dietary habits on the incidence of pre-eclampsia in Bahir Dar, Ethiopia

Methods: A prospective multicentre unmatched case–control study was conducted among 453 (151 cases and 302 controls) pregnant women attending antepartum or intrapartum care in public health facilities of Bahir Dar City from June to September 2014. The interviewer conducted a face-to-face interview, measured the mid-upper arm circumference (MUAC) and collected the mid-pregnancy haemoglobin level from clinical notes using a standardized and pretested questionnaire. Epi Info 3.5.3 was used for data entry and cleaning, while IBM SPSS Statistics 20 was used for data analysis. Backward stepwise unconditional logistic regression analysis was employed to determine the strength of association of predictive variables with the outcome variable and to control for the effect of confounding variables. A *P*-value ≤ 0.05 was considered statistically significant.

Result: For every 1-cm increase of MUAC, there was an increase in the incidence rate of pre-eclampsia by a factor of 1.35 (adjusted odds ratio (AOR)=1.35, 95% confidence interval (CI): 1.21, 1.51). A higher incidence of pre-eclampsia was found in women who reported to have consumed coffee daily during pregnancy (AOR=1.78, 95% CI: 1.20, 3.05). Similarly, for women who had anaemia during the first trimester, the incidence of pre-eclampsia was 2.5 times higher than their counterparts (AOR=2.47, 95% CI: 1.12, 7.61). This study also revealed consumption of fruit or vegetables at least three times a week during pregnancy to be protective against pre-eclampsia (AOR=0.51, 95% CI: 0.29, 0.91; AOR=0.46, 95% CI: 0.24, 0.90, respectively). In addition, compliance with folate intake during pregnancy has shown a significant independent effect on the prevention of pre-eclampsia in this study (AOR=0.16, 95% CI: 0.08, 0.29).

Conclusion and recommendation: Adequate vegetable and fruit consumption and compliance with folate intake during pregnancy are independent protective factors against pre-eclampsia. On the other hand, higher MUAC, anaemia and daily coffee intake during pregnancy are risk factors for the development of pre-eclampsia. Audience-specific education and promotion of the use of the protective factors identified in this study should be prioritized. The risk factors identified can be used for prediction and early diagnoses of pre-eclampsia allowing timely interventions to be performed to minimize deaths associated with severe pre-eclampsia/eclampsia.

Keywords: Preeclampsia, MUAC, Hypertension, Anemia.

Malaria

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Antimalarial Activity of Methanolic Crude Extract of Seeds of *Brassica Nigra* (ሰናፍጭ) Against *Plasmodium Berghei* Infection in Mice.

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Background: Resistances to currently available drugs and insecticides, significant drug toxicities and costs and lack of vaccines currently complicated the treatment of malaria. A continued search for safe, effective and affordable plant-based antimalarial agents thus becomes crucial and vital in the face of these difficulties.

Objective: To evaluate the antimalarial activity of 80% methanolic extract of the seeds of *Brassica nigra* against *Plasmodium berghei* infection in mice.

Method: Chloroquine sensitive *Plasmodium berghei* was used to test the antimalarial activity of the extract. In suppressive and prophylactic models, Swiss albino male mice were randomly grouped into five groups of five mice each. Group I mice were treated with the vehicle, group II, III and IV were treated with 100, 200, and 400 mg/kg of the extract, respectively and the last group (V) mice were treated with chloroquine (10 mg/kg). The level of parasitemia, survival time and variation in weight of mice were used to determine the antimalarial activity of the extract.

Results: Chemosuppressive activities produced by the extract of the seeds of *B. nigra* were 21.88, 50.00 ($P < 0.01$) and 53.13 % ($P < 0.01$), while the chemoprophylactic activities were 17.42, 21.21 and 53.79 % ($P < 0.05$) at 100, 200 and 400 mg/kg of the extract, respectively as compared to the negative control. Mice treated with 200 and 400 mg/kg extract were significantly ($P < 0.05$) lived longer and gained weight as compared to negative control in four-day suppressive test.

Conclusion: From this study, it can be concluded that the seed extract of *Brassica nigra* showed good chemosuppressive and moderate chemoprophylactic activities and the plant may contain biologically active principles which are relevant in the treatment and prophylaxis of malaria, thus supporting further studies of the plant for its active components.

Keywords: Antimalarial activity, *Brassica nigra*, Malaria, Mice, *Plasmodium berghei*.

Spatial Distribution of Malaria and Determinants of Malaria Clustering in South-Central Ethiopia. *Eskindir Loha, Wakgari Deressa, Meshesha Balkew, Taye Gari, Hans J Overgaard, Bernt Lindtjørn*

Introduction: Malaria transmission is highly heterogeneous at varying geographical areas including in low malaria incidence areas. The host population in malaria hotspots areas can be source for the continued infection to a wider geographic area and population. Therefore, identification of the potential malaria clusters and contributing factors will help to targeted interventions. The aim of this study was to assess spatial distribution and determinant of malaria clustering in Adami Tullu district south-central Ethiopia.

Methods: This longitudinal study was conducted from October 2014 to January 2017 as part of a cluster randomised controlled trial that aimed to assess the effect of combined use of long lasting insecticidal net and indoor residual spray against clinical malaria compared with individual interventions. Baseline socioeconomic and geographic location/elevation data were collected from visited households. Malaria cases were identified by active and passive searching. Malaria incidence data were collected using rapid diagnostic test in health posts for 121 weeks. The total number of population was 34548 in 6071 locations. A retrospective purely spatial Poisson regression model was fitted to identify statistically significant clusters with high rate malaria infection by adjusting for intervention arms, distance from lake or river and wealth index. SatScan™ v9.4.2. software was used to analyse the data.

Results: A total of 1081 malaria episodes were identified, giving 14.2 episodes per 1000 persons per year. Plasmodium Falciparum accounted for 70% of the cases. One most likely primary and two secondary significant clusters ($P < 0.001$) of malaria cases were identified. The primary cluster was in the north west of the study area within 2km from Lake Ziway and included 210 cases from 345 households with relative risk (RR) of 3.94. A secondary cluster 1 was found in the south of the study area within 2km from the Lake Ziway and River Bulbula included 198 cases from 427 households with RR of 2.41. A secondary cluster 2 was detected in south west of the study area out of 2 km radius from Lake Ziway and River Bulbula included 97 cases from 235 households with RR of 2.6.

Conclusion: In this study we identified distinct areas with higher risk of malaria infection than the underlining at-risk population. The finding could be an input for geographically targeted malaria prevention and control intervention.

Keywords: longitudinal study, spatial distribution, malaria clustering, Ethiopia.

Therapeutic Efficacy of Chloroquine for Treatment of Plasmodium Vivax Malaria Cases in Guragae Zone Southern Central Ethiopia. One-arm Prospective Study; 2017. *Teha Shumbej*.

Introduction: Malaria continues to be a public health problem and important cause of morbidity and mortality in countries like Ethiopia. Interventions like anti-malarial drugs to combat malaria in endemic regions are showing a decline in malaria related deaths and morbidity. These gains however, are threatened with the emergency of drugs resistant strains of Plasmodium parasites. Without regular inspection of anti-malarial drug resistance, the disease burden and the economic costs of malaria will rise radically. This study aimed to determine therapeutic efficacy of chloroquine for treatment of Plasmodium vivax in Guragae Zone, southern central Ethiopia

Methods: A one-arm prospective evaluation of clinical and parasitological responses to directly observed treatment for Plasmodium vivax was conducted in selected three health care centers at Guragae zone located southern central of Ethiopia. Patients with Plasmodium vivax mono infection, who met the study inclusion criteria were enrolled, treated with 25mg/kg chloroquine over three consecutive days followed by a fixed schedule blood film examination and clinical assessment for 28 days. The primary end point was failure at 28 days.

Results: A total of 81 subjects had completed the follow up. The mean haemoglobin concentration of study participants at day of enrolment was 11.8 g/ dl and 13.8 g/dl on day 28. More than half (57.5 %) had a history of fever and 42.5 % of them had fever at the time of enrolment. All study participants cleared off fever on day 2 following parasitaemia clearances. At day of enrollment geometric mean parasitemia was 2270 parasites/ μ l of blood. Among the study participants who completed their follow-up, 79 were classified under the category of adequate response. However, the remaining 2 cases were classified under late treatment failure (LTF) mainly due to recurrence of parasitemia on day 21 and day 28.

Conclusion: Our study showed a high rate of efficacy of CQ among the study participant. Therefore, CQ remains efficacious for the treatment of vivax malaria in the study area. However, there is a need to monitor CQ resistance by employing molecular tools for better evaluation of treatment outcomes.

Keywords: Plasmodium Vivax, Therapeutic Efficacy, Guragae Zone, Ethiopia.

First Record of *Anopheles Stephensi* Using Morphological and Molecular Analysis in Ethiopia: Potential Vector of Malaria. *Solomon Yared Gebremeskel.*

Malaria is a serious public health threat in Ethiopia. Over the past few years, malaria has become a growing public health problem in various zones and districts of Ethiopian Somali Regional State (ESRS). The aim of this study was to characterize vector population in the ESRS using morphological and molecular analysis. Methods: Mosquito larvae and pupae samples (n=750) were collected from water reservoirs in Kebridahar town in Ethiopian Somali Region over a course of three weeks from November 24-December 15 2016 and August 7-14, 2017. Larvae and pupae were reared at field lab to adulthood; they were maintained at $28 \pm 20^{\circ}\text{C}$ and $70 \pm 10\%$ relative humidity. DNA was extracted from 81 mosquitoes and PCR was performed targeting cytochrome oxidase subunit I (CO1) genes. CO1 amplicons were sequenced with Sanger technology for further species identification. Basic Local Alignment Search Tool (BLAST) was used to compare sample sequences to sequences in Genbank database for species identification. To further analyze the relationship between our samples and other *Anopheles* samples available in Genbank, phylogenetic analysis was performed using a maximum likelihood approach with RAxML.

Results: A total of 750 immature *Anopheles* were collected and reared to adulthood at field laboratory. All these specimens were identified as *An. stephensi* based on morphological characters under dissecting microscope after two days of post emergence. The following main characteristics were observed: the palps were smooth with three distinct pale bands and pale spots were also present in the maxillary palps, the palpomere five has entirely pale. The legs femora and tibiae were speckled with pale scales. The abdominal terga II-VIII and sterna V-VIII were covered with pale scales. The wing anal vein with 3 dark spot, scutal fossa was covered with scattered pale scales. The BLAST search of the sequence analyses showed that all samples from our rearing of larvae from Kebridahar shared identical CO1 sequences with *An. stephensi*. Phylogenetic analyses of CO1 sequences revealed strong bootstrap (100) support for our sequence clustering with other *An. stephensi* sequences to the exclusion of any other species of *Anopheles*. Thus we conclude that *An. stephensi* is present in Kebridahar town in Ethiopia. Future studies is needed to examine genes associated with *Plasmodium* spp infection and insecticide resistance in both lab reared and wild caught adult mosquitoes.

Determinants of Bed-Net Use for Protection Against Malaria Among Household Members in South-Central Ethiopia: a Community Based Cohort Study. *Tarekegn Solomon, Eskindir Loha, Wakgari Deressa, Meshesha Balkew, Taye Gari, Hans J Overgaard, Bernt Lindtjørn.*

Background: A remarkable decline in malaria morbidity and mortality has been documented in Ethiopia since 2005, following a scale-up of the distribution of long lasting insecticide treated nets (LLINs). However, universal access and utilization of LLINs have still not been achieved. The aim of this study was to determine the utilization rate of LLINs over time and to identify factors associated with the use of LLINs in south-central Ethiopia.

Methods: A prospective cohort study was conducted among 17,142 individuals residing in 3004 households from October 2014 to January 2017. Every week, the heads of household or family members age ≥ 18 years were asked whether the household members had slept under the LLIN in the previous night. A cross-sectional survey was carried out at week 110 of LLINs post-distribution to determine net ownership. Descriptive statistics were used to report LLIN ownership and utilization. To identify significant predictors of LLIN use, a Poisson regression model with log link function was fitted to the count data on the number of weekly LLIN use.

Results: At baseline 100% LLIN ownership was achieved with average 2.57 LLINs per household. After two years, only 233 (8.4%) of the households had at least one LLIN. Most LLINs loss, 4713(76%) was due to throwing away because of severe damage. The mean proportion of LLIN use was 17.8% over the whole 121 weeks of follow-up. The Higher LLIN use was observed in the first 52 weeks (36%) than in the rest 69 weeks (3.6%). The older age group over 15 years, higher educational level of head of household (primary, secondary and above), living in houses roofed with corrugated iron, and higher wealth status were associated with more frequent use of LLINs. Living in households headed by farmers, family size ≥ 5 , presence of more than one sleeping space, living in places >2 km from lake or river and people residing in identified malaria clusters were associated with less frequent use of LLINs.

Conclusion: The result show that the mean proportion of LLIN uses was low despite 100% LLIN coverage. Demographic, socioeconomic and malaria infection risks were predictors of LLIN use in the study community.

Keywords: Cohort study, Long-lasting insecticide nets, Ownership, Utilization, Malaria, Ethiopia.

Nutrition and food science, Behavioral Science and Communications

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Burden of Malnutrition in Ethiopia among HIV Positive Adults: a Systematic Review and Meta-Analysis. *Getiye Dejenu Kibret, Animut Alebel Ayalew.*

Background: Malnutrition and human immunodeficiency virus (HIV) are the two interlaced diseases in a vicious circle. In Ethiopia, different studies have been conducted revealing, considerable variability in the prevalence of malnutrition across the country. Therefore, this study aimed to estimate the pooled prevalence of malnutrition among HIV positive adults in Ethiopia by using available studies.

Methods: Studies were retrieved through manual and electronic searches. Electronic search carried out using the database of MEDLINE/PubMed, Google scholar and Google for gray literature's and reference lists of previous studies. A standardized data extraction checklist was used to extract the data from each original study. Finally, analysis was done using STATA 11 statistical software. Descriptive summary was presented in table and quantitative result was presented in forest plot. The Cochrane Q test and I^2 test statistics were used to test heterogeneity across the studies. A random effect model was computed to estimate the pooled prevalence of malnutrition among HIV positive adults.

Results: Four hundred eighteen articles were retrieved through electronic and manual searches using keywords. The result of this meta-analysis showed that the estimated pooled prevalence of malnutrition among HIV positive adults in Ethiopia was 26.2 % (95 % CI: 21.8, 30.6%). In addition, subgroup analyses of this study indicated that the prevalence 27.5 % (95% CI: 21.0, 34.0) of malnutrition is higher in the Northern and Central part of Ethiopia than the Southern part of Ethiopia 25 % (95% CI: 19.3, 30.7).

Conclusion: In this meta-analysis, the estimated pooled prevalence of malnutrition among HIV positive adults in Ethiopia was significantly high. Malnutrition among HIV positive adults living in the northern and central part of Ethiopia was higher as compared to those living in the southern part of Ethiopia.

Seasonality and Determinants of Child Growth Velocity and Growth Deficit in Rural Southwest Ethiopia. *Netsanet Fentahun Babbel.*

Background: Ethiopia faces cyclic food insecurity that alternates between pre- and post- harvest seasons. Whether seasonal variation in access to food is associated with child growth has not been assessed empirically. Understanding seasonality of child growth velocity and growth deficit helps to improve efforts to track population interventions against malnutrition. The aim of this study was assess child growth velocity, growth deficit, and their determinants in rural southwest Ethiopia.

Method:Data were obtained from four rounds of a longitudinal household survey conducted in ten districts in Oromiya Region and Southern Nations, Nationality and Peoples Region of Ethiopia, in which 1200 households were selected using multi-stage cluster sampling. Households with a child under 5 years were included in the present analyses (round 1 n=579, round 2 n=674, round 3 n=674 and round 4 n=680). The hierarchical nature of the data was taken into account during the statistical analyses by fitting a linear mixed effects model. A restricted maximum likelihood estimation method was employed in the analyses.

Result: Compared to the post-harvest season, a higher length and weight velocity were observed in pre-harvest season with an average difference of 6.4 cm/year and 0.6 kg/year compared to the post-harvest season. The mean height of children in post-harvest seasons was 5.7 cm below the WHO median reference height. The mean height of children increased an additional 3.3 cm [95% CI (2.94, 3.73)] per year in pre-harvest season compared to the post-harvest season. Similarly, the mean weight of children increased 1.0 kg [95% CI (0.91, 1.11)] per year more in the pre-harvest season compared to the post-harvest season. Children who had a low dietary diversity and were born during the lean season in both seasons had a higher linear growth deficit. Being member of a highly food insecure household was negatively associated with higher weight gain. Having experienced no illness during the previous two weeks was positively associated with linear growth and weight gain.

Conclusion: Child growth velocities and child growth deficits were higher in the pre-harvest season and post- harvest season respectively. Low dietary diversity and being part of a highly food insecure household were significantly risk factors for decreased linear growth and weight gain respectively.

Keywords: Seasonality, growth velocity, growth deficit, rural Ethiopia.

Is Small Play Area in Schools Associated with Overweight Among Students? A Comparative Cross Sectional Study.

Tsedey Moges, Solomon Shiferaw, Robel Yirgu, Bereket Gebremichael.

Introduction: Childhood obesity has more than doubled since it was formally recognized as a global epidemic in 1997 by World Health Organization (WHO). With increasingly dwindling space for private schools in Ethiopia, there is unresolved concern among the public on the possible effect of limited play area in schools on childrens sedentary behavior and its consequences including overweight and obesity. Previous studies reported a prevalence of overweight and obesity ranging from 10 to 23% among adolescents in private schools. The present study intended to determine and compare the levels of overweight and obesity among adolescents in private schools with and without adequate play area in Addis Ababa.

Methods: School based comparative cross-sectional study was conducted among 1276 adolescents of age 10-19 years. The study involved 20 private schools grouped into two based on the size of play area for their students. A three-stage random sampling technique was used to select study participants. Data was collected through face-to-face interview using a pre-tested questionnaire. Anthropometric measurements were also taken to assess nutritional status of participants. Descriptive statistical tests, bivariate and multivariate logistic regression analysis were done to identify factors associated with overweight/obesity.

Results: The overall magnitude of overweight and/or obesity was 17.0% with 95% CI (15% - 19%). It was significantly higher in schools without adequate play area, 19.4% with 95% CI (17% - 22%) than in schools with adequate play area which was 14.6% with 95% CI (13% - 17%) and p-value of 0.01. Adolescents with lower total physical activity level per day, those within the middle wealth quintile and who used private car as a means of transportation from and to school were significantly more likely to have overweight/obesity with OR (95% CI) = 1.57 (1.11-2.23), 2.2 (1.22-4.06) and 1.86 (1.09-3.17) respectively.

Conclusions: The findings of the study gave insight on the possible effect of inadequate play area in schools as an important contributor for a higher burden of overweight/obesity. Low physical activity and sedentary behavior were also found to be significant factors associated with overweight/obesity among private school adolescents.

Keywords: Adolescent, Overweight, Obesity, Schools play area.

Prevalence and Associated Factors of Stunting Among 6-59 Months Children in Pastoral Community of Korahay Zone, Somali Regional State, Ethiopia 2016. *Sisay Shine Tegegnetwork.*

Background: Stunting is one of the most important public health problems in Ethiopia with an estimated 44.4% of children less than five years of age are stunted. Thus, this study aimed to assess prevalence and associated factors of stunting among 6-59 months children in pastoral community of Korahay Zone, Somali Regional State, Ethiopia.

Objective of the study: To assess prevalence and associated factors of stunting among 6-59 months children in pastoral community of Korahay Zone, Somali Regional State, Ethiopia, 2016.

Methods: Community based cross sectional study design was done among 770 children in pastoral community of Korahay Zone. Systematic sampling techniques were used to select households and took child mother pair from each selected households. Data was collected using pre-tested and structured questionnaire. Odds ratio with 95% confidence interval was used to assess level of significance.

Result: Prevalence of stunting among 6-59 months age children was 31.9%. Sex (AOR: 1.47, 95%CI 1.02, 2.11), age (AOR: 2.10, 95%CI 1.16, 3.80), maternal education (AOR: 3.42, 95%CI 1.58, 7.41), maternal occupation (AOR: 3.10, 95%CI 1.85, 5.19), monthly income (AOR: 1.47, 95%CI 1.03, 2.09), PNC visits (AOR: 1.59, 95%CI 1.07, 2.37), unprotected well as source of water (AOR: 3.41, 95%CI 1.96, 5.93), toilet availability (AOR: 1.71, 95%CI 1.13, 2.58), first milk feeding (AOR: 3.37, 95%CI 2.27, 5.02) and bottle feeding (AOR: 2.07, 95%CI 1.34, 3.18) were significant predictors of stunting.

Conclusion and recommendations: Prevalence of stunting among 6-59 months children was high 31.9%. Lack maternal education, not feeding first milk, unsafe water supply, absence toilet availability and bottle feeding can increase the risk of stunting. So, educating mothers on child feeding practice, sanitation and important of first milk can reduce stunting.

Application of a Qualitative Rapid Assessment Approach to Inform Community-Responsive Information, Education and Communication Activities. *Shifera Asfaw Yedenekal, Nicole Bergen.*

Background: The Alma-Ata Declaration reaffirmed the importance of providing primary health care in a manner that is responsive to expressed community health needs. In its ongoing response to the Declaration and development of its primary health care system, the Ethiopian Federal Ministry of Health released in 2016 its National Health Promotion and Communication Strategy. This Strategy called for context-specific health communication interventions, built on detailed situational analyses that accommodated community-level diversity. In keeping with this aim, our study examined the application of a qualitative rapid assessment approach to explore community perceptions and experiences related to health and health inequality, focusing on maternal and child health (MCH). The objective of the study was to generate a context-specific situational analysis to inform the design and delivery of health information, education and communication (IEC) activities of the Safe Motherhood Project in three districts of Jimma Zone.

Study design: In May 2016, we conducted 24 key informant interviews (with health extension workers (HEWs), religious leaders, and members of the male and women development army) and 12 focus group discussions (with male and female community members) in six rural kebeles. Audio recordings of the interviews were transcribed from Afan Oromo into written English transcripts. Data were analyzed through thematic coding in Atlas.ti; content summaries were prepared by theme.

Results: Participants expressed that being healthy is related to: maintenance of hygiene and sanitation; ability to perform daily activities; and access to disease treatment. Community health was viewed as a prerequisite for peace, development and protection from outside threats. Health inequalities within communities were primarily attributed to a lack of knowledge or exclusion from social groups; poverty as a possible barrier to health could be largely overcome through participation in formal or informal support networks. MCH could be improved by ensuring reliable access to facilities, ambulance services, and trained health professionals – resources that are not always available or accessible locally. Participants felt it was important for women to have regular checkups during pregnancy, though they were uncertain about why, when and how often visits should take place. Major MCH information sources included HEWs, religious leaders and the development army. While participants were confident in their community's ability to disseminate and apply health knowledge, they were less confident in the community's collective ability to acquire new knowledge. Participant experiences and opinions varied between the six study sites to a greater extent than between stakeholder groups, suggesting that community-level interests and experiences were prioritized over individual roles.

Conclusions: IEC initiatives are warranted in Jimma Zone, to strengthen community-level knowledge and resource mobilization for improved MCH. HEWs, religious leaders and development army members are well-positioned to disseminate knowledge and influence health behaviours and norms. Existing community support structures can be harnessed to promote health for all.

Recommendations: Health promotion activities should be based on community-expressed needs and experiences. Rapid qualitative assessment approaches can be used to generate current and relevant situation analyses to inform the design and delivery of IEC initiatives in Ethiopia, where such evidence may be scarce.

Nutrition and Food science, Behavioral Science and Communications.

Abs. 61

Impact of Child Emotional and Behavioural Disorders on Educational Outcomes at 7 To 9 Years In Ethiopia: a Population-Based Cohort Study. *Habtamu Mekonnen, Dr Girmay Medhin, Prof Mark Tomlinson Tomlinson, prof. Atalay Alem, Prof. Martin Prince, Dr Charlotte Hanlon.*

Background: The relationship between child mental health and educational outcomes has been well documented in high income settings (HICs). However, the impact of child emotional and behavioural disorders (EBD) on education in low- and middle-income countries (LMICs) has received little attention in prospective studies.

Objectives: The study was aimed to investigate the association between preschool and early school age child EBD and child educational outcomes in the subsequent years.

Methods: Using the ongoing cohort of 2090 mother-child dyads (the C-MaMiE study) from rural Ethiopia, we examined the association between child EBD symptoms and educational outcomes. Child EBD was measured using the Strength and Difficulties Questionnaire (SDQ) (parent version) when the children were aged 6 to 7 ("6/7") and 7 to 8 ("7/8") years. Educational outcome (drop-out) was obtained from the mother at the end of 2013/14 academic year. At the end of 2014/15 academic year: drop-out, absenteeism and academic achievement were obtained from school records.

Result: After adjusting for potential confounders, child EBD symptoms at the age of 7/8 years were significantly associated with subsequent school absenteeism: SDQ total score: Incidence Rate Ratio (IRR) 1.01; 95% Confidence Interval (CI): 1.01, 1.02 and SDQ high score (≥ 14): IRR 1.36; 95% CI: 1.24, 1.48. The emotional (IRR 1.03; 95% CI: 1.01, 1.04), hyperactivity (IRR 1.03; 95% CI: 1.02, 1.04) and peer problem (IRR 1.02; 95% CI: 1.00, 1.04) sub-scales were all associated significantly with school absenteeism. Total SDQ high score ($\beta = -2.89$; 95% CI: -5.73, -0.06) and the conduct problems sub-scale score ($\beta = -0.57$; 95% CI: -1.02, -0.12) were significantly associated with academic achievement. Other child educational outcomes were not associated with SDQ sub-scales or total scores.

Conclusion and recommendation: Child EBD symptoms were associated with increased school absenteeism and lower academic achievement in this rural population of Ethiopia. Future studies are needed to examine the mechanism and to develop interventions.

Prediction of Height From Arm Span, Half Arm Span and Knee Height among Ethiopian Adults in Jimma University, Ethiopia: An Implication for Assessing Nutritional Status of elderly.

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Introduction: Standing height measurements in older people, hospitalized / bed ridden/ patients and peoples with skeletal deformity can be difficult to obtain due to different reasons. Alternative height measurements such as arm span, knee height and half arm span have been shown to be useful surrogate measures of stature. However, their ability to predict height could differ across populations and this has not been reported in Ethiopia.

Objective: To develop formula that predicts height from arm span, half arm span and knee height.

Methods: A cross sectional study was conducted from March 15 to April 21, 2016 in Jimma University. A total of 660 (330 females and 330 males) subjects aged 18-40 years were assessed. A two-stage sampling procedure was employed. Data were collected using interviewer administered questionnaire and anthropometric measurements. Data were edited and entered into EpiData version 3.1 and statistical analyses were done using SPSS for windows version 20. Linear regression was fitted to predict height from the independent variables. Bland-Altman analysis was employed to see the agreement between actual height and predicted heights.

Results: Multivariable linear regression analyses showed that arm span ($\beta = 0.63$, $P < 0.001$, $R^2 = 87\%$), half arm span ($\beta = 1.05$, $P < 0.001$, $R^2 = 83\%$) and knee height ($\beta = 1.62$, $P < 0.001$, $R^2 = 84\%$) are important predictors of height. The Bland-Altman analyses showed good agreement between measured height and predicted height.

Conclusion and recommendation: In the context where height cannot be measured, height predicted from arm span, half arm span and knee height is a valid proxy indicator of height. Arm span was found to be the best predictor of height. The prediction equations can be used to assess the nutritional status of hospitalized/bed ridden/ patients, peoples with skeletal deformity and elderly population in Ethiopia

Keywords: Height, Arm Span, Half arm Span, Knee.

Only One Fourth of HIV Exposed Children Received Optimal Complementary Feeding in Northwest Ethiopia: a Cross-Sectional Study. *Zegeye Abebe Abitew.*

Background: Malnutrition is a major problem, and it is more severe for HIV exposed children, which is mainly caused by inappropriate feeding practice. Hence, the study aimed to assess optimal feeding practices and associated factors among HIV exposed infants and young children aged 6-18 months in selected Amhara Regional Hospitals, northwest Ethiopia.

Methods: An institution based cross-sectional study was conducted from March 10 to April 30, 2017. Systematic random sampling was employed to select study participants. Pretested interviewer-administered questionnaire was used to collect data. Both bi-variable and multivariable binary logistic regression analysis were applied to identify factors associated with optimal complementary feeding.

Result: In this study, about 25.5% of HIV exposed children were received optimal complementary feeding. More than two thirds, (70.7%), of children were given the recommended meal frequency, 36.9% received the recommended minimum acceptable diet. Father's education; primary and higher (AOR= 2.39; 95%CI: 1.18, 4.88 and AOR= 2.44; 95%CI: 1.37, 4.34, respectively), rich household wealth status (AOR= 2.08; 95%CI: 1.13, 3.82), and satisfactory media exposure (AOR=1.70; 95%CI: 1.04, 2.78), and mothers HIV disclosure status (AOR= 1.78; 95%CI: 1.07, 2.98) were positively associated with optimal feeding practices.

Conclusion: Optimal complementary feeding was low compared to the WHO recommendation. Household wealth status, mother's HIV disclosure, and paternal educational status were associated with optimal complementary feeding practices among HIV exposed children. Therefore, a social safety net program for HIV positive mothers needs attention. In addition, strengthening maternal counseling about HIV status disclosure and media promotion of child feeding is important to achieve the recommended feeding practices.

Concordance of Poor Child Feeding and Preventive Behavior and its Predictors in Southwest Rural Ethiopia. *Netsanet Fentahun Babbel.*

Background: Inappropriate child feeding and caring practices are a major cause of malnutrition. To date, no studies have examined concordance and discordance of child feeding and preventive behavior and their predictors in developing countries.

Methods: We used baseline data generated from a 2-year-longitudinal agriculture-nutrition panel survey conducted from February 9 to April 9, 2014, in nine districts encompassing 20 randomly selected counties in Oromiya Region and Southern Nation, Nationality and Peoples Region in Ethiopia. Households were recruited using the Expanded Program on Immunization sampling method. A total of 623 children under the age of 5 years and their respective caregivers were included in the analyses. Generalized estimating equations were used to account for clustered observations.

Results: Concordance of poor child feeding and preventive behavior was observed in 45.1% of the children, while 45.5% of the children were suffering from discordance of poor child feeding and preventive behavior. Concordance and discordance of poor child feeding and preventive behavior had almost different predictors. Concordance of poor child feeding and preventive behavior was significantly associated with the age of the caretaker of ≥ 40 years (odds ratio (OR)=2.14; 95% confidence interval (CI): 1.04, 4.41), low household dietary diversity (OR=3.69; 95% CI: 1.93, 7.04), medium household dietary diversity (OR 2.17; 95% CI: 1.17, 4.00), severe household food insecurity (OR=1.72; 95% CI: 1.01, 2.93), and increase with increasing child age.

Conclusion: A substantial number of children in the southwest of rural Ethiopia are exposed to both poor child feeding and preventive behavior. Low household dietary diversity and extreme food insecurity household were predictors of concordance of poor child feeding and poor preventive behavior and provide useful entry points for comprehensive interventions to address child feeding and caring in the area.

Keywords: Child feeding; preventive behavior; rural Ethiopia

Acceptance of Human Breast Milk Donation for Banking, Using Donated Milk for Feeding Infants and Its Associated Factors Among Mothers Attending Public Hospitals in Eastern Ethiopia. *Tilayie Feto Gelano.*

Background: Evidences show that the first choose of nutritive feeding for an infant is its own mother's breast milk, but when this is not available, donated breast milk is the second best choice. In developing countries, very few studies were conducted on the acceptance of donor breast milk banking. Hence, this study was planned to uncover the acceptability of donor milk banking, its use for feeding infants, and associated factors among mothers in eastern Ethiopia.

Objective: The aims of this study was to assess acceptance of human breast milk donation for banking, using donated milk for feeding infants and its associated factors among mothers attending public hospitals in Eastern part of Ethiopia, 2016.

Method: To gather data on the donor breast milk and its use for feeding infants, a descriptive, cross-sectional mixed-method of study design was employed on 1085 mothers in Eastern Ethiopia; a survey and focus group discussions were made. Data obtained from the survey were checked for completeness, coded and entered into EPI-Info7 and imported into SPSS Version 20 for analysis and it was cleaned and prepared for tabulation. The acceptance of donor breast milk among the participants was computed from two variables: participant mothers' willingness to donate breast milk for banking and /or mothers' willingness to use donated milk for feeding infants. Descriptive statistics were used to report results from survey and qualitative data were analyzed using thematic data analysis approach. Bivariate analysis was conducted to examine the association between dependent and independent variables; Crude Odds Ratios (COR) and their 95% CI, were calculated. Then, all the variables which have p-value less than 0.2 in the bivariate analysis were included in the multivariate binary logistic regression analysis model to identify explanatory variables that were associated with the acceptance of donor milk banking. Adjusted Odds Ratios (AOR) were computed with 95% CI and p-value of less than 0.05 was considered to identify significant association.

Results: The study revealed that only 11% of the mothers were willing to donate breast milk for banking, 15.2% of them were willing to use donor milk for feeding infants. The acceptance of donor milk banking was 5.8 times more likely among the mothers who ever heard about donor milk banking (AOR=5.8, 95% CI, 3.1, 10.72), 4.2 times more likely among the mothers who ever heard about wet-nurse (AOR=4.2, 95% CI, 2.5, 6.99) and 2 times more likely among mothers who visited Neonatal intensive care unit (AOR=2, 95% CI, 1.1, 3.73).

Conclusions: Generally, this study showed that the acceptance of breast milk donation for banking and its use for infants feeding was very low. Despite low acceptance of donor milk banking, factors such as information on donor milk banking and wet-nurse, maternal health care use and counseling on breast feeding were identified as important factors. Therefore, before initiation of donor milk banking, program should be designed to create awareness about donor breast milk and its safety.

Keywords: Human milk Banking, Donated Human breast Milk, Eastern part of Ethiopia.

Maternal Health

Abs. 66

Spatial Patterns and Determinants of Unmet Need for Family Planning in Ethiopia: Data from EDHS 2016.

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Introduction: An estimated 225 million women in developing regions had an unmet need for modern contraception. Every year, an estimated 74 million unintended pregnancies occur in developing regions, the great majority of which are among women using no contraception or a traditional method. If all unmet need for modern methods were met, 52 million of these unintended pregnancies could be averted, thereby preventing the deaths of 70,000 women from pregnancy-related causes.

Objective: The main aim of this study was to explore the spatial distribution and to identify the multilevel determinants of unmet need for family planning in Ethiopia.

Methods: The data for this analysis were extracted from the 2016 Ethiopian Demographic and Health Survey. Spatial analysis was carried out using spatial scan statistics (SaTScan v9.4.4) and spatial statistics tools in ArcGIS version 10.3. Spatial scan statistics was used to detect clusters of unmet need for family planning. Purely spatial analysis scanning for clusters with high rates, using the Bernoulli probability model was carried out. For statistical analysis; to estimate the effects of socio-demographic and related variables on unmet need for family planning, generalized linear mixed models (GLMM) which combines the ideas of generalized linear models with accounting the hierarchical variability was fitted.

Results: The total percentage of unmet need for family planning in the 2016 EDHS was 22.3 % of which 13 % was for spacing and 9.3 % for limiting. Regionally the highest proportion of unmet need was observed in Oromia (28.9%) and the lowest was in Addis Ababa (10.5%). Majority of the areas with high rates of clusters were observed in Oromia, South nations, nationalities and people region, Tigray, Gambella, Dire Dawa and Harari regional states. Factors like place of residence, educational status, total number of alive children and media exposure were factors associated with unmet need for family planning.

Conclusion: The spatial distribution of unmet need for family planning in Ethiopia is not random. The health sector from ministry to *kebele* level and other non-governmental stakeholders have to give special emphasis in the areas with high clustering of unmet need for family planning.

Assessment of the Proportion of Episiotomy and its Associated Factors at Axum Town Public Health Institution Axum Town, Tigray Region, North Ethiopia, 2015.

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Background: Episiotomy means simply a 2nd degree tear to enlarge outlet, for expulsion of the fetus with tolerable damage or injury. Historically, episiotomy has been an element of vaginal delivery, with the rationale of preventing extensive perineal tearing. Incidence varies according to parity, patient population, indication, and health care provider practicing obstetrics. Study findings showed that higher rate of episiotomy in Ethiopia.

Objective: To assess the proportion of episiotomy performance and its associated factors in Axum town public health institutions 2015.

Methods: Facility based cross-sectional study design was employed in three Public health institutions in Axum town, Tigray, Ethiopia 2015. Information was retrieved retrospectively from a total of 338 maternal charts that were selected using systematic random sampling technique. The data were collected using pre-tested and structured data extraction format. Using SPSS version 20 software, descriptive statistics, bivariate and multivariate logistic regression analysis was done and during bivariate logistic regression analysis those variables at p-value <0.2 were transferred to multivariate logistic regression analysis and during Multivariate logistic regression analysis Variables at P-value <0.05 were considered as statistically significant and AOR with 95% CI was used to control for possible confounders and to interpret the result. The result is summarized using tables, graphs and charts for different variables.

Results: Out of 338 deliveries the proportion of episiotomy was 140(41.44%). The odds of episiotomy practice were 1.8 times greater among primipara when compared with multiparous women [AOR=1.89(1.08, 3.23)], 8.9 times greater among mothers whose labor were assisted by vacuum as compared to those who delivered by normal vaginal delivery [AOR=8.99(4.25, 19.03)], 4.7 times greater among deliveries whose fetal presentation was face when compared with vertex presentations [AOR=4.76(1.94, 11.67)].

Conclusion: The proportion of episiotomy practice is high parity, face presentation; mode of delivery; Birth Attendant and 1st minute Apgar score were significantly associated with practice of episiotomy.

Keywords; Episiotomy, Associated Factors, Proportion, Aksum.

Uropathogens and Antimicrobial Susceptibility Pattern among Asymptomatic Pregnant Women Attending Dessie Referral Hospital, Northeast Ethiopia: a Hospital-Based Cross-Sectional Study.

Ismail Ebrie Ali, Teklay Gebrecherkos, Mucheye Gizachew, Martha Alemayehu Menberu.

Background: Asymptomatic urinary tract infection occurs following the movement of bacteria awake the urethra into the bladder, occasionally with the subsequent act of ascending to the kidney. Nowadays, asymptomatic uropathogens is common in pregnancy and antimicrobial resistance in bacteriuria is increasing worldwide.

Objective: The aim of the current study was to find out the prevalence of uropathogens, antimicrobial susceptibility pattern of the isolates and related risk factors among asymptomatic pregnant women.

Material and Methods: A hospital-based cross-sectional study was carried out from February to May, 2017 among asymptomatic pregnant mothers attending Dessie Referral Hospital, Northeast Ethiopia. About 10-15ml of freshly voided midstream urine samples were collected from each study participants, and processed at Dessie regional research microbiology laboratory with convectional culture and bio-chemical test. Isolates were tested against commonly used antimicrobials with Kirby Bauer disc diffusion method. Data were analyzed by SPSS version 20 software and in all cases, the P-value below 0.05 was considered as statistically significant.

Results: Overall, 358 pregnant women were included during the study with mean age of 26.5years (SD 4.6, and ranges 19-43). The overall prevalence of uropathogens in asymptomatic mothers was 56 (15.6%). The organism mainly isolated were *Escherichia coli* and *Staphylococcus aureus* 18 (31%) each. *Escherichia coli* and *Staphylococcus aureus* was resistance to ampicillin (66.7%) and penicillin (94.44%), respectively. The prevalence of multiple drug resistance isolates was 72.4%. History of catheterization [AOR=2.28, 95% CI= (1.03-5.06)] and anemia [AOR=4.98, 95% CI= (2.395-10.34)] were statistically significant with the prevalence of asymptomatic bacteriuria.

Conclusion: The overall prevalence of uropathogens among asymptomatic pregnant mothers in the study area was high. The status of asymptomatic uropathogens and their antibiotic susceptibility test should be taken into consideration during the management of pregnant women, who are visiting antenatal care clinic.

Keywords: Asymptomatic bacteriuria, Drug susceptibility, Pregnant women, Uropathogens.

Application of the Andersen-Newman Model of Health Care Utilization to Antenatal Care Use in Kersa District, Eastern Ethiopia.

Gezahegn Tesfaye Girma, Deborah Loxton, Catherine Chojenta, Roger Smith.

Background: In Ethiopia the uptake of antenatal care antenatal care service has been low. Moreover, there is less frequent attendance and late initiation of antenatal care among women who attend. Using the Anderson-Newman model of health care utilization, the study identified factors that either facilitate or impede antenatal care utilization in Kersa district, Eastern Ethiopia.

Method: A community-based cross-sectional study was conducted from June to August, 2017. A total of 1294 reproductive aged women participated in the study. Participants were selected using systematic sampling technique. The data were collected using face to face interview with eligible women. A pre-tested interviewer-administered structured questionnaire was used for the data collection. Resident Health and Demographic Surveillance System (HDSS) interviewers were hired to collect the data using IPAD installed with a digital survey software. Frequency and percentage distributions were used to describe the data. Separate bivariate and multivariate logistic regression models were fitted to examine the association of the predisposing, enabling and need factors with antenatal care utilization. $P < 0.05$ was used to determine statistical significance in the multivariate model.

Result: Out of the 1294 study participants, 53.6% attended ANC at least once during their last pregnancy. Only 15.3% attended four or more ANC visits and 32.6% attended their first ANC prior to the 12th week of gestation. Significant predisposing factors were previous use of antenatal care (AOR, 0.06; 95% CI: 0.03, 0.10) and best friend's use of care (AOR, 0.37; 95% CI: 0.23, 0.59). Enabling factors included place of residence (AOR, 3.44; 95% CI: 2.13, 5.54), type of kebele (AOR, 1.87; 95% CI: 1.42, 2.46), wealth index (AOR, 1.56; 95% CI: 1.05, 2.31), husband's negative (AOR, 0.22; 95% CI: 0.09, 0.51) and neutral (AOR, 0.22; 95% CI: 0.17, 0.28) attitude towards antenatal care, and social support (AOR, 0.60; 95% CI: 0.40, 0.90). Health extension workers home visit (AOR, 0.46; 95% CI: 0.36, 0.59), pregnancy intention (AOR, 0.47; 95% CI: 0.37, 0.61), and awareness of pregnancy complications (AOR, 0.39; 95% CI: 0.30, 0.49) were the need factors associated with at least one antenatal care utilization. Moreover, place of residence (AOR, 3.28; 95% CI: 2.01, 5.37), previous experience of ANC (AOR, 0.24; 95% CI: 0.10, 0.61), female head of household (AOR, 0.25; 95% CI: 0.09, 0.73), history of abortion (AOR, 1.91; 95% CI: 1.04, 3.50), pregnancy intention (AOR, 0.44; 95% CI: 0.27, 0.74) and awareness of pregnancy complications (AOR, 0.31; 95% CI: 0.20, 0.48) were associated with four or more antenatal care visit.

Conclusion: More than half of the women attended antenatal care at least once during their last pregnancy. A sizable proportion of women use infrequent and delayed ANC. Intervention efforts should involve peer education programs targeting rural women, changing husband's attitude, strengthening health extension workers household level health promotion activities, improving access to family planning services, and promoting of awareness of pregnancy complications.

The Effects of Antenatal Care Follow-Up on Neonatal Mortality: a Systematic Review and Meta-Analysis. *Amsalu Taye Wondemagegn.*

Background: Neonatal Mortality is one of the major public health problems throughout the world notably in developing countries. There exists an inconclusive finding on the effects of ANC visits on neonatal death in the world. Thus the aim of this systematic review and meta-analysis was to reveal the pooled effects of ANC visits on neonatal death.

Methods: The present systematic review and meta-analysis was performed using published literatures which were accessed from different national and international databases such as, Medline/PubMed, EMBASE, CINAHL, Cochrane Central library, Google Scholar and HINARI. STATA/SE for windows version 13 software was used to calculate the pooled effect size with 95% confidence intervals (95% CI) of maternal ANC visits status on neonatal death using the DerSimonian and Laird random effects meta-analysis (random effects model) and results were displayed using forest plot. Statistical heterogeneity was checked using the Cochran Q test (Chi-Squared statistic), I^2 statistic, and by visual examination of the forest plot.

Results: The finding of the present systematic review and meta-analysis revealed that ANC visits decrease the risk of neonatal mortality [pooled effect size 0.66 (95%CI, 0.54, 0.80)]. Cochrane Q test ($P < 0.001$) revealed no significant heterogeneity among included studies, but I^2 statistic revealed sizeable heterogeneity up to 80.5% ($I^2 = 80.5\%$). In the present meta-analysis traditional funnel plot, Egger's weighted regression ($P = 0.48$) as well as Begg's rank correlation statistic ($P = 0.47$) revealed no evidence of publication bias.

Conclusions: The present systematic review and meta-analysis revealed that ANC visits were significantly associated with neonatal death. The risk of neonatal death was significantly reduced by 34% among those newborns of mothers with ANC visits. Thus, visiting ANC clinics during pregnancy is strongly recommended especially in poor resource settings like countries of SSA.

Keywords: antenatal care, maternal health service, follow up, visits, utilizations, neonatal mortality/death.

HIV and TB

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HIV Care Continuum in Southwest Ethiopia: Old Barriers and New Solutions. *Hailay Abrha Gesesew^{1,2}, Prof Paul Ward², Prof Kifle Woldemichael¹, Prof Lillian Mwanri²*

Background: Ethiopia has subscribed to the UNAIDS 90-90-90 targets. Guided by the HIV care continuum (HCC) framework and social-ecological model (SEM), we have explored the facilitators for, barriers to, and ways to improve these goals from the perspectives of patients, HIV care providers, community advocates, and HIV care administrators.

Methods: A two phases study was conducted in Southwest Ethiopia from October to December, 2017. In phase one, using one-on-one in-depth interview, we have carried out a qualitative inquiry with HIV patients, HIV care providers, community advocates involving HIV volunteer supporters, religious leaders, urban and rural health extension workers (HEWs), and HIV care administrators involving Zonal Health Department, Town Health Office, and local and global NGOs. A total of 10-20 individuals of each target audiences were interviewed and the participants were recruited purposely. We have applied a thematic framework analysis to analyse the qualitative inquiry using NVivo. In the second phase, we have used a two round modified Delphi technique to receive feedbacks, opinions and judgments on the possible solutions for HIV care and treatment from a panel of HIV experts and practitioners with 20 members. To undertake the basic steps of the Delphi process, we have contextually used a guide outlined by Pfeiffer (1968). Ethical approval was found from Flinders University of South Australia, and Jimma University of Southwest Ethiopia.

Results: In total, 11 HIV patients, 9 health workers, 10 members of community advocates, and 10 HIV care administrators were interviewed for the qualitative inquiry, and 20 participants included in the Delphi panel. The following are the main themes that emerged on facilitators for HIV care and treatment: new programs, knowledge and trust on ART, access and availability, and support. The main themes that emerged on barriers to HIV care and treatment included fear of not to be seen by others, accessibility and availability, our tradition our enemy, free ART as expensive, knowledge and trust on ART, and fragile health care system. After exploring the above facilitators for and barriers to HIV care and treatment, the following solutions emerged from the in-depth interview: strengthening programs and using other structures such as '*tokkoshenni* (1 to 5 structure)'; implementing new programs such as self-HIV testing (SHT), house-to-house HIV testing (H2H), and community ART groups (CAG); filling gaps in law (law) for disclosure and religious cures or traditional healing; and decentralization, task shifting and service integration such as ART in health posts and private clinics, assigning peer educators with HEWs coined teach-test-link-trace (TTLT) model, and chronic disease management in ART clinics. The Delphi panel, in its final consensus, has rated the following solutions for improving HIV care and treatment *in order*: Law was ranked top followed by SHT, TTLT, H2H, CAG, and ART in private clinics and health posts.

Conclusion: The HIV care and treatment was affected by patient-, HIV care provider-, community-, and policy-level barriers. These findings call for the need to implement the recommended solutions after conducting further nationwide studies.

Keywords: Qualitative, Delphi, barriers, facilitators, Solutions, HIV care, Ethiopia

The trend of HIV/AIDS for the last 26 Years and Predicting Achievement of the 90-90-90 by 2020 HIV Prevention Targets in Ethiopia: A Time Series Analysis.

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Background: After three decades where first case of HIV was reported in Ethiopia, almost 1.93 million people have been infected and 1.3 million have died of AIDS-related causes. It continues to be epidemic of public health importance with a prevalence of 1.1% and incidence of 0.33/1000 population. It is characterized by a low-intensity, mixed epidemic and self-sustaining transmission. Ethiopia has adopted the 90-90-90 by 2020 HIV prevention target to end AIDS epidemic by 2030. Thus, HIV/AIDS indicators have been of high importance in predicting the future, their application is very low. Therefore, this study aimed to assess the trend of HIV for the last 26 years and predict the achievement of the 90-90-90 target in Ethiopia.

Methods: This study was conducted using aggregates of HIV/AIDS indicator data from 1990-2016 of UNAIDS data bases. The data was compiled and analyzed with excel and STATA Version 11. The trend line that best fits the regression was drawn, annual change was estimated, correlation was assessed and future (predicted) values of the indicator computed and compared with the 90-90-90 target values.

Result: Since 1995, new infection has declined by 81% and since 2002; case has declined by 35.5%. However, after remarkable decline for decades HIV incidence began to rise by 10% since 2008 and new infection increased by 36% among all ages and doubled among adults. The coverage of antiretroviral treatment has increased by 90% among all age and tripled among pregnant women with in six years. Nationally, 67% of people living with HIV know their status, 88% of them are on treatment and 86% of people on treatment have viral suppression. As a result, a 77% and 79% decline in deaths from AIDS-related causes has been observed among all age and children respectively. By 2020, 79% of people living with HIV will know their status, 96-99% of them will be on ART and more than 86% will have viral suppression.

Conclusion: After remarkable decline, HIV infection started to increase in the last few years among adults. Ethiopia will achieve the second and third 90% targets for treatment and viral suppression, while the first target for HIV diagnosis is not achievable. Therefore due attention is needed to avert current increasing incidence and addressing the undiagnosed peoples.

Keywords: HIV/AIDS, antiretroviral therapy, viral suppression, the 90-90-90 target.

Tuberculosis Treatment Outcomes in Ethiopia from 2009 to 2017, and Impact of HIV Co-Infection and Prior Drug Exposure: aSystematic Review and Meta-Analysis. *Setegn Eshetie.*

Background: Knowledge of tuberculosis (TB) treatment outcomes is substantially needed to assess the performance of national TB controls programs (NTPs). To date, the overall estimates of treatment outcomes have not been determined in Ethiopia. Therefore, this meta-analysis was undertaken to produce pooled estimates of TB treatment outcomes and to analyze the impact of prior anti-TB drug exposure and HIV co-infection.

Methods: Potentially relevant studies were retrieved from PubMed, Embase, and MEDLINE online databases. Unpublished studies have been retrieved from the grey literature through Google and Google Scholar. Statistical analysis was done using STATA version 11 and pooled estimates were calculated using random effect model. Summary estimates are also presented using Forest plots and Tables.

Results: A total of 34 studies are included for meta-analysis. The pooled estimate of successful TB treatment outcomes amounts to 83.7% (95% CI 81.1% - 86.3%). Of successfully treated cases, 33.9% were cured and the remaining completed cases. Besides, nearly 50% deaths were indicated among the 16.3% patients with poor treatment outcome. Sub-group analysis shows that high treatment success rate was estimated in Afar; 88.9% (95% CI 83.8% - 94.2%), followed by Oromia; 88.5% (95% CI 82.6% - 94.5%) and Addis Ababa; 85.4% (95% CI 77.7% - 93.1%), whereas relatively poor treatment outcome was noted in Tigray; 20.0% (95% CI 2.1% - 37.9%) and Amhara; 19.0% (95% CI 12.6% - 25.5%). Unsuccessful TB treatment outcome was found to be higher among HIV/TB co-infected cases with an odds ratio of 1.98 (95%CI, 1.56 - 2.52) and re-treated cases with an odds ratio of 2.17 (95%CI, 1.55 – 3.03). The time trends were assessed from 2009 to 2017, but it shows insignificant variation with treatment outcomes ($P = 0.108$).

Conclusion: The rate of successful treatment outcome in Ethiopia appears generally high, only slightly below the threshold suggested by the World Health Organization. History of tuberculosis treatment and HIV/TB co-infection were inversely associated with favorable treatment outcomes.

Keywords: Tuberculosis, Treatment outcome, Meta-analysis, Ethiopia.

Incidence and Predictors of Tuberculosis among Adult People Living With HIV in Afar Public Health Facilities, Northeast Ethiopia. *Osman Ahmed Mohammed*

Background: Tuberculosis (TB) and human immune deficiency virus (HIV) infections are two major public health problems in many parts of the world .TB is the leading cause of morbidity and mortality among HIV-infected individuals. To assess the incidence of tuberculosis and its predictors among HIV infected individuals.

Methods: A five year retrospective follow up study was conducted among 503 adult PLHIV who enrolled in HIV care clinic from July 1, 2014 to June 30, 2015. After ethical clearance was obtained from school of medicine data collected from patient records. Data checked for completeness and entered to EPI-INFO version 7 then exported to SPSS version 20 for further analysis. Life table and long rank tests was used. Bi-variate and multivariate Cox proportional hazards model were used to identify predictors.

Result: Of all the 503 charts reviewed, 451 charts were included in the analysis. For a total of 1377.303 Person Years (PY) of observation, 119(26.38%) developed TB. The overall incidence density of TB was 8.6 per 100PY.68 (57.14%) of TB developed at the first year of follow up. The cumulative proportion of TB free survival was 79%, 76%, 74%and 71% at the end of one year, two, three and four year respectively .Past TB history (AHR=2.32, 95%CI=1.511-3.573). Bedridden functional status at baseline (AHR=2.42, 95%CI=(1.56-3.75). Baseline BMI<18.5kg/m² (AHR=1.621, 95 %CI =1.09-2.40).Not take IP (Isoniazid prophylaxis therapy) (AHR= 6.96, 95%CI=2.53-19.08). Baseline Hgb <10 g/dl (AHR= 2.54,95%CI=1.57-4.11)respectively were predictors that associated for TB occurrence.

Conclusion and recommendation: TB incidence in adult PLHIV remains high. Past TB history, Not receiving IPT, low BMI, low Hgb and unable to work was the most significant predictors for occurrence of TB. The high incidence of TB finding in this study call for an improved TB/HIV activity and scale up of IPT in the setup to reduce risk of TB.

Emerging and Re-Emerging Communicable Diseases

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Profile of Cytokine, Chemokines, Matrix Metalloprotease-9 in Cerebrospinal Fluid Profiles in Meningococcal and Pneumococcal Meningitis Patients in Ethiopia. *Wude Mihret Woldemedhin.*

Bacterial meningitis is an important cause of morbidity and mortality throughout the world. *N. meningitidis* (Nm), mainly group A, has, until recently, caused recurrent epidemics of meningitis in sub-Saharan Africa including Ethiopia. *Streptococcus pneumoniae* (Sp) is second prevalent pathogen causing an even higher mortality and morbidity than Nm in the same region. Two previous studies from Brazil and Burkina Faso suggested that a difference exists in the cytokine and chemokine profile in CSF between Nm and Sp, possibly explaining the difference in outcome. The objectives of this study are to identify the most prevalent bacteria causing bacterial meningitis in Ethiopia in 2012-2013, studying the molecular profile of inflammatory mediators in the cerebrospinal fluid in patients with established etiological agents and comparing the molecular profile in CSF between patients with documented Nm and Sp. Cerebrospinal fluids and clinical data were collected from a total of 139 patients, aged from 2 days to 78 years of age, admitted in 3 tertiary level referral hospitals: Gondar (n=92, 66.2%), Hawassa (n=27, 19.4%) and Addis Ababa (n=20, 14.4%) with suspected bacterial meningitis from 2012 to 2013. Multiplex real time (RT-PCR) performed at Norwegian Institute of Public Health (NIPH)/Oslo on CSF samples verified the aetiology in 46 (32.4%) of the 139 patients: *N. meningitidis* (n=27; 19.4%, 11 A, 7 W, 1C, 1X, 7 nongroupable), *S. pneumoniae* (n=18; 12.9%) and *H. influenzae* (n=1; 0.7%). Etiology of meningitis in the remaining 93 patients was not determined. Lipopolysaccharide (LPS) was quantified by Limulus Amebocyte Lysate (Chromo-LAL) and load of Nm by RT-PCR (ctrA). Cytokines and chemokines (n=18) were determined by BioPlex XMap technology and matrix metalloproteinase-9 (MMP-9) by enzyme linked immunosorbent assay (ELISA). Of 27 *N. meningitidis* confirmed patients 2 (7%) died and 2 (7%) had immediately severe sequelae while among the 16 *S. pneumoniae* confirmed patients 3 (19%) died and 3 (19%) had immediately severe sequelae. Patients with *S. pneumoniae* had significantly higher CSF levels of interleukines (IL-4, IL-8, IL-12/p70), interferon- γ (INF- γ), monocyte chemo-attractant protein (MCP-1), macrophage inflammatory protein 1 α (MIP-1 α), macrophage inflammatory protein 1 β (MIP-1 β), Regulated on Activation Normal T Cell Expressed and Secreted (RANTES), Tumor necrosis factor (TNF)-Related Apoptosis Inducing Ligand (TRAIL) and MMP-9 as compared with *N. meningitidis*. It is concluded that infections with *S. pneumoniae* appear to have a worse outcome than infections with *N. meningitidis* in Ethiopia in line with other studies from Africa and Europe. We showed that the levels of 10 out of 19 inflammatory parameters are significantly higher in CSF in patients with meningitis caused by *S. pneumoniae* as compared with *N. meningitidis*, possibly associated with the outcome.

Acute Watery Diarrhoea Outbreak Investigation and Response at Andasa Holy Water in Bahir Dar Zuriya District, Amhara Region, Northwest Ethiopia, 2017. *Yeshambel Worku Demlie, Yeshambel Worku Demlie.*

Introduction: Globally, Acute Watery Diarrhoea represents an estimated burden of 1.4 - 4.3 million patients. Recently, Acute Watery Diarrhea is a public health problem in Ethiopia. West Gojjam reported 574 AWD patients with 8 (1.4%) case fatality rates (CFR) started from Andasa Holy Water started at 21/August/2016. The aim was to assess the magnitude of acute watery diarrhoea outbreak and associated risk factors for appropriate control intervention at Andasa Holy Water in Bahir Dar Zuriya District, Amhara Region, 2017.

Methodology: Case-control study design was employed. A line lists was reviewed as per the world health organization patient definition. 144 patients and 144 controls were interviewed with a structured questionnaire. Data was entered to Epi-Info™7 and analyzed by SPSS V20. Backward likelihood ratio variable selection method was used. Bivariable and multivariable logistic regression was done to identify risk factors and $p < 0.05$ was taken as significant association.

Result: Among 144 patients, CFR was 5(3.5%). Pathogen was epidemiologically linked to rapid diagnostic test confirmed *Vibrio cholera* 01 serotype of previous outbreak started at 21/August/2016. The majority [89(61.8%)] of patients were males. 15-44 years aged population were most affected. Drinking river water [(AOR = 13.34, C.I. = 5.474 – 32.509)], hand washing after toilet [(AOR = 0.275, C.I. = 0.099 – 0.766)], hand washing before eating food [(AOR = 0.033, C.I. = 0.011 - 0.096)], contact with a patient [(AOR = 8.22, C.I. = 3.571 – 18.921)], hand washing before cooking food [(AOR=0.053, C.I. = 0.009 – 0.301)] and knowing AWD transmission mode [(AOR = 0.137, C.I. = 0.043 – 0.432)] are statistically significant association.

Conclusion: Drinking Blue Nile River water and contact vomit and/or diarrhoea of AWD patient were risk factors to have AWD patient. Woreda Health Office with collaboration of other concerned body is good to work on availability of safe water for holy water users by chlorination, water treatment chemicals, establish tap/pipe water and increase the awareness of hygienic practice Andasa Holy Water users.

Multi-drug Resistance and Extended-spectrum Beta-lactamase Producing Enterobacteriaceae in Addis Ababa, Ethiopia.

Dejenie Shiferaw Teklu, Dejenie Shiferaw Teklu, Kassu Desta, Melese Hailu Legese, Abebe Aseffa.

Background: The global emergence and spread of Extended-spectrum Beta-lactamases (ESBLs) producing *Enterobacteriaceae* have been threatening the ability to treat infection. Hence, this study aimed to determine the prevalence of multi-drug resistance (MDR) and ESBLs producing *Enterobacteriaceae* (ESBLs-E) from different clinical specimens in Addis Ababa, Ethiopia.

Methods: A cross-sectional study was conducted from January 1 to May 30, 2017. A total of 426 *Enterobacteriaceae* isolates were identified from different clinical specimens; 272 from urine, 90 from blood, 40 from pus, 11 from body fluids, 6 from sputum, 3 from ear discharge, 2 from eye discharge and 2 from cerebrospinal fluid (CSF). The isolates were collected from four bacteriology laboratories using tryptose soya broth with 20% glycerol. Fresh colonies of the isolates were recovered using MacConkey and 5% sheep blood agar plate. Antimicrobial susceptibility testing was performed on Muller Hinton agar (MHA). All *Enterobacteriaceae* were screened for ESBLs production using cefotaxime and ceftazidime as per Clinical and Laboratory Standards Institute (CLSI) guideline. Each ESBLs species *Enterobacteriaceae* were confirmed by combination disk test (CDT). Data was entered and analyzed by using SPSS version 20.

Result: The most frequent *Enterobacteriaceae* were *E. coli* 228 (53.5%) and *K. pneumoniae* 103 (24.1 %). The magnitude of ESBLs-E was 246 (57.7%) by CDT. The highest frequencies of ESBLs-E were observed in blood specimen (84.4%) and the highest ESBLs production was observed in *K. pneumoniae* (85.4%). Highest resistance level was seen to sulfamethoxazole-trimethoprim (77.0%), amoxicillin-clavulanic acid (71.6%), cefotaxime (62.2%), cefepime (60.3) and ceftazidime (60.8%). The resistance to meropenem, amikacin and ceftazidime were 5.2%, 13.8% and 25.1% respectively. The overall magnitude of multi-drug resistance (MDR) level was 68.3%. Of ESBLs-E, 96.3% of them were MDR ($P < 0.001$).

Conclusion: There was a high prevalence of ESBLs-E and MDR isolate in Addis Ababa. Most of ESBLs-E was isolated primarily in blood and urine. The highest ESBLs production was observed among *K. pneumoniae*. Resistance to multiple classes of antibiotics was observed among ESBLs producers than

Incidence of Human Rabies Virus Exposure at Addis Alem Hospital, North-West Ethiopia. Endalew Yizengaw^{1*}, Tamyalew Getahun², Wondemagegn Mullu¹, Mulat Ashagrie², Ebrahim Abdela², Mekuanint Geta³ ¹Department of Microbiology, Immunology and Parasitology, College of Medicine and Health Sciences, Bahir Dar University, Bahir Dar, Ethiopia ²Addis Alem Hospital, Bahir Dar, Ethiopia ³Department of Medical Microbiology, School of Biomedical and Laboratory Sciences, College of Medicine and Health Sciences, University of Gondar, Gondar, Ethiopia.

Background: Clinical Rabies is a widely distributed almost 100% fatal viral zoonotic disease. Most human rabies cases occur in developing countries especially in Asia and Africa. It can be prevented by immunization, post exposure prophylaxis. Ethiopia is assumed to be among African countries with high incidence of human rabies exposure cases. However, there is limited documented data on the incidence of human rabies exposure in the study area in particular and in Ethiopia in general. Thus, this study aimed to determine the incidence of human rabies exposure at Addis Alem hospital, North-west Ethiopia.

Methods: Retrospective cross-sectional study was conducted during August and September, 2017. Data on human rabies exposure cases registered from September 1 2015 to August 31 2017 were collected from anti-rabies post exposure prophylaxis registration log book. Data was collected using structured data collection questionnaire developed for this purpose. Descriptive statistics was used to describe relevant variables.

Results: A total of 924 human rabies exposure cases were recorded. The overall human rabies incidence per 100, 1000 population was 6.5 in 2015 and 7.5 in 2016. Males (55.2%, 510/924) and children of age less than fifteen (46.3%, 428/924) were more affected groups. Majority of human rabies exposure cases (71.9%, 664/924) were from rural settings. Dog was the principal source of exposure (96.3%) followed by cat (1.5%) and donkey (1.3%). High incidence rate of rabies exposure was reported during spring (360, 39%) and summer (244, 26.4%) seasons. There was significance difference between rural and urban exposure cases ($p=0.001$) in respect to the time of arrival to the hospital.

Conclusion: Taken together this study reveals that significant proportion of the population, especially the rural community, is exposed for rabies virus. This shows the need to organized preventive and control strategies and to build community awareness.

Keywords: Rabies, Rabies Exposure, Human Rabies.

Five Years Measles Surveillance Data Analysis of South Nations, Nationalities and Peoples Region. *Misgana Bancha Wonte, Shikur Mohammed, Abyot Bekele.*

Measles is one of the communicable diseases causing preventable mortality and morbidity. In the year 2000, it is estimated that 535 000 children died of measles, the majority in developing countries, and this burden accounted for 5% of all under five mortality. Measles has been targeted for elimination in many regions of the world and Ethiopia is working towards measles elimination by 2020. The aim of this study is to describe measles cases in SNNPR (South Nations, Nationalities and Peoples Region) region from the year 2011 to 2015 and to develop effective prevention and control measures. Retrospective record review was conducted by reviewing a five years (2011-2015) measles line list and case based surveillance data of SNNPR which is obtained from national public health emergency management database. Microsoft excel 2007 version was used to organize and analyse the data. During the study period, 16755 measles cases and 1483 deaths were registered. From these cases, 1190 were tested positive for measles IgM. The median age was six years; Most of the cases were from age group of 5-9 years (30.7%). Males comprise 52.4%. The cumulative incidence rate of the region was 18.3 per 100, 000 population. Highest incidence rate was reported in 2013 with 6431 cases (IR = 35/100,000). Kefa zone was the highest affected zone (IR =63.6/100,000). From the total suspected cases, CFR (Case Fatality Rate) was 8.9%. From the total deaths, 1128(76.1%) were unvaccinated. The most affected age group were children aged younger than one year (ASAR: 313.6 per100.000). Among all confirmed cases, 49% were unvaccinated. Measles cases are increasing year to year covering almost all zones and special woredas of the region. There is high number of susceptible people in the region and most of the suspected and confirmed cases were unvaccinated. Failure to achieve optimum herd immunity is the possible reason for sustained outbreak in the region. Finally, improving routine immunization coverage and SIA (Supplementary Immunization Activities) in the target age groups and strengthening surveillance approach for early case detection is recommended so that the 2020 measles elimination goal will be achieved.

Poster Presentations

Health Systems and Policy

Abs 1

Predictors of Adult Patient Satisfaction with Nursing Care in Public Hospitals of Amhara Region, Northwest Ethiopia, 2017: Institution level Cross-Sectional Study. *Ayele Semachew Kasa.*

Background: Nursing care plays a prominent role in determining the overall satisfaction of patients' hospitalization experience. Studies have shown that satisfaction with nursing care is the best indicator of patients' satisfaction with healthcare facilities. The aim of this study was to assess the level of adult admitted patients' satisfaction in nursing care and factors affecting their satisfaction in Amhara region public hospitals.

Method: An institutional based cross-sectional study was conducted from January 01 to February 01/2017 at three public hospitals in Amhara region. All patients who were 18 years and more, conscious, had 2 or more days in hospital stay and who were willing to participate included in the study. Systematic random sampling technique was employed to recruit participants. Patient Satisfaction with Nursing Care Scale was used to collect the data. Variables which statistically had a significant association with the outcome variable ($P < 0.05$) were identified as significant in the multivariate logistic regression analysis.

Result: A total of 563 patients participated. The overall admitted adult patient satisfaction with nursing care was 40.7%. Patients were more satisfied with the provision of health information, affective support, and professional technical control and least satisfied with decisional control. Age of the respondent, marital status, educational status, occupation, admission ward and number of patients admitted in a single room were the variables significantly associated with patient satisfaction with nursing care.

Conclusion: The overall level of patient satisfaction in this study was very low in comparison with many studies. Patients from decisional control were least satisfied. This may urge hospital administrators, policymakers and nurses to be more sensitive with patients' decisional control or sense of autonomy when providing care. Being governmental employee, patients in the age group of 31–40 years and 4 - 8 patients in a single room were least satisfied with the nursing care whereas ever married, more educated and patients admitted to the surgical ward were more satisfied than their counterparts.

Keywords: Admitted Patient, Nursing Care, Interaction Model, Amhara Region.

A Survey on the Implementation of Nursing Process in Clinical Settings: The Case of Three Governmental Hospitals in Ethiopia, 2017.

Ayele Semachew Kasa.

Nursing Process is a systematic method which utilizes scientific reasoning, problem-solving and critical thinking to direct nurses in caring for patients effectively? Many nurse researchers and theorists are in agreement that nursing process is a scientific method for delivering holistic and quality nursing care. Therefore, its effective implementation is critical for improved quality of nursing care. When the quality of nursing care improved, visibility of nurses' contribution to patient's health outcomes becomes distinct. The purpose of the current survey is to evaluate the implementation of the nursing process at three randomly selected governmental hospitals found in Amhara Region North West Ethiopia.

Methods: Institutional based descriptive and retrospective study design was used and the nursing process registration in inpatient records was also checked to inquire all pertinent information regarding on the implementation of nursing process from February 30 to March 30/2017. Nursing process implementation checklist was prepared in the English language to assess the implementation of nursing process in each hospital. The data were edited, coded and entered into Epi-Data version 3.1 and exported to IBM SPSS Statistics Version 20 for analysis. Results of the data analysis were presented in the form of descriptive statistics.

Result: From the total 338 reviewed documents 264 (78.1%) have a nursing process format attached with the patient's profile/file, 107 (31.7%) had no nursing diagnosis, 185 (54.7%) of nurses stated their plan of care based on priority, 173 (51.2%) of nurses did not document their interventions based on plan and 179 (53.0%) of nurses did not evaluate their interventions. The overall implementation of nursing process among the FelegeHiwotReferral hospital, Debretabor general hospital and Finoteselam general hospitals were 49.12%, 68.18%, and 69.42% respectively.

Conclusion: Nursing professionals shall improve documentation required in implementing the nursing process. Nursing managers (matron, ward heads) shall supervise the overall implementation of nursing process. Hospital nursing services managers (matrons) shall arrange and facilitate case presentations by the nursing staffs which focus on documentation and updates on nursing process. Hospitals need to establish and support nursing process coordinating staff in their institution.

Keywords: Nursing, Nursing Process, Implementation, Survey, North West Ethiopia.

Measuring Performance of Public Health Centers in Western Oromia: Using a Two-Stage Data Envelopment Analysis Approach. *FirewTekle Bobo*

Background: the struggle to improve access to quality healthcare is highly inhibited by the scarcity of resources and is worsened by inability of the health system to use resources efficiently. The aim of the study was to measure technical and scale efficiency of public health centers in western Oromia.

Method: seventy-three health centers were included in the study. Output oriented Data Envelopment Analysis model was used to estimate technical, scale efficiency and output increases or input reductions required to make inefficient health centers efficient. Tobit regression model was used in the second stage of the analysis.

Results: among the 73 health centers, 72.6% were technically inefficient. The average technical efficiency of the sampled health centers was 69.8%. All inefficient health centers together would need to increase their outpatient visits by 239,743(34.7%) contraceptive use by 25,106 (0.22%), immunization by 5,342(34%), ANC 4⁺ by 9,008(24.1%) and delivery care by 4,285(9%). This would help the health centers avoid reducing 118 (19.8%) nonclinical staff, 25 (2.8%) clinical staff and 8,921,831(0.24%)-birr expenditure on drugs and supplies as a group to become efficient.

Conclusions: the majority of health centers were technically inefficient. The results also revealed that there is a significant wastage of health resources. Considering the scarce resource available to the health centers, the findings indicate that performance improvement measures have to be taken to curb leakage of health resources.

Keywords: Technical efficiency, Scale efficiency, Data envelopment analysis, Tobit regression Input, output.

Maternal and Neonatal Illnesses, Health Service Utilization, and Household Out-of-Pocket Expenditure in Rural Ethiopia: a Community-Based Prospective Cohort Study. *MogesTadesse Borde, EskindirLoha, Kjell Arne Johansson, BerntLindtjørn.*

Background: The maternal and neonatal illness and death rates are still high in Ethiopia. Unfortunately, the decline in disease burden and death is very slow. There are very few studies on the incidence of illnesses among these groups, how they seek healthcare, and how much health care costs for the households. As Out-Of-Pocket (OOP) expenditure is high and it is one of the barriers to health service utilisation, ill mothers and neonates are at risk.

Objective: To measure the incidence and economic burden of maternal and neonatal illnesses, and describe the rate of health service utilisation.

Rationale: Ethiopia has no maternal and neonatal illness surveillance system. Data of illnesses is limited to health facilities and show only a small portion of the problem. Economic impact and spending on illness were unknown.

Methods: A community-based prospective cohort was conducted in 3 rural kebeles (villages) of Wonago district, South Ethiopia. Nine-hundred mothers and neonates are expected to participate. So far, we registered 718 pregnant women. Three-hundred-twenty mothers gave birth. We observed 8 abortions; 1 maternal death; 4 stillbirths; 2 neonatal deaths; 2 twins and 1 triple birth. A pregnant woman was visited every second week. The delivered mother and their neonates were followed for 42 days and 28 days, respectively. The exposure variables were socioeconomic and demographic factors. The primary outcomes were the incidence of illnesses health service utilisation and OOP expenditures for seeking health care.

Preliminary findings: The total household expenditure was 1312 birr/month. Three-hundred-three (51%) of pregnant mothers reported 1 or more type of illness, but only 17 (6%) of them used the health services. The three common illnesses were tiredness, fever, and headache. The OOP expenditure for pregnancy illnesses was 93 Birr which accounts 7% of the total household expenditure. The direct cost of diagnosis, registration, and drug was 35 Birr but the indirect cost of transport and food was 58 Birr.

Ninety-seven (45%) of delivered mothers reported 1 or more type of illness, but only 2 (2%) of them used the health services. The three common illnesses were blurred vision, excessive bleeding, and severe abdominal pain. These 2 mothers did not pay for treatment and indirect costs. This might be due the attention that was given to delivering mother.

One-hundred-eleven (54%) of mothers reported 1 or more type of neonatal illnesses, but only 2 (2%) of them used the health services. The three common illnesses were not sucking well, vomiting, and diarrhoea. The OOP expenditure for neonatal illnesses was 303 Birr which accounts 23% of the total household expenditure. The direct cost of diagnosis, registration, and drug was 103 Birr but the indirect cost of transport and food was 200 Birr.

134 (27%) and 14 (9%) of mothers were anaemic during the antenatal and postnatal period, respectively. But, 653 (92%) of mothers during the antenatal period and 216 (100%) of mothers during the postnatal period did not take Iron-folate tablets.

Lessons: The incidence of maternal and neonatal illnesses was high, but only few (6% and 2%) ill mothers and 2% of neonates used the health services. The OOP expenditure for neonatal illnesses was 18% of the household annual income. The incidence of anaemia was high, but Iron-folate tablet uptake was low. More efforts should be made to increase health service utilisation and reduce maternal and neonatal illnesses.

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Hematological and Immunological Reference Intervals for Adult Population in the Amhara Regional State, Ethiopia. *Bamlaku Enawgaw Walie*

Background: Reference intervals currently being used in Ethiopia are derived from western population. Thus, this study aimed to establish locally derived hematological and immunological reference intervals.

Method: The study was conducted in the state of Amhara, Ethiopia with a total of 1,040 (576 (55.4%) male and 464 (44.6%) female) volunteer blood donors aged between 18 and 61 years. A non-parametric test was used for the determination of upper (97.5th percentile) and lower (2.5th percentile) reference interval limits with 95% CI. Harris and Boyd rule was used to determine the need of partitioning of reference intervals based on gender.

Result: The established 95% reference interval (2.5th – 97.5th percentile) for WBC 3 – 11.2 x10⁹/L; platelet 90 – 399 x10⁹/L; RBC 4 – 6 x10¹²/L for males and 3.5 – 5.6 x10¹²/L for females; Hgb 12 – 18.9g/dl for males and 10.7 – 17.5g/dl for females; PCV 35.7 – 55.3%, for males and 32.2 – 50.1% for females; CD4 400 - 1430 x10⁹/L for males and 466 - 1523 x10⁹/L for females; CD4% 18 – 49.1% for males and 21.3 – 52.9% for females; MCV 81 – 100fl; MCH 25.3 – 34.6pg; MCHC 28.8 – 36.9%; RDW 11.6 – 15.4% and MPV 8 – 12.3fl. Males had significantly higher RBC, Hgb and PCV compared to females. On the other hand, CD4 cells and CD4 % were significantly higher in females.

Conclusion: The reference intervals established in this study showed variations from other reference intervals. Therefore, it is recommended to use this reference intervals for interpretation of laboratory results during patient diagnosis and safety monitoring during clinical trials.

Keywords: Reference interval, Hematological parameter, Immunological parameter, Amhara

Task Shifting of Emergency Caesarean Section in South Ethiopia: Does It Yield a Lasting Contribution? *Anteneh Asefa.*

Background: Preventable mortality from complications which arise during pregnancy and childbirth continue to claim more than a quarter of million women's lives every year, almost all in low and middle-income countries (LMICs). However, lifesaving emergency obstetric services, including caesarean section (CS), significantly contribute to prevention of maternal and newborn mortality and morbidity. Between 2009 and 2013 a task shifting intervention to train CS teams involving health officers, general practitioners and anaesthetic and scrub nurses was implemented in 13 hospitals in Southern Nations Nationalities and Peoples Region (SNNPR) of Ethiopia. This study was conducted to assess the contribution of task shifting implementation in the performance of CSs in the hospitals.

Methods: A cross-sectional study involving review of secondary data and interview with focal persons of comprehensive emergency obstetrics and newborn care was conducted to appreciate the contribution of task shifting of CS in primary hospitals in southern Ethiopia. Data from delivery and CS registers of the hospitals (for the six months before and after task shifting commenced) was collected. Mean differences were computed with their respective confidence intervals to appreciate the difference between numbers of CSs conducted and total deliveries attended.

Results: Comparing the hospitals' performance before and after the task shifting process demonstrated a significant increase in the number of CSs performed (Mean difference = 43.8; 95%CI: 18.3, 69.4; $p=0.003$) and the number of deliveries attended (Mean difference = 155.9; 95%CI: 48.9, 263.7; $p=0.02$) in the hospitals. However, non-retention of trained staff and limited continuous availability of blood transfusion cast a shadow on the contribution of task shifting; from the 41 trained surgeons, only 14 (34%) were retained in the primary hospitals.

Conclusions: There was a significant change in the number of CSs conducted after the task shifting although turnover of trained surgeons is an obstacle to maximizing the benefits of the innovation. Sound planning and implementation of task shifting of CS should be carried out in order to maximize the benefits from the innovation.

Keywords: Task shifting, CEmONC, caesarean section, delivery.

One Health to Improve the Health of Pastoralist Communities and Their Livestock in Liben Zone.

Andualem Assefa Mengistu, Alessandro Guarino, Alessia Villanueel, Micol Fascendini, Elena Cristofori, Alessandro Demarchi.

Introduction: In 2015-2016, ComitatoCollaborazioneMedica (CCM) carried out an Operational Research (OR), financed by the Swiss Development Cooperation and aimed at testing the feasibility and efficacy of the One Health (OH) approach to improve the health of pastoral communities and their livestock in Filtuworeda (Somali Regional State).

Objectives: The OR primary objective was to understand needs, perceptions and behaviours of local pastoralists towards human and animal health, and their strategies of adaptation to the environment, also in relation to climate change. The research mainly explored the socio-cultural, structural and economic hindrances that prevent the access to existing human and animal health facilities. The OR results allowed CCM to initiate a project planning process with local communities and authorities, aimed at: i) promoting an optimal common health for humans, animals and environment in the intervention area; ii) effectively responding to the local pastoralists' needs; and iii) integrating its actions with the government strategies within the Federal Ministry of Health and the Ministry of Livestock and Fisheries.

Methods: The research employed a transdisciplinary approach, involving several experts in medicine, veterinary, social and environmental sciences, applied geography and meteorology and directly engaging the local communities and authorities. The OR team was coordinated by a social anthropologist, which promoted the integration of plural scientific contributions with pastoralists' knowledge and experience and allowed an interactive dialogue among research staff, local authorities and household members. Fieldwork activities started on 2nd September 2015 and ended on 27th January 2016, developing through 5 steps: introduction of OR objectives and methods to local authorities; participatory mapping of the territory with the community leaders and elders; data collection among the pastoralist households; data analysis supported by local and international experts; and participatory discussion on the OR findings and the way forward with the pastoralist communities and their leaders.

Results: The OR allowed an in-depth analysis of the local Socio-Ecological System, the seasonal transhumance patterns and behaviors, the prevention/care conceptions and practices related to human and animal health, and the availability, functioning and hindrances of the OH resources. However, the main result of the OR transdisciplinary and collaborative approach was the participatory identification of strategies of intervention to enhance the health of pastoralist communities and their livestock in Filtuworeda. These refer to three main hindrances: the inadequacy of the human and animal health care systems, and the lack of communication and cooperation between the related professionals and authorities; the social and economic barriers to access existing facilities; the poor knowledge either among pastoralists or local health workers, about the risks of zoonotic diseases transmission.

Conclusion: The OR combined a plurality of perspectives and experiences, resulting in an 'augmented' One Health approach that allowed identifying multivariate solutions. These have been discussed, acknowledged and endorsed by the pastoralist communities, enhancing the responsibility, ownership and accountability of all concerned bodies to promote the efficacy and suitability of future actions.

Notifiable Disease Surveillance Practice and Associated Factors among Health Workers of Harari Region, Ethiopia, 2017. *Biniyam Teshome Tessema (BSc, MPH), Gudina Egata (PhD, Assistant Professor, Haramaya University).*

Introduction: Public health surveillance is the ongoing systematic collection, analysis, and interpretation of health data. Integrated Disease Surveillance and Response is now a part of Health Management Information System which comprises databases, personnel including Health professionals, and materials that are organized to collect the data that will be utilized for planning and informed decision making. Though strong surveillance system relies on good practices health care providers, literature on practices of health workers on notifiable disease surveillance and reporting are limited in low income countries.

Objectives: To assess notifiable disease surveillance practice and associated factors among health workers in Harari region.

Methods and materials: A cross sectional study design was used among randomly selected 428 health workers in selected Public and Private Health workers from April 1-15, 2017. Data were collected using structured pretested self-administered questionnaire. Descriptive statistics was used to describe the data using frequencies, proportions, and numerical summary measures bivariate logistic regression analysis was used to assess the association between outcome variable and each explanatory variables. Data was analyzed using Statistical Packages for Social Sciences (SPSS) version 23 and level of significance was at $p \leq 0.05$.

Result: Notifiable disease surveillance was practiced by 46 %, 95%CI: (41%, 50%) of health workers. Being knowledgeable about Notifiable Disease Surveillance [(AOR=2.02; 95% CI: (1.21-3.38)], Training on Notifiable Disease Surveillance [(AOR=8.56; 95% CI : (4.24-17.26)], and availability of reporting format of Notifiable Disease Surveillance [(AOR=4.41; 95% CI:

(2.54-7.66)] were significantly associated with notifiable disease surveillance practice among health workers.

Conclusion and Recommendations: Generally, half of the respondents working in Harari region had no reporting practice on notifiable disease surveillance. The main factors associated with non-reporting practice of notifiable disease surveillance were knowledge, training and availability of reporting format. The Harari regional health bureau is recommended to provide training and make reporting format available regularly for both private and government health facilities.

Health facilities are also recommended to request capacity building training and reporting format from the regional health bureau when it is needed. Finally, we recommend both Harari regional health office and respective health facilities involved in this study to conduct regular supervision, follow up and review meeting to strengthen the Notifiable Disease Surveillance practice.

Keywords: Notifiable Disease Surveillance, Harari, Health workers.

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Basic Coagulation Parameters among Human Immunodeficiency Virus-Infected Adults in Gondar, Northwest Ethiopia: a Comparative Cross-sectional Study. *Mulugeta Melku, Masresha Seyoum, fikirAsrie, Zegeye Getaneh, Getabalew Engidaye, Bamlaku Enawgaw.*

Background: Human immune deficiency virus infection causes haematological abnormalities including impaired haematopoiesis, immune-mediated cytopenias and altered hemostasis. Coagulation system abnormality in HIV infected individuals has been caused by endothelial dysfunction, the presence of anti-phospholipids antibody, liver disease and bone marrow dysfunction. This study is aimed at assessing the basic coagulation parameters of HIV infected adults at the University of Gondar hospital antiretroviral therapy clinic.

Methods: A comparative cross sectional study was conducted from February to May 2017. A total of 300 study participants, consisting of 100 HAART-naïve HIV-infected adults, 100 HIV-infected adults who were taking HAART, and 100 HIV-seronegative apparently healthy adults, were included. Basic coagulation functional assays such as Prothrombin time (PT), activated partial thromboplastin time (APTT) and international normalization ratio (INR) were determined by HUMACLOT DUE PLUS coagulation analyzer (Wiesbaden, Germany). Cluster of differentiation 4 positive (CD4+) cells and platelet count were analysed by FACS count automated analyzer (Becton Dickinson and Company, California, USA), and SYSMEX K-21N (Sysmex Corporation Kobe, Japan), respectively. The data were entered, cleaned and edited using Epi Info version 7, and analyzed using SPSS version 20. Kruskal Wallis H, Mann-Whitney U, and Spearman correlational test were used for inferential statistics. The results were expressed by median [interquartile range (IQR)], and presented in tables. P-value < 0.05 was considered as statistically significant.

Results: PT, APTT and INR were significantly higher, whereas platelet count significantly lower in HIV-infected adults (both who were taking HAART and HAART-naïve) than HIV-seronegative adults ($P < 0.001$). PT and INR were significantly higher, and platelet count was significantly lower in HAART-naïve HIV-infected adults than HIV-infected adults who were taking HAART. In Spearman's correlation analysis, APTT has shown a significant negative correlation with a CD4 count in HAART-naïve HIV-infected adults.

Conclusion: HIV infected adults are more likely to develop coagulation abnormality than HIV-seronegative subjects. Coagulation parameters need to be regularly checked to monitor coagulation disorders in HIV-infected individuals.

Keywords: APTT, Coagulation, HIV, INR, PT

The Burden of HIV/AIDS in Ethiopia from 1990 to 2016: Analysis of the Global Burden of Diseases 2016 Study. *Amare Deribew*

Background: The burden of HIV/AIDS in Ethiopia has not been comprehensively assessed over the last two decades. In this study, we used the 2016 Global Burden of Diseases, Injuries and Risk factors (GBD) data to analyze the incidence, prevalence, mortality and Disability-adjusted Life Years Lost(DALY) rates of Human Immunodeficiency Virus infection/ Acquired Immune Deficiency Syndrome (HIV/AIDS) in Ethiopia over the last 25 years.

Methods: The GBD 2016 used a wide range of data source for Ethiopia such as verbal autopsy (VA), surveys, reports of Federal Ministry of Health and United Nations (UN) and published scientific articles. The modified United Nations Programme on HIV/AIDS (UNAIDS) Spectrum model was used to estimate the incidence and mortality rates for HIV/AIDS.

Results: In 2016, an estimated 36,990 new HIV infections (95% uncertainty interval [UI]: 8775-80262), 670,906 prevalent HIV cases (95% UI: 568,268-798,970) and 19,999 HIV deaths (95% UI: 16426-24412) occurred in Ethiopia. The HIV/AIDS incidence rate peaked in 1995 and declined by 6.3% annually for both sexes with a total reduction of 77% between 1990 and 2015. Annualized HIV/AIDS mortality rate reduction during 1990 to 2015 for both sexes was 0.4%.

Conclusions: Ethiopia has achieved the 50% reduction of most of the Millennium Development Goals (MDGs) targets related to HIV/AIDS. However, the decline in HIV/AIDS mortality rate has been comparatively slow. The country should strengthen the HIV/AIDS detection and treatment programs at community level to achieve its targets during the Sustainable Development Program (SDGs)-era.

Mycobacterium Sputum Analysis and Comparative Evaluation in Pulmonary Tuberculosis Laboratory Diagnosis in Ethiopia. *KassayeTekie Desta.*

Background: Even though the laboratory testing is essential for the diagnosis and control of tuberculosis, it does not receive enough attention in Ethiopia where acid-fast bacilli (AFB) sputum microscopy is often the only available method to diagnose tuberculosis. Sputum microscopy lacks sensitivity. In Ethiopia like any other developing country, acid-fast bacilli (AFB) sputum microscopy is often the only available method to diagnose tuberculosis. The low detection rate of *Mycobacterium tuberculosis* in Ethiopia using sputum microscopy (less than 30 %) and the limitation of chest-x-ray for mass screening and diagnosis, initiated the researcher to conduct the study. This study was also extended to drug susceptibility test to show the importance of this area of screening on tuberculosis diagnosis.

Objective: The objective of this study was to make a comparative analysis of chest X-ray, sputum microscopy and culture for diagnosis of *Mycobacterium tuberculosis*

Methods: Quantitative, retrospective cross-sectional study was conducted to analyses chest X-ray, sputum microscopy and culture for diagnosis of *Mycobacterium tuberculosis*. The study was conducted on data collected from International Clinical Laboratories. All prospective participants' documents who had undergone chest radiography screening in Cathedral hospital, Chico hospital, St Yared hospital and International organization for migration and with suggestive x-ray findings from February 2009 to March 2010 were included in the study. They were all referred to International Clinical Laboratories from these health care facilities for AFB and culture diagnosis. The sampling frame for this study was the TB register that had all patients with suggestive x-ray findings referred to International clinical laboratory starting from 01/02/2009 to 01/03/2010. Samples were selected from the logbooks using systemic random sampling and until the required sample number of 943 had been obtained. Data collection was done using standardized and modified checklist from 943 participants' documents tuberculosis laboratory registers of International Clinical Laboratories from February 2009 to March 2010. The 943 study participants' documents sampled were analyzed for CXR, AFB microscopy, solid culture, liquid culture and anti-tuberculosis drug susceptibility testing.

Results: The findings illustrate that chest X-ray screening of tuberculosis lacks specificity and sputum smear microscopy has low detection rate compared to sputum for culture. The study illustrates the need for the implementation of culture techniques for tuberculosis diagnosis and strengthening of quality assurance measures for sputum microscopy. This requires joint efforts the Federal Ministry of Health of Ethiopia and all stake holders to improve the laboratory diagnosis and tackle the disease. Among the 943 study participants' documents with suggestive chest x-ray findings 13(1.4 %) had a positive smear results for AFB. The total number of organisms recovered was 98 of which 23 were *M. tuberculosis* whereas 75 were non-tuberculosis mycobacterium (NTM). In this study significant difference was not demonstrated statically between BACTEC MIGIT 960 and LJ medium in terms of *Mycobacterial* recovery rate ($p>0.05$). Characteristics of the findings revealed that twenty-three ($n= 23$) study participants' documents with suggestive chest x-ray findings were found to be positive *Mycobacterial* culture and identified as *M. tuberculosis* (PTB). Seventeen (17) whose smears were negative for AFB found to be positive for *Mycobacterial* culture and identified as *M. tuberculosis*. The diagnostic value of AFB sputum microscopy against sputum culture method for diagnosis of tuberculosis in terms

of sensitivity, specificity, and positive and negative predictive values of serial acid-fast bacilli screening among this group were 26% (6/23), 99.2% (913/920), 46% (6/13), and 98.2% (913/930), respectively. The resistance pattern to Isoniazid; Rifampin, Ethambutolhydrochlorid and streptomycin was 7(30.5%); 2(8%); 6(26%) and 5(22%) respectively. 2/943(2.1%) participants' documents with abnormal chest radiographs were found to be MDR. i.e. 2/23 culture positive isolates. Eleven (11/23) isolates were found to be mono drug resistant.

Conclusion and recommendation: The findings of this study revealed that chest x-ray for tuberculosis screening lacks significant specificity and is susceptible to miss screening and diagnosis. Although AFB microscopy is easy to conduct, cost effective and gives results soon, it cannot detect early infections because of the low load of tuberculosis bacilli in the sputum. The findings of this study showed that culture method has a great potential to improve the clinicians' ability to diagnose tuberculosis. Joint efforts are needed to make the culture method of tuberculosis diagnosis cost effective and applicable in resource limited countries like that of Ethiopia.

Tuberculosis and Human Immune Deficiency Virus Co-Infection and Associated Factors at DebreMarkos Referral Hospital, Northwest Ethiopia: a Four Years Retrospective Study.

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Background: Human immunodeficiency virus and tuberculosis (HIV &TB) are the leading global causes of death among patients with infectious diseases. Additionally, due to shared immune defense mechanisms, they are the leading cause of co-morbidities globally. However, little information was found regarding the proportion of TB/HIV co-infection in the study area.

Objective: The main aim of this study was to assess the prevalence of tuberculosis and HIV co-infection, and associated factors among TB patients registered and treated from September 11, 2012 to September 10, 2016 at DebreMarkos Referral Hospital DOT's clinic.

Methods: All TB patients registered and treated from September 11, 2012 to September 10, 2016 at DebreMarkos Referral Hospital DOT's clinic were included in this study. Data was entered, cleared, and analyzed using SPSS version 20. Logistic regression was used to determine the association between independent variables and the outcome variable. Odds ratio and 95% confidence intervals were calculated and the result was considered statistically significant at p-value less than 0.05.

Results: A total of 180 TB patients were enrolled in this study. Males constituted 96/180(53.3%) of the study participants. Those living in urban areas were 133/180(62.8%). PTB accounted 97/180(53.9%) followed by EPTB 83/180(46.1%). New cases were 164/180(91.1%) and 16/180(8.9%) were treatment failure, no relapse or defaulter cases were observed. Forty percent (72/180) of them were co-infected with TB and HIV. The odds of having TB/HIV co-infection were 3.4 and 2.1 times higher among pulmonary tuberculosis (PTB) and extra-pulmonary pulmonary tuberculosis (EPTB) with [AOR= 3.4; 95%CI: 1.4-8.1, p=0.006] and [AOR=2.1, 95%CI: 1.0-4.3, p=0.05] respectively. The HIV co-infections proportion among TB patient were 42.7% in males and 36.9% in females. TB/HIV co-infection was 42.4 % (28/66) in 2013, 47.4% (18/38) in 2014, 40.6 % (13/32) in 2015, and 29.5 % (13/44) in 2016. The trend of TB/HIV co-infection was decreasing in the last two years in the study area.

Conclusion: TB/HIV co-infection is one of the serious public health problems in the study area. Thus, collaborative TB/HIV activities that reduce the co-infections and its impact on community should be addressed.

Keywords: TB/HIV co-infection, Tuberculosis, HIV, MDR-TB

Homosexual Anal Sexual Experience and HIV Risk Awareness among Men Who Have Sex with Men in Dire Dawa, Ethiopia: Qualitative Study.

YohannesTeka, Lemessa Olijira, Yadeta Dessie.

Background: Men who have sex with men (MSM) have been disproportionately affected with HIV and anal intercourse carry exacerbated risk of HIV for receptors, which coupled with related risk sexual behaviors such as not using proper lubricants and inconsistent condom use. Besides their risk anal sexual practice, most of MSM do not well-understand HIV transmission risk of anal sex. Therefore, the purpose of this study was to explore homosexual anal sexual experience and HIV transmission risk awareness among men who have sex with men in Dire Dawa town, Eastern Ethiopia.

Method: we used qualitative study design with thematic analysis approach. The study participant men who had sex with men were recruited using respondent driven sampling. Sample sizes attained with saturation of ideas from 15 participants. Interviews were carried out with local language, and it was recorded on tape recorder. We analyzed the data concomitantly with data collection. Prior to data analysis, we transcribed the tape recorded data and translated it to English and then it entered into open code software version 3.4 for coding and theme identification. Final analysis performed based on major themes.

Result: practicing as gay commercial sex worker, sexual coercion and external influence and influence from sexual desire enabled MSM to practice homosexual anal sex. They practiced unprotected anal sex for better sexual pleasure and due to inaccessibility of condom. Poor awareness about proper lubricants and condom was a major theme that participants practiced homosexual anal sex without proper lubricants and condom respectively. Half of them did not understand exacerbated risk of anal sex for HIV transmission.

Conclusion and recommendation: men who have sex with men practiced risk homosexual sex without risk reduction methods and they did not understand HIV transmission risk of their risk sexual behavior. Therefore, stakeholders including ministry of health need to incorporate potential HIV transmission risk awareness about risk anal sexual behaviors for MSM and other population groups.

Keywords: MSM, anal sex, HIV risk awareness.

Tuberculosis Incidence and Predictors among Human Immunodeficiency Virus-Infected Children after initiation of Antiretroviral Therapy: A Retrospective Cohort Study. *Aklilu Endalamaw, Eshetu Hailesilassie Engeda, NegaTezera Assimamaw.*

Background: Tuberculosis is a predominant opportunistic infection among HIV-positive children in developing countries. There are different contributing factors involved to increase tuberculosis infection.

Objective: This study aimed to assess tuberculosis incidence and predictors among human immunodeficiency virus-positive children on antiretroviral therapy in Northwest Ethiopia

Methods: A total of 352 children followed from March 2005 to April 2017. Kaplan-Meier was used to estimate tuberculosis-free survival probability. We used a Cox-proportional hazard model to show independent predictors with a p-value 0.05 was inferred statistically significant.

Results: The study found thirty-four (9.7%) tuberculosis cases. The overall tuberculosis incidence rate was 2.63 per 100 person-years in the 1294.7 person-years observation. The median tuberculosis-free survival time was 135 months. Overall tuberculosis-free survival proportion at the end of the study was 82% (95%CI (Confidence Interval) = 74 to 88%). Being on WHO clinical stage 3 and 4 (AHR (Adjusted Hazard Ratio) =3.0 (95% CI=1.2 to 7.7), a fair and poor adherence level to ART (AHR=4.0 (95%CI= 1.5 to 10.8)), started ART after 3 months of HIV care (AHR=4.0 (95%CI=1.5 to 10.6)) and 6 months duration on ART (AHR=5.5 (95% CI= 1.5 to 20.6)) were predictors of tuberculosis.

Conclusions: The incidence rate of TB among HIV-positive children after ART initiation was high. WHO clinical stage 3 and 4, a fair and poor adherence level to ART, > 3 months in HIV care before ART and < 6 months on ART were associated factors of tuberculosis. A study result suggest a need to give more attention for advanced clinical stages, initiation of ART, first six months on ART, and adherence to ART.

Keywords: Antiretroviral therapy; Children; HIV; Incidence; Tuberculosis; Ethiopia

Syphilis and Human Immunodeficiency Virus infection among pregnant women attending at antenatal care clinic of Gondar Family Guidance Association, northwest Ethiopia: Implication for prevention of mother to child transmission.*Belete Biadgo.*

Background: Sexually transmitted infections constitute a major public health problem worldwide. Syphilis and HIV infections causes various adverse pregnancy outcomes. Therefore the aim of this study was to determine the seroprevalence of HIV and syphilis infections among pregnant women at Gondar Family Guidance Association clinic, northwest Ethiopia.

Methods: A retrospective study was conducted using data obtained from registration books of Gondar family guidance association clinic from January 2011 to April 2015. Data entry and analysis was done using SPSS version-20 software. Descriptive statistics were computed. A binary logistic regression model was fitted to identify factors associated with each infection. The odds ratio with a 95% confidence interval was calculated. A p-value ≤ 0.05 was considered statistically significant.

Results: A total of 3,504 pregnant women were included in the study. Of all study participants, the seroprevalence of HIV was 145(4.1%) and syphilis was detected in 66(1.9%). Twenty three (0.66%) of the study's participants were co-infected. Women aged 20-29 years (AOR: 3.86; 95% CI: 1.36-10.89), women aged ≥ 30 years (AOR: 6.08; 95% CI: 2.04-18.14) and women infected with HIV (AOR: 14.6; 95% CI: 8.49-25.18) were significantly associated with syphilis infection. Whereas the risk for HIV infection was higher among women aged 20–29 years followed by 30-39 years but not statistically significant. The majority of pregnant women's blood group was O (41.7%) followed by A (28.1%). There was a decline in trend prevalence of HIV from 5.2% in 2011 to 2.1% in 2015 and decline in syphilis prevalence from 2.6% in 2011 to 1.6% in 2015.

Conclusion and recommendation: The data showed that syphilis and HIV infections are still critical public health concerns among pregnant women. Screening of all pregnant women for these infections are valuable. Further community-based studies to identify risk factors are necessary.

Keyword: Human Immunodeficiency Virus, Pregnant women, Seroprevalence, Syphilis

Dietary Diversity Practice and Associated Factors among Adolescent Girls in Dembia District, Northwest Ethiopia, 2017: Community Based Cross-sectional Study. *Kedir Abdela Gonete.*

Introduction: Dietary Diversity Practice and Associated Factors among Adolescent girls in Dembia District, northwest Ethiopia, 2017: Community Based Cross-sectional Study where to go for services and timeliness of care seeking has not been studied in people with tuberculosis (TB). The objectives of this study were to assess the impact of co-morbid depression on pathways to care and diagnosis delay, and to find out whether depression mediates the association between diagnosis delay and its factors.

Methods: We analyzed cross-sectional data collected from 592 adults with newly diagnosed TB. We assessed depression using Patient Health Questionnaire, nine items (PHQ-9) at a cut-off 10. Data on diagnosis delay, pathways to TB care, socio-demographic variables, stigma, types of TB, substance use, co-morbid chronic illnesses, and perception about TB were assessed using structured questionnaire. Generalized structural equation modeling was used to analyze the data.

Results: 312 (52.7%) of the participants were male. Three hundred thirteen (52.9%) of the participants had probable depression. Pathway to TB care was direct for 512 (86.5%) of the participants and indirect for 80 (13.5%) of them. The median diagnosis delay was 12.0 weeks. Depression did not have a statistically significant association with pathways to TB care ($\beta = -0.45$; 95%CI = -1.85, 0.96) and diagnosis delay (Adjusted odds ratio (AOR) = 0.90; 0.77, 1.06). Indirect pathway to TB care was positively associated with diagnosis delay (AOR=2.72; 95%CI= 1.25, 5.91). Other factors associated with pathways to care and diagnosis delay have been presented and discussed.

Conclusions: People with co-morbid depression visit the modern health care system as directly as and as soon as others do but the modern health care systems are not detecting the co-morbid depression. How socio-demographic factors influence pathways to care and diagnosis delay require qualitative exploration.

Determinants and morbidities of multiple anthropometric deficits in southwest rural Ethiopia. *Netsanet Fentahun Babbel.*

Objective: The aim of this study was to compare undernutrition with child morbidity and their determinants according to a composite index of anthropometrical failures and conventional indices.

Methods: We used data generated from three rounds of a longitudinal panel survey conducted in nine districts in Oromiya Region and the Southern Nations, Nationality and Peoples Region of Ethiopia. We estimated undernutrition using conventional indices and composite index of anthropometrical failures. Included in this analysis were 579, 674, and 674 children age <5 y in rounds 1, 2, and 3, respectively. The households were recruited using the expanded program on immunization sampling method. The hierarchical nature of the data Applied nutritional investigation was taken into account during the statistical analysis using a two-level mixed-effects logistic regression model.

Results: A composite index of anthropological failure, estimated 45.1%, 42.4%, and 46.4% of the children were undernourished in round 1, 2, and 3, respectively. The conventional indices estimated 24.4%, 24.2%, and 30.4% underweight in round 1, 2, and 3, respectively. Being female (odds ratio [OR], 7.4; 95% confidence interval [CI], 3.9–14.0); low dietary diversity (OR, 3.1; 95% CI, 1.6–5.9); medium dietary diversity (OR, 1.9; 95% CI, 1.1–3.3), and no special foods during illness (OR, 1.8; 95% CI, 1.2–2.8) were determinant of multiple anthropometrical failures. Children with multiple anthropometric failures were 2.6 times more likely to report child morbidities (OR, 2.6; 95% CI, 1.1–5.9). However, none of the conventional indices were associated with any of the reported child morbidities, such as stunting (OR, 1.1; 95% CI, 0.8–1.4), wasting (OR, 0.9; 95% CI, 0.5–1.6), or underweight (OR, 1.4; 95% CI, 1.0–2.0).

Conclusion: The conventional indices underestimated the prevalence of undernutrition by 20.7%. Children with multiple anthropometric failures are at high risk for developing child morbidities and should benefit from nutrition intervention to reduce child morbidities.

Keywords: Anthropometrical failure, Malnutrition, Children, Child morbidities

Determinants of Chronic Energy Deficiency among adult people living with HIV/AIDS at ShebelBerentaWoreda, East Gojjam, Amhara Region, North West Ethiopia, 2017. *Mulugeta Tesfa Gebeyehu.*

Introduction: Infection caused by HIV and malnutrition have complex interaction. Malnutrition has synergistic effect in immune system and HIV affects nutritional status. Greater political, financial, and technical commitment and support must be given in order to improve dietary quality and increasing dietary intake to standard levels in HIV/AIDS patients.

Objective: To assess determinants of chronic energy malnutrition in adults People living with HIV/AIDS, in shebelberentaworeda, East Gojjam, Amhara region, Ethiopia, 2017.

Methods: Facility based un-matched case control study was conducted in ShebelBerentaworeda among people living with HIV/AIDS of adult age. EPI info statistical soft ware was used to determine sample size. The sample size was 473 and the ratio of control to case was 3 to 1 . The study was conducted from March 15—April 25, 2017 using semi structured questionnaire and the data was entered using EPI-Data version 3.1 and exported to SPSS version 20. The crude and adjusted odds ratio (AOR) together with their corresponding 95% confidence intervals was computed. Bivariate and multivariate logistic regression analysis was computed to identify factors associated chronic energy malnutrition. A P-value<0.05 was considered to declare a result as statistically significant in this study

Result :- A total of 473 adult PLWHA taking ART were participated in the study and 355 were controls and 118 cases .Out of 473 participants, female accounts 200 (56%) and males account 155(43) in controls and in cases 55(46%) and 63(53%) respectively. The mean age of participants was 39.27(sd±9.082). WHO stage 1AOR 0.285(CI=0.100-0.810), feeding style change AOR 0.075(CI 0.038--0.150), baseline CD4cell count AOR 13.398(4.826--37.192), interruption of treatment AOR2.276 (CI 1.017--5.094), monthly family income AOR 6.906(CI 1.069—44.623), residence AOR 0.376(CI 0.171—0.826) and family size AOR 0.114(CI0.027-0.475) are the major identified significant factors for Chronic energy deficiency in peoples living with HIV/AIDS.

Conclusion and recommendation:- clinical stage of patients, interruption of treatment, feeding style change, base line CD4 cell count, family monthly income, residence and family size are determinant factors for chronic energy deficiency among adult peoples living with HIV/AIDS. Therefore: the capacity to effectively manage the above critical factors is crucial in the success of chronic energy deficiency management and prevention in peoples living with HIV/AIDS.

Keywords: - Malnutrition, HIV/AIDS, Chronic Energy deficiency, Shebel.

Maternal Anemia among Women Attending Antenatal Care Service in Bench Maji Zone, Southwest Ethiopia: Institution Based Cross Sectional Study. *Niguse Tadele Atnafu*

Background: The adverse effects of maternal anemia have long been identified. Evidences showed that, in addition to its consequences on mothers, it has increased risk of preterm delivery, low birth weight, lower mental and cognitive development, behavioral problems, lower height, head and chest circumference and risk of child mortality. Despite this fact, it is the most globally prevalent nutritional problem reaching an epidemic level in many developing countries. Hence, this study assessed prevalence of maternal anemia among mothers who attend ante natal care services in Bench Maji Zone (BMZ), South West Ethiopia.

Methods: Institution based cross sectional study was conducted in Bench Maji zone from June-August, 2016 among mothers who attend antenatal care services. Data was collected by using pre-tested structured interviewer administered questionnaire, anthropometric measurements and laboratory investigation. For laboratory investigations stool and blood samples were taken and examined to determine hemoglobin level, parasitic infections and malaria. 15 Health centers and 422 study participants; which were determined based on a single population proportion formula, were selected by simple random sampling and allocated proportionately to each health facility. Data was entered using Epi data 3.1 and checked for consistency, cleaned and analyzed using SPSS version 20. Descriptive statistics, bivariate and multiple logistic regression analyses was employed to identify factors associated with maternal anemia. Results: In this study, the mean hemoglobin level of pregnant women was 12.04 mg/dl and about 15.4% of were anemic according to WHO classification of Anemia. On the stool exams, about one third (30.8%) were infected with intestinal parasites; which included 8 species of intestinal parasites with *Ascaris Lumbricoides* and *Gardia Lamblia* being predominant (11.3% and 11.0 % respectively) intestinal parasites identified. Plasmodium species were also detected in 19(4.9%) of the blood films examined. Among socio-demographic characteristics, obstetric history, dietary practice, nutritional status (based on MUAC level) and presence of intestinal parasites and malaria, factors that are independently associated with having maternal anemia included; under nutrition (MUAC level less than 23Cm) (AOR=0.02), presence of either of intestinal parasites (AOR=0.025), positive for plasmodium species (AOR=0.010), being a housewife (AOR=0.036) [compared with those who are involved in income generating activities], who have children with less than 2 years interval (AOR=0.035)[compared with those who have no children], and the Sheko's (AOR=0.009) [compared with the Bench] in Ethnicity.

Lessons and Recommendations: Despite the fact that about half of the anemia in pregnant women is amenable to iron supplementation, it is prevalent nutritional problem in Bench Maji zone. It is found to have association with under nutrition, presence of intestinal parasites and malaria, involvement in income generating activities, birth intervals less than 2 years and Ethnicity. Hence, screening for parasitic infections, advising pregnant women to use footwear, improves sanitation and personal hygiene, routine supplementation of iron, health education on family planning and nutrition is recommended. Moreover, further investigation on some determinants of anemia as Ethnicity which could be related to dietary habit is recommended.

Optimal Iodine Status of School Age Children after Universal Salt Iodization Program in Ethiopia: a Cross Sectional Study at Dabat District.

Ejigu Zeleke Molla Mesele Wassie, Zegeye Abebe, Amare Tariku, Ejigu Gebeye, Tadesse Awoke, Azeb Atenafu Gete, Melkie Edris, Yigzaw Kebede, Gashaw Andargie Bik.

Background: Iodine deficiency is one of a major nutritional problem and its control is a global public health triumph. Existence of iodine deficiency disorders reported in Ethiopia despite the country launched universal salt iodization program.

Objective: The study aimed to assess the prevalence of iodine deficiency disorders in Dabat district in school age children aged 6-12 years.

Methods: A cross sectional survey was conducted in Dabat district on May 2016. MBI international Rapid Test Kit was used to determine the level of salt iodine content. The urinary iodine concentration (UIC) was analyzed by using the Sandell-Kolthoff reaction method. One-way ANOVA was used to compare mean of log transformed UIC values among different categories for independent variables.

Results: A total of 358 school age children enrolled to the study. The mean age of children was 10.8(SD= 1.45) and 56.7% were males. The median urinary iodine concentration was 234.99µg/l [IQR: 161.3, 320.2]. Nearly one-third of school age children had excessive iodine intake. Thirty-four percent of school age children had goiter. The prevalence of grade 1 and grade 2 goiter was 26.5 and 7.5%, respectively. The coverage and adequacy of household iodised salt was 97.5% and 30.7%, respectively. Median urinary iodine concentration was correlated with place of residence and household iodine level ($P<0.05$).

Conclusions and recommendations: The study population is currently iodine sufficient by median urinary iodine concentration in school age children but total goiter rate showed severe iodine deficiency. Regular monitoring of the level of household iodised salt and median urinary iodine concentration in school age children and other vulnerable groups of iodine deficiency is warranted.

Keywords: Optimal iodine status, school age children, Dabat District, Ethiopia

Social Connectedness among Youth in North Shewa Oromia region; Central Ethiopia. *Simegnew Handebo^{1*} Yohannes Kebede² Sudhakar N. Morankar³*

Background: Human beings have an innate desire to feel connected, trusted and loved. As a result individuals may experience high degrees of connectedness with one while low connectedness with others. Social connectedness has association with mental health, physical health, and longevity.

Objective: To assess the level of social connectedness among youth in North Shewa zone.

Methods: An institutional based cross-sectional study triangulated with qualitative data was conducted in North Shewa Zone, from February to March 2016. 635 students were selected using multi-stage sampling method. Self-administered questionnaire and focus group discussions guide were used for data collection. For clarity and consistency the questionnaire was pre-tested with 32 (5%) at Ejere high school before the actual data collection. Two days intensive training was given for all supervisors and data collection facilitators. For Likert scale items exploratory factor analysis with factor loading score of >40% and Varimax rotation was performed to validate the underlying dimensions. The line graph and Radar chart was used for comparison of the mean scores of each dimension of social connectedness converted to 100%. Independent t-test and one-way analysis of variance was performed to observe variation in scores of the social connectedness domains by sex, grade levels and residence of the student. In order to examine domain of social connectedness the Pearson correlation coefficient was executed.

Result: Out of 635 sampled students, 628 respondents were participated in the study, which gives the response rate of 98.9%. Overall mean social connectedness score of the respondent was 77.8 ± 10 . Lower mean score was observed on social media connectedness domain (mean=65.3, SD +9.7). Whereas higher mean score was obtained on family connectedness (mean=84.5, SD +17.1). A 16 years female explained this saying that; *"I live together with my family members. This by itself has a lot of contribution to have good bonding with them. From them my mother is special for me..."* Higher correlation exist between family and spiritual connectedness ($r=0.616$, $P=0.000$). However, social media connectedness has lowest correlation with these domains. Of which higher was with peer ($r=0.245$, $p=0.000$). The mean peer connectedness score of females (mean= 79.4, SD +15.6) is significantly lower than that of males (mean=81, SD +13.4). Similarly with regard to permanent place of residence, students who permanently live in their respective town have significantly low family connectedness (F_{626} , $P=.020$), peer connectedness (F_{626} , $P=0.027$) and spiritual connectedness (F_{626} , $P=.026$) mean score than those who were not.

Conclusion: Youths' social connectedness was high on most of the domains except for social media. Youths had higher social connectedness with their family members. Strong correlation exists between family and spiritual connectedness

Keywords: Social-connectedness; Youths; Ethiopia.

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Diabetes Mellitus and Its Association with HIV Infection among Tuberculosis Patients in Sub-Saharan Africa: a Systematic Review and Meta-Analysis. *Cheru Tesema Leshargie.*

Background: Currently, tuberculosis and diabetes mellitus are significant global public health challenges. In Sub-Saharan Africa, study findings regarding prevalence of diabetes mellitus amongst tuberculosis have been inconsistent and highly variable. Therefore, this systematic review and meta-analysis aimed to estimate the pooled prevalence of diabetes mellitus and its association with HIV infection among tuberculosis patients in Sub-Saharan Africa.

Methods: International databases, including PubMed, Google Scholar, Science Direct and Cochrane Library, were systematically searched. All observational studies reporting the prevalence of diabetes mellitus among tuberculosis patients in Sub-Saharan Africa were considered. Two authors independently extracted all necessary data using a standardized data extraction format. STATA 13 statistical software was employed to conduct meta-analysis. The Cochrane Q test statistics and I^2 test were used to assess the heterogeneity of the studies. A random effect model was computed to estimate the pooled prevalence of diabetes mellitus. In addition, the associations between diabetes mellitus and HIV infection among tuberculosis patients were examined.

Results: Sixteen studies fulfilled the inclusion criteria and were included in the meta-analysis. The findings from 16 studies revealed that the pooled prevalence of diabetes mellitus among tuberculosis patients in Sub-Saharan Africa was 9.0% (95% CI: 6.0, 12.0 %). The subgroup analysis of this study also revealed that the highest prevalence of diabetes mellitus was observed in Nigeria (15%), followed by Tanzania (11%), and then by Ethiopia (10%). Though the prevalence of DM in HIV/TB co-infected cases is higher than to those without HIV infection, the association was statistically insignificant (OR: 1.04, 95%CI: 0.58, 1.87).

Conclusion: In this study, diabetes mellitus among tuberculosis patients in Sub-Saharan Africa was significantly high. HIV infection was not significantly associated with diabetes mellitus.

Keywords: Prevalence, Type1/Type 2 diabetes mellitus, tuberculosis, meta-analysis, systematic review, Sub-Saharan Africa.

Prevalence and Factors Associated with Chronic Diabetic Complications in Ayder Referral Hospital, Northern Ethiopia, 2017.

Solomon Hintsa Gebremichael.

Background: Chronic diabetic complications increase morbidity and mortality of diabetic patients. Prevalence and associated factors of chronic complications of diabetes are different in studies done in Ethiopia and is not well known in Ayder Referral Hospital. Thus, the aim of this study is to determine the magnitude of chronic complications of diabetes and identify associated factors in Ayder Hospital, Ethiopia. **Methods** A cross-sectional study was conducted from January 10 to April 10, 2017. Simple random sampling was used to select a sample of 389 participants. Record review and interviewer-administered questionnaire were used to collect data. Chronic diabetic complications were those who had at least one diabetic chronic complication from the patient index card. Data were coded and entered into the Epi-Data version 3.1, and then exported to SPSS version 21 software for analyses. Variables with P-values < 0.25, in the bivariate logistic regression, were selected for multiple logistic regressions to identify associated factors of chronic diabetic complications. Odds ratio was calculated with 95% Confidence Interval (CI) to show strength of association.

Results: The mean age (\pm Standard Deviation) of the participants was 44.07 (SD: \pm 14.58) years. There was at least one chronic complication of diabetes in 41.3% (95% CI 36.2-45.8) of the participants. The most common chronic complications found were hypertension, nephropathy, retinopathy, neuropathy, cardiac disease and diabetic foot ulcer with the magnitude of 28.2%, 14.7%, 7%, 7.5%, 4.6% and 3.2% respectively. In multiple logistic regression, every year increment in age of patients (AOR: 1.079; 95%CI: 1.04–1.12), being an alcohol consumer (AOR; 3.26; 95%CI: (1.74–6.1), not adhered to exercise (AOR: 2.37; 95%CI: 1.165– 4.832) and being overweight (AOR; 9.36; 95% CI (4.25–20.6) were found factors significantly associated with chronic complications of diabetes.

Conclusions: The finding of this study revealed that the prevalence of chronic diabetic complication/s still needs focus and is consistent with most of the studies conducted in different settings. Older age, alcohol consumption, lack of adherence to exercise and overweight are the independent factors associated with development of chronic diabetic complication/s. Based on these findings, relevant interventions should be considered in the diabetic clinic to minimize complications and the risk factors. **Key words:** Diabetes, complication, prevalence, associated factors, Ayder Referral Hospital

Prevalence and Associated Factors of Anemia among School-Aged-Children in Gondar Town Public Primary Schools, Northwest Ethiopia: a School Based Cross-Sectional Study. *Zegeye Getaneh Eskezia.*

Background: Anemia is a global public health problem affecting 305 million school-aged-children worldwide. Anemia among School-aged-children has deleterious effects which include lower school achievement due to impaired cognitive development and physical growth, fatigue and poor attention span, and increased morbidity because of reduced resistance to infection. Hence, this study aimed to assess the prevalence and associated factors of anemia among school-age children attending public primary schools in Gondar town, northwest Ethiopia.

Methods: A School-based cross sectional study was conducted on a total of 523 school-age-children aged from 6-14 years old. Systematic random sampling technique was employed to select study participants. Data on socio-demographic and socio-economic characteristics, nutritional and dietary status of children were collected using pre-tested structured questionnaire through face-to-face interview. Anthropometric measurements were taken. Hemoglobin concentration was determined by using HemoCue 301*analyzer (Angelholm, Sweden). Stool and blood samples were collected in the school premises and examined for intestinal and hemoparasites, respectively. Data were entered into EpiInfo version 3.5.3 and transferred to SPSS version 20 for analysis. Bivariate and multivariable logistic regression models were fitted to identify associated factors of anemia. P-value ≤ 0.05 was considered as statistically significant.

Result: Of the total School-Aged-Children participated in the study, 269 (51.4%) were males. The median (IQR) age was 12 (10-13) years, and 332 (63.5%) of them were in the age group 11-14 years. About 81(15.5%) (95%CI: 12.4-18.7) of children were anemic: 56 (10.7%) and 25 (4.8%) of them were mildly and moderately anemic, respectively. Low maternal education (AOR=2.304; 95%CI: 1.112-4.775), stunting (AOR=2.221; 95%CI: 1.297-3.804), severe food insecurity (AOR=5.112; 95%CI: 1.526-17.129), and soil transmitted helminthic infection (AOR=7.131; 95%CI: 3.161-16.860) were found significantly associated with anemia.

Conclusion: Anemia among school age children in this study was found as mild public health problem. It was strongly associated with low maternal education, food insecurity, chronic nutritional problem and intestinal helminthic infection. Focused policies and strategies towards the above factors should be designed to reduce anemia among school aged children.

Keywords: Anemia, Associated factor, Prevalence, School-Aged-Children

A Comparative Cross-Sectional Study of Some Hematological Parameters of Hypertensive and Normotensive Individuals at the University of Gondar Hospital, Northwest Ethiopia. *Bamlaku Enawgaw Walie.*

Background: Hypertension is a major health problem worldwide. It can lead to cardiovascular disease and also leads to functional disturbances including hematological parameters. The abnormalities of haematological parameters may enhance an end-organ damage. Therefore, the aim of this study was to assess some hematological parameters of hypertensive individuals in comparison with normotensive individuals at University of Gondar hospital, northwest Ethiopia.

Methods: A cross sectional comparative study was conducted from October to November 2015 on a total of 126 hypertensive and 126 normotensive individuals at University of Gondar Hospital. All participants after taking informed consent were interviewed for detailed history and 3ml of blood was collected for hematological test analysis. Independent *t*-test and the Mann Whitney *u*-test were used to find out significant difference and Pearson's and Spearman's correlation were used for correlation test. P values less than 0.05 was considered the level of significance.

Result: From a total of 252 study subjects, about 67.5% were females. The mean age of study subjects was 50.3 ± 11 years for hypertensive individuals and 49.8 ± 11.6 years for normotensive individuals with range of 18 – 65 years. In the present study, the median (IQR) value of WBC, RBC, Hgb, HCT, MCV and the mean value of MCHC, RDW, MPV and PDW were significantly higher in hypertensive group compared to apparently healthy normotensive groups. Additionally, WBC, RBC, Hgb, HCT and PLT showed statistically significant positive correlations with blood pressure indices. Platelet count and MCH did not show statistically significant difference between the two groups.

Conclusion: Hypertension has impact on hematological parameters. In this study, the mean and median values of haematological parameters in hypertensive individuals were significantly different compared to apparently healthy normotensive individuals. Hence, hematological parameters can be used to monitor the prognosis of the disease and manage hypertensive related complications, and it is important to assess hematological parameters for hypertensive individuals which may help to prevent complications associated hematological disorders.

Keywords: Hypertension, Hematological parameters, Blood pressure indices, Gondar, Ethiopia

Is Depression Associated with Pathways to Care and Diagnosis Delay in People with Tuberculosis in Ethiopia? *Fentie Ambaw Getahun, Rosie Mayston, Charlotte Hanlon, Girmay Medihin, Atalay Alem.*

Background: Co-morbid depression alters symptoms of physical illness and decreases energy, memory and executive function. Its impact on where to go for services and timeliness of care seeking has not been studied in people with tuberculosis (TB). The objectives of this study were to assess the impact of co-morbid depression on pathways to care and diagnosis delay, and to find out whether depression mediates the association between diagnosis delay and its factors.

Methods: We analyzed cross-sectional data collected from 592 adults with newly diagnosed TB. We assessed depression using Patient Health Questionnaire, nine items (PHQ-9) at a cut-off 10. Data on diagnosis delay, pathways to TB care, socio-demographic variables, stigma, types of TB, substance use, co-morbid chronic illnesses, and perception about TB were assessed using structured questionnaire. Generalized structural equation modeling was used to analyze the data.

Results: 312 (52.7%) of the participants were male. Three hundred thirteen (52.9%) of the participants had probable depression. Pathway to TB care was direct for 512 (86.5%) of the participants and indirect for 80 (13.5%) of them. The median diagnosis delay was 12.0 weeks. Depression did not have a statistically significant association with pathways to TB care ($\beta = -0.45$; 95%CI= -1.85, 0.96) and diagnosis delay (Adjusted odds ratio (AOR) = 0.90; 0.77, 1.06). Indirect pathway to TB care was positively associated with diagnosis delay (AOR=2.72; 95%CI= 1.25, 5.91). Other factors associated with pathways to care and diagnosis delay have been presented and discussed.

Conclusions: People with co-morbid depression visit the modern health care system as directly as and as soon as others do but the modern health care systems are not detecting the co-morbid depression. How socio-demographic factors influence pathways to care and diagnosis delay require qualitative exploration.

Functional Disability of Patients with Mental Illness In Jimma Town Who Have Been Treated in Jimma University Teaching Hospital at Psychiatric Clinic, South West Ethiopia, 2016, Community Based Cross-Sectional Study. *Liyew Agenagnew Gebeyaw.*

Background: Functional Disability define as limitations in performing socially defined roles and tasks expected within a social cultural and physical environment. It is a focus of concern in mental health care, yet the score of functional disability of patients with mental illness and its determinants factors are not studied in Jimma town, south west Ethiopia.

Objective: this study was aimed to assessed the functional disability of patients with mental illness in Jimma town who have been treated at Jimma university teaching hospital, south west Ethiopia, 2016.

Methods: Community based cross sectional study design with case tracing method was conducted from April 20 – June 24/2016 among 304 patients who have been treated in Jimma university teaching hospital. Data were collected through face to face interview using World Health Organization Disability Assessment Schedule 2.0 with 12 items. *The collected data were analyzed by Bivariate and multivariable linear regression analysis method by using spss version 20.*

Result: out of 300 respondents Majority had the diagnosis of schizophrenia (32%, n=96) followed by (24.3%, n=73) major depressive disorder. Median score of disability of the respondents were 11.1 within the ranges from (0-100). More than one third of the respondents (39.3%, n=118) reported no difficulty in any activity and only (5%, n=15) reported extreme difficulty for the last 30 days. Having job decreases the disability score by 0.075 as compared to not having job (UN standardized B= -0.075, p value =0.007), Not attending school increase the disability score by 0.113 as compared to attending primary and secondary school (B= 0.113, p value =0.020), A unit increase in number of admission results in 0.022 increase in disability score (UN standardized B= 0.022, p value 0.033), Non Adherence increases the disability score by 0.083 as compared to adherence (UN standardized B= 0.083. p value= 0.003) and a unit increase in stigma score results in 0.008 increase in disability score (UN standardized B= 0.008, p< 0.001).

Conclusion: Median score of disability of the respondents were 11.1 within the ranges from (0-100) and most of the patients had no disability .Occupational status, educational status, number of admission, non Adherence and stigma were independent predictors of functional disability of mentally ill patients.

Keywords: Functional disability, Mental illness, WHODAS, Ethiopia, Jimma town.

Alcohol Use Disorders and Associated Factors among Women Attending Antenatal Care in Gedeo Zone Health Centers, Southern Ethiopia, 2017: a Facility Based Cross Sectional Study. *Birhanie Mekuriaw Temesgen.*

Background: Alcohol in the form of beverages is the most common drug which is found throughout the world and has been consumed for centuries by pregnant women. However, in Ethiopia it is not well explored among pregnant women attending antenatal care yet.

Objective: To *assess the prevalence and* associated factors *of* alcohol use disorders among pregnant women attending Antenatal Care (ANC) in Gedeo zone health centers, Southern Ethiopia, 2017.

Methods: An institutional based cross-sectional study design was conducted from June to August 2017 at ANC clinics of Gedeo Zone health centers and a 10-item Alcohol Use Disorder Identification Test (AUDIT) was used to assess alcohol use disorders. A total of 718 pregnant women were participated in the study through systematic random sampling technique. The association between variables was analyzed with bivariate and multivariable logistic regression. P-Value of less than 0.05 was considered statistically significant association in the final model.

Results: The prevalence rate of alcohol use disorder among pregnant women was 8.1%. Unplanned pregnancy [AOR=2.123, 95% C.I (1.206, 3.739)], having abortion history [AOR=2.401, 95% C.I (1.161, 4.965)], pre pregnancy alcohol use [AOR 2.172, 95% C.I (1.179, 4.000)] and mental distress [AOR=3.503, 95% C.I (1.993, 6.157)] were variables significantly associated with alcohol use disorders.

Conclusion: Significant proportions of participants (8.1%) were found to have alcohol use disorder which needs higher public health attention. Assessment and counseling service on alcohol use is recommended for health professionals and better to incorporate it in ANC service delivery.

Keywords: Alcohol use disorder, Pregnant women, Gedeo zone, Ethiopia

Prevalence of Overweight/Obesity and Associated Factors among Type 2 Diabetic Patients at NigistElleni Memorial Hospital, Hosanna Town, Southern, Ethiopia. *Abera Lambebo Temamo.*

Background: Non-communicable diseases especially type 2 diabetes mellitus (T2DM) is exhibiting an alarming prevalence among people of sub-Saharan Africa including Ethiopia. However, little is known about nutritional status of type 2 diabetic patients and associated factors in low income countries like Ethiopia.

Objective: To assess Overweight/Obesity and associated factors among Type 2 Diabetic Patients at Hosanna Zonal Hospital, Hadiya Zone, Southern, Ethiopia from

Methods and materials: Institution based cross-sectional study was conducted among 420 type2 diabetic patients at Hosanna NigisitElleni Memorial Hospital. Systematic sampling method was used to select the study participants. Anthropometric measurements and pretested structured questionnaire through face to face interview were used to collect the data. Data were entered on to Epidata version 3.02 statistical software and cleaned for implausible and missed values. Then data were exported to Statistical Package for Social Sciences (SPSS) version 20. Body mass index (BMI) was calculated by using SPSS Software and descriptive statistics was conducted using frequency table. Multivariable logistic regression was used to identify factors associated with overweight/obesity.

Results: The magnitude of overweight was [(31.5%), 95% CI (27%-35.9%)] while obesity accounts for [(4.4%), 95%CI: (2.5%- 6.9)]. On multivariable logistic regression model, age above 55 years [AOR= 3.24, 95% CI (1.74-6.06)], physical activities less than 30 minute/day [AOR= 2.31, 95% CI (1.30-4.11)], duration of diabetes after diagnosis 3 years and beyond [AOR =2.55, 95% CI (1.48-4.40)] and poor dietary practices [AOR= 2.98, 95%CI (1.79-4.96)] were significantly associated with overweight / obesity.

Conclusion: in this study, one third of study participants were overweight. Age, physical activities, and poor dietary practice were found to be associated with overweight/obesity. Thus behavioral change among type 2 diabetic patients, nutrition education and regular nutritional status monitoring is needed to regulate nutritional status of diabetic patients.

Keywords: Overweight/obesity, dietary practice, type 2 diabetic and Ethiopia 2017.

Emerging and Re-Emerging Communicable Diseases

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Ethnobotany of Medicinal Plants Used to Treat Leishmaniasis in Ethiopia: a Systematic Review. *Yibeltal Aschale Temesgen.*

Background: Leishmaniasis is an infectious tropical vector born disease imposing high burden in developing countries including Ethiopia. Its treatment is still using pentavalent antimonials which have been used for several years and prone to drug resistance. Other alternative drug like amphotericin B also have horrible side effect. Therefore, new drugs are urgently needed and drug screening efforts should be encouraged. No review has been done that broadly indicates medicinal plants used to treat leishmaniasis.

Objective: The aim of this review was to provide an overview of the Ethnobotany of medicinal plants used to treat leishmaniasis in Ethiopia.

Methods: Databases (Pub Med, Google Scholar, Research Gate, and Hinari) were searched for published articles on the Ethnobotany of medicinal plants used to treat leishmaniasis in Ethiopia without restriction in the year of publication or methodology. Some studies were also identified through manual Google search. Primary search terms were “Leishmania review”, “Leishmaniasis” “Ethiopia”, “medicinal plants” and “Ethnobotany”. Studies that did not contain full ethnobotanical data of medicinal plants traditionally used to treat Leishmaniasis and plants which are out of flora list of Ethiopia were excluded from this review.

Results: The database search produced a total of 206 articles. After adjustment for duplicates and inclusion and exclusion criteria, 11 articles were found appropriate for the review. Majority of the studies were qualitative in nature and some were mixed type. None of the medicinal plants traditionally used to treat leishmaniasis in Ethiopia are confirmed scientifically. Of the 28 plants identified from the various studies, 53.6% were herbs and the common plant part used was leaf (44.8%) followed by latex (20.7%). Majority of the plant remedies were given topically (75.7%). Cutaneous leishmaniasis comprises high percentage of *leishmania* infection treated by traditional medicinal plants.

Conclusion: Variety of medicinal plants have been used by Ethiopian people of different cultures to treat leishmaniasis. Most of the plants were herbs and the commonly used plant part was leaf. Majority of prepared remedies were applied externally on the affected part. There is an urgent need to conduct clinical trials on such plants to support traditional claims and to analyze molecular and cellular mechanisms involved.

Barriers to Access to Visceral Leishmaniasis Diagnosis and Care for Vulnerable Populations in Ethiopia. *Tesfay Gebregzabher Gebrehiwot.*

Background: Ethiopia bears a high burden of visceral leishmaniasis (VL). Early access to VL diagnosis and care improves clinical prognosis and reduces transmission from infected humans, however significant obstacles exist. The hundreds of thousands of mobile workers employed in the Amhara and Tigray region during the agricultural season may be particularly at risk of VL acquisition and death.

Methods: In early 2017, using purposive sampling, 50 in-depth interviews (IDI) and 11 focus group discussions (FGD) were conducted with current/previous VL patients, caretakers of VL patients, mobile workers (MW), healthcare workers, and community leaders/members in KaftaHumera district, Tigray Region. A thematic content analysis was used to explore barriers to access to diagnosis and care.

Results: Mobile workers, as well as residents engaged in transitory work, were vulnerable to VL. Transmission of VL was largely attributed to sand flies. Participants also implicated mosquitos, termites, unclean food/water, dirt/lack of sanitation, increased temperatures, person-to-person transmission, evil, fatigue, hunger and disease evolution (malaria evolving into VL). Community health education was considered deficient. Local residents were considered to have greater knowledge of VL compared to mobile workers; however, awareness alone was an insufficient motivator for early health seeking given significant barriers to access to care. Social support (i.e., decision-making and financial assistance) strongly and positively influenced care-seeking; workers unable to receive salary advances, compensation for partial work, or peer assistance for contract completion were particularly disadvantaged. Multiple visits were consistently needed to access VL diagnosis. Inadequate health staff training, diagnostic test kit unavailability at the primary health care level, lack of VL awareness, insufficient finances and prioritization of income-generating activities/family were significant barriers to diagnosis and care. Participants suggested that the government and stakeholders intervene to ensure mobile worker access to bed-nets (especially), food, shelter, water, and healthcare at farms or sick leave. Additional recommendations included: community health education; health staff training; availability of diagnostic materials at primary health facilities; surplus medications and health staff during the peak season; improved referral/feedback/reporting within the health system; and free comprehensive healthcare for all VL-related services.

Conclusions: While the health policy for VL is good on paper, it is striking that in a VL endemic setting, access to diagnosis was very poor and access to treatment was consequently delayed. Delays in diagnosis contributed to increased severity of disease, which, at best, led to additional financial losses and at worst, resulted in death. Interventions tailored to the socio-economic and health needs of mobile workers as well as to other persons suffering from VL are needed to reduce health disparities and the burden of VL disease.

Outbreak of Gastrointestinal Anthrax Following Consumption of Diseased Goats in HawiGudina District, Oromia Region, Ethiopia, 2017.

Belay Mamuye Cherinet.

Background: Gastrointestinal (GI) anthrax is a rare but often fatal disease caused by eating meat from unvaccinated, anthrax-infected animals that are not inspected prior to slaughter. In Ethiopia, although suspected cases of anthrax are reported from several districts, few of these are investigated and factors associated with contracting anthrax in the affected area have not been identified. In February 2017, we investigated a suspected GI anthrax outbreak among a pastoralist community in HawiGudina district, Oromia Region to confirm the etiology, assess its scope and risk factors, and implement control measures.

Methods: We defined suspected case as a person who had an acute onset of diarrhea, abdominal pains, nausea and vomiting and epidemiologically linked to suspected animal cases or contaminated animal products and residing in HawiGudina district with illness onset between January 27 and February 8, 2017. An unmatched 1:3 case-control study was used to compare exposures status between 23 case-persons and 67 conveniently sampled, unmatched neighborhood controls. Data were coded and entered using EpiData Version.3.1 and exported to SPSS Version 23.0 for cleaning and further analysis. Bivariate and multivariate logistic regression analyses were performed to determine factors associated with anthrax infection.

Results: We identified 30 suspected GI anthrax cases with three admissions and two community deaths. Eating raw/improperly cooked meat of diseased goats (aOR=20.69, 95% CI 3.34-128.21), handling animal carcass (aOR= 9.95; 95% CI 1.16-85.42) and cattle death in the village (aOR= 8.11; 95% CI 1.25- 52.70) were independent risk factors for contracting anthrax.

Conclusions: A suspected GI anthrax outbreak in HawiGudina district was resulted from eating raw/improperly cooked meat and handling the carcass of infected goats. We recommended that vaccination of livestock against *Bacillus anthracis*, inspection of all livestock prior to slaughter, and strengthening timely case notification and increasing community awareness on transmission and prevention activities.

Keywords: Gastrointestinal anthrax, Outbreak, Ethiopia.

The Trend of Measles on Malnutrition Hotspot Areas of Ethiopia, 2011-2015-Surveillance Data Analysis. *Luna Habtamu Degife, Luna Degife, Yoseph Worku, Abyot Bekele*

Background: Despite the availability of a safe and effective vaccine, measles remains one of the leading causes of death among young children globally. A significant proportion of deaths due to measles are attributable to low weight for age. This study assessed the trend of measles in malnutrition hotspot priority areas of Ethiopia in order to identify the burden and enhance decision making.

Methods: Retrospective data analysis from 2011 – 2015 was conducted on malnutrition hotspot areas of Ethiopia. The August 2015 Disaster Risk Management and Food Security Sector's hotspot classification was used. We identified 415 malnutrition hot spot woredas (142 priority one, 189 priority two and 84 priority three). Data was obtained from Ethiopian public health institute (EPHI) measles database. All suspected and confirmed measles cases reported to EPHI/Public health emergency management from malnutrition hot spot areas were included. We analyzed data using Microsoft Excel and SPSS version 20.

Result: A total of 24,371 measles cases (53.8% males) and 550 deaths were reported in the 5 years period. The 5-14 year age groups constituted 39.6% of cases. The incidence of measles increased in all priority woredas over the last five years. In priority one woredas it increased continuously reaching its peak in 2014. The overall incidence rate (IR) was 51.7/100,000 populations (Priority one=55.7/100,000, priority two=50.3/100,000 and priority three=47.6/100,000). The case fatality rate (CFR) was 3% in priority two woredas followed by 1.9% in priority one and 1.4% in priority three woredas. Thirty-six percent (36%) of the cases didn't take measles containing vaccine (MCV) and 17% took one dose of MCV. Only 8% took ≥ 2 doses, while vaccination status for 5% and 35% of the patients was unknown.

Conclusion: The incidence of measles in all the classified hotspot areas has been increasing in the past five years. The IR and CFR were high in priority one and two woredas respectively. More than quarter of the cases was not vaccinated. Therefore, improved routine and campaign measles immunization should be enhanced with special emphasis given to malnutrition hotspot priority woredas. Additionally, the case management and surveillance system of measles should be strengthened.

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Water, Sanitation, and Hygiene Practice and Associated factors among PLHIV in Arba Minch Town, Southern Ethiopia. *DestaHaftu*¹ G/kiros G/michael¹, Desalegn Ajema¹, Genet Gedamu¹Eskeziayw Agedew¹*

Introduction: HIV infected people have substantially greater need for water, sanitation, and hygiene. However, access to improved water supply and sanitation and hygiene is poor in developing countries including Ethiopia. Many of the opportunistic infections like diarrhea cause high morbidity and mortality in people living with HIV than immune competent populations, even when on antiretroviral therapy.

Objective: To assess water, sanitation, and hygiene practice and associated factors among HIV infected people.

Methods: A community based cross-sectional study design using simple random sampling technique was conducted in Arba Minch town in February 1-30, 2016. A total of 423 study subjects were proportionally allocated to each association (Mahiber) and selected by simple random sampling using random table. Data was collected using a pretested structured questionnaire in Amharic version. Bivariate and Multivariate logistic model was employed to identify associated factors of water, sanitation and hygiene practice and to control confounding effect respectively. Principal component analysis was used for wealth index measurement. P- value less than 0.05 was considered as significant value.

Results: Four hundred thirteen study participants were interviewed and included in the analysis, providing 97.6% response rate, out of which 292(70.7%) were females. The mean age of respondents was 37.14 ± 7.74 years. According to this study, 97(23.5%) of the households have unimproved water status, 221(53.5%) of the households have unimproved sanitation status, and 171(41.4%) of the households have poor hygienic practice. Frequent illness (diarrhoea) and latrine availability [AOR = 16.; 95% CI: (6, 44)] were associated with water status and sanitation status of the clients respectively. Occupational status [AOR=8.9; 95% CI (2,38)], income quintile [AOR = 0.23; 95% CI: (0.12, 0.4)], Diarrhea [AOR = 3; 95% CI: (1.12, 12.9)], frequency of body washing [AOR = 0.23; 95% CI: (0.12, 0.4)], and hand washing availability [AOR=4.4; 95% CI: (2.5,8)] were significantly associated with hygienic practice.

Conclusions: The magnitude of the problem on water, sanitation and hygiene practice in HIV/AIDS infected people in the study area is high. Encouraging hygiene education for people living HIV in community based participation and the study also underscores the need for better integrated additional support for the provision of water, sanitation, and hygiene practices.

Keywords: Water, Sanitation, Hygiene, People Living with HIV, Ethiopia.

Barriers to Infection Prevention and Control Practice Among Amhara Region Teaching Hospitals in Ethiopia: Qualitative Study. *Walelegn Worku Yalley.*

Background: Hepatic-Veno-occlusive disease (HVOD) is blockage of the microscopic veins in the liver. HVOD mortality rate ranges from 20 to 50%. Of the causes, Ingestion of pyrrolizidine alkaloids (PAs) plant is the commonest. In Ethiopia HVOD outbreak identified in 2002 in Tahtaykoraro district, Tigray region, suspected due to Ageratum conyzoids weed that is one of the PAs toxic plants. Four zones of the region with 35000 people are at risk. This review aimed to describes the disease in terms of person, place, time and case fatality rate, and asses the intervention activities undertaken in TahtayKoraro District from 2006-2016.

Methodology: We defined a suspected HVOD case as any patient with chronic epigastria-pain, abdominal distention, ascites, emaciation and hepato/splenomegaly during September 2006 to August 2016. We reviewed line list and weekly reports to describe the cases. Intervention activities undertaken obtained from the Agricultural offices of the district. Analysis performed using SPSS.20 after data coded, cleaned and entered.

Result: We identified 179 HVOD-patients and 95 deaths at a Case Fatality Rate of 53%. Of cases, 110 (61.5%) were males and 113(63%) were aged >15 years. Majority, 164 (91.6%), of cases were from Kelakilkebele. The highest incidence rate occurred in 2008, 86 patients while the lowest in 2015 with three patients per 100,000 populations. During these ten years 2746 years of potential life lost attributed to HVOD. Regarding Intervention activities, population of the highly affected sub-village displaced to the non-affected area and mechanically unweeding of the ageratum started since 2011 and is still ongoing.

Conclusion: More than half of the patients were died, and Cases were higher among males and >15 years. Majority of the cases were from Kelakilkebele. More research should conduct to understand why only one of the 14 kebele of the district is more affected. Chemically unweeding of the ageratum could strengthen the intervention activities in addition to the mechanical.

Keywords: Hepatic-VOD, PAs, Ageratum conyzoids, TahtayKoraro district, Ethiopia.

Ten Year's Period Analysis of Hepatic-Veno Occlusive Disease (HVOD) in Tahtay Koraro district, Tigray Region, Ethiopia, 2017.

Mekonen Gebremichael¹, Alefech Adissu² and Omer Seid³ Mekelle University master in field epidemiology Graduate, ²Ethiopian Field Epidemiology and Laboratory Training resident advisor, ³Mekelle university Instructor.

Background: Hepatic-Veno-occlusive disease (HVOD) is blockage of the microscopic veins in the liver. HVOD mortality rate ranges from 20 to 50%. Of the causes, Ingestion of pyrrolizidine alkaloids (PAs) plant is the commonest. In Ethiopia HVOD outbreak identified in 2002 in Tahtay koraro district, Tigray region, suspected due to Ageratum conyzoids weed that is one of the PAs toxic plants. Four zones of the region with 35000 people are at risk. This review aimed to describes the disease in terms of person, place, time and case fatality rate, and asses the intervention activities undertaken in Tahtay Koraro District from 2006-2016.

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Key words: Hepatic-VOD, PAs, Ageratum conyzoids, Tahtay Koraro district, Ethiopia

Perception towards Climate Change and Associated Factors among Rural Households in Gondar Zuria District, Northwest Ethiopia: a Cross Sectional Study. *Getu Debalkie.*

Background: Climate change affects all countries, but more the poorest and vulnerable countries of Africa that are least responsible for it. Ethiopia has been subjected to drought, floods, insect pests, vector-borne diseases and other public health problems made worse by climate change. Understanding climate change perceptions of the community would help to generate additional information relevant to policy and interventions for the adaptation and mitigation program. Therefore, this study was aimed as assessing perception towards climate change and associated factors among households in Gondar Zuria district, northwest Ethiopia.

Methods: Community based cross sectional study was conducted from March 23- April 27, 2015. A total of 427 household heads were selected using systematic random sampling method. Interviewer administrated questionnaire was used for collecting data. Bivariable and multivariable binary logistic regression were used to identify the factors associated with perception towards climate change.

Result: Out of 407 participants 58.5% (95% CI: 54%, 63%) perceived causes and effects of climate change. Knowledge (AOR 1.8, 95%CI: 1.04-3.20), wealth index (AOR 7.45, 95%CI: 3.30-16.00), access to climate information (AOR 6.80, 95%CI: 4.1-11.9), farming experience (AOR 7.8, 95%CI: 2.46-24.8), and occupational status (AOR 2.9, 95%CI: 1.22-7.13) of the head of household were associated with perception towards climate change.

Conclusion: More than half of household heads in the study area perceived that climate is changing time to time. Variables, including respondent's climate change knowledge, farming experience, wealth index, access to climate information and respondent's occupation had significant association with climate changes perception. Pursue vigorously, public enlightenment on climate change using media.

Keywords: - climate change, perception, associated factors, northwest.

Indoor and Outdoor Malaria Transmission in Metema and West Armachiho Lowlands, Northwest Ethiopia: Cross Sectional Based Entomological Study. *Yibeltal Aschale Temesgen.*

Background: Malaria is a febrile illness caused by protozoan parasites of the genus *Plasmodium*. It is distributed in tropical and subtropical regions of the world. Malaria is one of the diseases of major public health importance in Ethiopia.

Objective: The aim of this study was to investigate indoor and outdoor malaria transmission in Metema-West Armachiho lowlands, Northwest Ethiopia.

Method: Cross-sectional entomological study was conducted in Metema-West Armachiho lowlands from July 2016-April 2017. Adult mosquitoes were collected using CDC-light traps, and human landing catches. Female *Anopheles gambiae* complex mosquitoes were dissected for examination of ovaries, and salivary glands. Data were entered and analyzed using SPSS 20 software.

Result: A total of 511 adult female *Anopheles* mosquitoes were collected from 160 CDC-light traps and 20 nights HLC and analyzed in this study, of which 98.0% were *Anopheles gambiae* complex, followed by *Anopheles pharoensis* (1%), *Anopheles dthali* (0.6%) and *Anopheles rupicolus* (0.4%). Sixty point one percent (60.1%) and 39.9% of the *Anopheles gambiae* complex included in this study were collected from indoor and outdoor, respectively. A total of 159 female adult *Anopheles gambiae* complex mosquitoes were captured in indoor (n=95) and outdoor (n=64) by human landing catch. Greater than three-fourth of these vectors were collected after sleeping time. The parous rates of those indoor and outdoor collected mosquitoes were 68.4% and 70.8%, respectively. None of the parous *Anopheles gambiae* complex mosquitoes examined in this study was found to be infected with *Plasmodium* species.

Conclusion and recommendation: *Anopheles gambiae* complex is found to be the predominant species in the study area. Despite zero sporozoite infection rates, the predominant mosquito vector in the area seeks hosts in both indoor and outdoor suggesting the possibility of both indoor and outdoor transmission. Incorporating prevention tools that target outdoor biting and resting together with indoor residual spraying and long lasting Insecticide treated bed nets is therefore necessary for successful malaria control programs.

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Spatio-Temporal Trend Analysis of Malaria Occurrence in Aleta_Chuko District, Southern Ethiopia: A Retrospective Study. *Dawit Hawaria Logita.*

Background: The spatiotemporal trend analysis of malaria data in the health facilities is crucial to evaluate the interventions and early notice change in the dynamics of diseases at the area in terms of parasite species, space, time and person. However, malaria occurrence pattern of Aleta_Cuko District, Southern Ethiopia remains unknown. Thus, the study was conducted to determine the malaria trend at the area over a five-year period, from September 2011 to August 2016.

Methods: A health facility-based retrospective study was conducted in Aleta_Cuko District from October 2016 to February 2017. Records of malaria cases over a five-year period of seven Health Centers were reviewed. The disease distribution across the kebeles was mapped using GIS 10.1 version.

Results: Overall, 66,452 blood films were requested for malaria diagnosis in all Health Centers. Among these, 23,700 malaria cases which are confirmed by both microscopy and rapid diagnostic tests were reported, with slide positivity rate of 35.7% and mean annual prevalence of 4740 cases.

Of the confirmed cases, *Plasmodium vivax* constituted 11,174(47.1%), followed by *Plasmodium falciparum* and mixed infection accounting 8,663(36.6%) and 3,863(16.3%) respectively. *Plasmodium vivax* found to be dominant across the age groups and sex. The disease affected both males and females almost equally with the ratio of 1:1.07. Majority of reported cases were in the age group of ≥ 15 years, which accounts 55.2% of cases. The prevalence had shown fluctuating trend across months in a year of 2011/2012 (2004 E.C) and slightly in 2012/2013 (2005 E.C). Only one peak season occurred between October and February 2011/ 2012 (2004 E.C).

Conclusion: Malaria occurred in all months throughout study years. A remarkable decline in malaria cases was observed in first three consecutive years but the cases remained the same in the last two years with raising positivity rate. In the study area, the peculiar trend has observed that *Plasmodium vivax* found to be relatively dominant over *Plasmodium falciparum* across the years. Therefore, control activities need to be strengthened in the area with emphasizing both *Plasmodium vivax* and *Plasmodium falciparum*.

Surveillance Data Analysis of Malaria in West Hararghe Zone, Oromia Regional State, Ethiopia from 2012-2016. *Temesgen Neme Dinsa.*

Background: Malaria is ranked as the leading communicable disease in Ethiopia, accounting for about 30% of the overall Disability Adjusted Life Years lost. Approximately 52 million people (68%) live in malaria risk area primarily at altitudes below 2,000 meters. Despite the zone is hotspot for malaria there is lack of information on its general trend in the zone. This study analyses malaria's surveillance data to fill the gap for appropriate public health action.

Methods: Descriptive institutional record based cross-sectional study was conducted. Data of malaria from Public Health Emergency Management report was collected and analyzed by using MS excel and SPSS software.

Results: All districts in west Hararghe zone were malarious with 82.4% of the total population (2,400,509) at risk of infection in 2016. The average annual incidence rate of malaria in the study period was 10 per 1000 population. The average annual outpatient cases and Inpatient cases were 10 per 1000 and 50 per 1,000,000 at risk population for Malaria infection respectively. Plasmodium Falciparum and Plasmodium vivax species were the dominant causes of malaria in the zone (77%:33%). This study shows that plasmodium falciparum increase steadily through time since 2012. Malaria in less than five and above 15 years accounts the highest proportion of cases in 2015 and 2016 which was 43% and 55% respectively.

Conclusion and Recommendation: Proportion of Plasmodium falciparum shows increment through time of the study. Despite different malaria prevention and control strategies were designed to rollback it to its minimum, incidence of malaria were increasing till 2015 and decreased to its minimum incidence in the last year of the study. This needs to identify preventive measures taken in this year or the exact reasons for decrement of malaria cases in the Zone to apply it in sustainable way.

Keywords: Surveillance data analysis, Incidence of malaria.

Malaria outbreak investigation —Dilla Town, Southern Ethiopia, 2016.

Abadi Belay¹, Abraham A¹, Dejene H², Jimmawork W³.

Background: Malaria causes 300 to 500 million episodes of acute illness and 1.2 million deaths per year globally. In Ethiopia, malaria is highly seasonal in many communities and is unstable in other areas with epidemic-prone transmission pattern. Unusual increment of malaria case was reported from Dilla Town on March 7, 2016. We investigated to describe the epidemiology, identify risk factors, and recommend preventive measures

Method: we defined suspected malaria patient with fever or history of fever in the last 48 hrs and lives in malaria endemic areas or has history of travel within the past 30 days to malaria-endemic areas and used microscopic and rapid diagnostic tests to investigation and confirm the disease and reviewed the previous year's malaria data to establish a threshold level and to understand the trends of the disease. We conducted 1:1 unmatched case-control study using a standard structured questionnaire to identify risk factors. We assessed presence of mosquito breeding site and Anopheles larvae in affected area of the town using observation.

Result: Out of 9633 suspected cases, 3448(35.7%) were confirmed malaria cases with plasmodium falciparum accounting for 2052(59%). Person 15 years and older were most affected with an Attack rate of 54%.Male were more affected than female with Attack rate of 46.5 per 1000 population. The most affected kebele were Odeya with Attack rate 13.6 per 1000 population. Presence of mosquito breeding sites within less than 1000m distance to the community and not having awareness on ITN utilization was identified as a risk factor and associated with malaria outbreak with an Adjusted odds ratio of 16.29[95% CI=3.39-79.49,10.83(95%CI=2.24-52.42) respectively.

Conclusion: This was a malaria outbreak during the investigation in Dilla Town associated with presence of stagnant water and poor awareness on bed nits use. We recommended improving awareness of ITN utilization and environmental management through optimized community participation.

Keywords: Malaria outbreak, Dilla Town, Southern Ethiopia.

Early Treatment Seeking Behaviour for Malaria among Malaria Suspected Febrile Clients in Dera District, Northwest Ethiopia, 2017.

Fantahun Ayenew Mekonnen.

Background: Malaria is a leading public health problem on the rank of the biggest killer, causing 1.3 billion malaria cases and 6.8 million deaths from 2001-2015 globally, 94% of which were from African. In Ethiopia, 75% of land mass and 68% of population are at risk of malaria. Early diagnosis and prompt treatment of all malaria cases is one of the key interventions for malaria control and prevention. But, little is known about treatment seeking behavior for malaria in Ethiopia. Even, no study has been conducted in our study area specifically though it is known as one of the hot spot area in the region. The aim of this study was to assess early treatment seeking behaviour for malaria and associated factors among malaria suspected febrile clients in Dera district, Ethiopia, 2017.

Method: Institutional based cross-sectional study was conducted from September - Dec/2017, among 680 malaria suspected febrile clients in Dera district. Simple random sampling (Health centers) and systematic sampling for participants was used. Data was collected using pretested structured questionnaire and entered in to Epi info7 and exported to SPSS 20 for analysis. Binary and multi-variable logistic regressions were applied to identify factors associated with early treatment seeking behavior.

Results: A total of 680 respondents were enrolled in the study with response rate of 96.6%. Three hundred fifty six (52.3%) of participants were sought treatment within 24 hrs of onset of symptom. Sixty percent of participants had good knowledge about malaria. Distance < 6KM (AOR=2.5; 95CI 1.72-3.6), Poor knowledge (AOR=0.37(0.21-0.64), previous malaria history (AOR=3.26(1.64-6.49), Knew advantage of sleeping under net (AOR=2.8; 95%CI (1.7-4.6), and Knew mosquito breeding site (AOR=1.9(1.1-3.3) were significantly associated with early treatment seeking behavior for malaria. Conclusion and

Recommendation: A low proportion of malaria suspected clients sought treatment within 24 hours from onset of fever from health center compared to national malaria strategic plan and this has reduce the effective of malaria control and elimination strategy, through due to direct effect for treatment seeking delay. Distance of health center, knowledge on malaria, previous malaria history, Knew advantage of sleeping under net and Knew mosquito breeding sites were determinants of early treatment seeking behavior for malaria. Dera district health office and responsible stockholders should strengthen the communication with the community and community health agents on awareness about malaria to encourage early treatment seeking and filled identify gaps and improve timely treatment. Also, consistent efforts at providing relevant information by health organizations and health extension workers are needed to reduce delay on treatment seeking for malaria those who live distant to health centers. Key words: Malaria, Early Treatment Seeking Behavior, Associated factors, Ethiopia.

Effectiveness of Long-Lasting Insecticide-Treated Nets in Prevention of Malaria among Individuals Visiting Health Centers in Ziway-Dugda District, Ethiopia, 2017: a Case-Control Study for Program Evaluation.

Mesfin Wubishet Kelkile.

Background: Malaria is major health problem in Ethiopia. Use of long-lasting insecticide-treated nets (LLINs) is its common control strategy. Despite high LLINs coverage in Ziway-Dugda District, malaria remained a public health problem. As understanding of effectiveness of its control strategies is vital to improve malaria interventions, we evaluated effectiveness of LLINs and determinants of malaria in Ziway-Dugda District in 2017.

Methods: We conducted a *matched case-control* study among 71 cases and 213 controls during March to May, 2017. We randomly selected three health centers, and enrolled newly diagnosed individuals proportionally. Cases and controls were individuals with positive and negative malaria antigen rapid diagnostic test results respectively. Each case was matched to three controls using (± 5) years age interval, sex and village of residence. We collected data using pre-tested structured questionnaires by face to face interview and observation. We entered data in to Epi-Info version 3.5, and analyzed using Stata version 12. Conditional logistic regression was performed; odds of LLINs use were compared using matched Adjusted Odds Ratio (AOR), 95% confidence interval (CI) and p-value of <0.05 .

Result: Above three-fifth (61.2%) of cases and 22 (32.8%) of controls had regularly slept under LLINs in the past two weeks. Using multivariate analysis, odds of both sleeping under LLINs for the past two weeks (AOR: 0.23, 95% CI: 0.11, 0.45) and living in houses sprayed with Indoor Residual Spray (IRS) (AOR: 0.23, 95% CI: 0.10, 0.52) were 77% times lower among cases than in controls. The odds of staying late outdoor during night in the past two weeks (AOR: 2.99, 95% CI: 1.44, 6.19) was three times higher among cases.

Conclusions: Use of LLINs is effective in prevention of malaria in the district. IRS and staying late outdoor were determinants of malaria. We recommended strengthening LLINs use and IRS in the area.

Five Year Malaria Surveillance Data Analysis Report of Oromia Region, Ethiopia, 2012-2016.

Kinfu Manzura (MD, EFETP Resident at Saint Paul's Hospital Millennium Medical College) Elias Senbeto MD, MPH, Ph.D. (Ass. Professor at SPHMMC Public Health Department) Birhanu Amhare MD, MPH (from CDC-Ethiopia.)

Background: Malaria is one of the top ten diseases in outpatient and inpatient disease in health facilities in Ethiopia as well as in Oromia region. More than 55 million people in the country are at risk for malaria. Despite tremendous efforts made to control malaria; it is still a challenging problem in the country and the region. Therefore it is important to analyze the magnitude of the disease to strengthen the control mechanisms. This paper shows the trend of malaria in Oromia region from 2012 – 2016 highlighting its magnitude, changes and distribution.

Method: After the data was formally requested and collected from EPHI-PHEM center, retrospective secondary five year (2012 – 2016) malaria data analysis was conducted. Data analysis and cleaning was conducted using Microsoft Excel 2007 and Epi Info version 7.2.

Result: Out of a total of 12,814,238 clinical and confirmed malaria cases seen nationally from 2012-2016, 2,100,100 (16.4%) were from Oromia region. Of total malaria cases reported from the region 67.9% were laboratory confirmed cases. Total clinical and confirmed cases were continuously decreasing from 708,588 in 2012 to 196,451 in 2016. Inpatient cases of the region decreased from 4,990 cases in 2012 to 1,063 in 2016. Malaria mortality of the region also decreased from 48 in 2012 to 6 in 2016. There was variation of malaria case load over the five years within the region's zones and towns with Ilu Aba Bor, East Showa and South west Showa being the top three zones of malaria case load over the five years.

Conclusion: There is a decreasing trend of total malaria cases in Oromia region from 2012-2016. Malaria case load and burden among different Oromia zones are different therefore require specific prevention and control measures specific to that zone. Though there is decreasing of trend of malaria from 2012-2016, malaria is still a public health problem. Therefore strengthening malaria surveillance system, control and prevention is very important.

Keywords: malaria, surveillance, Oromia.

Malaria Outbreak Investigation - In TanquaeAbergelle District, Tigray Region of Ethiopia, 2017: A Case Control Study. *Alefech Addisu Gezahegne, Belete Assefa Belete.*

Background: In 2015, Sub-Sahara Africa accounted for 76% of world malaria cases. Around 2 million malaria cases occurred in Ethiopia in 2014/2015. In the same year Tigray region had 302,136 malaria cases. Tanquae Abergelle district with total population of 26,488 number of malaria cases crossed the threshold starting from epidemiologic week 28, 2017. We investigated this outbreak to describe the epidemiology and identify risk factors of malaria.

Methods: We defined suspected malaria case as any resident of Tanquae Abergelle district with fever or history of fever in the last 48 hours from September 8 to October 18, 2017. For descriptive study health facility register review was used. Then using pretested structured questionnaire we conducted 1:2 unmatched case-control study. We selected confirmed malaria cases using systematic random sampling method and community controls were selected for each malaria case.

Result: We identified a total of 1300 suspected malaria cases with no death, among those 694(53.4%) were females. Positivity rate of the outbreak was 876(67.4%). The median age of suspected malaria cases was 18 years (ranges from 1 month to 88 years). The overall attack rate was 33.1 per 1000 population. Mearey kebele of the district attack rate was 11.7%. We have included a total of 62 cases and 124 controls. Presence of mosquito breeding sites around residency [Adjusted Odds Ratio (AOR) =6.56 Confidence Interval (CI) (2.09-20.58) P-value=0.001], sleeping outside home [AOR=5.06 CI (1.75-14.62) P-value=0.003] and having unscreened window [AOR=14.89 CI (1.87-118.26) P-value=0.011] were independent risk factors associated with malaria.

Conclusion: Tanquae Abergelle district malaria outbreak was associated with presence of mosquito breeding sites, having unscreened window and sleeping outside home. We recommend elimination of mosquito breeding sites, use of old bed nets as window screen and use of long sleeve clothe, coils and fogs while sleeping outside.

Keywords: Malaria, Outbreak, Case control, Tanquae Abergelle, Tigray Region, Ethiopia.

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Prevalence of Bacterial Otitis Media and Antimicrobial susceptibility Pattern among Children attending Nekemte Referral Hospital, West Ethiopia. *Regea Dabsu Hirpa.*

Background: Otitis media (OM) is the infection of the middle ear caused by pathogenic microorganism's mainly bacteria. The most common bacterial pathogens of otitis media are *S. pneumoniae*, *H. influenza* and *Moraxella catarrhalis* and less commonly *S. aureus*, *E. coli*, *Klebsiella sp*, *P. aeruginosa* and *Proteus sp*. Development and spread of resistant bacteria due to the over and indiscriminate use of antibiotics is a global public health threat. Hence, current information on microbial resistance and the prevalence of the pathogenic bacteria needs to be available at national and local levels to guide the rational use of the existing antimicrobials.

Objective: The objective was to determine bacterial profile and susceptibility patterns of bacterial pathogens seen among patients with OM in Nekemte Referral Hospital, Ethiopia, 2017.

Method: A hospital based cross-sectional study was conducted on patients with OM who attended the study setting during the study period. The sample size for this study was determined by using a single proportion population equation. Hence, a total of 162 study participants were included in this study. Middle ear discharges were collected and processed for bacterial culture and antimicrobial susceptibility testing using standard bacteriological techniques. Clinical and demographic data was collected using standard questionnaire. Data entry and analysis was done using SPSS version computer 16 software. Comparisons were made using Chi-square test with Fisher exact tests. A p-value of <0.05 was considered indicative of a statistically significance difference.

Result: A total of 162 study participants were included in the study with response rate of 87%. 77(48.1%) male and 84(51.9%) was female. Ninety two (56.7%), 30(18.5%), 40(24.7%) were within age group of 0-5, 6-10 and 11-15 years old respectively with a mean of 6.59 years (SD=4.665). Of the total 162 collected ear swab sample, 121 (74.7%) were positive bacterial growth. Among the culture positive ear swab, CONS were the most dominant species 43(35.5%) followed by *S. aureus* 38(31.4%), *E. coli* 15 (12.4%), *P. mirabilis* 11(9.1%), *K. pneumoniae* 5(4.1%), *K. ozanae* 4 (3.3%), *P. vulgaris* 2(1.7%) and the rest *Citrobacter species*, *Streptococcus species* and *Pseudomonas species* accounts for 1 (0.8%) each. Among the dominant isolated species of bacteria and tested against more than ten different antimicrobial agents, 97.7% of CONS, 97.4% of *S. aureus*, 73.3% of *E. coli*, 72.7% of *P. mirabilis* and 25% of *K. pneumoniae* were resistant for one or more antimicrobial agent tested. And also 79% of CONS, 79% of *S. aureus*, 40% of *E. coli*, 63 % of *P. mirabilis* and 20% of *K. pneumoniae* were resistant for two or more antimicrobial agent tested. Socio-demographic and clinical data has no statistical difference for isolated bacteria from OM case patients.

Conclusion: The prevalence of bacterial isolates from OM in this study was high (74.7%). Most of the isolated bacterial species were developed resistant for more than two or more antimicrobial agents. Proper management of children OM was need great attention to tackle drug resistant problem in the study area.

Keywords: Otitis media, bacterial profile, susceptibility patterns, Nekemte Referral Hospital

Perinatal Death and Associated Factors in Wolaita Sodo Referral Hospital, Southern Ethiopia: a Facility Based Cross-Sectional Study.

Mihiretu Alemayehu Arba.

Background: Birth is a critical time for the mother and fetus. In Ethiopia rates of new born morbidity and mortality are among the highest in the world. Even though many African mothers including Ethiopian mothers' pregnancies are ending up in perinatal mortality, little was investigated to identify the associated factors.

Objective: This study aimed to assess predictors of perinatal death among mothers who gave birth at Wolaita Sodo University teaching and referral hospital, Southern Ethiopia.

Methodology: A facility based retrospective cross-sectional study was conducted in July, 2015 in Wolaita Sodo University teaching and referral Hospital by collecting data through record review of all women who gave birth at the hospital within the past one year preceding the survey. Systematic sampling technique was used to select 300 subjects. Epi-data version 1.4.4.0 and SPSS version 20 were used to enter and analyze data respectively. Proportions and means were used to describe the study population by explanatory variables whereas; Bivariate and multivariable logistic regression were used to identify the candidate and predictor variables respectively. All statistical tests were considered significant at $\alpha < 0.05$.

Result: Among the 300 mothers who delivered their index child at Wolaita Sodo University teaching and referral hospital, 52(17.3%) of them had a dead perinatal outcome. Antenatal care visit, obstructed labor, referral from other health facility, cord prolapse, preeclampsia and birth weight were identified as predictors of perinatal outcome.

Conclusion: Perinatal death in Wolaita Sodo referral hospital is tremendously high, which seeks a due attention. Hence, to avert the situation, improvement in antenatal care service (supported with ultrasound examination); improving obstetrics care; and early diagnosis and appropriate management of severely asphyxiated fetus at the time of delivery could reduce the prevalence. Easily accessible health facilities (which provide comprehensive essential and emergency obstetric services) could reduce perinatal death attributable to referral related causes. Besides, to have a safe delivery, health facilities should give due attention to the use of partograph.

Diarrheal Disease in Under-Five Children among Model and Non-Model Families in Northern Ethiopia: 2017. A Comparative Cross Sectional Study. *Berhe Beyene.*

Introduction: Ethiopian Health Sector Development Program-I review indicated that basic health services were not delivered to the people at the grass root level. In response to this, the Ethiopian government introduced community-level intervention called health service extension package. The Health extension workers identify and train “model families” that have been acceptance and credibility by the community, and that are early adopters of desirable health practices. The prevalence of diarrheal disease in under-five children among model families is expected to be lower than non- model families. This study compared the effect of health extension package implementation on diarrheal diseases among under-five children between health extension model and non-model families in Laelaymychew district, Tigray, northern Ethiopia.

Methods: A Community based comparative cross-sectional study was conducted from May, 2017 to June, 2017 among 644 under-five children (322 children from each model and non-model family). Multistage sampling technique was used to select households. Data were collected through interview administered structured questionnaire and checklist based observation. Multiple logistic regression models were used to compute the statistical associations. SPSS software version 20 was used for data analysis and Variables with p – value < 0.05 were considered as statistically significant.

Results: Diarrheal disease in under-five children for those from model families was 26(8.1%) and 65 (20.2%) to the Non-model families with 95 % CI = 0.117, 0.168. Being non-model family (AOR=1.9 and 95% CI =1.004, 3.565), having maternal history of diarrhea (AOR= 3.3 and 95 % CI = 1.975, 5.570), improper waste disposal method (AOR = 2.6 and 95% CI= 1.251, 5.578) and not latrine use (AOR=2.1 and 95% CI=1.128, 3.897) were found factors significantly associated with diarrhea in under-five children.

Conclusion: Families who implement health extension package showed a positive impact on the reduction of diarrhea in under-five children. Health extension model families training follow up and support programs are needed to be expanded for all non-model families.

Assessment of the Associated Factors, Management and Complications of Uterine Rupture at Mizan-Tepi University Teaching Hospital, Mizan-Aman Town, Bench-Maji Zone, SNNPRS, South West Ethiopia, 2017. A Case Control Study. *Yayehyirad Yemaneh Adinew.*

Background: Uterine rupture is tearing of the uterine wall during labor or delivery. Rupture of a previously unscarred uterus is usually a catastrophic event resulting in death of the baby, extensive damage to the uterus and sometimes even maternal death from blood loss. The overall incidence of uterine rupture is 1 in 2,000 deliveries. In developing countries, uterine rupture is more prevalent and is a serious problem.

Objective: To Assess the associated factors, management and complications of uterine rupture in Mizan-Tepi University Teaching hospital, Mizan-Aman town, Bench-Maji Zone, SNNPRS, South west Ethiopia, 2016/17.

Methodology: A Hospital based unmatched multi-factorial case-control study was employed from 1st October - 30th October 2016. The required sample size gave us a total of 352 Delivery Charts by considering case to control ratio of 1:4, of these 71 were Delivery Charts with Uterine Rupture and 281 were Delivery Charts without uterine Rupture were selected by using lottery method. Data was retrieved using pre-tested and structured data extraction format from operation notes, delivery registers and patients cards documented from 2013-2015 G.C. Using SPSS version 20 software, descriptive statistics, bivariate and multivariate logistic regression analysis was done and p-value <0.2 and <0.05 were considered as significant during bivariate and Multivariate logistic regression analysis respectively. AOR with 95% CI was used to control for possible confounders and to interpret the result.

Result: From 1st January 2013 up to 31st December 2015 there were a total of 9878 Deliveries from these 71 Cases of uterine rupture were recorded giving an incidence of 1 in 139 Deliveries. Predisposing factors for uterine rupture were No antenatal care (AOR 4.08 95% CI 1.924-8.651), Labor Duration >18hrs (OR 2.769 95% CI 1.231-6.226), parity ≥ 5 (AOR 6.16 95% CI 2.886-13.148), Having Obstructed Labor (AOR 2.714 95% CI 1.228-5.720), No use of Partograph (AOR 2.248, 95% CI 1.049-4.817). There were 7 maternal deaths due to uterine rupture during the study period giving a Mortality Rate of ~ 0.07%.

Conclusion: Uterine rupture still remains one of the major causes of maternal and newborn morbidity and mortality. The prenatal mortality for both case and controls is high in Mizan-Tepi University Teaching Hospital.

Keywords: uterine rupture, associated factors, management, and complications.

Intrauterine Growth Pattern in Rural Ethiopia Based on Serial Ultrasound Measurements: a Community Based Study. *Meselech Roro, Wakgari Deressa, Bernt Lindtjørn.*

Introduction: Normal foetal growth is one of the fundamental elements of a healthy pregnancy that is associated with perinatal morbidity and mortality and the long-term wellbeing of the child. Several disease conditions and common situations in adults such as type II diabetes mellitus, cardiovascular conditions, malaria, malnutrition and obesity have been associated with abnormal foetal growth. One of the standards for follow up of normal foetal growth is estimated foetal weight (EFW) at a given gestational week. The aim of this study was to assess the intrauterine growth pattern in a rural area in the Rift Vally of Ethiopia using serial ultrasound measurements.

Methods: We conducted alongitudinal community based study in Adami Tulu district south central Ethiopia. The study population comprised 675 single tone gestations based on ultrasound-derived estimation of gestational age. We followed pregnant women in the study area throughout their pregnancy until delivery. Biometric measurements were obtained at entry (11-24 weeks) and at the consecutive visits at interval of four weeks until 38 weeks of gestation using trans-abdominal ultrasound. Fetal weight was estimated using the Hadlock three algorithm and the 5th, 10th, 25th, 50th, 75th, 90th and 95th centiles (reference centiles) were developed from this model. We developed the growthchart after excluding all pregnancies with pathology.

Result: A total of 1812 ultrasound scans taken from 675 foetuses were included in the analysis. Biometric measurements taken from 24 to 38 weeks of pregnancy were used for development of foetal growth chart. Based on centiles derived at each gestational age from 25 to 38 weeks 25.0% of the raw EFW value fell below the 10th centiles, 50.1% between the 10th and 90th centiles and 24.9% above the 90th centiles.

Conclusions: In this study of intrauterine growth pattern using serial ultrasound measurements, we found small for gestational age in a quarter of the participants.

Bacterial Profile, Antibacterial Susceptibility Pattern and Associated Factors among Women Attending Antenatal and Postnatal Health Services at the University of Gondar Teaching Hospital, Northwest Ethiopia. *Abebew Bitew Kifilie.*

Background: Bacterial infection is an important cause of maternal morbidity and mortality especially in resource poor countries. Major sources attribute to maternal infections include urinary tract infection, surgical site infections, septicemia and endometritis. The rise of antibiotic resistance bacterial infection poses a big threat to this vulnerable population.

Objective: To assess bacterial profile, antibacterial susceptibility pattern and associated factors among mothers attending antenatal and postnatal care health service.

Methods: A cross-sectional study was conducted on 329 study participants at the University of Gondar Hospital from January 2016 - May 2016. Clinical specimens such as urine, wound swab, blood and cervical discharge was collected for culture and antimicrobial susceptibility tests. Data were entered and analyzed with SPSS version 20. Descriptive statistics were analyzed. Bivariate and multivariate logistic regression model were carried out to determine the associated factors for bacterial infection. Odds ratio (95%CI) was carried out to determine statistically significant associated factors with bacterial infection.

Result: Out of 329 specimens, 147(44.7%) bacterial species were isolated. Of these 35.1% from urine, 84.1% from wound, 13.1% from blood and 7.4% from cervical discharge were isolated. The predominant bacterial isolates were *S. aureus* (42.2%), *E.coli* (30%), *Coagulase negative staphylococci* (15%), and *Klebsiella* spp (12.2%). Majority of the isolates were resistant to amoxicillin and ampicillin but susceptible to ceftriaxone. Multi drug resistant bacterial species were isolated. Cesarean section, 1st trimester, one parity, multiparity and history of diabetes mellitus had strong association with bacterial infection.

Conclusion: The overall prevalence of bacterial infection was 44.7%. The predominant bacterial isolates were *S. aureus*, *E. coli*, *CoNS*, *Klebsiella* spps. MDR bacteria were isolated. This signals the big threat posed by antibiotic resistant strains in such vulnerable population. Pregnant women and mothers following delivery are core part of the society and effort should be done to increase the existing care given to this vulnerable population during pre-natal and post-natal health services.

Keywords: Antenatal care, antibiotic susceptibility pattern, bacterial profile and postnatal care.

The Proportion and Factors Associated With Episiotomy at FelegeHiwot Referral Hospital, Bahirdar City, North West Ethiopia 2017.

Azimeraw Arega Tesfu, Azimeraw Arega Tesfu.

Introduction: Episiotomy is one of the most common procedures performed on the perineum to facilitate vaginal delivery. Despite of World Health Organization recommendation (10%), routine episiotomy is still high. As far as I know in Ethiopia studies are limited to show the extent of the problem.

Objective: The aim of the study was to assess the proportion and factors associated with episiotomy among women who gave birth vaginally at Felege Hiwot Referral Hospital, Bahirdar City, North West Ethiopia, 2017.

Method: Institution-based cross sectional study was conducted among 411 mothers from Feb 18- April18/2017. Data was collected through interview, observation and document review with systematic random sampling technique to select the study participants and analyzed through SPSS. Both bivariate and multivariate logistic regressions were computed. A *P*-value less than was 0.05 considered statistically significant at 95% confidence level throughout the study.

Result: Among 411 participants, episiotomy was performed for 169(41.1%) mothers. Primiparity (AOR=6.026, 95%CI (3.542,10.253)), prolonged duration of second stage of labor (AOR=4.612, 95%CI(2.247,9.465)), Instrumental delivery (AOR =3.933, 95%CI (1.526,10.141)), using oxytocin drug (AOR=2.608, 95% CI (1.431,4.751)), delivery attended by medical resident (AOR =3.225, 95% CI (1.409,7.382)) and birth weight \geq 4000 gm (AOR=5.127,95% CI (1.106,23.772)) were factors significantly associated with episiotomy.

Conclusion and recommendations: The proportion of episiotomy was higher than the recommended practice. Parity, using oxytocin, duration of second stage of labour, instrumental delivery, delivery attendant and birth weight were variables that had influenced to do an episiotomy. Thus, minimize the unnecessary interventions during intrapartum and periodic training regarding the indication of episiotomy should be provided to all obstetric care providers.

Keywords: Episiotomy, proportion, associated factors, Ethiopia.

Pelvic Floor Disorders Associated with Higher Level of Sexual Dysfunction in Kersa District, Ethiopia: a Community Based Study.

Merga Agga Dheresa.

Background: Sexual dysfunction has negative impact on women's general health, reproductive capability, and psychological wellbeing. Pelvic floor disorders negatively affect sexual function of women, however, reported relationships between pelvic floor disorder and sexual function have been inconclusive. Given the relative paucity and contradicting research finding on the relationship between pelvic floor disorders on sexual function, we aim to assess the relationship in a large scale community based study.

Method: We conducted a community based study in Kersa district, Eastern Ethiopia. The study participants were ever married women selected through multistage sampling procedure from Kersa Health and Demographic Surveillance System (Kersa HDSS). The data were collected using female sexual function index (FSFI) questionnaire through face-to-face interview. The index score <26.55 was used as a cut off point for sexual dysfunction. The magnitude of sexual dysfunction is presented along with the 95% Confidence Intervals. Poisson regression model with robust variance estimation was used to investigate the association of the independent variable with sexual function. The results are reported in crude and adjusted prevalence ratio with 95% confidence intervals.

Result: Among 2389 women in sexual relationship participated in the study, 1127(47.0%; 95% CI: 45.0%, 49.0%) of them had sexual dysfunction. Sexual desire disorder is the most prevalent reported disorder (72.0%; 95% CI: 70.0%, 74.0%), and pain (5.4%; 95% CI: 4.6%, 6.4%) is the least disorder. After controlling confounding factors, the prevalence of female sexual dysfunction was 56% (adjusted prevalence ratio, 1.56; 95% CI: 1.44, 1.69) higher among women with pelvic floor disorder as compared to women without pelvic floor disorder.

Conclusion: In rural Kersa, about half of women suffer from sexual dysfunction and it is significantly associated with pelvic floor disorder. This would call for an urgent interventions against PFD to maximize women's reproductive health.

Keywords: female sexual dysfunction, pelvic floor disorder, women, Ethiopia.

Food Insecurity Predict Intimate Partner Violence Status of Currently Married Women in an Urban Setting from South Ethiopia: a Community Based Comparative Cross Sectional Study.

Eshetu Andarge Zeleke.

Background: Intimate partner violence (IPV) against women and food insecurity are an ever growing public health concerns in Ethiopia. However, the connection between the two is not yet well investigated. Therefore, this study assesses the association between IPV and food insecurity and compares IPV by household food security status among currently married women in child bearing age in Arba Minch town, South Ethiopia.

Methods: A community based comparative cross-sectional study was conducted among 696 currently married women (15-49) to assess association between IPV and women's household food security status. A quantitative data was collected using a pre-tested and structured questionnaire. Logistic regression was done using IBM SPSS version 20. Statistical significance was declared at p-value of less than 0.05 and odds ratio with its 95% confidence interval was used to show the degree of association.

Result: Life time and current IPV was 62.4% and 50.4% respectively. Sixty three (24.0%) and 285(66.4%) of women who experienced current IPV were from food secured and in-secured households respectively ($P\text{-value} < 0.001$). The odds of experiencing current IPV was higher among women from food in-secured households (AOR=6.14, 95% CI 4.13, 9.11)) and who were merchants and NGO workers (AOR=2.13, 95% CI (1.22, 3.73)) and it was lower among women with 10 years and above age difference with their husband (AOR=0.47, 95%CI (0.29, 0.77)) and with high decision making power (AOR=0.54, 95% CI (0.33, 0.89)) than their reference groups.

Conclusion: The prevalence of current IPV was significantly higher among women from food in-secured households as compared to their counterparts. The odds of experiencing current IPV were higher among women from food in-secured households. Policy makers at different levels and sectors should be committed in improving urban women's household food security status in order to improve gender inequality and empower women.

Keywords: food insecurity, intimate partner violence, Arba Minch

Exploration of Barriers Related to Family Planning Use among Pastoralist Communities of Ethiopian Somali Region, Eastern Ethiopia: Qualitative Study. *Gemu Tiru Bati, Gemu Tiru Bati.*

Background: Rapid population growth is a threat to wellbeing in the poorest countries. In Ethiopia there was a dramatic increase in contraceptive prevalence rate (CPR) from 8.2% to 36% in 2016. Although such encouraging results have been achieved, there are significant variations among the regions, with very low coverage in the pastoralist regions ranging from 1.5 percent in the Somali region to 56 percent in Addis Ababa. No studies in Somali region have qualitatively explored for barriers accessing and utilizing family planning from the pastoralist community perspective.

Objectives: The objective of this study was exploring barriers related to family planning use among pastoralist communities of Ethiopian Somali region.

Methods: Qualitative inductive content analysis through purposive sampling with maximum variation mixed with snow ball were used to conduct four FGD among married women and their husbands, fifteen KII among programmers, service providers and community chiefs. On top this 6 facility observation were undertaken. Data analysis was done using Open code version 4.02.

Results: Six major themes were emerged during the study: Religion prohibition, socio cultural factors, limited access to family planning services, gender roles and social pressure, myths and misconceptions related to family planning and provider negative attitude affected family planning service uptake.

Conclusions: Poor women empowerment and limited male involvement, Religion prohibition, Cultural barriers such as clan leaders influence affected family planning service uptake. Women and girls remain largely marginalized in terms of development and full participation in the health program as a whole family planning in particular which contributes to low service uptake at the household and community levels due to underdevelopment, low literacy and prevailing socio-cultural perceptions.

Recommendations: Massive community mobilization, women empowerment and male involvement through chiefs and religious leaders, Capacity building on family planning program, new service provision modality that will fit to mobile community are crucial to increase family planning service uptake.

Predictors of Maternal Near Misses among Women Admitted in Gurage Zone Hospitals, South Ethiopia, 2017: a Case Control Study. *Abebew Wasie Kasahun.*

Background: Maternal near miss or severe maternal morbidity is a condition in which a woman nearly dies from complications of pregnancy or childbirth within 42 days of termination of the pregnancy regardless of location or duration, but survives either due to the care she receives or due to chance.

Methods: Hospital based case control study was conducted to assess determinants of maternal near miss in South Ethiopia. A total of 229 women (77 cases and 152 controls) were included in the analysis.

A validated disease-specific approach (clinical criteria) was used to identify cases. Two controls were selected for each case; controls were women admitted for uncomplicated normal vaginal delivery service or women admitted due to obstetric complication not progressed to maternal near miss.

Data were collected using interviewer administered structured questionnaire. Data were entered using Epi Info 7 and exported to SPSS 21 for analysis. Binary and multivariable logistic regression analysis was used to identify independent predictors of the outcome variable.

Result: Dystocia is the most common proximal or direct cause of maternal near miss followed by obstetric hemorrhage in the study area. Besides to proximal factors there are also underlying/distal factors for maternal near miss. Delay in seeking health care is one of the underlying factors of maternal near miss. The first delay (delay to seek health care) among controls is 4.3 hours; while it is 8.7 hours among cases. Prior history of cesarean section {AOR 7.68, 95%CI, 3.11-18.96}, first delay {AOR 2.79, 95%CI, 1.42-5.50}, and being referred from other health facilities {AOR 7.47, 95% CI, 2.27-24.51} are independent predictors of maternal near miss.

Conclusions: First delay (Delay to seek health care), prior history of cesarean section and referral from other health facility are distal factors associated with maternal near miss events. Enhancing health care programs including the national health extension program tailored to enable women to timely seek health care and to improve the referral system is crucial.

.Key words: *Maternal near miss, Healthcare delay, severe obstetric complications, severe maternal morbidity, South Ethiopia.*

Assessment of Adherence to Iron with Folic Acid Supplementation and Its Associated Factors among Pregnant Women Attending Antenatal Care Follow-Up at Debre Tabor General Hospital.

Sofonyas Abebaw Tiruneh, Alemayehu Digssie G/Mariyam, Melaku Tadege Engdaw, Dessalegn Tesfa Asnakew, Bedilu Abebe Abate.

Introduction: Nutritional anemia is a major public health problem throughout the world, particularly in developing countries. Pregnant women are the most vulnerable group for anemia. Anemia during pregnancy has a significant effect both on the mother and fetus. Iron with folic acid supplementation is recommended to mitigate anemia and its complication during pregnancy. Despite, there is poor adherence to iron with folic acid supplementation during antenatal period, there is limited study conducted to assess the adherence status of pregnant women to iron with folic acid supplementation in the study area.

Objective: To assess adherence to iron with folic acid supplementation and its associated factors among pregnant women attending antenatal care service in Debre Tabor General Hospital, 2017.

Methods: Institution based cross sectional study was conducted from January 9 to April 8, 2017 at Debre Tabor General Hospital. A total of 249 study participants were included and selected by systematic random sampling. All the interviewed questionnaires were checked and entered to EpiData version 3.1 and exported to SPSS version 20 for windows for analysis. Bivariate and multivariable logistic regression were fitted to identify independent predictors of adherence. P-value less than 0.20 was considered to select variables for multivariable logistic regression. P-value less than 0.05 was used to declare statistical significance.

Results: A total of 241 study participants were involved with response rate of 96.8%. From 241 pregnant women 107 (44.4%) were adherent to iron with folic acid supplementation. Gravity (AOR=2.92 95%CI (1.61, 5.30)), gestational age at first ANC visit (AOR=3.67, 95% CI (1.94, 6.97)), got advice about iron with folic acid supplementation (AOR=2.04, 95%CI (1.12, 3.75)), current anemia (AOR=2.22, 95%CI (1.45, 4.29)) and knowledge about iron with folic acid supplementation (AOR=3.27, 95% CI (1.80, 5.95)) were statistically associated with adherence to iron with folic acid supplementation among pregnant women.

Conclusion: Adherence rate of iron with folic acid supplementation was low. Gravity, gestational age at first ANC visit, advice about iron with folic acid supplementation, current anemia and knowledge about iron with folic acid supplementation were independent predictor of adherence to iron with folic acid supplementation among pregnant women.

Sexting among High School Students in Northern Ethiopia: Magnitude and Determinants.*Kidan Abrha^{§1} Alemayehu Worku^{2, 3} Wondwossen Lerebo¹ Yemane Berhane²*

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Background: Sexting, exchange of text, photo, picture and/or video message of explicit sexual material via electronic devices is an emerging phenomenon in low income settings. Its potential impact on psychosocial and academic performance to school adolescents has documented. However, empirical evidence which employed probability sampling is limited about it in Ethiopia. The aim of this study was to assess the magnitude and related factors of sexting among high and preparatory school students in northern Ethiopia.

Methods: Across-sectional study was conducted in ten districts of Tigray Regional State, northern Ethiopia from March to April 2015. A multistage stratified cluster random sampling method was used to select students. Data was collected using a validated, facilitator-guided, self-administered questionnaire. Complex sample survey data analysis using Poisson regression model was used to estimate adjusted prevalence ratio with 95% confidence interval (CI).

Result: We surveyed 5301 high and preparatory school students. The reported prevalence of overall sexting was 33.4 % [95% CI:30.5, 36.4]; the prevalence of sexting receiver was 32.0% [95%CI:29.3, 34.9], and sender was 25.9%[95%CI:23.1, 28.9].The proportion of sexting was higher among pornography viewers [adjusted prevalence ratio (APR):95%CI: 2.98(2.57, 3.45)]; 18-24 year olds[APR 95%CI: 1.23(1.13, 1.33)] and among internet users[APR 95%CI: 1.79(1.40, 2.30)] compared to their counterparts.

Conclusion: About a third high and preparatory school students are involved in sexting. its proportion is higher among pornography viewers and internet users. Timely and proper guidance would be necessary to mitigate undesirable consequences of the phenomenon.

Key words: Sexting, high school, youth, Ethiopia.

Sexual Violence: the Case of Female High School Students in Sodo Town, Wolaita Zone, Southern Ethiopia. *Aleme Mekuria.*

Background: Sexual violence is a major concern of society because the physical and mental harm endured by women is extremely destructive. Moreover, little has been explored about the pattern of Sexual violence in Ethiopia in general and in Sodo town in particular. Therefore, the present study aims to assess the prevalence and associated factors of sexual violence among adolescent female high school students in Sodo town, Wolaita Zone, Ethiopia.

Methodology: School- based cross sectional study was conducted among 515 female high school students in Sodo town from December 2014 to Feb 2015. A pre-tested, structured, self-administered questionnaire was used. A simple random sampling technique was used to select 515 female students from grade nine and ten of the seven high schools in the town. Data were coded, entered and cleaned using Epi Info version 3.5.1 and analysis were performed using SPSS for windows version 20 statistical packages.

Results: The prevalence of sexual violence among female high school students in Sodo town was 79.3 %. The life time rape among female high school students in Sodo town was found to be 25.8 %. The chance of life time exposure to rape was higher among students who lived alone (AOR=2.71; 95%CI: 6.04-8.77) and with friends (AOR=4.2; 95%CI: 7.3-14.3) than those living with their family. The odds of experiencing life time rape was higher among students who had more than one sexual partner (AOR=9.11; 95%CI: 5.52, 15.04) than those with none. Substance abuse was significantly associated with life time rape that the chance of experiencing rape among students who were chewing chat was higher (AOR=6.09; 95%CI: 1.57, 23.69) as compared to their counterparts.

Conclusion: This study revealed high level of sexual violence. Substance abuse, living arrangement and having more than one sexual partner had statistically significant association with life time rape. Comprehensive school based reproductive health education, wide range provision of youth friendly services to high school students and community based awareness creation to concerned bodies are recommended.

Keywords: Sexual Violence, Adolescent, School, Sodo town, Ethiopia.

Assessment of Sexual Violence and Associated Factors among High School Students in Dire Dawa City, Eastern Ethiopia. *Eden Abebe Merid.*

Background: Sexual violence is defined as any sexual act; attempt to obtain a sexual act, unwanted sexual comments or advances or act to traffic or otherwise directed against a person's sexuality using coercion by any person regardless of their relationship to the victim in any setting including but not limited to home or work. Female adolescents are more prone to experience sexual violence than any other age group. This study was aimed at investigating the prevalence and associated factors of sexual violence against adolescent females in Eastern Ethiopia.

Objective: The main objective of this study is to determine the prevalence and associated factors of sexual violence among female high school students in Dire Dawa, Eastern Ethiopia.

Methodology: This school based, cross sectional study investigated self-reported data from 416 female high school students who are 15 years old and above during the months of November 2016 to March 2017. Study samples were enrolled using multistage cluster sampling technique. From eighteen schools four from high school and two from preparatory schools was selected by simple random sampling. From the selected six schools sections were sampled again by simple random method and from these sections all female students who are learning in that section were involved to fulfill the calculated sample size. If the number of students in the identified section did not fulfill the calculated sample size of that specific school, then students from other section were included. The questioners were adopted from WHO multi-country study and from a study done in Eastern Ethiopia on women's health and violence with some adjustment. The students arranged to sit separately and informed about the research. The questionnaires administered and finally when they finished filling the supervisors took from the students by checking the completeness.

The data was entered, cleaned, edited and analyzed using EPI info version 7 and SPSS (statistical package for social science) version 20. Logistic regression was performed to see the effect of each independent variable towards the dependent variable.

Results: 47.2% of females reported that they experienced at least one type of sexual violence in their life time. 37.5% of the respondents reported that they had experienced one form of sexual offence, 34.5% sexual assault, 8.4% sexual coercion and 10.7% sexual aggression. Female students who have two sexual partners in the past 12 months are 3 times more likely to experience sexual violence than those who had only one sexual partner. Those who had three or more sexual partners had a 5 fold increase in sexual violence victimization.

Conclusion and recommendations: Nearly one out of every two female students experienced at least one form of sexual violence before they complete high school. This is an alarming figure which needs immediate action; schools, the community and the law enforcement should work closely to mitigate this problem.

Socio-demographic Determinants of Adolescent Fertility Vary in Urban and Rural Areas in Eastern Ethiopia: a Cross-sectional Study Based on Health and Demographic Surveillance System Data. *Melkamu Merid*

Introduction: Adolescent fertility remains a global public health problem with sub-Saharan Africa experiencing the largest burden despite a downward trend observed between 1990 and 2011. In Ethiopia, the national adolescent fertility rate has shown a slight increase between 2011 and 2016. This study was conducted to assess the level of adolescent fertility and associated factors in two health and demographic surveillance system (HDSS) sites in Eastern Ethiopia.

Method: Data of 2493 adolescent women, aged 15 to 19 years, from the 2014 observation year were obtained from the two HDSS sites representing rural and urban areas, Kersa— and Harar—HDSS, respectively. Binary logistic regression was used to identify related socio-demographic factors associated with adolescent fertility. Data were analyzed in STATA version 14.2 and all statistical tests were declared significant at $p\text{-value} < 0.05$.

Result: The rate of adolescent fertility was 4.5 times higher in Kersa HDSS, 116.6 with 95% confidence interval (CI) 100.0 to 135.5, compared to 25.2, 95% CI 17.7 to 35.6, in the Harar HDSS. In Kersa HDSS, 15.6% of adolescent girls were ever married and 44.3% were uneducated compared to 6.8% married and 3.1% uneducated adolescent girls in Harar. In both HDSS sites, ever married adolescents had an increased risk of adolescent fertility. Adolescent women's educational status, age and wealth status were not associated with adolescent fertility in Harar. However, adolescent women who were aged 18-19 years and who had primary education had an increased risk of fertility in Kersa.

Conclusion: The study noted a sub-district level variation of adolescent fertility rate in both HDSS sites that require the attention of the local government and other development partners to mitigate the situation. The variation of factors linked with adolescent fertility in urban and rural districts emphasize the need for interventions to consider the context of adolescent fertility.

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Utilization of Preconception Care and Associated Factors among Reproductive Age Group Women in DebreBirhan Town, North Shewa, Ethiopia. *Tesfanesh Lemma Demissie.*

Background: Preconception health refers to things women can do before and between pregnancies to increase the chance of having a healthy baby and being a healthy mother. Unfortunately, millions of women in the world do not have access to pre-pregnancy, pregnancy health services and childbirth with suitable quality. Therefore Addressing this important topic and coming up with necessary information is helpful to improve maternal and child health in our country.

Methods: community based cross-sectional study with both quantitative and qualitative method of data collection was employed from March 1st to 30, 2017. Systematic sampling technique was used to select a total of 424 reproductive age women. The data was collected using pre-tested and structured questionnaire and eight in-depth interviews were done using interview guide. The collected data was coded and entered to Epi data 3.5.1 and exported to SPSS version 21 for cleaning and analysis. Descriptive statistics like frequency table and graphs were used for data presentation. Factors with p-value < 0.25 in bivariate analysis were entered to multivariate logistic regression and statistical significance was considered at p-value < 0.05. OR and 95% CI were used to show the strength and significance of the association.

Result: A total of 410 subjects were participated with a response rate of 96.7%. The overall utilization of Preconception care was 13.4%. Women's age, marital status, knowledge and availability of unit for preconception care were significantly associated with utilization of preconception care with (AOR: 3.567; 95% CI: 1.082, 11.758), (AOR: 0.062; 95% CI: 0.007, 0.585), (AOR= 6.263; 95% CI: 2.855, 13.739) and AOR: 13.938; 95% CI: 3.516, 55.251) respectively.

Conclusions: The finding of this study showed that women's utilization of preconception care is low. Therefore, establishing preconception care strategies which can address all the components of the care and understanding the views of reproductive age women's and care providers will be essential when designing effective implementation strategies for improving delivery and uptake of preconception care.

Effect of Enhanced Reminders on Postnatal Clinic Attendance in Addis Ababa: a Cluster Randomized Control Trial. *Abraham Sahilemichael Kebede.*

Introduction: According to WHO 2016, globally an estimated 303,000 women died from pregnancy-related causes, 2.7 million babies died during the first 28 days of life and 2.6 million babies were stillborn. Low adherence to health care appointment is among the challenges to the health care system. Using technologies to remind appointment is considered as one of the future tools to increase health care service utilization in developing countries like Ethiopia. The overall goal of this study was to assess the effect of enhanced reminders on postnatal attendance.

Methods: A cluster-randomized trial, a total of 350 participants from 4 sub-cities in Addis Ababa and 16 health centers were enrolled from August 2017 to November 2017. The study enrolled 16 health centers randomizing into the intervention group (receiving sequential SMS and voice call reminder before 48 hours of the next postnatal appointment) and the control group (usual care) there and after. All eligible pregnant women were enrolled consecutively till allocated number is achieved. The recruitment of the study participants was done shortly after the time of delivery. The analysis considered the clustering effect using two-level models (the individuals nested within the health facilities and health facilities nested in the sub-cities) and post-estimation reliability test have been done to generate Intraclass coefficient.

Result: A total of 342 women, 96.6% from the control group and 98% of the intervention group were eligible for the final analysis. The odds of postnatal attendance found to be higher with statistical significance OR: 1.97[95%CI (1.3,2.99)] among individuals in the intervention group compared to those in the control. But the multilevel model adjusting for the group level clustering effect found the odds of attendance is higher among intervention with 2.2 which was statistically significant AOR: 2.2 (P-value=0.042). The clustering effect revealed there is no significant variability between the health facilities with variance 0.3528944 (95% CI 0.061, 2.03).

Conclusion and recommendation: Non-attendance is an intractable challenge within the wide variety of health-care services including maternal health uptake, leading higher drop out from continuum of care and low-quality service. M-Health and reminders have found to be effective on health care appointments. So further studies on the cost-effectiveness of the reminder intervention should be done and the government should strategize to foster the integration of mHealth in the health care system to promote health and healthy behaviors.

Sero Prevalance of HIV among pregnant women in Ethiopia: a Systematic Review and Meta-analysis. *Demeke Geremew Debebe.*

Background: HIV is a disastrous infectious diseases that causes millions of death worldwide, and the prevalence is surging again in Ethiopia. Except individual studies, there are no national HIV prevalence studies conducted among pregnant women in Ethiopia. Thus, the aim of this systematic review and meta-analysis was to determine the pooled prevalence of HIV among pregnant women in Ethiopia, and in different regions of Ethiopia particularly.

Methods: We searched PubMed, Google scholar, Science Direct and EMBASE databases for studies on the prevalence of HIV among pregnant women in Ethiopia. A total of 1405 titles were identified and 15 studies met the inclusion criteria. Descriptive and quantitative data of included studies were presented in tables and forest plots. The I^2 statistics was used to assess heterogeneity between studies. Stata version 11.0 was used for pooled prevalence analysis and 95% confidence interval using random effects model.

Result: Based on 15 included studies in the meta-analysis, a total of 717 and 12 pregnant women were HIV and HIV-HBV seropositive respectively from 13,746 participants. The overall pooled prevalence of HIV among pregnant women in Ethiopia was 5.74% (95% CI; 3.96%–7.53%). The pooled prevalence among subgroups indicated 9.50% (95% CI; 7.76%–11.23%) in Amhara, 4.80% (95% CI; 3.12%–6.49%) in Addis Ababa, 2.14% (95% CI; -0.54%–4.82%) in SNNP and 4.48% (95% CI; 2.56%–6.41%) in Oromia region. Six studies reported HIV-HBV co-infection and the pooled prevalence was 0.68% (95% CI; 0.27%–1.08%) among pregnant women in Ethiopia.

Conclusion: The pooled prevalence of HIV among pregnant women in Ethiopia is high. This high prevalence may explain the spread of HIV among sexually active age groups. Specifically, higher prevalence of HIV in Amhara region could indicate that weak HIV transmission advocacy by higher officials and health care workers to ordinary people in the region. Thus, pregnant women's knowledge, attitude and practice towards HIV and HIV-HBV should be a concerned issue to decrease the rate of mother to child transmission and save the lives of newborns.

Keywords: HIV, Pregnant women, Pregnant, Systematic review, Meta-analysis, Ethiopia.

Maternal Satisfaction and Associated Factors on Delivery Care Service in Hawassa City Public Hospitals, South Ethiopia: a Cross Sectional Study in Ethiopia. *Marishet Agumasie¹, Zemenu Yohannes*¹, Teferi Abegaz²*

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Introduction: Childbirth is one-day events; the experience lasts lifelong and share with others. Client dissatisfaction at public health hospitals women to do the health care shopping to private or decrease utilization of service. The aim of this study was to assess client satisfaction and associated factors at public health hospitals in Hawassa city.

Method: A hospital based cross sectional study was conducted from December to January 2015. A systematic sampling technique applied, and 398 mothers who gave live births were included in the study subjects. Data were entered into EPI info version 7.1 statistical software and exported to SPSS version 20 for analysis. Bivariate and multivariate analysis applied to check the association of explanatory variables with outcome variable.

Result: In public health hospitals, clients' satisfaction at three dimensions were 87.7%. Non-formal education (AOR=6.8, 95 % CI: 1.2-38.7), had primary education (AOR=4.25, 95 % CI: 1.4-13.2) and getting prompt attention by caregivers within five minutes (AOR= 5, 95 % CI: 2.08-12.03). Being student (AOR=0.16, 95 % CI: 0.05-0.59) and instrumental delivery (AOR=0.19, 95 % CI: 0.06-0.69).

Conclusion: This study showed that client satisfaction is better than other public hospitals on delivery service. There is needed to intervene on predictors of maternal dissatisfaction like being a student, instrumental delivery and waiting time to get obstetric care providers and points to improve and strengthen for better maternal satisfaction.

Keyword: maternal satisfaction, delivery care service, Ethiopia.

Comprehensive LARC through L4HEW - does it work? *Tesfa Demelew*

Taye, Alula M Teklu.

Program Description: This program was initiated by the FMOH and partners to ensure availability of comprehensive (insertion and removal) of implants and IUCD at the health post level. The providers are L4HEW who are trained for 11 days using the standard training material. HP are selected based on setup, size of user population, catchment HC LARC service availability. The program was started in 66 health posts. It was underway for 8 months and its effectiveness needed to be evaluated. The goal of the evaluation was to investigate the implementation status and effectiveness of LARC methods through L4HEWs.

Methods: A cross sectional convergent parallel mixed method design was used. Data was collected through facility assessment using checklist, implementation and programmatic experience through KII, user experience through structured questionnaire and IDI.

Results: 64 out of the 66 health posts have started. Most selected sites meet the criteria. Initiation was smooth mostly, but delays, supply and coordination challenges were reported. L4HEW have moderate knowledge and skill. Users have good knowledge of LARC and HEW are source of info for 93% of users. 89% (606/681) have reported not problems after receiving LARC from the L4HEW.

11.6% reported side effects. Pregnancy was reported from 2 out of the 598 users (0.3%), only one user (0.2%) reported expulsion. Only 37 women out of 687 (5.4%) reported removal, most of which 60% are done at the HP. The commonest reason for removal is wanting to have more children, which is too early for a woman who received LARC in the last 8 months.

Conclusion: The principles followed have enabled the sites to start. Training – content, method, venue and language had limitations. L4HEWs can effectively provide LARC insertion and removal services. The outcomes on users are good – compared to other studies but this study did not use any comparisons. Ensuring continuous availability of FP services at HP will require HR, supply and monitoring and mentoring related inputs

Recommendations: Revising and enriching the package based on the findings [Revision of training material – translation, content, duration, assessment, coordination including provision of guidance on selection of participants, partner coordination, ensuring strong monitoring and evaluation, mentoring and coordination as well as proper advance planning. Consider phased-expansion with more robust study:

- Comparison
- Baseline
- Quasi-Experimental design

Refresher training targeting areas of weakness including misconceptions and proper assessment. Address the excessive involvement of L4HEW in political roles. Promotion of the services. Strengthen supervision as well as mentoring.

Level of Husband Involvement and Its Barriers in Family Planning among Married Couples in Afar Pastoral Community: a Constant Comparative Analysis of Users and Non-Users. *Mebrahtu Kalayu Chekole.*

Background: Family planning service use is low among less educated and rural resident couples and disproportionately low among pastoral community. To change this low utilization and improve uptake of family planning services, involving husbands in family planning is gaining a focus of family planning programs in developing countries. However, there is scarce documented evidence that examined whether husband involvement brings a positive change in improving family planning use in the context of pastoral community. Thus, the current study aimed to compare the level of husband involvement in family planning and the barriers linked to it among currently married couples, who use and do not use family planning.

Methods: A qualitative study that adopted constant comparative analysis was employed among 16 purposively selected participants (ten family planning users and six non-users) to examine the level of husband involvement in the family planning and what do the non-users do think about it. Each in-depth interview was conducted using semi-structured guide for a minimum of 45 minutes. Each interview was audiotaped, transcribed verbatim and imported into Atlas.ti, window for qualitative data software, for coding and analysis. The analysis was focused to constantly compare the data generated by the family planning users and non-users.

Results: Couples' discussion about family planning, husband approval to use family planning and accompanying wife to health facility for obtaining family planning services were recurrently reported among family planning users, which the non-users reported them that they are unlikely to occur to them. Both the users and non-users agreed that the decision to use family planning lay to the husband as well as his disapproval leads to its non-use. Religious disapproval, husband's low awareness on the need to regulate fertility and desire to have more children were the paramount barriers for husband involvement.

Conclusion: In contrary to family planning non-users, husbands of family planning users tend to discuss on issues related to family planning use, approve its use and accompanying their wife to health facilities. The decision on family planning use continues to lie on the husband. Thus, Targeting and involving husbands in family planning awareness and demand creation activities is crucial for increasing uptake of family planning among pastoralist community.

Keywords: Husband involvement, family planning, contraceptive use, pastoral community, Qualitative study, Afar region, Ethiopia.

More than Half of Adult Women Experienced Child Marriage in Northwest Ethiopia: A Finding from Dabat Health and Demographic Surveillance System. *Kindie Fentahun Muchie.*

Background: Child marriage is one of a public health concerns that violates international human right laws. It erodes the health and well-being of girls and the overall welfare of communities. There was a limited evidence on child marriage in northwest Ethiopia. Therefore, this study was aimed at assessing prevalence and determinants of child marriage in Dabat Health and Demographic Surveillance System (HDSS) site, northwest Ethiopia.

Methods: A cross sectional study was carried out in Dabat HDSS site in 2014. A total 2281 women in between 20 and 24 years old were included in the analysis. Variables significant at p-value of <0.25 in bi-variable analysis were subsequently included in multivariable binary logistic regression analysis. Finally, odds ratio with its respective 95% confidence interval were reported.

Results: The prevalence of child marriage was 54.7% (95% CI: 52.6 – 56.8). The median age at marriage was 17 (IQR: 13, 18). The likelihood of child marriage was reduced by 71% (AOR=0.29 95%CI: 0.22, 0.38) for those with primary educational level, 95% (AOR=0.05, 95% CI: 0.04, 0.07) for those in secondary/ above educational. Those in the medium wealth quantile were 44% (AOR=1.44, 95%CI: 1.11, 1.85) more likely to experience childhood marriage as compared to those in the lower household wealth quantile.

Conclusion: In this study, prevalence of child marriage is high. Lowest educational levels and medium wealth quantiles are predictors of child marriage. Hence, legal campaigns are recommended to allow full community participation against child marriage by intensifying movement against dropout from education, and by sharing knowledge about child marriage and its effects broadly.

Immune Protection of Hepatitis B Vaccine among Children Living in Gondar Town, Northwest Ethiopia.

Getnet Ayalew Gudeta, Anteneh Amsalu Gremaw, Abate Assefa Bashaw, Adane Mihret, Abraham Aseffa, Rawleigh Howe, Mekuanint Geta, Ebba Abate Waktola.

Background: Hepatitis B virus infection is a worldwide health problem and highly endemic in developing countries including Ethiopia. Hepatitis B vaccine is included in the routine Expanded Program on Immunization since 2007 in Ethiopia.

Objective: The aim of this study was to assess the sero-protection level of hepatitis B vaccination among children who have received the vaccine.

Methods: A cross-sectional study was conducted among children attending Kindergarten and first cycle elementary school in Gondar town. A pre-tested structured questionnaire was used to collect the socio-demographic data. Blood sample was collected and serum separated for anti-HBs, anti-HBc and HBsAg. The data was analyzed using SPSS statistical software version 20. Binary logistic regression analysis was done. P-value less than 0.05 was considered as statistically significant.

Result: Out of 431 children screened, 27 were excluded from analysis because they were positive for anti-HBc (27/431, 6.3%) and/or for HBsAg (18/431 or 4.2%). Out of 404 children, 130 (32.2%) had anti-HBs titers >10 mIU/ml (seroprotected) while 274 (68.8%) had anti-HBs titers <10 mIU/ml (non-protected). Among 130 seroprotected cases, 99 (76.2%) were hypo-responders (antibody titer 10-100 mIU/ml) and 31 (23.8%) were good responders (antibody titer >100 mIU/ml). In multivariate analysis children at age 6 and 8 years old were 2.4 times (AOR: 2.436, 95% CI 1.049-5.654) (P=0.038) and 3.3 times (AOR: 3.397, 95% CI 1.306-8.837) (p=0.012) more responder as compared to children at age 9 years old respectively. Moreover, children whose mothers had no previous history of hepatitis were 2.0 times (AOR: 2.009, 95% CI 1.101-3.665) (P= 0.023) more responder as compared to their counterparts.

Conclusion: The hepatitis B seroprotection level among vaccinated children was surprisingly low. Age and children born from mothers with a history of hepatitis B infection are having association with serprotection. The preliminary findings obtained in this study call for a thorough assessment of the effectiveness of the current hepatitis B vaccination program in the study region.

Keywords: Hepatitis B Virus, Vaccine, EPI, Ethiopia.

Assessment of Milk-Borne Bacterial Hazards in Milk Produced for Commercial Purpose in Selected Sites of Tigray Region, Ethiopia.

Gebretsadik Berhe Gebremedhin.

Background: Foodborne diseases are an important cause of morbidity and mortality worldwide. Despite being a nutritional-balanced foodstuff, milk is well known as a medium that favours growth of several microorganisms. Up to 90% of all dairy related diseases are due to pathogenic bacteria found in milk. In Tigray region where milk pasteurization is negligible practice, the burden of milk-borne bacterial diseases is expected to be high. However, data that examine the burden of the problem and factors associated with its occurrence is scanty.

Objectives: The objective of this study was to assess the prevalence of milk-borne bacterial pathogens, isolate the common pathogenic bacteria and assess the factors associated with presence of pathogenic bacteria in milk chain values in selected sites of Tigray region.

Method: A cross-sectional study design was used. The study population was all dairy farmers, milk vendors/shops, cafeterias and restaurants owners' who sell milk in different forms in the selected seven Kebeles in Mekelle, Wukro and Adigrat cities during the study period. Three hundred fifteen respondents were interviewed using structured and pre-tested questionnaire and 315 milk samples were obtained for testing. Cluster sampling strategy was used for sampling. Laboratory analyses were carried out in the Bacteriology Laboratory of the College of Veterinary Medicine, Mekelle University. First, enumeration of microorganisms was done using colony counting methods to establish the microbial load in milk and then detection of microorganisms was done using enrichment methods and performing various biochemical tests with pure cultures obtained from presumptive colonies by following standard procedure. The data were entered into Epidata software by an independent data clerk, exported to SPSS version 20 for windows for analysis. Descriptive statistics were depicted using simple frequencies, percentages, measures of central tendency (mean, median) as appropriate. Bivariate and multivariable logistic regressions were used to control the possible confounding effect of selected variables and to determine the independent predictors' of bacterial contamination of milk.

Results: From the 315 milk samples examined in the laboratory, the prevalence of bacterial milk contamination was found to be 50%. *Staphylococcus aureus*, *Escherchia coli*, *Klebsella pneumonia*, *Klebsella oxytoca* and *Citrobacter freundii* were the main bacterial species isolated and identified from the milk samples. Among the variables examined using bivariate logistic regression for association and independence, the type of business was statistically associated with high burden of bacterial pathogen. Milk vendors, cafeterias and restaurants were nearly 3 times at higher risk (AOR=2.72, 95% CI= 1.60-4.61) of exposing to bacterial pathogen when we compare them with dairy farmers.

Conclusion and Recommendation: The high prevalence of bacterial pathogens in milk needs to be addressed by rigorous health education, practicing good farm hygiene practices and use of technologies that destroy pathogenic bacteria in milk.

Keywords: bacteria, milk-borne, hazards, milk-chain-value, Tigray

Facility-Based Initiation of Kangaroo Care: Gaps Uncovered and New Knowledge Intuited; a Reflexive Ground Theory Approach, Central Ethiopia. *Sisay Gere Beyene, Yemane Berhane, Alemayehu Worku.*

Introduction: Kangaroo care (KC) is among the high impact, evidence-based, child survival interventions to reduce death of low birth weight (LBW) and/or premature babies. Almost two decades were elapsed as of its entry in to Ethiopia. But still, the prevalence of facility-based initiation (FBI) of KC has been remain low. This study therefore aims to uncover barriers to facility-based initiation of KC in Ethiopia.

Method: A nested-qualitative study, designed in reflexive ground theory (GT), was applied on five facilities found in Dembel-Chilalo Demographic Surveillance and Research Site of Arsi University and regional bureau. Informants from these six facilities were selected purposely. Data had been collected from them through interview, reflection and participatory observations. The data were gathered from 3rd of January to July 2017 without any harm on participants (approved project protocol No. A/CHS/RC/15/16). We used reflexive GT to analyze data.

Result: Does skin-to-skin-contact (SSC) sound like treatment; lack of dedication; ill-infrastructure, linkage and regulatory mechanisms were the prominent findings. Intuiting SSC in line with principles of medication administration is an important contribution of this study.

Conclusion and recommendation: Our data ruled out the possibility that barriers to FBI of KC may resulted either from the different or a combination of hemispheres that may influence its delivery Viz., knowledge, value and system/service support. Our findings can be applied to meet the 2019/2020 Ethiopian newborn and child survival strategy, and middle and low income countries as well. To our knowledge, if one thing could be changed to enhance FBI of KC, its delivery should primarily be farmed in line with principles of drug administration focusing on SSC as a treatment. However, results are preliminary and geographically limited that further studies should be required.

Keywords: Facility-based initiation, Kangaroo care, Barriers, Central Ethiopia.

Predictors of Survival and Length of Hospital Stay among Neonates Admitted to Tertiary Neonatal Care Unit, South Ethiopia, 2017: a Cohort Study. *Abdirehim Bedru Shihure, Abdirehim Bedru Shihure.*

Background: It is tragic that millions of newborn die every year specially when their deaths are so easily preventable. In Ethiopia, there is an increasing higher utilization rate of health services for antenatal care and delivery services but the outcome of such services on perinatal morbidity and mortality is not well measured. The aim of this study was to assess the predictors of survival and length of hospital stay among neonates admitted to Dilla University referral hospital neonatal intensive care unit.

Methods: A retrospective hospital-based cohort study was conducted in Dilla university referral hospital. The sample size was calculated using two sample proportion formula by using Epi-Info version 3.3 for windows and was 666. Survival analysis was used to measure the association of neonate's characteristics with time from admission to death. Actuarial life table was used to estimate survival after admission, and a log rank test was also used to compare survival curves. A survival analysis for the whole group using stepwise Cox proportional hazard model was used to identify independent predictors of survival.

Result: Among the cohort of 626, 51.1% (320) of them were male, 67.9 % (425) of them were aged less than 24 hours during admission, 74.9 % (469) of them were term and above, and 68.5 % (429) of them had weight of greater or equal to 2,500gm. The overall mortality rate was 23.8 %. Of them, 77(51.7%) were died on the interval between 2 to 4 days (HR=0.07) 46(30.8%) were died on the interval between 4 to six day. The average length of stay was 7 days (SD=4.58). The independent significant predictors of not surviving among neonates admitted to Neonatal Intensive Care Unit remain perinatal asphyxia (AHR=3.91(95%CI= (2.12, 6.34)), preterm with complication (AHR=2.32(95%CI= (2.08, 6.81)), low(AHR=2.41(95%CI=(1.91,3.97)) and very low birth weight (AHR=2.75(95%CI=(2.35, 4.52)), and persistent hypothermia (AHR=2.06(95%CI= (1.65, 4.56)).

Conclusion: The first two significant predictors of lesser survival among neonates admitted to the tertiary care teaching hospital are perinatal asphyxia and preterm birth with complications while the first commonly diagnosed neonatal problems is neonatal sepsis/meningitis. Providing comprehensive neonatal intensive care with 1:1 nursing care with due emphasis to the peak time of complication of perinatal asphyxia and preterm is crucial.

Vaccination Coverage and Associated Factors among Children Aged 12-23 Months in DebreMarkos Town, Amhara Regional State, Ethiopia.

Tenaw Gualu, Abebe Dillie.

Introduction: Vaccination is the administration of a vaccine or a biological substance intended to stimulate a recipient's immune system to produce antibodies or undergo other changes that provide future protection against specific infectious diseases. EPI was launched with the aim of reducing mortality and morbidity of children and mothers from vaccine preventable diseases. However, still system-wide barriers related are linked to incomplete or unvaccination of children. So determining the coverage and related factors of childhood immunization had paramount importance

Objective: To determine vaccination coverage and associated factors among children aged 12-23 months in Debre Markos town, Amhara Regional State, Ethiopia, 2016.

Methods: Community based cross sectional study was employed among 288 mother/care taker with child (12-23 months) pairs. Study populations were selected using systematic random sampling technique. Structured interviewer administered questionnaires adapted from previous studies were used to collect data. The data was cleaned, coded and entered in Epi data version 3.1 and transferred to SPSS version 20.0 for analysis. Frequency and percentage were used to summarize the socio-demographic characteristics. And variables with P value of less than 0.05 in multivariate analysis was considered as statistically significant at 95% CI.

Result: The mean age of the participants was 30.01. About 264 (91.7%) of children were completely vaccinated, 19(6.6%) were partially vaccinated and 5(1.7%) weren't not vaccinated at all and the overall dropout rate was (5%). Male birth 3.24(1.16-9.04), wanted pregnancy 2.89(1.17-7.17), having at least two ANC follow up during pregnancy 4.04(1.35-12.06) and short distance from vaccination site 3.38(1.29-8.86) were found positively associated with complete immunization.

Conclusion and recommendation: There was relatively high immunization coverage in the study. About 264(91.7%) were completely vaccinated. Childs sex, ANC follow up during pregnancy, type of pregnancy and distance from health institution were factors associated with complete vaccination of children. Preventing unwanted pregnancy and promoting ANC and post natal follow should be strengthened. Vaccination sites should also be further expanded

Keywords: Coverage, Immunization, Factors, Debre Markos, Amhara, Ethiopia.

Abs. 74

Time to Cessation of Breastfeeding among Mothers Having Index Child Aged 2-3 Years in DebreMarkos Town, Northwest, Ethiopia. *Melkamu Tamir Hunegnaw.*

Background: Breastfeeding of children until two years is one of essential action to child survival and recommended by World Health Organization (WHO). However in Ethiopia, the duration of breastfeeding until 2 years age is not a well documented.

Objectives: The aim of this study was to assess the time to cessation of breastfeeding (CBF) among mothers having index child aged 2-3 years in Debre Markos town, northwest, Ethiopia.

Methods: A retrospective follow up study was conducted at Debre Markos town from March 1, 2013 to March 30, 2015. A total of 500 mothers having index child aged 2-3 years were selected randomly. A structured and pre tested questionnaire was used to collect data. The Cox-Regression model was employed to identify the predictors of the time to CBF.

Results: The overall incidence density of cessation was 13.70 mothers per 1000 person months before 2 years child age. About 31.5% of mothers were ceased breastfeeding before 2 years. Those HIV positive status mothers had 3.4 fold hazard of early ceased breastfed compared to their counterparts (AHR = 3.41 95% CI 1.96, 5.94), government employee mothers increased the risk of CBF by 2.8 times compared to house wife mothers (AHR=2.8 95%CI 1.80, 4.40) and educated mothers reduced the risk by 55% compared with not educated and informal educate mothers (AHR=0.45 95%CI 0.24, 0.58). Mothers who had more than three children, monthly family income >650 ETB, and gave birth at hospital were the other significant predictors of the time to CBF (P- < 0.05).

Conclusions and recommendations: In this study the rate of time to cessation of breastfeeding among mothers was lower than compared with most study in the world. HIV positive status, government employee, educational status, mothers having greater than three children, higher family monthly income and gave birth at hospital were significantly associated to the time to cessation of breastfeeding. Even if the rate of breastfeeding duration is high, there is no reach the WHO standards. So, appropriate interventions should be exercised to achieve the WHO standards on breastfeeding duration.

Keywords: Index child, Cessation of breastfeeding, Debre Markos town

Baseline Characteristics: Seasonality Study of Malnutrition among Children Aged 6-59 Months, Boricha, Sidama Zone, Ethiopia. *Mehretu Belayneh Dinage.*

Background: Malnutrition varies from season to season due to agricultural production and rainfall seasonality. However, seasonal variation in Ethiopia is not well documented even if wasting is 10% and stunting is 40%. Hence, this study will measure seasonal variation of malnutrition at community level. This will help implementers of nutritional intervention program to understand malnutrition vulnerability in different season.

Objective: The aim of these baseline characteristics is to measure malnutrition status and its predictors among children aged 6-59 months at community level, Boricha, Ethiopia

Methods: A cohort study design was employed starting from March, 2017. Accordingly, data was collected at the end of each seasonal month that is on “Bega” (March), “Belg” (June), “Kiremt” (September), and Tsedey (December). The study was done in Boricha Woreda in Sidama Zone. Nine kebeles were randomly selected and all *got* (smallest administrative unit) in each Kebele were included. Anthropometric measurements of children such as height, weight and age was measured.

Pretested and structured questionnaire was used to gather socio-demographic data, wealth quintile data, antenatal and postnatal care history, breastfeeding practice, household dietary diversity, children dietary diversity, children morbidity, immunization status, and food insecurity.

Data was double entered using EpiData version 3.1 and analysed using SPSS version 20. Anthropometric data was analysed by WHO Anthro software.

Summary of Results from first seasonal measurements

The total numbers of mother-child pair participants were 935. Among these, 69% (634 households) were severely food insecure and 16% (149 households) received food support in the past one month.

Prevalence of global acute malnutrition was 8% (73 households), moderate acute malnutrition was 6% (56) and severe acute malnutrition was 2% (17).

Prevalence of stunting was 38% (338 of 894 households), moderate stunting was 16% (141) and severe stunting was 22% (197).

Prevalence of underweight was 22% (198 of 891 households), moderate underweight was 13% (112) and severe underweight was 10% (86).

Children of age older than 24 month were 1.8 (95%CI 1.4-2.5) times more likely to be stunted. Mothers who receive food support while pregnant were 1.4 times more likely to have stunted children (OR=1.4, 95% CI 1.1-1.9). Children who had diarrhoea in the past fifteen days were 1.4

more likely to be stunted (OR=1.4, 95% CI 1.0-1.9). Children from households that treated water before drinking were 1.4 times more likely to be stunted (OR=1.4, 95% CI 1.1-1.9).

Conclusion and Recommendation: The prevalence rates for stunting, wasting and underweight are similar to other areas in Ethiopia. Our upcoming results may give some explanation about the seasonal variations in nutritional indices.

Source of Fund: Norwegian Programme for Capacity Development in Higher Education and Research for Development (NORHED) South Ethiopia Network Universities in Public Health (SENUPH).

Feeding Practices and Nutritional Status of Infants and Young Children in Rural Southwest Ethiopia: an Implication for Intervention.

Manuel Tesfay Gebremedhin, Alemayehu Argaw, Abebe Gebremariam, Lieven Huybregts, Rüdiger Von Kries, Berthold Koletzko, Tefera Belachew, Veit Grote.

Background: In Ethiopia, the burden of under-nutrition is among the highest in Sub-Saharan Africa and has persisted as a severe public health problem for decades. Identifying factors contributing to stunting is essential for developing intervention strategies. Thus, this study assessed the magnitude and determinants of stunting among young children in Southwest Ethiopia.

Methods: A cross-sectional survey was conducted. Information on socio-demographic, anthropometry, hemoglobin levels, child and maternal characteristics and food security status were collected from infants and young children and their mothers in southwest Ethiopia (Dedo and Seka districts) from January–February 2014. Weight and height were measured using a standard calibrated scale. Both the crude (COR) and adjusted odds ratios (AOR) are reported with their 95 % confidence intervals. Multiple imputations using chained equation was employed to impute missing variables.

Results: The mean age of the children was 9.2 (SD \pm 2.7) months. The prevalence of stunting, wasting and underweight was 17.8%, 10.8% and 13.8% respectively. Two thirds of children were reported to be fed less than four recommended food groups. Risk factors potentially amenable for intervention were identified such as mothers/ caregivers knowledge on child feeding, child dietary diversity, and Vitamin A supplementation. Mothers/ caregivers poor knowledge on child feeding was associated with a three-fold increased risk of stunting (adjusted OR= 2.58, 95% CI (1.32, 5.05)). Children who consumed less than recommended food groups were three times more likely to be stunted (adjusted OR= 2.98, 95% CI (1.32, 6.70)).

Conclusion: Integrated intervention focusing on diversifying diet, improving knowledge of mothers regarding child feeding, childcare and maternal health care aiming at improving nutritional status (micro-nutrient and macro-nutrient) of children is recommended.

Implication of the study: Based on the findings of our study, the interventional study registered in a clinical trial registry (ClinicalTrials.gov Identifier: NCT02249286), designed at child centered maternal nutritional counseling and improving food diversity (home gardening and poultry production) appears to tackle the key risk factors for stunting in this region of Ethiopia.

Assessment of Nutritional Status and Dietary Diversity among in-school Adolescent Girls of East wollega Zone, Ethiopia. *Rediet Takele. Regasa*

Background: Adolescent is defined by World Health Organization (WHO) as the period of life from 10 to 19 years of age, while “adolescence period” is a period of transition from childhood to adulthood. It is considered as a nutritionally critical period of life. Rapid growth and changes that occurs during adolescences demands both macro and micronutrients. The pre-pregnancy nutritional status of young girls is important as it impacts on the course and the outcome of their pregnancy. Hence, addressing the nutritional needs of adolescents could be an important step towards breaking the vicious cycle of intergenerational malnutrition. This study aims to assess adolescent nutritional status and dietary diversity among school going adolescent girls of *Wayu tuqa district Ethiopia*, 2016.

Methods: A school based cross-sectional study was conducted among 448 in-school adolescent girls selected from all government schools of Wayutuka district, Ethiopia from February to March, 2016. A pre-tested questionnaire was used to collect data on socio-demographic information. Weight and height were measured using standard procedures and converted to BMI for age z-score based on WHO Anthro-plus software Version 1.0.4. Data were analyzed using STATA version 12. Binary logistic regression with 95% CI was used to see the associations. A p-value <0.05 was considered statistically significant.

Result: The proportion of thinness and overweight girls based on the BMI for age z-score was 33% (95% CI: 27.7- 41.3%) and 3.6%, respectively. The mean (+s.d) of Dietary Diversity Score (DDS) was 3.3(+1.24). Over half (56%) of the adolescent had consumed 3 or less food groups (poor dietary diversity) within 24 hours prior to the survey. The major determinants identified for underweight were place of residence (AOR=3.6, 95% CI: 1.33, 13.08) older age (AOR=3.2, 95% CI: 1.72, 7.24) and family size (AOR=2.7, 95% CI: 1.3, 11.6).

Conclusion: One in three school going female adolescents were thin in this community and was associated with place of residence, older age and family size. To improve the prevailing adolescent nutritional problem, appropriate nutritional education and interventional strategies should be designed.

Keywords: Determinants, Female adolescent, Nutritional Status, Underweight, Rural Ethiopia

Hunger as a Major Coping Strategy for Food Deficit: The Case of a Dabat Health and Demographic Surveillance Site: Northwest Ethiopia.

Dino Tesfahun Tsegaye, Amare Tariku, Abebaw Gebeyehu Worku, Solomon Mekonnen Abebe, Mezgebu Yitayal, Tadesse Awoke, Kassahun Alemu, Gashaw Andargie Bikis.

Background: Food insecurity is a global problem affecting many people worldwide, including approximately 220 million people in sub-Saharan Africa. Ethiopia is among the countries severely affected by hunger. However, evidence on how populations within Ethiopia cope with hunger and food insecurity is limited. This study aimed to identify household coping mechanisms in response to food deficit at a Dabat Health and Demographic Surveillance System site.

Methods: This study used data from a re-census collected between October 2014 and December 2014. 15,159 household members in thirteen kebeles of the Dabat Health and Demographic surveillance system were included. The outcome variables of the study were food deficit and coping strategies. Using a standardized World Health Organization questionnaire, each household was asked about food deficit and respective coping mechanisms in the past four weeks. If food deficit was found, families were asked about coping mechanisms used. Binary logistic regression analysis was applied to identify socio-demographic determinants of hunger as a coping mechanism in response to food deficit.

Result: Of the 15,159 households surveyed, 6,671 (44.01 %) reported the presence of a food deficit in their household. Decreasing meal frequency and portions (going hungry) (3,733 (55.96%)), borrowing money and food (2,542 (38.11 %)), and receiving food and money aid (1779 (26.67 %)) were among the major coping strategies used by the households. Urban dwellers (AOR 2.07: 95% CI 1.74, 2.46) and not married persons (AOR 1.60: 95% CI 1.07, 2.39) were more likely to consume less when faced with a food deficit (using hunger as a coping strategy).

Conclusion: Households in the study area experienced a very high rate of food deficit. Decreasing meal frequency and portions was the primary coping mechanism used by the households. Due to the severe deficit of food in their household, many people chose to remain hungry in order to prolong the small amount of food in their house. This finding indicates a high risk for undernourishment which can exacerbate the burden of malnutrition and related diseases in the region.

Keywords: Food deficit; coping, hunger; food aid; borrowing; Ethiopia.

Dietary Practices and Associated Factors among Type 2 Diabetic Patients in DebreMarkos and FinotaSelam Hospitals, Amahara, Ethiopia. *Dibora Alemayehu, Nurilign Abebe.*

Background: Nutrition is a major lifestyle factor in health promotion and is important in the prevention and management of chronic non communicable diseases such as diabetes mellitus (DM). Dietary management which is considered to be one of the corner stone of diabetic care. In the area, there is lack of enough information on dietary practice among diabetic patents which under estimates its role in the management of diabetes.

Objective: To assess dietary practices and associated factors among Type 2 Diabetic patients in Debre Markos and Finota Selam Hospitals, Amahara, Ethiopia, 2017.

Methods: Institution-based cross sectional study was conducted in Debre Markos and Finota Selam hospital on 422 respondents. Data was collected using pre tested and semi-structured questionnaire. The collected data was entered using Epi data version 3.1 then was transferred in to SPSS version 20 for analysis. Logistic regression was performed to detect any association between dietary practice .Variables found significant ($p < 0.2$) in a bivariate analysis was used to build a multiple variable model and variables with p value less or equal to 0.05 was considered significant.

Result: A total of 422 type II DM patients participated in this study. The mean and standard deviation (+SD) of age was 44.72(+11) years. The proportion of poor dietary practice was 247 (58.3%). Factors associated with poor dietary practice were, hopeless ness (AOR=4.58, 95%CI: 1.28, 16.39), un availability of fruits and vegetables (AOR=9.508, 95% CI: 3.15, 28.68), think high cost of food, difficulty to choose foods [AOR=31.795, 95%CI: 12.86, 78.78]], were factors significantly associated with poor dietary practice.

Conclusion: The proportion of poor dietary practice was relatively high. Hopelessness of patients, unavailability of fruits and vegetables, cost of food and difficulty to choose food were factors significantly associated with poor dietary practice. Therefore, the Integration of diabetic based nutritional counseling and education with motivation and home gardening. Encouraging best ways of life with diabetes in better ways.

TB and HIV

Abs. 80

Incidence and Determinants of Tuberculosis Infection among Adult HIV Patients Attending HIV Care in Northeast Ethiopia: a Retrospective Cohort Study. *Melaku Kindie Yenit .*

Objective: This study assessed the incidence of tuberculosis and its predictors among adults living with HIV/AIDS in government health facilities of northeast Ethiopia.

Setting: A five year retrospective cohort study was conducted from May to June 2015 on 451 adult HIV/AIDS infected individuals who enrolled in the HIV Care Clinics of government health facilities of northeast Ethiopia.

Participants: A total of 451 HIV infected adults who newly enrolled in the adult HIV Care Clinic from July 1, 2010 with complete information were followed until May 2015.

Primary outcome measure: The primary outcome was the proportion of patients diagnosed with TB or TB incidence rate.

Results: A total of 451 charts with complete information were followed for 1377.41 Person-Years (PY) of observation. The overall incidence density of tuberculosis was 8.6 per 100 person-year observation. Previous TB disease [Adjusted Hazard Ratio (AHR) 3.65, 95% CI 1.97-6.73], being bedridden [AHR 5.45, 95% CI 1.16-25.49], being underweight [Body Mass Index (BMI) <18.5kg/m²) (AHR 2.53, 95 % CI 1.27-5.05)], taking isoniazid preventive therapy (IPT) (AHR 0.14, 95% CI 0.05-0.39), hemoglobin below 11 g/dL (AHR 2.31, 95% CI 1.35- 3.93), being in WHO clinical stage III and IV (AHR 2.84, 95% CI 1.11, 7.27), and (AHR 3.07, 95% CI 1.08, 8.75), respectively, were significant for the incidence of tuberculosis.

Conclusion: The incidence of TB among adults living with HIV/AIDS in the first three years of follow-up was higher compared with that of subsequent years. Previous TB disease, no IPT, low BMI and hemoglobin level, advanced WHO clinical stage and bedridden condition were the determinants of the incidence of tuberculosis. Therefore, addressing the significant predictors and improving TB/HIV collaborative activities should be strengthened in the study setting.

Opportunistic Infections among HIV/AIDS Patients Taking Antiretroviral Therapy at Tertiary Care Hospital in Wolaita Zone, Southern Ethiopia. *Mihiretu Alemayehu Arba.*

Introduction: Opportunistic infections, which mostly manifest at advanced stage of HIV/AIDS, are the leading causes of morbidity and mortality despite the existence of prevention and treatment modalities. People with advanced HIV infection are vulnerable to opportunistic infections and malignancies because of the opportunity offered by a weakened immune system. Since the types of opportunistic infections vary from region to region, for strategies to reduce morbidity and mortality, the identification of opportunistic infections, with their frequency and distribution plays a significant role.

Objective: This study aimed at determining the magnitude of opportunistic infections among HIV/AIDS patients taking antiretroviral therapy at Wolaita Sodo University Teaching and referral hospital.

Methodology: A facility based cross sectional was conducted using secondary data extracted from a data pool covering a period from September 1, 2012 to August 30, 2016 in Wolaita Sodo Teaching and Referral Hospital, among HIV/AIDS patients who were taking antiretroviral therapy within the five years preceding the survey. A total of 377 study subjects were selected through systematic sampling technique and a pre-tested checklist was used to collect data from clinical records of study subjects. The data was entered by EpiData 1.4.4.0 and analyzed using SPSS version 20.

Result: The overall magnitude of opportunistic infections was 45.3%. Only 6.9% of them had co-infections. The most prevalent opportunistic infection was oral candidiasis (17.7%), followed by herpes zoster (15.5%) and pulmonary tuberculosis (11.9%). The cumulative prevalence of all forms of tuberculosis, (19.4%), was identified as the leading opportunistic infection. Cryptococcal meningitis (2.8%), cryptosporidiosis (2.5%) and recurrent mycosis (1.4%) were the least commonly occurring opportunistic infections. AIDS defining illnesses such as CNS toxoplasmosis, Cryptococcal meningitis, pneumocystis carinii pneumonia (PCP) and cryptosporidiosis with diarrhea, which commonly manifest during the end stage of HIV/AIDS, cumulatively accounted for 14.6% of opportunistic infections.

Conclusion: A high prevalence of opportunistic infection was identified among HIV/AIDS patients taking antiretroviral therapy. This implies that the threatening burden of opportunistic infections could not be averted by sole provision of antiretroviral therapy. Therefore, in order to reduce the magnitude of the diseases, strategies beyond providing antiretroviral therapy are required. In addition, researchers and other stake holders have to conduct longitudinal studies in order to identify risk factors for respective opportunistic infections.

Condom Utilization and Associated Factors among Female Sex Workers in Gondar Town, Northwest Ethiopia 2014. *Masresha Molla Tamene*

Introduction: Sexual transmitted infections are the most important public health problem and widespread in the world. Especially the most at risk population groups were exercising unsafe sex, particularly female sex workers, in which the prevalence of HIV/ADIS is higher than the general population due to multiple sexual partner and inconsistent condom use.

Objective: To determine Condom Utilization and associated factors among female sex workers in Gondar town, northwest Ethiopia 2014.

Methods: Community-based quantitative cross-sectional study triangulated with qualitative method was conducted on 488 female sex workers for quantitative part and 10 female sex workers for qualitative data. Stratified sampling technique was undertaken in licensed and non-licensed establishment. Pre-tested and structured questionnaire were used to generate quantitative data through interview technique of data collection. Open ended and semi structured in-depth interview were prepared for qualitative data. The collected data were entered into Epi info version 3.5.3 and exported to SPSS version 20.0 software package for analysis. Binary and multivariate logistic regression analyses were done to determine the association between condom utilization and associated factors.

Result: This study revealed that 47.7 % of the respondent used condom with any type of client. Secondary or above education [AOR:3.7,95%CI(1.70,8.25)], HIV/AIDS and STI transmission and prevention method knowledge[AOR:1.9, 95CI%(1.04,3.33)], perceiving at risk of HIV/AIDS infection [AOR: 5.9, 95%CI (3.18, 10.51)], awareness of STI will increase HIV infection [AOR: 3.11, 95%CI (1.62,5.94)], participated in any HIV/ADIS prevention program [AOR: 13.3,95%CI (7.33, 24.10)], tested HIV/ADIS [AOR: 3.4 95%CI (1.51, 7.78)], lower number of clients in a month [AOR:2.48,95%CI (1.42,4.24)] and payment for one night [AOR:2.1,95%CI (1.57,3.72)] less than the mean were factors affecting condom utilization.

Conclusion and recommendation: This finding depicted female sex workers condom utilization was low and this puts them at high risk of HIV infection. Primary and secondary or above education, knowledge about HIV and STI prevention and transmission methods, Perceiving at risk of HIV infection, awareness of STI will increase HIV infection, participating in any HIV prevention program, testing of HIV, number of client and payment for one night sex were positively associated with condom utilization. Thus, target oriented behavioral change and communication strategies have to be developed and implemented in the government health sector, HIV/ADIS prevention and control office and other.(key word: HIV/ADIS,STI, Female sex worker, condom utilization, client, factors and Gondar).

Time to Sputum Culture Conversion and Its Determinants among Multi-Drug Resistance Tuberculosis Patients in Public Hospitals of Amhara Regional State: a Multi-Center Retrospective Follow-Up Study. *Temesgen Yihunie Akalu.*

Introduction: In Ethiopia, MDR-TB is one of major public health problems that need great emphasis. Time to sputum culture conversion is often used as an early predictive value for the final treatment outcome. Even though, guidelines for MDR TB prepared every time, medication provided freely and centers for MDR TB expanded, studies on time to culture conversion were very limited in Ethiopia. This study was aimed at determining time to sputum culture conversion and determinants among MDR TB patients in public Hospitals of Amhara Regional State.

Methods: Retrospective follow up study was conducted between September 2010 and December 2016. Three hundred ninety two MDR TB patients were included in the study. Parametric frailty models were fitted. Cox Snell residual was used for goodness of fit and Akakis information criteria (AIC) was used for model selection. Adjusted Hazard Ratio (AOR) with a 95% Confidence Interval (CI) was reported to show the strength of association.

Result: Out of the study participants, sputum culture changed for 340(86.7%) patient's during the follow up period. Median culture conversion time in this study was 65 (60-70 days). The cumulative proportions of failure to culture conversion were 89% at the end of one month, 56% at the end of two month, and 19% at the end of four month. Alcohol drinking (AHR=3.79, 95% CI=1.65-8.68), sputum smear grading +2 (AHR=0.39, 95%CI 0.19-0.79), smear grading +3 (AHR=0.30, CI=0.14-0.64), cavitations (AHR=0.36, 95%CI=0.19-0.68), and consolidation (AHR=0.29, CI=0.13-0.69) were determinants of time to sputum culture conversion.

Conclusion: In this study time to sputum culture was rapid as compared to WHO guidelines which recommend four months. Alcohol drinking, sputum smear grading, cavitations and consolidations were found to be determinants of time to sputum culture conversion. Therefore, it is recommended to provide special attention to Patients who had baseline radiological finding, high bacillary load and those who had history of alcohol intake at the baseline.

Keywords: Time, MDR TB, culture conversion, Parametric, Survival analysis, Frailty model, Amhara, Ethiopia.

Nearly One Fourth of Peoples Living with HIV Are Depressed in Metema Hospital, North West Ethiopia, 2017: Institutional Based Cross-Sectional Study. *Degefaye Zelalem Anlay.*

Background: Depression is one of the major mental health disorders and predicted a second disease burden in the globe by the year 2020, but its neglected mental disorders among HIV patients in Sub Sahara Africa. Depression in HIV patients lead to poor engagement of care ultimately, poor health outcomes. Prevalence and factors associated with depression among HIV patients is different across the area but have limited studies in rural area. This study was conducted to assess depression and associated factors among HIV/AIDS patients attending ART clinic at Metema hospital.

Methods: Institutional, based cross sectional study was conducted among 395 HIV/AIDS adults' patients attending ART clinic at Metema Hospital from April 1 to 30, 2017. Systematic random sampling technique was used to select the study participants. Data were collected by using standardized Patients Health Questionnaire (PHQ-9) tool to measure depression. The collected data were checked, coded and entered to EPI-INFO version 7 and exported to SPSS version 20 for further analysis. Descriptive statistics was applied and Binary logistic regression model was fitted to identify factors associated with depression among Adult HIV /AIDS patients. An adjusted odds ratio with 95% confidence interval was computed to determine the level of significance.

Result: From a total 395 respondents 102(25.8%) were depressed. Depression was significantly associated with stigma, hazardous drinker, symptomatic patients, poor and fair drug adherence and gossiped about with AOR=2.91((1.263, 3.8) AOR=4.039(1.392, 11.715) AOR=8.015(4.168, 15.410), AOR=8.563(2.807, 26.126) and AOR=5.919 (2.080.16.840) respectively.

Conclusion: The magnitude of depression among HIV infected individual was till high. It was positively associated with stigma, hazardous drinking, symptomatic patients, and fair or poor drug adherence and gossiped about. There is a need to strengthen a public health approaches to reduce the magnitude and impact of depression in people living with HIV

Keywords: Depression; HIV/AIDS; Prevalence; Metema.

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