Ethiopian Public Health Association (EPHA)

30th EPHA Annual Conference

25 – 27 February 2019

Adama

Impacts of Climate Change on Public Health:

Ethiopia's Challenge in the 21st Century

Abstract Book

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Abstract Book

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Message from the Executive Director

Ethiopian Public Health Association (EPHA) comprises over 7,700 ever-registered members of diverse public health disciplines and professional experiences. 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, research institutions both government and Non-government and the Academia.

EPHA conducts its 30[th]Annual Scientific Conference and General Assembly Meeting that will be held 25-27 February 2019 at Kereyu Hill Resort Hotel, Adama. The main theme of the 30th Annual Scientific Conference is: **"Impacts of Climate Change on Public Health: Ethiopia's Challenge in the 21st Century".**

This year, research topics covering a wide range of Public Health issues including Health Management, Policy and Economics, Behavioral Science and Communication, Health Information Systems, Maternal Health and Population Studies, Environmental, Occupational Health and Climate Change, Nutrition and Food Science, Biomedical Science, Neonatal, Infant, Child, Adolescent and Youth Health, Non-communicable Diseases, Mental Health and Substance Use, Existing, Emerging and Re-emerging Communicable Diseases, have been submitted, reviewed and made ready for presentation. A total of 170 scientific papers of which 80 oral and 90 poster have been selected through a series of review process. Moreover, moderated panel discussions will be held under three sub-themes: Climate Change and Public Health: Understanding the Nexus, One Health: The Thrust to Contain Climate Change and its Health Consequences and Climate Change and Public Health Emergencies: Ethiopia's Preparedness and Response.

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 of both panel and parallel sessions and speaker of the panel settings.

Last but not least, EPHA would like to extend its sincere appreciation to all who have made their contributions to make the 30[th]Anuual scientific conference and General Assembly Meeting a reality.

Alemayehu Mekonnen (MD, MPH, Associate professor of Public Health)
Executive Director, EPHA

Oral Presentations

Health Management, Policy and Economics

Abs. 1

Measuring Performance of Public Health Centers in Western Ethiopia: Two-Stage Data Envelopment Analysis Approach *Firew Tekle Bobo.*

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

Method: A two-stage Data Envelopment Analysis (DEA) approach was used. First, technical and scale efficiency of each health center was estimated. In the second stage, the estimated technical efficiency scores were regressed against institutional and environmental factors using a Tobit model.

Results: Among the 73 health centers, 72.6% were technically inefficient. The average variable return to scale (pure) efficiency of the health centers was 69.9%, while the average constant return to scale efficiency was 63.9%. In 2016, all inefficient health centers together would have needed to increase their outpatient visits by 239,743 (34.7%), contraceptive use by 25,106 (0.22%), immunization by 5,342 (34%), ANC4^{+} by 9,008(24.1%) and delivery care by 4,285(9%) to become efficient. Alternatively, the health centers could have reduced 118 (19.8%), nonclinical staff, 25 (2.8%) clinical staff and 385,060 (0.24%)-dollar expenditure on drugs and supplies as a group to become efficient. Tobit regression results revealed that catchment population and being type B health center are factors influencing efficiency.

Conclusions: The majority of the health centers were technically inefficient. The results also revealed that there is a significant wastage of health resources. We recommend for regional and federal health managers and policymakers to reconsider the allocation of health resources and include efficiency assessment results as part of performance measurement procedures.

Assessment on Implementation Status of Ethiopian Health Center Reform Guideline in Addis Ababa, Ethiopia *Yeneneh Getachew Haile, Frewoini Kidane Gebremedhin, Naod Wonderad Abera.*

Introduction: Ministry of health has started the implementation of health center reform guideline - a minimum standard which all health centers are required to function. Ethiopia health center reform implementation guideline (EHCRIG) implementation is regarded as one of the criteria for high performing primary health care unit. According to 2017 report on reform implementation status of public health center, their performance was found to be an average of 61% which is below the expected performance.

Objective: The aim of this study was to assess the implementation status of Ethiopian health center Reform, staff awareness and its associated factors in public health centers in Addis Ababa.

Methods: Institutional based cross-sectional study was conducted in Addis Ababa in 4 selected sub-cites of 31 public health centers from May 2018 to July 2018. Health center reform guideline implementation data was collected using standardized checklist. A total of 664 participants were randomly selected from these 31 health centers to assess their awareness and its associated factors. Thirteen Key informant interviews were conducted to identify major gaps of the reform implementation. Bivariate and multivariate logistic regression analyses were executed to determine the presence and strength of association. The qualitative data was analysed by thematic approach using open code software.

Result: The average EHCRIG implementation status of the facilities was 73.68%; it ranges from 48% to 97%. The mean awareness score of EHCRIG of staffs was 57%. Profession of staffs [AOR=4.497; 95%CI (2.300-8.793)]; position [AOR=1.775; 95%CI (1.206-2.612)], total work experience of staffs [AOR =0.505; 95%CI (0.266-0.959)] and work experience in existing position [AOR= 0.460; 95%CI (0.325-0.650)] have significant association with awareness of EHCRIG. The following are identified as gaps in the reform guideline: standards are not contextualized; some of the standards are not applicable and achievable; it focuses on curative part of the service; some standards lack clarity and prone to subjectivity.

Conclusion and recommendation: Ethiopian health center reform implementation guideline score improves from the 2017 Addis Ababa city Administration health bureau assessment report but short of the minimum score expected from high performing primary health care unit—it should have been 80 %. Level of staff awareness about EHCRIG is low. Therefore it needs a concerted effort to improve staff awareness using different modalities. In addition, the guideline needs to rectify its gaps to make its implementation successful.

Keywords: Health center, health center reform, implementation guideline, EHCRIG.

Strategies to Facilitate Service User Participation in Health Policy-Making in Ethiopia: A Modified Delphi Study. *Kassu Ketema Gurmu.*

Background: The importance of service users' participation in health policy-making has been recognized in the literature. Their participation is necessary if care experiences and health outcomes are to be improved and is called for in laws and strategic and policy documents in Ethiopia. Nevertheless, there is as yet limited service user participation in health policy-making in Ethiopia.

Objective: The primary objective of this study was to survey a national panel of policy-makers, program managers, healthcare providers, researchers and service users to elicit their views about strategies to facilitate participation of service users in health policy-making in Ethiopia. The service users brought both their own experiences and the experiences of other service users they had interviewed after participating in a training on essentials of qualitative research methods. The secondary objective was to assess the feasibility of using e-Delphi in a context with limited Internet coverage and of combining paper-based and e-Delphi.

Methods: We used a combined paper-based and e-Delphi method to build consensus among study participants. Participants were asked to rate strategies to facilitate service users' participation for their relevance to health policy making in Ethiopia, their feasibility in the Ethiopian health and political systems, and their validity in the eyes of the stakeholders who implement them.

Results and conclusions: All participants agreed that the strategies identified in the literature were relevant, feasible, and valid in the Ethiopian context, albeit to varying degrees. The top ten strategies identified were consultative rather than collaborative strategies of participation. It was observed that service users could be trained to systematically elicit views of other service users whom they were representing, forming a "pyramid of participation". It was also possible to combine paper-based and e-Delphi, although the response rate was significantly higher with the paper-based component than with the e-Delphi. It is recommended that interventions be introduced to improve the level of participation of service users and that the strategies be further evaluated for their effectiveness and cost-effectiveness in Ethiopia and other low- and middle-income countries.

Secondment Practice in Ethiopian Health Sector: *Tegbar Yigzaw Sendekie.*

Background: Ethiopia met most of the health millennium development goals. The number of citizens dying from preventable and curable health problems is still high. This is due to unfavorable workforce development and management practices among other issues. Development partners have been providing technical assistance through seconding high caliber staff. However, there was no empirical evidence on Secondment practices in Ethiopia. A USAID funded HRH Project; therefore, conducted a national study on magnitude, distribution, management practices, contributions and barriers of Secondment in the health sector.

Methods: A cross sectional study using mixed methods approach was conducted in 2017. A census of 20 federal and regional health sector organizations was done. A sample of 472 seconded staff and 71 key informants were included. Self-administer questionnaires and key informant interview guides were used to collect data. The quantitative data were entered into EPIDATA, and cleaned and transferred into SPSS V.20 for analysis. Descriptive statistics were calculated. The qualitative data was thematically analysed using NVIVO v11.

Findings: About 9.3% of staff at the FMOH, RHBs and health agencies was seconded. Most (85.0%) of them were males. Average duration at the secondment post was 22 months with range of 3 months to 8 years. About 36% were public health experts. And about 32% were health professionals. Many (37%) did not have postgraduate level training. No organization had guideline for managing secondment. Needs assessment for hiring and performance monitoring for working were uncommon. Recruitment processes were reported as non-transparent. Majority of seconded staff were assigned to ad hoc tasks (tasks not listed in the job descriptions). In addition, limited incentives, inadequate logistics, and lack of supervision and feedback were barriers for secondment roles. Majority of seconded staff felt they were effective in achieving secondment goals. No health sector organization had registry for the seconded staff.

Conclusions and Recommendations: Significant number of experts at FMOH, RHBs and health agencies were seconded. They provided indispensable contributions to the health system. But, there existed weaknesses such as lack of managing policy and guideline. Seconded staff were hired without needs assessment. Their performance was not properly monitored. The health system should collaborate with partners for proper needs assessment, planning, recruiting and performance monitoring. Secondment guideline should be developed.

Quality Antenatal Care Services Delivery at Health Facilities of Ethiopia: Assessment of the Structure/Input of Care Setting: *Atkure Defar Deghebo, Theodros Getachew Zemedu, Girum Taye Zeleke, Tefera Taddele Tessema, Misrak Getenet Beyene, Tigist Shumet, Geremew Gonfa Ayana, Habtamu Teklie Wubie, Ambaye Tadesse Tadesse, Abebe Bekele Belayneh.*

Background: According to Donabedian, assessment of quality of care includes three dimensions: structure, process, and outcome. The present study focused on to identify and measure structural quality of Ethiopian Health facilities to provide Antenatal care (ANC) service.

Methods: Data from Ethiopian Service Availability and Readiness Assessment (SARA) survey were used. It was a cross-sectional facility-based assessment conducted to capture health facility service availability and readiness in Ethiopia. The assessment involved representative health facilities across the country and data were collected from October- December, 2017. The assessment has focused on availability of equipment, supplies, and medications, and health worker's training and availability of guideline in 764 selected facilities. Health facilities were selected from 9 regional and 2 city administrations. We ran multiple linear regression models to identify predictors of Antennal care service readiness at all surveyed facilities. Statistical tests were done at a level of significance of $p < 0.05$.

Result: Among the selected facilities**,** 80.5% reported availability of ANC services. However, the service availability for tetanus toxoid vaccination, folic acid and iron supplementation, and monitoring of hypertension disorder was low, 67.7%, 65.6%, 68.6%, and 75.1%, respectively. Among the identified ten tracer item that are necessary to provide quality ANC services, the overall mean tracer items availability was 50%. In multi-linear regression model, health centers, health posts, and clinics scored lower ANC readiness compared to hospitals. The overall readiness index score was lower for private health facilities (β = -0.047, 95%CI: (-0.100, -0.004). The ANC readiness score had no association with location of facilities (*p-value > 0.05*). Facilities in six regions except Dire Dawa (β= 0.067, 95% CI: (0.004, 0.129) had lower overall ANC readiness score than facilities in the Tigray region with ($p-value < 0.015$).

Conclusion: This analysis provides evidence of the gaps at national level for the provision of quality ANC. Key supplies for quality ANC service provision were found to be missing in many of the surveyed health facilities. Guaranteeing properly equipped and staffed facilities in addition to ensuring the presence of trained health workers and equipment availability is a mechanism for continuous effort to improve facility-based care.

Keywords: Antenatal care, Ethiopia, Quality, Structure, Input.

Behavioral Science and Health Information Systems

Tuberculosis Knowledge, Attitudes, and Practices among Refugees in Ethiopia: Do they Differ from Surrounding Communities? A Comparative Cross-Sectional Study: *Eyasu Ejeta Duken.*

Introduction: Ethiopia is the second largest refugees hosting country in Africa. Refugees are at increased risk of developing TB and of poor access to TB care and control services. However, there is limited evidence on whether the refugees' TB related behavior is different from the surrounding communities in the country. This study, therefore, aims at assessing the knowledge, attitudes and practices (KAP) of the refugees towards TB, and their health seeking behaviors in comparison to the surrounding communities in Gambella Regional State, Ethiopia**.**

Methods: A community based comparative cross-sectional study was conducted in three refugee camps and their SCs in Gambella Regional State, Ethiopia from November, 2016 to May, 2017. The study participants were TB presumptive cases (cough for >2 weeks) and patients on anti-TB treatment who were 15 years of age and older. A total of 651 study participants were identified though screening of entire refugee camps and the SCs. A pretested structured questionnaire was used to collect data. Communities KAP differences between the two study population towards TB and their health seeking behaviors were computed using SPSS version 20.0.

Result: Of the 292 refugees and 359 SCs study participants, 188(64.4%) of the refugees and 216(60.2%) the SCs heard about TB. The SCs had higher overall (53.2%) TB knowledge compared to the refugees (31.9%) (P < 0.001). However, the refugees had better awareness than the SCs that HIV is a potential risk for TB (62.5% vs. 52.7%, (P=0.016). Only 40.4% of refugees and 21.3% of the SCs know that refugees are high risk group for TB (P< 0.001). The study participants belong to Nuer (AOR=0.23, 95% CI: 0.14-0.39) and Anuak (AOR=0.46, 95% CI: 0.25-0.87) ethnic groups had low level of knowledge.

Majority ($\overline{x}$ score= 4.35) of the SCs study participants agree that TB is a public health problem in general, and a serious disease ($\overline{x}$ score= 4.14) in that specific community compared to the refugee (P <0.001). However, refugees more likely agree on feeling embarrassed ($\overline{x}$ score= 3.24 vs. 3.13 P <0.001), hiding from other people ($\overline{x}$ score= 3.16 vs. 3.02, P <0.001), and having higher stigma if they had TB ($\overline{x}$ score=3.25 vs. 3.24, P= 0.016) compared to the SCs, respectively. Moreover, appropriate health seeking behaviors were significantly higher among respondents who had information on TB transmissibility (AOR= 2.10, 95% CI: 1.33-3.32). But refugees and Nuer ethnic groups (AOR=0.52, 95%CI: 0.35-0.79) had significantly less odds of appropriate health seeking behaviors.

Conclusion: This study revealed low TB knowledge, poor health seeking behaviors, higher stigma, and negative attitude toward TB among refugees compared to the SCs. The national TB control program and other organizations working in refugees should design health communication strategies for refugee communities to address the gap and bring behavioral changes so as to ultimately improve TB control endeavors.

 Keywords: Tuberculosis, KAP, Refugee, Surrounding Community, Ethiopia

The Role of Marriage Brokers on Adolescent Girls' Early Marriage: A Qualitative Evidence – the Case of West Harargae Ethiopia: *Anene Tesfa*

Background: Adolescent girls below the age of 18, pressured by various factors, are the most susceptible beings for early marriage and its consequences. Marriages at this age are either forced or by own interest but influenced by one or many factors. This paper will illustrate the findings of a baseline and mid-term qualitative studies on the Context and Social norms of girls' marriage, education and nutrition in West Harargae, Oromia, Ethiopia.

Methods: Qualitative research methods were conducted for a formative baseline (March to August 2016) and midterm (May 2018 to August 2018) studies. Vignettes were used as a study tool for focus group discussions and separate interview tools were prepared for in-depth and key informant interviews. Focus group participants (n=42 groups) included Unmarried and married adolescent girls, unmarried adolescent boys, parents of adolescent girls. Individual interview participants (n= 52) included married and unmarried adolescent girls, mother in laws and husbands of adolescent girls and finally marriage brokers themselves. Key informant interviews(N=74) included education, health, agriculture, women and child affairs and administration office focal persons, school teachers and directors, women association members and health extension workers.

Results: Adolescent girls below the legal age of marriage are forced to accept marriage proposals convinced by intermediaries**.** Marriage brokers can be peers, relatives, elders or any skillful people in convincing and persuading girls. Marriage brokerage is commercialized and girls are going through the burdens of early marriage and early child bearing.

Conclusion and recommendations: As findings demonstrate marriage brokerage has become a serious problem in West Harargae. Marriage brokers play an inevitable role in arranging potential matches for adolescent girls. Policy makers on ending child marriage and related areas should divert their focus to marriage brokerage and marriage brokers to eliminate the underlying causes.

Keywords: Marriage brokerage, matchmaker, marriage brokers, female reference groups, male reference groups

Impact of Health Information Dissemination and Print Media to Enhance Cervical Cancer Screening in Addis Ababa: Cluster Randomized Controlled trial. *Berhan Woldehanna*

Introduction: According to Globocan, in Ethiopia there were 7,095 newly diagnosed cancer cases and 3,235 deaths occurred in 2012 alone. Studies in Ethiopia indicate low prevalence of cervical cancer screening practice. In Black Lion Hospital only 3% of cervical cancer patients were ever screened for cervical cancer before diagnosis.

The aim of this study is to determine the joint effect of one to one health education and educational brochure on the practice of cervical cancer screening among women who visit selected health centers of Addis Ababa.

Methods: This study was conducted in eight selected health centers which provide VIA screening service in Addis Ababa. A cluster randomized controlled trial study was conducted from September, 2017 to December, 2017. Eight health centers were randomized to intervention and control groups with a 1:1 ratio. Two thousand four hundred women in the age range of 30-49 years who visited the selected health centers for immunization, family planning, under 5 clinic services were included in the study. Convince sampling method was employed to select study participants. The intervention was health education framed in health belief model involving a one to one brief heath talk by the health provider followed by issuing educational brochure. Baseline data was collected from mothers who came seeking care both in the intervention and control facilities and a follow up measurement was done after two months. Data analysis was done using STATA version 14.

Result: A total of 2,137 women participated in the study. The median age of participants among the intervention and control group was 32 and 34, respectively. In the study period, 211 (9.9%) women were screened for cervical cancer and majority of these women were in the intervention health centers. Getting health education assisted with educational brochure is significantly associated (X^2, 41.3, P-value 0.000) with the uptake for cervical cancer screening.

Discussion and Conclusion: This study revealed that significant number of women who received health education and educational brochure were screened for cervical cancer using VIA. This finding is similar with study done in Zimbabwe, which showed that educational interventional program has a positive effect on the practice of cervical cancer screening (Sylvia C et.al., 2011). We can conclude that the existing low uptake for cervical cancer screening can be improved by providing focused health education on the benefits of cervical cancer screening and risks of delay.

From women in the intervention group, 75% stated that being busy with other things was the reason for not being screened for cervical cancer. So, repeated and continuous educational messages may result a better practice of cervical cancer screening.

Implementation and Usability of the CommCare Mobile Application at Primary Health Care Level of Ethiopia: Process Evaluation. *Zeleke Yimechew Nigussie, Gizachew Tadele Tiruneh.*

Introduction: In Ethiopia, though institutional delivery has increased three-fold during 2011 and 2016, the coverage of postpartum care remained low. The Ethiopian DHS shows high fall out rates across the continuum of maternal and newborn care¾while 62% of pregnant women received antenatal care (ANC) and 28% delivered assisted by skilled person, only 17% received postnatal care (PNC) within 48 hours.

Methods: We have developed and implemented innovative CommCare based mobile application primarily to improve PNC at four districts of Ethiopia. Over the past 12 months, HEWs, midwifes and HEWs supervisor were trained, application developed and tested to register pregnant women to provide continuum of care. The system automatically flags, sends and receive notification, date of appointments and referral feedbacks about the clients.

Findings: Users were trained on the app and able to demonstrate how to log in, connect mobile data and sync the device. Users described CommCare as a very useful tool that helped them to improve linkage among facilities, exchange information timely, deliver quality service, and trace defaulters.

Most users used the app for providing and recording ANC, delivery and PNC services, sending referrals and receiving notifications. However, there were substantial late clients in users' app.

Network interruption, fear of loss or damage of device, inadequate mobile device to use across multiple services delivery points, and poor support were some of the challenges they experienced.

Interpretation: The app is found to be user-friendly and it helped users to provide timely care. Users need continuous support and motivation to improve performance. Moreover, availing adequate devices including mobile and solar charger are critical.

Conclusion and Recommendation: Users have positive feeling for the mobile application and they recommended to be scale up for to improve service delivery and on time information sharing. Strengthening support and follow up system integration with the routine monitoring system of the health system and regular performance review and feedback systems and infrastructural set ups like power source and internet connection reported to be address prior to scale the application.

Implementing Data to Action Strategies: EPHI's Experience in Creating National Health Research Data Repository and Integration Systems: *Dr. Alemnesh Hailemariam, Dr. Solomon Ali, Dr. Asnake Worku, Dr. Awoke M. Temesgen.*

Background: The 2016 information revolution agenda of the Ethiopian Health Sector transformation plan calls for a fundamental shift on the way health information is collected and used for decision. Responding to this call the Ethiopian Public Health Institute (EPHI) established a National Data Management Center for health (NDMC) in July 2017, to create a national repository system for health and health related data, to facilitate ethical data sharing, data integration, rigorous analysis and generating evidence for policy and action.

Objective: To share experiences, challenges and lessons learned in establishing NDMC.

Activities: NDMC was launched with defined mission and goals under the leadership of EPHI and Federal Ministry of Health (FMoH). NDMC is a flagship initiative focusing on capacity building, creating a system for data mapping, archiving, banking and sharing; estimating national and sub-national disease burden, evaluating disease control priorities and monitoring health sector and sustainable development goals progress. NDMC did comprehensive mapping and inventory of data generated within EPHI. According to the findings, EPHI lack central system to archive, access and lack a coordinated share data and the data management practice. Most research data were stored in personal computers. Majority of the researchers at EPHI assumed they were sole owners of data's and were skeptical to submit data to central repository. Ignorance of institutional and public ownership of data appeared pervasive. NDMC has conducted consultative meetings with senior researchers from EPHI, Universities and other stakeholder to create awareness about the center and to facilitate archiving of research and surveillance data to central repository. Moreover, NDMC has been developing guidelines and frameworks for data sharing, data security, data organization and analysis and authorship contribution considering national and international ethical and scientific standards. Currently, the center is working in collaboration with the Institute for Health Metrics and Evaluation (IHME) to support evidence informed health decision at national and sub-national levels on burden of disease, injury and risk factors.

Lesson learned: It is possible to improve existing poor research data archiving and sharing culture and data for action practices. The experience and challenges within EPHI found to be important for scaling up national implementation. Collaborations with local and international partners have been key for capacity building of the center.

Conclusion: The establishment of NDMC was challenging but possible through the coordinated efforts from EPHI, FMoH, Universities and other stakeholders. NDMC took the heavy burden of realizing the vision to create national research data repository in line with the national information revolution road map. Creating such central repository and evidence synthesis system is crucial to profit from health research investments and to advance data for action initiatives. Human resource capacity with multi-disciplinary competency is critical for full scale implementation. NDMC intends to establish systems to reach out Universities, research institutes and consulting firms engaged in health research in Ethiopia for countrywide data mapping,

inventory and archiving of retrospective and prospective data. For prospective data archiving, NDMC is currently working with FMoH on draft Health Act and national data sharing policy mechanisms.

Maternal Health

Time to Recovery after Cesarean Section Delivery and Its Predictors in Butajira and Attat Hospitals: A Prospective Cohort Study. K*ifle Lentiro Lamade, Kifle Lentiro Lamade, Tadele Girum Banketa, Teklemichael Gebru Berhie.*

Background: Better maternal and perinatal outcomes can be ensured through essential obstetric and newborn care provided by skilled attendants during pregnancy and childbirth. In many resource-poor settings, access to skilled care and crucial interventions is limited. Cesarean delivery is a marker for the availability and use of obstetric services in this situation. A number of factors have been found to make it more likely that a cesarean section will be chosen, but the risks cannot yet be clearly defined. The aim of this assessment is to determine recovery situation after cesarean surgery and associated factors in governmental and Non-governmental hospitals of Gurage Zone.

Methods: A prospective cohort study was employed among a total of 400 women who gave birth by cesarean section in Attat and Butajira Hospitals with in the follow up period. Data was collected using standardized checklist and interview questioner by trained professionals through reviewing records and interviews. Data was cleaned and entered by Epi-info version 7 and analyzed by SPSS version 20. Cox-proportional hazard regression model was built and variables that had P-value < 0.25 in bivariate analysis considered candidates for multivariate analysis to determine independent predictors of timely recovery by using P-value < 0.05. Finally, the result was presented using descriptive statement, tables, and figure that is compared with similar studies elsewhere.

Results: Randomly selected 400 mothers were followed for 1285 person day of observation. During the follow up 386 women have timely recovery; hence, the overall incidence density rate (IDR) of timely recovery in the cohort was 0.3 per Person-day which is equal to 2.1 per person week patients. The rate of timely recovery (within 4 days) is 96.5%. Survival at the end of 1st, 2nd, 3rd, and 4th day was 87%, 82.5%, 46.5% and 3.5% respectively and the overall mean survival time was 3.27(95%CI: 3.15-3.39) days. Having a normal weight, term gestation, early initiation of mobilization, having regional anesthesia and transverse cesarean section associated with timely recovery after cesarean section.

Conclusion and Recommendation: The rate of timely recovery (within 4 days) is 96.5%. Usually it is expected that mothers will recover within 3-4 days after having cesarean section delivery and is in acceptable range. However, to improve timely recovery in the best position, hospital managers and professionals need to work in improving preoperative maternal status, intraoperative follow up and post-operative care.

Keywords: recovery after cesarean section, associated factors, Butajira and, Attat hospital.

Intimate Partner Violence and Maternal Depression during Pregnancy: A Community Based Cross-Sectional Study In Ethiopia.

Sewhareg Belay[1], Ayalew Astatkie[1], Maria Emmelin[2], Sven Gudmund Hinderaker[3]* [1]School of Public Health, College of Medicine and Health Sciences, Hawassa University, Hawassa, Ethiopia; [2]Department of Social Medicine and Global Health, Lund University, Lund, Sweden; [3]Centre for International Health, University of Bergen, Bergen, Norway.

Background: Intimate partner violence (IPV) is regarded as an important public health and human rights issue, and is characterized by physical, sexual or emotional abuse. Globally more than one in three women report having experienced physical or sexual violence by their intimate partner. We found no studies from Ethiopia using standard tools in assessing both IPV and depression among pregnant women.

Objectives: To measure the prevalence of physical, sexual, and emotional violence during pregnancy, measure the prevalence of antenatal depression and assess the association between IPV and depression and other determinants.

Methods: This is a community based cross-sectional study conducted as part of a prospective cohort study which enrolled 589 pregnant women with a gestational age of 25-34 weeks or 6-8 equivalent months reported by the mother based in two urban and three rural kebeles of Wondo-Genet district. Exposure to IPV was assessed using a standard structured questionnaire of the WHO multi-country study of violence against women and maternal depression, was measured by the Edinburgh Postnatal Depression Scale (EPDS) at the time of enrollment. Data was collected by five female nurses. Data was double entered and validated using Epi-data and analyzed using SPSS. Descriptive statistics was computed and multivariable logistic regression was carried out to estimate the risk and adjust for confounders, keeping in the model variables with associations $p<0.25$.

Results: A total of 589 women out of 606 were interviewed and enrolled, making a response rate of 97%. The mean age of the participants was 25 years, ranging from 16 to 45 years. The overall prevalence of IPV was 21% (95%CI, 18.1-24.7). The prevalence of emotional, physical and sexual violence was 14.6%, 9.2% and 9.5% respectively. After adjusting for potential confounders, risk of IPV remained among rural participants (AOR=2.09; 95%CI=1.06-4.09), parental exposure to IPV (AOR=14.00; 95%CI=6.43-30.48), pregnancy not desired (AOR=9.64; 95%CI=3.44-27.03), alcohol use by husband (AOR=17.08; 95%CI=3.83-76.19), depressed (AOR=4.71; 95%CI=1.37-16.18) and low social support (AOR=13.93; 95%CI=6.98-27.77). The prevalence of antenatal depressive symptom (with EPDS score above 13) was 6.8% (95% CI 6.2-11.3). Exposure to IPV (AOR=17.60; 95%CI=6.18-50.10) and alcohol use by husband (AOR=3.31; 95%CI=1.33-8.24) were predictors of depression.

Conclusion: In our study one in five pregnant women experienced domestic violence, confirming that pregnancy does not protect from IPV; and it was strongly associated with depression. Screening for both IPV and depression at antenatal visits with referral of identified survivors to relevant care and service is recommended. Future studies should focus on testing interventions to prevent and reduce IPV.

The Associations between Intimate Partner Violence and Maternal Health Care Service Utilization: A Systematic Review and Meta-Analysis. *Abdulbasit Musa Seid*

Background: Intimate partner violence exposes women to a wide range of health problems that can either directly or indirectly lead to maternal death. Although a number of studies have reported an association of intimate partner violence with inadequate utilization of antenatal care and skilled delivery care, other studies have not found this association. Therefore, we aimed to comprehensively review the evidence, and quantify the strength and direction of an association between intimate partner violence and utilizing adequate antenatal and skilled delivery care services.

Method: We systematically searched articles from MEDLINE, Embase, PsychINFO, CINAHL, and Maternity and Infant Care databases. Two independent reviewers screened the articles for eligibility. Quality and risk of biases of the articles were evaluated by using the Newcastle-Ottawa scale for observational studies. Pooled odds ratios and 95% confidence intervals were computed to estimate the association between intimate partner violence and antenatal care, and skilled delivery care. Random-effects models were used to allow for the significant heterogeneity that might possibly be found between studies. The degree of heterogeneity was expressed by using the I^2 statistic.

Results: The meta-analyses have shown that women who experience intimate partner violence are at an increased risk of not having adequate antenatal care and not utilizing skilled delivery care services. Women who experienced intimate partner violence were 31% (AOR= 0.69, 95%CI= 0.58, 0.82) less likely to have adequate antenatal care than those who did not experience intimate partner violence. Similarly, women who experienced intimate partner violence were 17% (AOR= 0.83, 95%CI= 0.72, 0.95) less likely to receive skilled delivery care compared with women who do not experience intimate partner violence.

Conclusion: The meta-analyses indicated that experiencing intimate partner violence is associated with receiving inadequate antenatal care and not receiving skilled delivery services. Both community-based and facility-based interventions that target reduction of IPV, and strictly implementing proven health facility-based counselling interventions could aid in improving utilization of maternal health care services.

Keywords: Systematic review, Meta-analysis, Intimate partner violence, maternal health care service use.

Gestational Syphilis in Ethiopia, Meta-Analysis and Systemic Review, *Bekele Tesfaye.*

Background: World Health Organization estimated that 1.86 million cases of syphilis occur globally among pregnant women each year and that a large proportion of them are untreated or inadequately treated. Up to one third of the women attending antenatal care (ANC) clinics are not tested for syphilis. If syphilis is left untreated during pregnancy, it can lead to fetal loss or stillbirth or, in a live born infant, neonatal death, prematurity, low birth weight or congenital syphilis. There are separate studies conducted in different regions of Ethiopia on Seroprevalence of Syphilis, but the figures vary across regions with no national representative data. Therefore, we aimed to summarize the effect of STI in pregnancy outcome in Ethiopia, using meta-analysis based on systematic review of published & unpublished articles.

Methods: We conducted a systematic review and meta-analysis of Seroprevalence of Syphilis among Pregnant Women from 5 published studies. To conduct this systematic review and meta-analysis from 11/01/2018 to 01/03/2018, major databases such as; Google Scholar, MEDLINE, EMBASE, Psych Info, Web of science, CINAHL, Soc Index, Academic Search Premier, Family and Society Studies Worldwide, Women's Studies International, Africa Wide Information and Google were systematically searched. A standardized data extraction format, and analysis was done using STATA version 11. A Statistical heterogeneity across the studies was evaluated by using Cochran's Q test and I^2 statistic. The pooled effect size was conducted in the form of prevalence. Moreover, Univariate meta regression, the Egger's weighted regression and Begg's rank correlation tests were used to assess potential publication biases.

Results: This meta-analysis included a total of 6,230 participants. The pooled seroprevalence of syphilis among pregnant women was 3.67% (95% CI (1.79%–7.23%). There is significant variation among regions and more common in urban areas.

Conclusion: This finding revealed that there was a high magnitude of syphilis among pregnant women in Ethiopia with higher rates in urban areas. The results of this study urge the need for universal screening of syphilis infections early in pregnancy and applying syndromic treatment approach to reduce vertical transmission.

Keywords: Meta-analysis, Systemic review, Seroprevalence, Syphilis, Ethiopia.

Respectful Maternity Care: A Qualitative Study on the Experience of Health Providers In Public Health Facilities of North Shoa Zone, Oromia Ethiopia. *Abrham Getachew [1], Nebiyou Wondwessen [1], Tsegaye Bedane [1], Delessa Wolde [1], Tesfalem Teshome Tessema[2], Fanna Adugna Debele[2], Andamlak Gizaw Alamdo[2] Ethio-Canada MNCH office in Ethiopia[1] St. Paul's Hospital Millennium Medical College, Department of Public Health, Addis Ababa Ethiopia[2]*

Background: Emerging evidence indicates that, women face humiliating and undignified conditions in health facilities in developing countries like Ethiopia. This negative aspect of maternity care can influence women's decision not to make use of health facilities. It is therefore crucial to examine the experiences of health providers on provision of respectful maternity care and to identify the forms of disrespect and abuse that exist, and better meet women's needs as part of broader efforts to provide better quality care. Furthermore why disrespects are committed by health care providers will be addressed as there are clear reports from clients that show the existence of disrespects.

Methods: A qualitative study employing a phenomenological research design was carried out from August to September 2017 in six woredas /districts of North Shoa zone, Oromia Ethiopia. A total of 20 key informant interviews with health providers working in Maternal, Neonatal and Child health (MNCH) service delivery points of selected public health facilities were conducted. The data were collected by using a semi structured key informant interview guide. All interviews were transcribed and translated verbatim into English. Data analysis was initiated alongside data collection using a thematic approach based on primarily identified themes and those emerged during the analysis.

Results: The health providers' experiences indicated the existence of different categories of disrespect and abuse to women in the study area. Non-consented care, physical abuse, non-confidential care, non-dignified care were the areas identified. Furthermore, painful procedures such as episiotomy were performed without anesthesia, women may also stay for long time without getting the service and they were restricted to have a companion of their choice in the birthing area. The discrimination of women because of personal attributes such as income level, being rural vs. urban, and HIV status were also revealed in the present study. However detention wasn't reported by any of the respondents.

Conclusions: To promote quality maternal health service, the government in partnership with other stakeholders, should address challenges faced by women in the health facilities. Providers should also be capacitated with the required knowledge, attitude and skill and further effort should be made to equip health facilities with the necessary material and human resource. Enforcing policies on respectful maternity care is also important.

Geographical Inequalities and Burden of Symptoms of Vaginal fistula in Ethiopia Using National Household Survey Data. *Kebede Deribe.*

Background: Vaginal fistula is a devastating maternal complication characterized by an abnormal opening between the vagina and the bladder or rectum, which results in continuous leakage of urine or stool. We aimed to comprehensively assess district-level geographical disparities, lifetime and point prevalence of symptoms of vaginal fistula using national household surveys based on self-report of symptoms.

Methods: We used data from 2005 and 2016 Ethiopia Demographic Health Surveys, which included self-reported signs of vaginal fistula for 14,070 and 15,683 women of childbearing age (15-49 years) respectively. We estimated the lifetime prevalence and point prevalence of vaginal fistula in all districts of Ethiopia using a binomial mixed model. We then fitted a binomial mixed model combining the site-level vaginal fistula prevalence with continuous environmental covariates to estimate prevalence at unsampled locations. Finally, we produced estimates of cases by district combining our mean predicted prevalence and a contemporary gridded map of estimated population density.

Results: In 2016 we estimated the number of women of reproductive age who had ever had vaginal fistula symptoms to be 72,533 (95% CI: 38,235–124,103) and the point prevalence (untreated cases) 31,961(95% CI: 11,596–70,309) in Ethiopia, with reduction from the 2005 estimates of 98,098 (95% CI: 49,819–170,737) life time fistula and 59,114 (95% CI 26,580–118,158) point estimates. Relatively high prevalence of vaginal fistula were predicted in some part of Amhara, Oromia, SNNP and Tigray regions. With regards to the prevalence of vaginal fistula symptoms indicators in districts in Ethiopia, lifetime prevalence of vaginal fistula symptoms ranged from 2.3 to 6.7 per 1000 women of reproductive age. District level point prevalence ranged from 0.6 to 3.9 per 1000 women of reproductive age. Looking at the number of cases of vaginal fistula in 2005 the number of districts with >200 cases of untreated virginal fistula was 54 districts in Ethiopia and this reduced to 6 districts in 2016.

Conclusion: We noted large geographical inequalities in symptoms of vaginal fistula, masked by national and regional averages. Novel evidence from our study can be used to understand and to identify granular disparities for local level tracking, planning, and implementation of vaginal fistula interventions.

Pastoralism and Antenatal Care Service Utilization in Afar, Ethiopia, 2015. A Community Based Cross-Sectional Study, *Nejimu Biza[1*] (BSc, MSC, PhD Candidate), Hussein Mohammed[2] (MPH), 1- College of Health Sciences, Samara University , Samara, Afar, Ethiopia 2- Afar Regional Health Bureau, Afar, Semera, Ethiopia.*

Background: Maternal health services are particularly inadequate and poorly equipped, being scarce, inaccessible, and inappropriate to the pastoralist way of life. Effective antenatal care (ANC) use has been shown to influence women's use of maternal health services, probably the most effective intervention in reducing maternal mortality in the developing world. Despite many studies done on ANC service utilization among agrarian women, the studies done on pastoralist women are almost negligible. Therefore; this study intended to assess utilization and associated factors towards ANC service use in pastoralist mothers of Afar region, Ethiopia.

Methods: A community cross-sectional study was carried out from 5th January to 5th February, 2015. The data was collected by interviews through a questionnaire. Statistical analyses were done to describe pertinent findings.

Result: A total of 788 women, 42.4% (334) made at least one antenatal care visit, while 19.5% (65) had adequately utilized antenatal care (i.e., made four or more antenatal care visits). Only 9.7% of women visited an antenatal care center during the first trimester (12 weeks). Educational status of the mother had a significant association with ANC service use. Mothers who attended college/university were five times more likely to utilize ANC service than those mothers who are illiterate. ANC utilization in peri-urban area was two times more than ANC utilization in rural areas with CI of (1.37, 3.59). Multivariate analyses, being pastoralist by way of life (AOR=2.23, 95% CI: 1.38, 3.60), possessing radio/TV (AOR=3.13, 95% CI: 2.20, 4.46), were positively associated with ANC service utilization.

Conclusion: In this study only 20% of the respondents were able to fulfill WHO recommendation of minimum four ANC visits strategy. Pastoralist lifestyles, access and socio-cultural barriers are identified to affect proper utilization of ANC services. Increasing service coverage and promotion of available services in the community, accessible health services, transportation and improving information, education and communication on ANC services must be intensified to reach women in pastoralist communities of the country. Rigorous efforts are needed to reach disadvantaged groups, so as to overcome health inequities between agrarian and disadvantaged pastoralist women.

Keywords: Pastoralism, Antenatal care utilization, Afar Region, Ethiopia.

Return of Fertility after Discontinuation of Contraception: A Systematic Review and Meta-Analysis, *Tadele Girum*

Introduction: Along with increasing availability and utilization of contraception, it is also important to confirm that the effects of contraception use on resumption of fertility after discontinuation However currently evidences on resumption of fertility after contraception use are inconclusive and practically fertility after termination of contraception remains a big concern for women who are using contraception. This fear poses a negative impact on utilization and continuation of contraception. Therefore, Estimating the rate of pregnancy resumption after contraceptive use from the available reports and identifying the associating factors are important for designing a strategy to overcome the problem.

Methods: The review was conducted through a systematic literature search of articles published between 1985 and 2017. Five bibliographic databases and libraries: PubMed/Medline, Global Health Database, Embase, the Cochrane Library, and African Index Medicus were used. After cleaning and sorting, analysis was performed using STATA version 11. The pooled rate of conception was estimated with a random-effects model. Heterogeneity was assessed by the I^2 and publication bias through funnel plot.

Results: twenty two studies that enrolled a total of 14884 women who discontinued contraception were retained for final analysis. The pooled rate of pregnancy was 83.1% (95% CI=78.2-88%) within the first 12 months of contraceptive discontinuation. It was not significantly different for hormonal methods and IUD users. Similarly the type of progesterone in specific contraception option and duration of oral-contraceptive use do not significantly influence the return of fertility following cessation of contraception. However the effect of parity in the resumption of pregnancy following cessation of contraception was inconclusive.

Conclusion and Recommendation: contraceptive use regardless of its duration and type does not have a negative effect on the ability of women to conceive following termination of use and it doesn't significantly delay fertility. Therefore, appropriate counseling is important to assure the women to use the methods as to their interest.

Keywords: Return of fertility, contraceptives, Intrauterine device, Implants, pills

Preeclampsia and Associated Factors among Mothers Who Gave Birth at Yirgalem General Hospital, Sidama Zone, Southern Ethiopia. *Desalegn Tsegaw Hibstu.*

Background: About 76,000 pregnant women and 500,000 neonates die each year worldwide due to preeclampsia and related hypertensive disorders. In Ethiopia preeclampsia is among the top five leading cause of maternal mortality which causes 11 % all maternal death and 16 % of direct maternal death. Studies on magnitude and associated factors of preeclampsia are limited in southern Ethiopia. The aim of this study was to assess magnitude of preeclampsia and associated factors among mothers who gave birth at Yirgalem General Hospital, Southern Ethiopia.

Methods: Institution based retrospective cross-sectional study was conducted among 361 mothers who gave birth at Yirgalem General Hospital from January 1, 2015 to December 30, 2017. Data was collected from December 1 to 30, 2017 by reviewing medical records of mothers using prepared check list. Logistic regression was performed using SPSS version 20.0 software to identify possible predictors of preeclampsia.

Result: The overall magnitude of preeclampsia was 9.6 % (95% CI; 6.5-12.7). Women who had previous history of preeclampsia [AOR = 3.85; (95 % CI: 1.19 – 12.49)], pre-existing chronic hypertension [AOR = 4.84; (95 % CI: 1.02 - 22.94)], pre-existing renal disease [AOR = 4.91; (95 % CI: 1.42 -16.95)], family history of hypertension [AOR = 7.90; (95 % CI: 2.59 -24.15)] and family history of preeclampsia [AOR = 6.45; (95 % CI: 1.50 -27.76)] were identified predictors of preeclampsia.

Conclusion: The magnitude of preeclampsia in the study area was relatively low compared with other studies in Ethiopia. Previous history of preeclampsia, pre-existing chronic hypertension and renal disease, family history of hypertension and preeclampsia were predictors of preeclampsia. Screening for preeclampsia, improve mothers' health seeking behavior, follow up of high risk mothers and providing laboratory tests for early diagnosis & initiation of treatments need to be given emphasis.

Keywords: Preeclampsia, Associated factors, Yirgalem

Disrespect and Abuse during Childbirth in Public Health Facilities of Western Ethiopia, *Firew Tekle Bobo*

Background: Healthcare coverage in Ethiopia has improved dramatically in recent decades. However, facility-based delivery remains persistently low, while maternal mortality remains high. This paper presented the prevalence and associated factors of disrespect and abuse during childbirth in public health facilities of western Oromia, Ethiopia.

Method: A facility-based cross-sectional study was conducted among 612 women from February 2017 to May 2017. Exit interview of the mothers was conducted upon discharge from the maternity ward. We measured disrespect and abuse during childbirth using seven dimensions. Multivariate logistic regression models were used to assess the association between the dependent variable and client and institutional factors.

Result: Three fourth (74.8%) women reported experiencing at least one form of disrespect and abuse. The proportion of disrespect and abuse categories experienced by the women were physical abuse (37.1%), non-dignified care (34.6%), non-consented care (54.1%), non-confidential care (40.4%), neglect (25.2%), detention (2.9%), and discrimination (13.2%). Experiences of disrespect and abuse were 1.6 times more likely to be reported by women delivering at hospitals than health centers (OR: 1.64, 95% CI: 1.01, 2.66). Women who gave birth to their first child than who have three and above (OR: 1.9, 95% CI: 1.14, 3.33), Women lacking companion throughout delivery than women who had a companion (OR: 9.94, 95% CI: 5.72, 17.28) were more likely to encounter disrespect and abuse. On the other hand, women with more than 1,368-birr (USD 57) monthly income were less likely to experience any type of disrespect and abuse (OR: 0.36, 95% CI: .21, .65).

Conclusion: Three in four women reported experiencing at least one form of disrespect and abuse during labor and delivery. This demonstrates a real disconnect between what the health system intends to achieve and calls for fundamental solutions in terms of both improving qualities of facility-based delivery and ensuring women's right to receive health care with dignity.

Keywords: Facility-based delivery, Disrespect and abuse, Maternal mortality, Quality of care, Western Oromia, Ethiopia

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Magnitude and Contributing Factors of Low Back Pain among Long Distance Truck Drivers at Modjo Dry Port, Ethiopia, 2018. *Tewodros Yosef (BSc, MPH), Department of Public Health, College of Medicine and Health Sciences, Mizan-Tepi University, Ethiopia Ayele Belachew (MD, MPH), School of Public Health, Addis Ababa University, Ethiopia. Yifoker Tefera (MSc, PHD fellow), School of Public Health, Addis Ababa University, Ethiopia*

Background: Low back pain is a common musculoskeletal disorder affecting about eighty percent of people at some point in their lives. Globally, 37% of low back pain was attributable to occupational risk factors and the magnitude was generally higher in those regions with lower overall health status. Truck driving is among jobs causing occupational LBP. Long distance truck drivers are more stressed when compared with other commercial drivers.

Objective: To assess the magnitude and contributing factors of low back pain among long distance truck drivers at Modjo dry port, Ethiopia, 2018.

Methods: A cross-sectional study was conducted among systematically selected 422 long distance truck drivers at Modjo dry port, Ethiopia from February to March, 2018. Data was collected through face to face individual interview using structured questionnaire adapted from standardized Nordic questionnaire for the analysis of musculoskeletal symptoms. The data was entered using epi-data version 4.2.0.0, cleaned and analyzed using SPSS version 20 statistical software for windows. Binary logistic regression was computed to determine association using crude and adjusted odds ratios at 95% confidence intervals. Independent variables found significant with p-value less than 0.05 at the bivariate level were included in the multivariable logistic regression model to control for potential confounding.

Results: The prevalence of LBP was found to be 65%. The study found monthly income above 5350 ETB [AOR = 3.07, 95% CI (1.76-5.33), P = 0.000], smoking cigarette [AOR = 2.28, 95% CI (1.25-4.17), P = 0.007], physical inactivity [AOR = 2.14, 95% CI (1.26-3.61), P = 0.005], irregular mealtime [AOR = 1.73, 95% CI (1.02-2.93), P = 0.042], chronic diseases other than LBP [AOR = 2.16, 95% CI (1.28-3.65), P = 0.004], frequent lifting or carrying heavy objects [AOR = 3.25, 95% CI (1.83-5.75), P = 0.000], perceived improper sitting posture while driving [AOR = 1.95, 95% CI (1.17-3.25), P = 0.011] and perceived job stress [AOR = 2.00, 95% CI (1.09-3.70), P = 0.026] were predictors of low back pain.

Conclusion: This finding shows the public health importance of low back pain among long distance truck drivers in Ethiopia. Individual factors largely accounted for the development of low back pain, hence orientation on these modifiable risk factors and regular follow up on safety procedures should be considered to mitigate the problem.

Keywords: low back pain, magnitude, contributing factors, long distance truck drivers, Modjo dry port.

Diarrheal Disease in Under-Five Children and Associated Factors among Farta District Rural Community, Amhara Regional State, North West Ethiopia: A Comparative Cross-Sectional Study. *Yilkal Tafere Gualie.*

Abstract Background: Diarrhea is the major cause of morbidity among under-five children in Ethiopia. To decrease the burden of diarrhea; the key initiative identified was the implementation of open defecation free program. Objective: To determine the prevalence of diarrhea and associated factors among children in open defecation free and non-open defecation free kebeles of Farta district, Ethiopia.

Methods: Community based comparative cross-sectional study was conducted. Data was collected from households living in open defecation free and non-open defecation free kebeles who had at least one under-five child using structured questionnaire. A total of 758 mothers with under-five children (378 in open defecation free and 380 in non-open defecation free kebeles) were interviewed using structured questionnaire. The households were selected by systematic sampling technique. Descriptive analyses and binary logistic regression model were applied to analyze the contribution of predictors of diarrheal diseases.

Results: Overall 227 (29.9%) of children had got diarrheal disease in the last two weeks before the survey. The prevalence of diarrhea among children varies between households in open defecation free and non-open defecation free kebeles (19.3% and 40.5%) respectively. Poor hand washing practice (AOR: 1.6; 95% CI: (1.12-2.03) and lack of hand washing facility (AOR: 11, 95%CI: (8.1-29.6), improper excreta disposal in the compound (AOR: 3.84; 95%CI: (2.15-5.65) and living in non-open defecation free kebele (AOR: 2.4; 95% CI: (1.72-3.23) were predictors of diarrheal disease.

Conclusions: The prevalence of diarrhea among children living in open defecation free kebeles is lower than in its counterpart in non-open defecation free kebeles. Lack of functional hand washing facility, poor hand washing practice after touching infant's faeces, living in non-open defecation free kebeles and improper excreta disposal were significant predictors of diarrhea. Therefore, to Sustain and further strengthen the achievements gained; community and government should accelerate their efforts to maintain the initial open defecation free practices. The risk of diarrhea could be reduced by enhancing latrine access, preparing hand washing facilities near the toilet, hand washing practice at critical time and making residential area open defecation free are important.

Keywords: Open defecation free, Diarrhea, Ethiopia.

Exploring Geographical Variations and Inequalities in Access to Improved Drinking Water and Sanitation in Ethiopia: Mapping and Spatial Analysis of 2016 Ethiopian Demography Health Survey Data. *Muluken Azage Yenesew.*

Background: Ensuring access to improved water and sanitation remains a public health challenge in Ethiopia. Only 13 percent of Ethiopians used safely managed drinking water services in 2016. Exploring geographic variation and inequalities in access to improved drinking-water supply and sanitation will help track progress towards to meet sustainable development goals of water and sanitation by identifying risk populations for water borne diseases.

Objective: This study aims are to explore geographical variation and inequality in access to improved drinking water and sanitation in Ethiopia.

Methods: A total of 16, 650 households from 643 enumeration areas of the recent Ethiopian Demographic and Health Survey 2016 data were included in the analysis. World Health Organization recommended definitions were used to measure the indicator of basic services of improved drinking water and sanitation at enumeration area. Satscan spatial analysis was done using cluster of enumeration areas as center for exploring geographical variation of improved water and sanitation. Absolute and relative inequalities were used to quantify subnational regional inequality in access to improved drinking water and sanitation.

Results: Access to improved drinking water (considering fetching time within 30-minutes round trip of their household) and sanitation in Ethiopia was 49.6% (95% CI: 48.4-50.7) and 6.3% (5.8-6.8), respectively, with large variations between and within regions. Access to improved drinking water ranged from 28.5% in Somali region to 95.3% in Addis Ababa and access to improved sanitation ranged from 1.7% in Amhara Region to 24% in Dire Dawa. Most likely significant cluster in lack of access to improved water and sanitation was identified in northwestern parts (Amhara Region) and southern parts (South Nation and Nationalities and People Region) of Ethiopia. Most enumeration areas reported very low levels of access to improved drinking water and/or sanitation.

Conclusions: There are geographical variation and inequalities in access to improved drinking water and sanitation in Ethiopia. Monitoring geographical variation and inequality using spatial analysis and inequality indicators serves to identify underserved population which is useful for developing approaches to improve inequalities that can help a progress to achieve the 2030 Agenda for Sustainable Development.

Prevalence of Staphylococcus Aureus among Food Handlers Working in Hotels and Restaurants in Jimma Town, Southwest Ethiopia *Girma Mamo Zegene, Abiyot Wolie Asres.*

Background: Food handlers with poor personal hygiene practices serve as major sources of pathogenic S. aureus which potentially causes to food intoxication. Researchers reported that 30-50% of the human populations are carriers of S. aureus more of in their nasopharynx. This study aimed to evaluate nasal and hand prevalence of S. aureus and its antimicrobial resistance pattern and other associated factors among food handlers

Methods and materials: A cross sectional study was carried out on the prevalence of S. aureus in the nose and on the hand of food handlers working in restaurants and hotels of Jimma town from Feb 30 to May 30, 2017. Food establishments and food handlers were selected by Simple random Sampling (lottery) method. Swabs from nares and hands of food handlers were collected then drug sensitivity tests and food samples microbial quality were processed using standard microbiologic protocols. All data were entered into an Epi data 3.1 and SPSS version-21.0 windows statistical software. P-value <0.05, at 95% CI has been taken as cut off point for statistical significance.

Result: Among 300 food handlers 86(28.7%) were positive for S.aureus. This prevalence rate was significantly associated with unfavorable attitude (P=0.020), wearing hand ornaments (P=0.040) and for waiters job category (P=0.044). S.aureus Isolates (90.7%) showed high resistance to Amoxicillin and Penicillin but most of the isolates were sensitive to Ciprofloxacin(96.5%), Cefoxitin (95.3), Amoxicillin-Clavulanic Acid (94.2%). Certain isolates showed resistance to Trimethoprim-Sulphamethoxazole (37.2%), Cefoxitin, Oxacillin and Vancomycin by 4.7%, 7% and 7% respectively. Isolates resistance to Methicilin (MRSA) were (7%).

Conclusion: This study showed 28.7% of food handlers were positive for S.aureus bacteria which potentially cause to staphylococcal food poisoning out breaks. Most isolates were resistant against Amoxicillin and Penicillin also showed high resistant against Vancomycin. All food samples microbial quality mean count (CFU/g) was unsatisfactorily contaminated by aerobic mesophilic bacteria. Therefore, food handlers need to get trainings and periodical health checkups as well as rational use of drugs is advisable.

Keywords: Food handlers, Nasal & hand carriage, S. aureus, Hotels and Restaurants.

Developing Low-Cost and Ecofriendly Industrial Wastewater Treatment Technology Using Locally Available Substrate for the Removal of Hazardous Pollutants. *Mekonnen Birhanie Aregu, Seyoum Leta Asfaw, Mohammed Mazharuddin Khan.*

Background: Industrial wastewater is High-strength wastewater which is defined by elevated levels of hazardous pollutants measured in BOD, heavy metals, nutrients and other toxic substances. This kind of wastewater discharged to water body without treatment from different industrial sectors like tannery that adversely affects the health of downstream water consumers. Therefore, developing low-cost and ecofriendly wastewater treatment technology using locally available material for the removal of hazardous pollutants is critical.

Objective: The general objective of this study is to investigate locally available, low-cost and efficient substrate for constructed wetland to remove hazardous pollutants from high-strength wastewater in ecofriendly manner.

Methods: This study was conducted at Modjo town from September 2016 to March 2018. Plug flow experimental study design was carried out. The substrate (Pumice) was collected from the study area and chemical characteristics were determined using X-ray fluorescence analysis. Chrysopogon zizanioides was planted and grown for five months before running high-strength wastewater for the treatment. The composite wastewater was introduced to the constructed wetland from Modjo leather industry, Ethiopia. The physicochemical analysis of the sample wastewater was done before and after treatment at four different hydraulic retention time (HRT) using American public health association standard methods. Heavy metal uptake capacity of the plant and adsorption potential of the pumice were determined by Ash-Modified AOAC 923.03 and Minerals-Modified AOAAC 985.35. Mean and standard deviations were calculated for each parameter. Originlab 2017 and R statistical software were run for graphing and data analysis.

Result: Characterization of the untreated tannery wastewater revealed that the mean concentration of BOD_5, COD, TSS, PO_4-P, TP, NO_3-N, TN, sulfide, sulfate and total chromium were 1641±373.6, 6953.33±339.4, 1868±863.1, 88.06 ±40.8, 144.53 ±20.8, 116.66 ±26.6, 650.33 ±93.6, 241.33 ±101.2, 1072.82 ±352.7and 18.33±6.7 mg/l respectively beyond the permissible limits. The maximum removal efficiency of the constructed wetland in pumice bed revealed that BOD_5 at HRT 7and9 days (96.42%, 96.30%), COD at HRT 5 and 7 days (96.76%, 96.91%), NO_3-N at HRT 5 and 7 days (99.99%, 99.68%), TN (98.67%, 99.00%), PO_4-P HRT 7and9 days (96.97%,100%), TP at HRT 5 and 7 days (94.79%, 96.17%), Sulfide at HRT 7 and 9 days (99.59%, 99.76), sulfate at HRT 5 and 7 days (94.07%, 94.72%) and total Chromium at HRT 5 and 7 days (98.36%, 98.91%) respectively. Whereas, the removal efficiency of constructed wetland bed with gravel substrate used as a control subject with similar condition to pumice showed lower performance. The result between pumice and gravel bed was tested for their significance difference using two sample t-test statistics. Based on the test statistics, the pumice substrate perform better than the gravel significantly at 95% confidence interval, p-value < 0.05.

Conclusion and Recommendation: Pumice substrate and Chrysopogon zizanioides have a potential ability to remove hazardous pollutants from industrial wastewater in horizontal subsurface constructed wetlands.

Keywords: High-strength wastewater, Pumice, Constructed wetland, Chrysopogon zizanioides

Household Fine Particulate Matter (Pm2.5) Concentrations from Cooking Fuels: The Case in an Urban Setting, Wolaita Sodo, Ethiopia. *Amha Admasie Gelaye.*

Background: Household air pollution from biomass fuel is a main causes of health problem in Ethiopia. Ninety-three percent (70.6% in urban and 98.8% in rural) of of households in Ethiopia use some type of solid fuel for cooking, with virtually all of these households using wood. The level of $PM_{2.5}$ concentration on household air pollution is limited in Ethiopia. The purpose this study was to determine the level of household fine particulate matter ($PM_{2.5}$) Concentrations from cooking fuels in Wolaita Sodo town, Ethiopia.

Methods: A cross-sectional study design was used to measure Particulate matter of $PM_{2.5}$ in109 kitchens in randomly selected households. Sample sizes were distributed based on probability proportional to size of the households in each district. The University of California Berkeley Particulate Monitor data logger devices were used for measuring the level of $PM_{2.5}$. These instruments were installed in households according the guideline of School of Public Health, University of California-Berkely, USA. Data were managed and analyzed using EpiData 3.1 and SPSS version 21. Descriptive statistics and ANOVA were used to evaluate the variation across fuel sources.

Results: Out of 109 households, 83 (76.9%) and 26 (23.1%) used predominately biomass fuel and clean fuel sources for cooking respectively. $PM_{2.5}$ concentration was measured for the duration of 24 hours. The overall mean (SD) concentration of $PM_{2.5}$ in kitchen cooking area were 495.29µg/m^3(183.35). About 92 of the cook (84.4%) spent two or more hours in cooking. The magnitude of $PM_{2.5}$from biomass fuel users for cooking was a mean (±SD) of 539.25 µg/m^3(SD=176.91), followed by clean fuel users, 354.97µg/m^3(125.18). The use mixed fuel accounted for the increased level of $PM_{2.5}$ in clean fuel users. ANOVA between fuel types was statistically significant at p-value <0.001.

Conclusion: The concentration of $PM_{2.5}$ was higher than the World Health Organization air quality guideline. The contribution of biomass fuel concentration was the largest of all fuel sources. Therefore, supplying clean fuel sources to the households is decisive intervention of all.

Keywords: Household Air Pollution, Indoor Air Pollution, Particulate Matter, Fine Particulate Matter$_{2.5}$, Type of fuel source, cooking fuels, Time spent in cooking, Wolaita Sodo Ethiopia

The Effect of Household Source of Drinking Water on Malnutrition among under Five Children in Ethiopia: Systematic Review and Meta-Analysis. *Dube Jara.*

Background: Nutritional status of children reflects the overall health status of children. Under nutrition is caused by various factors, most of which relate to poor diet and repeated infections, particularly in poor socioeconomic populations. The few Studies conducted on the association between child malnutrition and household source of drinking water among under five children present inconsistent and inconclusive findings. Therefore, the objective of the current systematic review and meta-analysis was to determine the pooled estimates on the effect of household source of drinking water malnutrition among under five children in Ethiopia.

Methods: Both published and unpublished studies were accessed through electronic search from databases such as, PubMed, Medline, HINARI, Scopes, CINAHL, PopLine, MedNar, Embase, Cochrane library, the JBI Library, the Web of Science and Google Scholar. All observational studies that were conducted on the association between malnutrition and source of drinking water among under five children in Ethiopia were included in the review. The meta-analysis was conducted using STATA version 14 software and results were presented in forest plots. The pooled estimate with 95% confidence intervals were computed using random effect model. We used funnel plot, Egger's and Begg's tests at significance level 5% to check the presence of publication bias.

Result: A total of 1009 published and unpublished studies were identified of which 22 studies were included in the final analysis with a total of 12792 under five children. Our analysis found that the source of drinking water had statistically significant effect on the occurrence of malnutrition among under five children. The overall pooled estimate showed that the odds of developing malnutrition among under five children whose household had protected drinking water source was 39% lower than those under five children whose household with unprotected water source (OR: 0.61, 95% CI: 0.44, 0.84).

Conclusion: The systematic review and meta-analysis found statistically significant effect of household source of drinking water on malnutrition, in which children from household who used protected water source for drinking was less likely to develop malnutrition as compared with their counter parts. This finding indicates that the need for increase in the coverage of protected water source and creating awareness on how to treat drinking water at household level particularly in rural household.

Keywords: Malnutrition, under-five, source of water, Ethiopia.

Assessment of Regional Variation of Climate Change Induced Childhood Diarrhea in Ethiopia.
Shirega Minuye Share

Background: Climate Change is currently emerging as one of posing challenges to address public health issues particularly in developing countries like Ethiopia. Climate change projection in Ethiopia shows quite alarming trend in which the mean annual temperature is projected to increase by 1.1 to 3.1% by 2060 and increases in the annual rainfall in Ethiopia. Besides, Child diarrhea under-five is still among the top ten diseases in Ethiopia.

Methodology: The study utilized review of published documents, researches, and data repositories of Ethiopian Demographic Health Survey, Central Statistical Agency, and Ethiopian National Metrology Agency so as to analyze the level of association among the major influencing variables.

Results: Rainfall and temperature are found to be as the major significant influencing factors for the occurrence of childhood diarrhea. However, the sensitivity of regions on the effect of rainfall and temperature variability on childhood diarrhea is varying among regions even with similar agro-ecology or livelihood patterns.

Conclusion: The variability of rainfall and temperature has relatively different weights in the occurrence and impact of diarrheal diseases among regions.

Recommendation: Health strategies that focus on childhood diarrheal disease prevention and control program should be designed or re-designed by considering local specific climatic variability factors that affect childhood diarrhea diseases.

Occupational Injury and Factors Associated among Employees in Heineken Brewery Share Company, Harar Brewery Share Company and Awash Wine Share Company, Ethiopia. *Teshome Wakjira Tike.*

Background: Occupational injury is a major global public health problem resulting in work related morbidity, disability and fatality. The occurrence of occupational injury is the highest in food and drink processing industry, which make it the most dangerous occupation, among the manufacturing industries. Beverage workers have been reported to be exposed to various work hazards. This situation may increase their risk of occupational injury. However, the situation in Ethiopia particularly in the beverage industries is less known.

Objective: to assess the magnitude and predictors of occupational injury among employees in beverage industry in Harar and Addis Ababa, Ethiopia from September 1- October 15, 2017.

Methods: Descriptive cross-sectional study design was employed using both quantitative and qualitative methods. The study settings were Awash Wine Share Company, Heineken Brewery Share and Harar Brewery Share Companies. A total sample size of 675 was drawn randomly based on the population proportion of the industries. For the qualitative data, key informants were interviewed until saturation level is achieved. The data were entered into Epi-data statistical software version 3.1 and exported to SPSS version 21.0 for further analysis. Descriptive analysis is done for frequency and cross tab, Binary logistic and all covariates that have p value < 0.2 in crude logistic regression analysis were considered for further multiple logistic analysis. Odd Ratios along with 95% Confidence interval was calculated to measure the strength of association between dependent and independent variables. Level of statistical significance was declared at p-value < 0.05.

Results: The prevalence of occupational injury for life time and for 12 months was found to be 20.9% and 11.1% respectively. The commonest injury in this study was trauma to fingers and hand. Factors associated with injuries were sleeping related problem (OR=1.8 times), contract employment status (OR=2.4 times and working in technical department (OR=4 times). Age group 28-34were (OR=0.45) 55% and experience < 1 year were (AOR=0.15) 85% less likely to sustain occupational injury. Key informant interview revealed that common hindrance stated are inconsistent execution of safety procedure and lack of commitment of employer to provide personal protective devices. This problem is highly affecting contract based employees. On observation of the companies' environment, Heineken and Harar have well organized work place in comparison to Awash.

Conclusion: The magnitude of occupational injury among the employees in beverage industries was high 20.9%.Factors associated with occupational injuries were observed in technical departments, contract employment and presence of sleeping disturbance while experience of one year and age group 28-34 were found to be protective. The hindrances like improper utilization of personal protective equipment, lack of continuous supply of personal protective equipment were observed among the study participants. Thus, occupational safety measures like availing and refilling of personal protective equipment have to be strengthened by the companies through strong follow up with special emphasis to Contract employee.

Keywords: Beverage Industry; Employees; Occupational injury

Effects of Socio-climatic Factors on Spatial Destitution and Treatment Outcomes of Tuberculosis in Ethiopia, *Kefyalew Addis Alene, Kerri Viney, Darren J Gray, Emma S McBryde, Maereg Wagnew, Archie C A Clements.*

Background: Tuberculosis (TB) is the leading cause of death from an infectious disease worldwide and in Ethiopia. Understanding the impacts of climatic conditions on the geographical distribution and treatment outcomes of TB is crucial for effective control of TB in high TB burden countries such as Ethiopia. This presentation consists of findings from two different studies that investigated the effects of socio-climatic factors on spatial destitution (paper I) and treatment outcomes (paper II) of TB in Ethiopia.

Methods: Geospatial analyses were conducted on TB and TB treatment outcomes using data reported to the zonal and national health management information system (HMIS). District level socio-economic and demographic variables were obtained from the Central Statistics Agency of Ethiopia, and climatic data were obtained from the Worldclim database. Spatial autocorrelation was explored using global and local Moran's I statistics, and the Getis-Ord statistic. Multivariate spatial analyses were performed using a Bayesian framework with a conditional autoregressive (CAR) prior structure, and with posterior parameters estimated using a Markov chain Monte Carlo (MCMC) simulation.

Results: A total of 223 244 TB patients reported from 722 districts in Ethiopia were included in the analysis. Spatial clustering of TB was observed in districts located in the Ethiopia-Sudan and Ethiopia-Eritrea border regions, where large numbers of seasonal migrants live and work. Hot-spots and clustering of poor TB treatment outcomes were detected in districts near the international borders in Afar, Gambella, and Somali regions and cold spots were detected in Oromia and Amhara regions. District level socio-climatic factors such as lower educational status (RR: 1.5; 95% CrI: 1.0, 2.1), a high percentage of internal migration (RR: 1.3; 95% CrI: 1.0, 1.6), high mean annual temperature (RR: 1.3; 95% CrI: 1.0, 1.7) and high rainfall (RR: 1.5; 95% CrI: 1.1, 2.0) were positively associated with spatial clustering of TB. Similarly, the proportion of the population with low wealth index (OR: 1.01; 95%CI: 1.0, 1.01), the proportion of the population with poor knowledge about TB (OR: 1.02; 95%CI: 1.01, 1.03), and higher annual mean temperature (OR: 1.15; 95% CI: 1.08, 1.21) were positively associated with spatial clustering of poor TB treatment outcomes in Ethiopia.

Conclusion: Spatial clustering of TB and poor TB treatment outcomes, fully explained by socio-climatic factors (wealth index, migration, temperature, rainfall and knowledge of TB), were detected in the border regions of Ethiopia. Clinical and public health interventions should be targeted in hot spot areas, and cross-border initiatives including options for mobile TB treatment and follow should be strengthened in the border region of Ethiopia to reduce the burden of TB and to achieve the national End-TB Strategy targets.

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Phylogeography, Genomic Diversity and Transmission Dynamics of M. Tuberculosis in Africa: A Systematic Review and Meta-analysis. *Daniel Mekonnen[1, 2*], Awoke Derbie[1,3], Andargachew Abeje[4], Abebe Shumet[5], Yonas Kassahun[6], Endalkachew Nibret[2,7],Abaineh Munshae[2,7], Kidist Bobosha[6], Liya Wassie[6], Fantahun Biadglegne[1], Stefan Berg[8], Abraham Aseffa[6], Ulrich Sack[9]*

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Introduction: The population genomic make-up of *Mycobacterium tuberculosis* complex (MTBC) is geographically restricted. This review determined the phylogeography, clinical phenotype related genomic diversity and transmission dynamics of MTBC in Africa.

Methods: Spoligotyping and MIRU-VNTR based articles were analyzed. Articles published in English language irrespective of year of publication were included. We retrieved articles from PubMed and Scopus on 12 May 2018. Phylogeographic distributions were scrutinized using ArcGIS 10.3. Clustering and recent transmission index (RTI) were figured out using Stata 14.

Results: Among the MTBC population genomic make-up, 92% and 7% went to *M. tuberculosis* and *M. africanum*, respectively. The minority (1%) went to the animal habituated species of *Mycobacterium.* Of the lineages under *M. tuberculosis*, the Euro-American (EA) and Central Asia (CAS) gauged at 67% and 10%, respectively. Lineage 7 and *M. africanum* were confined in Ethiopia and western Africa, correspondingly. The EA sub-lineages such as T3-Ethiopia_2, H37Rv, Haarlem (H) and H3-Ural were proportionally higher among tuberculosis lymphadenitis (TBLN) compared with pulmonary tuberculosis (PTB). The pooled prevalence of clustering and RTI was 48% and 35%, respectively. Moreover, the rate of clustering was higher among PTB (52%) compared with TBLN (31%).

Conclusions: Africa in general and east-west pole of Africa in particular harbored diverse population genomic make-up of MTBC. While EA lineage remains the prominent lineage; *M. bovis* is going away as a cause of human TB. The high prevalence report of active TB transmission marked the awful TB control program. Hence, key policy priority should be breaking the transmission, promoting innovative approach for early case notification and contact tracing.

Keywords: Molecular epidemiology, *M. tuberculosis,* Africa.

Evaluation of Innate Immune Makers in Latently Infected and Non-Infected Children and Adolescents Living in a Tuberculosis Endemic Setting Using Gene Expression Analysis in Addis Ababa, Ethiopia.

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Background: About one-third of the global population is considered to be latently infected with tuberculosis (TB) causing bacteria, Mycobacterium tuberculosis. Only 10% progress to active disease, while the majority contains the infection. Latently infected individuals are considered as reservoirs for continuous new TB infections.

Objective: The aim of this study is to measure the mean fold change in mRNA gene expression of Toll-like receptors (TLRs) during latent TB infection as a diagnostic biomarker tool for detection of TB progression.

Methodology: Quantitative real-time PCR (qRT-PCR) was used to measure the expression of selected TLRs (TLR-1, TLR-2, TLR-4, TLR-6 and TLR-9) in a total of 64 cDNA samples, retrieved from AHRI biorepository and collected from 32 tuberculin skin test (TST) positive and 32 TST negative, using convenient sampling, apparently healthy school children and adolescents, aged between 11 and 20 years. Specific primers and florescent labeled probes were used to span exon-intron junctions to prevent amplification of genomic DNA. Human acidic ribosomal protein (HuPO) was used as an internal control. A comparative CT method was used to describe fold change in the relative expression of TLR genes. Data were analysed using Graph-Pad Prism 7.01 for Windows and a p-value less than 0.05 was considered statistically significant. This study was approved by the AHRI/ALERT Ethics Review Committee (AAERC), AAU-CHS IRB and the National Research Ethics Review Committee (NRERC).

Result: Overall, an increased fold change in the mRNA expression of TLRs was observed in latently infected individuals relative to non-infected ones. Remarkable fold change was observed in TLR-2 and TLR-6 in TST positive individuals relative to TST negatives (mean with SEM) whereas a slight fold decrease was observed for TLR-1 gene. On the other hand, we found a strong positive linear correlation between intra compartment (TLR9) receptors and surface receptors TLRs (TLR1, TLR2, TLR4, and TLR6) expression in latent infected tuberculosis relative to non-infected. Similarly, the relative expression of TLR mRNAs was compared between children and adolescents and both sexes. However, no apparent difference was observed in the fold change expression of TLRs across age and sex.

Conclusions: Our results suggest that the up-regulation of TLR-2 TLR-4, TLR-6, and TLR-9 genes have role in latent tuberculosis infection through TLRs signaling a pathway and synergic effect with other immunological markers to maintain and continuous stimulation of immune response against latent tuberculosis in human. Therefore, further studies are needed, in order to elucidate whether those genes have used as booster vaccine or therapeutic agents and could serve as a specific molecular marker of latent TB.

Keywords: Tuberculosis, Innate immunity, Latency, Age, Toll-like receptors, Children, Adolescence.

Multiplex Serology Shows Cumulative Prevalence and Spatial Distribution of Malaria in Ethiopia

. Ashenafi Assefa[1,2], Ahmed Ali[2], Wakgari Deressa[2], Heven Sime[1], Hussien Mohammed[1], Amha Kebede[3], Hiwot Teka[4], Hiwot Solomon[5], Kevin Gurrala[6], Brian Matei[6], Richard Maud[7], Ipsita Sinha[7], Jackie Cook[8], Ruth Ashton[9], Glenn Wilson[10], Brian Wakeman[6], Ya Ping Shi[6], Lorenz Von Seidlein[7], Chris Drakeley[8], Eric Rogier[6], Jimee Hwang[11,12] [1]Ethiopian Public Health Institute, Addis Ababa, Ethiopia [2]Addis Ababa University, Addis Ababa, Ethiopia [3]African Society for Laboratory Medicine, Addis Ababa, Ethiopia [4]U.S. President's Malaria Initiative, United States Agency for International Development, Addis Ababa, Ethiopia [5]Ethiopian Federal Ministry of Health, Addis Ababa, Ethiopia [6]Malaria Branch, Division of Parasitic Diseases and Malaria, Centers for Disease Control and Prevention, Atlanta, GA [7]Mahidol Oxford Research Unit, Mahidol University, Bangkok, Thailand [8]LondonSchool of Hygiene and Tropical Medicine, UK [9]Center for Applied Malaria Research and Evaluation, Tulane School of Public Health and Tropical Medicine, New Orleans, LA [10]University of Southern Denmark, Odense, Denmark [11]U.S. President's Malaria Initiative, Malaria Branch, Division of Parasitic Diseases and Malaria, Centers for Disease Control and Prevention, Atlanta, GA [12]Global Health Group, University of California San Francisco, CA.*

Background: Measures of malaria burden using conventional diagnostic methods in cross-sectional household surveys may incompletely describe the burden of malaria transmission in low transmission settings where few infections are detected. This study describes the burden and pattern of malaria transmission in Ethiopia using serological estimates derived from a nationwide household survey completed in 2015.

Methods: Dried blood spot (DBS) samples were collected during a Malaria Indicator Survey in 2015 representing malarious areas of Ethiopia. Samples were analysed using bead-based multiplex assays for IgG antibodies to six *Plasmodium* antigens; four human malaria species-specific merozoite surface protein 1 19kD antigens (MSP-1), and apical membrane antigen 1 (AMA-1) for *P. falciparum* and *P. vivax.* Seroconversion rate was estimated using a reversible catalytic model fitted with maximum likelihood methods. Models were stratified by age group, elevation and administrative regions.

Results: Of 9,801 DBS samples, 91.3 (8,944) had valid serological results for analysis. The mean age of participants was 14.9 years (95% confidence interval (CI): 14.5-15.3); 53.3% (4,748) participants were female. National seroprevalence for antibodies to *P. falciparum* was 35.7% (95% CI: 34.6-36.7) and antibodies to *P. vivax* was 23.8% (95% CI: 22.9-24.7). Estimated seroprevalence for *P. malariae* and *P. ovale* were 3.2% (95% CI: 6.6-7.7) and 2.6% (95% CI: 2.2-2.9), respectively. Seroprevalence estimates were significantly higher at lower elevations (<2000m) compared to higher elevations (2000-2500m) for both *P. falciparum* [Odds Ratio (OR) 1.7 (95% CI: 1.5-1.9), p=0.001], however evidences were weak for *P. vivax* [OR 1.2 (95% CI: 1.0-1.4) p=0.037]. Among administrative regions, *P. falciparum*seroprevalence ranged from 64.1% (95% CI: 60.6-67.6) for Gambella to 11.1% (95% CI: 9.0-13.7) in Somali Region. *P. vivax*seroprevalence ranged from 39.4% (95% CI: 36.1-42.7) in Amhara to 3.9% (95% CI: 2.7-55.9) in Somali Region. Models fitted to measure seroconversion rates show variation nationally, by elevation with variability by regions, antigen type and within species.

Conclusion: Using multiplex serology assays for IgG antibody detection, this study explored the cumulative malaria burden and regional dynamics in Ethiopia and the use of multiplex assay on multiple antigens in a low transmission setting as a more sensitive biomarker.

Keyword: Multiplex Serology, seroprevalence, Malaria, Ethiopia.

Evaluation of Gene Xpert in Detecting Suspected Pulmonary Tuberculosis, from Stool Sample, for Children <15years, Adama, Ethiopia. *Teklu Shiferaw, Mohammed Abdella, Haji Aman.*

Background: Case detection of pulmonary tuberculosis (PTB) is a challenge, even if different diagnostic methods used. Nowadays, it is improved, after the advancement of the detection method such as Gene Xpert assay a prodigious change for the adult. But in the pediatric PTB is a still a challenge, due to the lack of well-developed physiological capacity. Young children are unable to produce enough amount of sputum to be detected by the Gene Xpert. So, a substantial number of children are not diagnosed and fail to get treatment.

Objective: To evaluate Gene Xpert in detecting PTB from the stool and sputum samples from TB suspected children against the gold standard sputum culture method in Adama Hospital Medical College (AHMC), Adama, Ethiopia from Jan 1, 2017, to June 30, 2018.

Methods: A cross-sectional study design was used, to evaluate 422 Stool and sputum sample was collected from PTB suspected children (<15 years) by consecutive sampling technique. Both stool and sputum specimens were run in the Gen Xpert at AHMC and sputum specimens were cultured using LJ culture medium at Oromia Regional Laboratory, Adama, Ethiopia. Specimen processing and testing were done in accordance with the standard mycobacterial safety precautions, procedures, and manufacturers instruction. Descriptive statistical analysis was done by SPSS version 20, a chi-square test was used to show their association at 95 % CI and *P*-value <0.05 was considered statistically significant, sensitivity, specificity, PPV and NPV of the tests were also calculated. The study was commenced after obtaining ethical approval and permission letter from respective bodies. All data obtained from the participants kept confidentially.

Result: A total of 422 children were enrolled. About, 70% were living in an urban area. Male to female proportion was 203/219. The mean age was 10.8 yrs, the majority (71.8%) of the participant age was >=5 yrs old. From 422 children investigated, 26 had been detected for PTB and 24 of them are confirmed by the sputum culture, with three invalid and four errors. Two of those PTB detected were rifampicin resistant. Stool Gene Expert had a sensitivity, specificity, PPV and NPV (96%, 99.5%, 92.3%, 99.7%) respectively.

Conclusion and Recommendation: the sensitivity of Gene expert to detected MTB in stool sample was higher as 96 % (P=.000). Therefore, stool can be used as an alternative sample for the diagnosis of PTB using gene Expert assay for children unable to give respiratory samples.

Keywords: Gene Expert, Mycobacterium tuberculosis, Pulmonary Tuberculosis, Children.

Artemisinin Resistance: A Terrible Threat to Defeat Malaria and Possible Approaches to Tackle it: Review. *Wote Amelo Rike.*

Despite the failure of previous malaria eradication program, the world is currently working to eliminate and ultimately eradicate malaria. One of the most important tools to achieve this goal is antimalarial drugs. These drugs, starting from the oldest quinine and progressing to chloroquine, sulfadoxine-pyrimethamine, mefloquine and the currently utilized artemisinin based combination therapy, have played significant role in the recorded successes of malaria control and elimination. However, the recent emergence of parasites with decreased susceptibility to artemisinin and related malaria treatment failure in Southeast Asian countries appeared as a big threat against the success. In 2014, mutations in the propeller domain of the kelch protein (K13), associated with phenotypic markers of artemisinin resistance, were identified as candidate molecular markers of resistance. Several cellular stress response pathways such as K13-dependent alterations in phosphatidylinositol-3-kinase (PfPI3K) are being forwarded as potential molecular resistance mechanisms. Consequently, malaria community is working to counteract the problem through application of several strategies ranging from surveillance of resistant strains to the development of new drugs. Additionally, vaccine development and Mass Drug Administration (MDA) are other alternatives under scientific scrutiny. This review will discuss and examine in detail about these and other related issues.

Keywords: Artemisinin resistance, kelch 13, phenotypic markers, phosphatidylinositol-3-kinase, unfolded protein response.

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Late Antiretroviral Therapy Initiation and Associated Factors among Children on Antiretroviral Therapy at University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia, 2017. *Getaneh Mulualem Belay.*

Background: The use of highly active antiretroviral therapy reduces Human immunodeficiency virus related morbidity and mortality dramatically. Despite this, late initiation of highly active anti-retroviral therapy among pediatric patients poses poor treatment outcome. However, information related to the magnitude of late antiretroviral therapy initiation among children is scarce in Ethiopia.

Objective: To assess late antiretroviral therapy initiation and associated factors among children on Antiretroviral Therapy at University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia, 2017.

Method: An institution based cross-sectional study was conducted among 422 children on antiretroviral therapy between January/2007 to December 2016. The data were collected from March 28, 2017 to April 13, 2017. Simple random sampling technique was used to select study participant records. Data were collected using pretested and structured data abstraction tool. Multivariable binary logistic regression model was fitted and adjusted odds ratios with 95% confidence interval were computed to determine the strength of association between each variable with late antiretroviral therapy initiation. Variables with P-value < 0.05 was considered as statistically significant.

Result: A total of 422 child records were reviewed. Of which 402 (95.3%) were included in the study. The overall proportion of late antiretroviral therapy initiation among 402 children on antiretroviral therapy was found to be 53.2% (95% CI: 48.5%-58.4%). The mean age of children at the time of antiretroviral therapy initiation was 74.2 months. Age of children below 5 years [AOR: 2.165 (95% CI: 1.341,3.495)], rural resident [AOR: 1.825 (95% CI: 1.052, 3.166)], any medication taken other than ART [AOR: [2.237 (95%CI,1.212, 4.130)], presence of past opportunistic infection [AOR: 2.548 (95%CI,1.554, 4.178)], unmarried caregiver [AOR: 1.618 (95%CI, 1.023, 2.559)], male caregiver [AOR: 1.903 (95%CI,1.026-3.527)] and mothers with no antenatal visits [AOR: 1.721(95% CI,1.077, 2.752)] were factors associated with late ART initiation among children on ART.

Conclusion and Recommendation: The proportion of late anti-retroviral therapy initiation in this study was found to be high. Therefore, early diagnosis, early enrolling HIV diagnosed children into care and prompt initiation of antiretroviral therapy is recommended.

Keywords: Antiretroviral therapy; Children; Ethiopia; Hospital; Late initiation.

Prevalence and Determinants of Diarrhea among Under-Five Children in Ethiopia: A Systematic Review and Meta-Analysis. *Animut Alebel Ayalew.*

Background: Despite remarkable progress in the reduction of under-five mortality, childhood diarrhea is still the leading cause of mortality and morbidity in under-five children. In Ethiopia, study findings regarding prevalence and determinants of diarrhea amongst under-five children have been inconsistent and highly variable. Therefore, this systematic review and meta-analysis estimates the pooled prevalence of diarrhea and its determinants among under-five children in Ethiopia.

Methods: Databases, including PubMed, EMBAS, CINAHL, Google Scholar, Science Direct, and Cochrane Library, were systematically searched. All identified observational studies reporting the prevalence and determinants of diarrhea among under-five children in Ethiopia were included. STATA Version 13 statistical software was used to do a 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 diarrhea. Moreover, the associations between determinant factors and childhood diarrhea were examined using the random effect model.

Results: After reviewing of 535 studies, 31studies fulfilled the inclusion criteria and were included in the meta-analysis. The findings from the 31 studies revealed that the pooled prevalence of diarrhea among under-five children in Ethiopia was 22% (95%CI: 19, 25). The subgroup analysis of this study also revealed that the highest prevalence was observed in Afar region (27%), followed by Somali and Dire Dawa regions (26 %), and Addis Abeba (24%). Maternal education (OR: 2.5, 95% CI: 1.3, 2.1), latrine availability (OR: 2.0, 95%CI: 1.3, 3.2), residence (OR: 1.9, 95%CI: 1.2, 3.0), and maternal hand washing practices (OR: 2.2, 95%CI: 2.0, 2.6) were significantly associated with childhood diarrhea.

Conclusion: In this study, diarrhea among under-five children in Ethiopia was significantly high. Maternal education, latrine availability, residence and maternal hand washing practices were significantly associated with childhood diarrhea.

Keywords: Prevalence, under-five children, diarrhea, Ethiopia.

Health Extension Workers' diagnostic Accuracy for Common Childhood Illnesses in Four Regions of Ethiopia: an Observation and Re-examination Study. *Theodros Getachew Zemedu, Solomon Mekonnen, Mezgebu Yitayal, Lars Åke Persson, Della Berhanu.*

Introduction: The Ethiopian primary healthcare of sick children is provided within the integrated Community Case Management of childhood illnesses provided by the Health Extension Workers. There is limited knowledge whether this cadre correctly asses and classify common diseases. The aim was to study their ability to correctly classify common childhood illnesses.

Method: A survey was conducted from December 2016 to February 2017 in four regions of Ethiopia. Observations of the health extension workers' assessment and classification of sick children were followed by a re-examination by a trained health officer.

Results: The classification by the HEWs of 620 sick children as compared to the re-examiner had a sensitivity of 89% and specificity of 94% for diarrhoea, sensitivity 52% and specificity 91% for fever, and acute respiratory tract infection had a sensitivity of 59% and specificity of 94%. Malnutrition had a sensitivity of 39% and specificity of 99%, and ear infection had a sensitivity of 61% and specificity of 99%.

Conclusion: The Ethiopian Health Extension Workers' assessment and classification of sick children 2-59 months of age was validated by re-examination performed by trained health officers. Most cases of diarrhoea were correctly classified, while fever and respiratory infections frequently were not identified. The identification of malnutrition was especially missed. This suggests that a significant number of sick children were undiagnosed that could lead to absent or incorrect management and treatment. Efforts are needed to improve the quality of the diagnosis and classification of childhood illnesses done by the Health Extension Workers. Emphasis should be given to improve the ability of HEWs to adhere to the iCCM guidelines.

Keywords: Quality, HEWs, Ethiopia

Predictors of Low Birth Weight in Newborn Delivered in Public Hospital of Gurage Zone, Southern Ethiopia: Unmatched Case -Control Study. *Andamlak Dendir Egata.*

Background: Worldwide, low birth weight is one of the most common causes of neonatal morbidity and mortality. Different factors are associated with low birth weight but they operate at different environment and culture, they vary from set up to set up. To the best of authors' knowledge, in Gurage Zone there is no sound empirical study done to examine the determinants of low birth weight through using case-control study design. Hence this study aimed to elucidate factor associated with low birth weight in public hospital of Gurage zone

Methods: - A facility based unmatched case - control study design was employed to detect the existing exposure difference between cases and controls. The study included a total of 270 controls (normal weight) and 134 cases (low birth weight baby). Control and case participants were selected through consecutively. To collect the data structured interviewer administered questionnaire and anthropometric measurement were used. The collected data were entered through Epi-data3.1 computer program and analyzed through Statistical package for Social Sciences version 21(SPSS v. 21). Univariate, Bivariate and Multivariate analysis were done.

Result: Multiple logistic regression model analysis indicated that low birth weight was independently associated with maternal MUAC less than 23 cm (AOR 1.79 (95% CI= 1.01-3.16)) , gestational age less than 37 weeks(AOR 24.94 (95% CI= 12.38-50.27)], presence of malaria infection during period of pregnancy(AOR 3.02 (95% CI =1.39-6.51, presence of preclampsia, multiparity (AOR 2.19 (95% CI =1.21-3.96) and twining (AOR 5.42 95% CI =2.01-14.59).

Conclusion: Gestational age <37 weeks, twining, malaria infection during pregnancy and maternal under-nutrition were a significant predictors of LBW in the region of Gurge zone. Hence, to effectively prevent low birth weight Gurage zone health departments should work on promotion of maternal nutrition during pregnancy, prevention of malaria during pregnancy.

Spatial Distribution and the Determinants of Pneumonia among Under-Five Children in Ethiopia: Evidence from Edhs 2016. *Erkihun Tadesse.*

Introduction: Childhood pneumonia has been the commonest global cause of morbidity and mortality among under-five children. In developing countries like Ethiopia, it remains to be the highest burden of the health care system. In our country, where the problem varies in space and time, exploring its spatial distribution is of supreme importance for monitoring and designing effective intervention programs.

Methods: The two stage stratified cluster sampling technique was utilized along with the 2016 Ethiopian Demographic and Health Survey data to deal with 10,006 under-five children who took part in the study. The Bernoulli model was used by applying the Kulldorff method using the SaTScan software to analyze the purely spatial clusters of under-five pneumonia. Arc GIS version 10.1 was used to visualize the distribution of cases across the country. The mixed-effect Logistic regression model was used to identify the determinants of childhood pneumonia.

Result: In this study, the spatial distribution of pneumonia among under-five children was non-random at cluster level (Moran's I: 0.34, p < 0.001). Statistical significant clusters were found in Tigrai (LLR = 38.53, p < 0.001) and Oromia (LLR = 22.27, p < 0.001) National Regional States. History of Diarrhea (AOR=4.71, 95% CI: (3.89-5.71)), 45-59 months of age (AOR= 0.63, 95% CI: (0.45-0.89)), working mothers (AOR=1.27, 95% CI: (1.06-1.52)), mothers' secondary school education (AOR= 0.65; 95 % CI: (0.43–0.99)), and stunting (AOR= 1.24, 95% CI: (1.00-1.54)) were significant predictors of under-five pneumonia.

Conclusion and Recommendation: In Ethiopia, pneumonia had spatial variations across the country. Areas with high hotspots of child pneumonia should more focused on by allocating additional resources and providing appropriate interventions that have public health implications.

Practice of Mothers/Caregivers on Home Management of Diarrhea in Under-Five Children in Mareka District, Southern Ethiopia– A Community Based Cross Sectional Study. *Terefe Dodicho Dosha.*

Background: Diarrhea is the most common pediatric disease. Drug therapy is unnecessary in most cases, and may even be contraindicated or dangerous because majority of diarrhea cases in children are viral in origin. Most diarrheas can be managed at home and without drugs. The WHO definition of home case management for diarrhea allows for flexibility: begin early use of available food-based fluids (except heavily salted soups or very sweet drinks) and/or give oral rehydration solution (ORS) if available and affordable, continue breastfeeding if the child is breastfed; give frequent and small amounts of food during diarrhea and continue with catch-up feeding for two weeks following the diarrhea episode, recognize danger signs of diarrhea that require immediate care and seek help from an appropriate provider and give zinc supplements (tablets or syrup) for 10-14 days.

Ethiopia is one of the top 15 countries in which nearly ¾ of child death occur due to diarrhea. The vast majority of deaths from diarrhea are among children under 5 years of age living in low and middle income countries including Ethiopia. Early and correct identification of diseases and prompt initiation of management plays a key role in reducing diarrhea related mortality. Increased fluid intake and continued feeding by caregivers especially by mothers are vital measures that prevent diarrhea related child mortality.

Objective: The present study is aimed to investigate the practice of mothers/caregivers on home management of diarrhea in under-five children in Mareka district, Dawuro zone, SNNPR, Ethiopia.

Methods: Community based cross-sectional study was employed from March 1-30, 2016. Multi stage stratified sampling technique was used to select subjects to be included in the study from 11 Kebeles. Data were collected using pre-tested structured interviewer administered questionnaire.

Results: Total of 654 mothers/caregivers were participated in the study. Most (70.3%) of the mothers/caregivers were in favor of sustained feeding (breast milk, solid and liquid food) during episodes of diarrhea in their children while 194 (29.7%) supported diet withdrawal. The level of practice on home management of diarrhea among respondents was good in 309 (47.2%) respondents and poor in 345 (52.8%) respondents respectively. Only 50 respondents were aware about the correct amount of ingredients of homemade ORS (salt-sugar solution). A significant relationship was found between mothers' educational level secondary and above, mothers of female index child, average monthly income of the household & mothers residence in urban areas and mothers' practice. Mothers educated secondary and above had better practice when compared to mothers with lower education. This study also revealed significant difference between sex of an index child and maternal practice. Mothers of female children practice 35% less likely when compared to mothers of male children. Mothers living in urban area had 13 times better practice on home management of diarrhea when compared to mothers living in rural areas.

Conclusion and Recommendation: More than half of the respondents have poor practice on home based management of diarrhea. Therefore, strategies to increase practice level of mothers on home management of diarrhea are needed.

Application of 7.1% Chlorhexidine Digluconate on Umbilical Cord Stump Reduces Omphalitis and Neonatal Mortality but Prolongs Cord Separation Time Compared to Dry Cord Care in Low and Lower-Middle Income Countries: A Systematic Review and Meta-Analysis. *Aklilu Abrham Roba.*

Introduction: There are perplexing findings from large randomized controlled trials regarding the effectiveness of topical application of 4% chlorhexidine on reducing neonatal mortality. Meta-analysis and systematic review of South Asia and Europe support chlorhexidine application to reduce neonatal mortality whereas trials of Sub-Saharan Africa have not. The aim of this review was to determine the pooled effect of the application of chlorhexidine on cord stump on neonatal mortality in addition to omphalitis and cord separation time.

Methods: MEDLINE through PubMed, EMBASE, CINAHL, SCOPUS, Google Scholar, Web of Science, Cochrane Central Register of Controlled Trials and LILACS database and other study sources were searched to identify RCTs published between January 2000 and September 04, 2018 that meet the inclusion criteria. We included studies that used 7.1% chlorhexidine digluconate (4% chlorhexidine) as the intervention compared with dry care in control arms. Seven RCTs were conducted in Zambia, Tanzania, Bangladesh, Nepal, India and Pakistan with a total of 123,196 participants were identified from low and lower-middle income countries. Pooled relative risks (RR) with 95% confidence intervals (CI) using fixed-effect model was calculated.

Results: The result of the Analysis revealed that there is a 20% reduction in the pooled incidence of neonatal mortality among the chlorhexidine group as compared to the dry cord care group (pooled RR = 0.80; 95% CI: 0.73-0.0.87; P = 0.00001). Furthermore, incidence in omphalitis was decreased by 28% in the chlorhexidine group as compared to the dry cord care group (pooled RR = 0.72; 95% CI: 0.70-0.74; P = 0.00001). On the other hand, chlorhexidine topical application delayed cord separation time by 2.69 days than dry care.

Conclusion: Topical application of chlorhexidine significantly reduces the incidence of omphalitis and neonatal mortality even if it resulted in a delay of cord separation time. We recommend a guideline on the use and incorporation of chlorhexidine in the routine cord care.

Systematic Review Registration: CRD42018109280

Keywords: Chlorhexidine, umbilical cord, cord separation time, omphalitis, neonatal mortality, neonates, low-income countries, Lower-Middle income countries

Dietary Pattern is Associated with Iodine Deficiency among School Children in Southwest Ethiopia; A Cross Sectional Study. *Hamid Yimam Hassen*

Background: Despite the universal iodization of salt in Ethiopia, iodine deficiency disorders remain a major public health problem and continued to affect a large segment of the population. It is thus essential to assess factors contributing to the unacceptably high endemic goiter rate in the country and avail evidences for further additional interventions. In line with this, we examined the association of diet and iodine deficiency among school aged children in Ethiopia.

Method: A school based cross sectional study was conducted among 767 school children in southwest Ethiopia February to May 2016. Relevant socio-demographic and other important health information were collected using a pre-tested structured questionnaire through interview. Dietary pattern was measured using modified Hellen Keller's food frequency questionnaire. Iodine deficiency was diagnosed based on urinary iodine concentrations level and total goiter rate according to the World Health Organization threshold criteria. Multivariate linear regression was used to identify dietary factors that affect urinary iodine level.

Result: Of the 767 sampled children, 12% and 4% of school children have grade 1 and grade 2 goiter respectively, making the total goiter rate 16%. While the prevalence of iodine deficiency based on urinary iodine concentration is 58.8% of which 13.7 % had severe, 18.6% had moderate and 26.5% had mild form. The proportion of children who consumed taro/godere, banana, corn, Abyssinian cabbage, and potato respectively at daily bases 57.8%, 53.1%, 37.9%, and 31.2%, respectively. Age (β= -0.7, 95%CI= (-1.1, -0.4)), sex (β= -22.3, 95%CI= (-33.8, -10.8)), consumption of godere/taro root (β= -27.4, 95%CI= (-22.9, -31.8)), cabbage (β= -11.7, 95%CI= (-5.7, -17.6)), Abyssinian cabbage (β= 12.4, 95%CI= (6.7, 18.2)), and banana(β= 5.6, 95%CI= (0.01, 11.2)) significantly associated with urinary iodine level.

Conclusion: Iodine deficiency is still an important public health problem in southwest Ethiopia. Over-consumption of goitrogenic foods and under-consumption of iodine-rich foods were prevalent and associated with lower urinary iodine level. Therefore, dietary counseling apart from universal salt iodization is recommended.

Dietary Sodium and Potassium Intake among Adult Population of Addis Ababa, Ethiopia, 2018:
Semira Saje Mitiku.

Background: World health organization recommends approximately a one to one ratio of sodium to potassium intake. However, most populations around the world consume high amount of sodium and low amount of potassium leading to high sodium to potassium ratio, which puts the population at risk of hypertension and cardiovascular disease. In Ethiopia, population potassium intake and body sodium to potassium ratio was unknown.

Objective: To evaluate potassium and sodium intake among adult population of Addis Ababa, Ethiopia, 2018.

Method: A community based cross-sectional study was conducted among 284 individuals aged 20 years and above residing in Addis Ababa. Participants' socio-demographic data were collected. Repeated multiple pass 24-hour dietary recall and random urine were collected to estimate sodium and potassium intake. Nutrient content of diet was calculated using software package Nutrisurvey. Usual intake from the diet recall was determined using national cancer institute (NCI) method by adjusting for sex, age, day of consumption and sickness (decreased appetite). Cobas 6000(501) analyser was used for urine electrolyte analysis. Estimated 24 hour sodium and potassium excretion was calculated from sample urine using INTERSALT and Tanaka formula by adjusting for individual's sex, age, creatinine, height, weight and body mass index. Prevalence of inadequate potassium intake, prevalence of excess sodium intake and prevalence of excess sodium to potassium ratio were compared with recommended values using SAS 9.3 and STATA14 software. Salt intake per day was estimated by multiplying sodium intake per day by 2.5.

Result: The mean intake of potassium was 1.9(SD=0.4) g/day and 1.9(SD=0.6) g/day from urine and diet evaluation respectively. The mean value of sodium estimated from urine was 3.3 (SD=0.7) g/day, which is equivalent to 8.2 (SD=1.8) g/day of salt. The mean intake of sodium estimated from diet evaluation was 3.0 (SD=0.9) g/day, which is equivalent to 7.5 (SD=2.2) g/day of salt. The prevalence of inadequate potassium intake was 100% from both dietary assessment and urine analysis. The prevalence of excess sodium intake was 98.2% and 99.7% from urine and diet evaluation respectively. The prevalence of excess sodium to potassium ratio was 90.1%, with a mean intake of 2.5(SD=1.4).

Conclusion and Recommendation: We conclude that there was high prevalence of inadequate potassium intake and excess sodium intake leading to a high prevalence of excess sodium to potassium ratio. Interventions targeting to decrease sodium intake and to increase potassium intake is needed.

Keywords: sodium, potassium, diet recall, spot urine, Ethiopia

Factors Associated with Chronic Energy Deficiency among Elderly Population in Ethiopia: A Community Based Study. *Zegeye abebe Abitew.*

Introduction: Chronic energy deficiency is an important public health problem among elders aged ≥ 65 years. One in seven older people aged ≥ 65 years has a medium to high risk of malnutrition, globally. The situation of chronic energy deficiency among elders aged ≥ 65 years is quite poorly known in Ethiopia. Therefore, this study was aimed to determine the magnitude of chronic energy deficiency and associated factors among elders' aged ≥ 65 years, in Aykel town administration, Amhara Regional State, Northwest Ethiopia.

Methods: A community-based cross-sectional survey was carried out from March 28th to April 20th, 2018. Study participants were recruited by a census technique. Both bivariate and multivariate logistic regression analysis used to identify factors associated with chronic energy deficiency. All variables with P–values of < 0.2 in the bivariate analysis were remarked for the multivariable analysis. Both Crude Odds Ratio (COR) and Adjusted Odds Ratio (AOR) were computed to determine the strength of association. In the multivariate analysis, all variables at P–values of < 0.05 were considered as statistically significant with chronic energy deficiency.

Results: A total of 892 participants recruited for the study. The prevalence of chronic energy deficiency was 17.6% (95%CI: 15.0, 20.20) among the study community. It was significantly associated with female sex (AOR: 1.58; 95%CI: 1.04, 2.41), age (AOR: 3.90; 95%CI: 1.85, 8.25), household food insecurity (AOR: 1.95; 95%CI: 1.16, 3.00), poor household wealth status (AOR: 1.77; 95%CI: 1.07, 2.94), loss of appetite due to illness (AOR: 2.93, 95%CI: 1.92, 4.48)] and poor dietary diversity score (AOR: 5.51; 95%CI: 2.89, 10.52).

Conclusion: The magnitude of chronic energy deficiency was low in the study area. It was significantly associated with sex, age, poor dietary diversity score, loss of appetite due to illness, household food insecurity and wealth status. Therefore, there is a need to design and implement programs and strategies to improve nutritional status among elders in the Northwest part of Ethiopia. In addition, improving household economic and living standards is an essential measure to address the burden of chronic energy deficiency among the older community.

Keywords: Chronic Energy Deficiency; Elders; Associated Factors; Northwest Ethiopia;

Stunting and Anemia among Children 6-23 Months Old in Damot Sore District, Southern Ethiopia. *Minyahil Tadesse Boltena*

Background: Stunting and anemia are a long-standing public health challenges which adversely affects the cognitive development and physical wellbeing of children in low income settings. The aim of this study was to assess the prevalence and associated factors of stunting and anemia among 6-23 months old children in Damot Sore District, Southern Ethiopia.

Methods: Cross-sectional survey was conducted among 477 children aged 6 – 23 months, which were living in Damot Sore District, in April 2017. A multistage sampling technique was used. Villages were randomly selected and systematic random sampling method was used to select study participants. Data on socio-demographic, anthropometric, dietary, blood samples for hemoglobin were collected. Data were entered into EPI Data V. 3.1 and exported into SPSS Version 21.0 for analysis. A principal component analysis (PCA) was done to generate wealth score of households. Binary logistic regression model was used to identify factors associated with the outcome variables (stunting and anemia) separately, those variables having less than a p-value of 0.25 were chosen as candidate for multivariable analyses and finally multivariable logistic regression model was used to identify independent variables of each outcomes, with statistical significance set at $p<0.05$ (95% confidence interval (CI)).

Results: Out of 477 children studied, 31.7% were stunted and 52% were anemic. In the multivariable analyses, the number of under five children within a household (AOR=4.18, 95%CI: 2.65–6.57), drinking water from unsafe source (AOR=4.08, 95%CI: 1.33-12.54) and anemia (AOR=3.13, 95%CI 2.00-4.92) were factors significantly associated with stunting. On the other hand, independent variables of anemia were early initiation of complementary feeding (AOR=2.96, 95%CI: 1.23–4.85), poor dietary diversity (AOR=2.95, 95%CI: 1.78–4.91), poor breast feeding practice (AOR=2.94, 95% CI: 1.63–5.32) and stunting (AOR=3.65, 95%CI: 2.15–6.19).

Conclusion: This study revealed higher level of stunting and anemia among children aged 6 – 23 months than WHO (world health organization) criteria of public health importance. Sustainable promotion of diversified diet, optimal complementary feeding, optimal and complementary breast feeding practices, improving sanitation infrastructure are measures needed to tackle these severe public health challenges.

Keywords: Stunting, Anemia, Southern Ethiopia.

A meta-analysis of Inpatient Treatment Outcomes of Severe Acute Malnutrition and predictors of Mortality among Ethiopian Under-five Children, *Fasil Wagnew.*

Background: Severe forms of malnutrition have drastic effects on childhood morbidity and mortality in sub-Saharan countries, notably in Ethiopia. Although few studies have previously estimated treatment outcomes of severe acute malnutrition (SAM) in Ethiopia, their reports were widely varied and remained inconsistent. Thus, this study aimed to pool estimates of treatment outcomes and predictors of mortality among SAM children in Ethiopia.

Methods: Databases including PubMed, CINHAL, Web of Sciences; Cochrane, Psych INFO and Google Scholar were comprehensively reviewed to identify 21 studies (dating from 2000 to 2018) estimating treatment outcomes and predictors of mortality among SAM children, using *a priori* set criteria. PRISMA guideline was used to systematically review and meta-analyze eligible studies. Details of sample size, magnitude of effect sizes, including Hazard Ratio (HRs) and standard errors were extracted. Random-effects model was used to calculate pooled estimates in Stata/se version-14. Cochran's Q, I^2, and meta-bias statistics were assessed for heterogeneity and Egger's test for publication bias.

Result: Twenty-one studies were included in the final analysis, which comprised 8,057 under-five children with SAM in Ethiopia. The pooled estimates of treatment outcomes, in terms of death, recovery, defaulter and transfer out were 10.3% (95%CI: 8.3, 12.3), 70.5% (95%CI: 65.7, 72.2), 13.8% (95%CI: 10.8, 16.9) and 5.1% (95%CI: 3.3, 6.9), respectively. Diarrhea (HR: 1.5, 95% CI: 1.1, 2.2), dehydration (HR: 3.1, 95%CI: 2.3, 4.2) and anemia (HR: 2.2, 95%CI: 1.5, 3.3) were statistically significant predictors of mortality among these children. No publication bias was detected.

Conclusion: Treatment outcomes in under-five children with SAM are lower than the national standard, where mortality is being predicted by comorbidities at admission. Children with SAM need to be adequately treated for diarrhea, dehydration and anemia at the primary point of care to reduce mortality.

Keywords: Severe acute malnutrition, treatment outcomes, meta-analysis, and Ethiopia.

Utilization of Adequately Iodized Salt at the Household Level and Associated Factors in Debre Tabor Woreda, Northwest of Ethiopia: Community Based Cross-Sectional Study. *Yaregal Animut Abebil*

Background: Iodine deficiency disorders (IDD) is a significant public health problem in more than 50 countries in the world and elimination of iodine deficiency, by convenient production, marketing, and universal consumption of iodized salt, represents a significant development effort in public nutrition. However, slight is known about utilization of adequately iodized salt in the northwest parts of Ethiopia. Therefore the aim of the study was to assess utilization of adequately Iodized Salt and associated factors at Household level in Debre Tabor District, North west, Ethiopia, 2017.

Methods: A Community based Cross-sectional study was conducted from June to July 2017. Multistage stratified sampling followed by systematic random sampling technique was used to select 520 households. A teaspoon salt was collected from each household and the concentration of salt iodine was determined by using the rapid field test kit. Accordingly, the value of 0 Part per million (PPM), below 15 Part per million (PPM) and greater than 15 Part per million (PPM) with the conforming color chart on the rapid test kit were employed to classify the level of iodine content in the sampled salt. A multivariate logistic regression analysis was carried out to identify factors associated with utilization of adequately iodized salt, and variables with a *p*-value <0.05 were considered statistically significant.

Result: This study showed that about 36.2% [95% CI: 27.1, 45.3%] of Household utilize adequately iodized salt. Educational status of the household head [AOR: 3.60, 95% CI: (2.06, 6.31)], buying salt from nearby shop [AOR: 3.32, 95% CI: (2.06, 5.34)] and having good knowledge on iodized salt use [AOR: 1.80, 95% CI: (1.21, 2.68)] were positively associated with the utilization of adequately iodized salt.

Conclusion: utilization of adequately iodized salt is low in the study area. Therefore, intensifying strategies to enhance community awareness on the benefit and proper practicing of iodized salt and increasing accessibility of iodized salt is essential to improve utilization..

Keywords: Utilization, adequately iodized salt, associated factors, Northwest Ethiopia

Prevalence of Food Insecurity and Its Gender Disparity among Adult People Living with Human Immunodeficiency Virus Receiving Antiretroviral Therapy in Ethiopia: A Systematic Review and Meta-Analysis. *Dube Jara*

Background: People living with HIV lack access to sufficient quantities of nutritious foods and develop the feeling of hunger as a result of food insecurity. Studies suggest that there is gender-based inequality in the experience of food insecurity. The few studies conducted on the prevalence of food insecurity among adults living with HIV in Ethiopia presented inconclusive finding. Therefore, the objective of the current systematic review and meta-analysis was to estimate the pooled prevalence of food insecurity and its gender disparity among adult patients living with HIV receiving antiretroviral therapy in Ethiopia.

Method: We followed Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. Studies were accessed through electronic web-based search from PubMed, Google Scholar, CINAHL, PopLine, MedNar, Embase, Cochrane library, the JBI Library and the web of science. We included studies conducted on the prevalence of food insecurity adults living with HIV receiving antiretroviral therapy whose age was greater than 18 years. The meta-analysis was conducted using STATA 14 software. A random effects model was used to estimate the pooled prevalence at 95% CI. Funnel plots and Egger's and Begg's tests were used to check for publication bias.

Results: A total of 52 studies were identified of which eleven studies included in the meta-analysis with a total of 4031 adult people living with HIV receiving antiretroviral therapy. The overall pooled estimated prevalence of food insecurity among adult people living with HIV receiving antiretroviral therapy in Ethiopia was 63.44 % (95% CI (46.33% - 80.54%)). The analysis indicated that there was gender disparity in pooled prevalence of food insecurity. The findings showed a higher pooled prevalence of food insecurity among female (68.85%, 95% CI (57.88%, 79.81%)) compared to males (31.15%, 95% CI (20.19%, 42.12%)).

Conclusion: The review demonstrates the high overall pooled prevalence of food insecurity among adult people living with HIV receiving antiretroviral therapy in Ethiopia with high gender disparities. Therefore, the interventions should be culture and context specific to address the regional and gender disparities in the prevalence of food insecurity.

Keywords: food insecurity, adult people, gender disparity, HIV, Ethiopia

Oral and Anal Sexual Practice among Preparatory School Youths in Dire Dawa City Administration, Eastern Ethiopia, *Abdu Oumer Abdu.*

Background: human immunodeficiency virus highly affects young peoples in developing countries, of which sexual transmission was the major route in addition to vaginal, oral and anal sex. Understanding the full range of sexual behavior among young people especially oral and anal sexual experience is very crucial to design appropriate intervention strategies.

Objective: to assess oral and anal sexual experience and associated factors among preparatory school youths in Dire Dawa city, Eastern Ethiopia, 2016.

Method: School based cross sectional study was conducted among 1067 school youths attending preparatory schools. Systematic random sampling method was used to select study participants. Data were collected using self-administered questionnaire and entered in to Epi-data version 3.3.1 and exported to SPSS 20 for analysis. Descriptive and bivariate logistic regression with COR and AOR with 95% Confidence interval was done. Variables in bivariate analysis with $P < 0.25$ were entered to multiple logistic regression analysis to determine predictor variables. $P < 0.05$ was considered statistically significance and AOR with 95% CI used to assess strength of association.

Result: A total of 983 (92.1%) response rates was achieved. The proportion of youths who reported having oral sex was 9% (88) and that of anal sex was 6.7% (66). Having multiple sexual partnerships was reported by 65.8 % and 56.5% of youths who ever engaged in oral and anal sex respectively. From those who ever engaged to oral sex and anal sex 15.9% and 34.8% consistently used condom respectively. Oral sex practice was significantly associated with intimate partner ever engaged to oral sex practice (AOR= 4.53, 95%CI: 2.26-9.05), ever engaged to vaginal sex (AOR= 16.38, 95% CI: 7.22-37.19), older age (20-24years) (AOR= 2.45, 95% CI: 1.24- 4.86), ever drinking alcohol (AOR= 2.11,95% CI:1.02-4.34), and ever smoke shisha (AOR= 2.85,95% CI:1.4-5.83). Similarly anal sex experience was significantly associated with intimate partner ever engaged to anal sex (AOR= 5.34, 95% CI: 4.2- 26.98), ever engaged to vaginal sex (AOR= 10.64, 95% CI: 2.39-11.9), ever watching pornographic movies (AOR= 3.86, 95% CI: 1.45- 10.29) and parental monitoring of youth's sexual behavior (AOR= 2.63, 95% CI: 1.12- 6.19).

Conclusion and Recommendation: Significant proportion of youths had engaged in oral and anal sexual practice and multiple sexual partners were common among youths for oral and anal sex. In the contrary consistent condom use was very low. A combination of Sexual health education intervention strategies should be implemented at family, school and community level.

Keywords: oral sex, anal sex, school youths

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Risk Factors for Hypertension among Adults, an Analysis of Population Based Cross sectional Survey Data at Gilgel Gibe Field Research Center. *Tesfa tsegaye birlew,*

Background: Population based survey study on hypertension risk factors among adults in Ethiopia are lacking. The objective of this study was to assess hypertension risk factors among adults aged 1564 years, at Gilgel gibe field research center.

Methods: An analysis of population based cross-sectional survey data on chronic non-communicable diseases was carried out at the Field Center. Four thousand & fifty five individuals (hypertensive=303) were involved for analysis. Principal investigator together with data miner extracts the required data. Bivariate analysis of the association between the explanatory and outcome variable were carried out and assessed using Odds ratio with 95% confidence interval; variables in a binary screening found at p-value ≤ 0.25 candidate, and then Multiple logistic regression analysis employed to find out significant socio-behavioral factors associated with being hypertensive, employing Statistical Program for Social Science version 20.0.

Result: Four thousand and fifty five (90.7%) out of the planned sample engross in the analysis (hypertensive =7.5%; women 179 (4.4%; No hypertensive = 92.5%). And the age groups of 45-54 years were substantial number of suffering hypertension 67(7.8%). Female, able to read and write only, alcohol binge women and vigorous recreational exercise were predictors of hypertension. Men and urban residents were less likely to be hypertensive (Odd Ratio =0.74 and, 0.82, respectively). Current Khat chew was highest among hypertensive (Odd Ratio =1.07(95%CI: 0.84-1.36). Reported risk factor: low fruit &/ or vegetable serve was the highest both in normotensive (42%) & 43% in hypertensive, and total level of physical inactivity was the lowest among hypertensive (1.7%), and current alcohol consumption 5.5% among normotensive. The results of bivariate analysis illustrated female, alcohol binge women and vigorous exercise in leisure were statistically significant with Odd Ratio of (1.35, 6.12 and 2.03) times more likely hypertensive, respectively. Then multivariate analysis, denote the Odd Ratio value of being female was 1.32, able to read and write only 1.60, binge women 6.78 and vigorous recreational activity 2.61 times more likely to have the disease.

Conclusion: Risk factors for hypertension were common, so provision of health education, strength a surveillance system for hypertension and its risk factors and further extended studies including biological risk factors; is necessary to reduce the burden of hypertension, in the survey population.

Keywords: Risk Factors, Hypertension, Gilgel Gibe Field Research Center, Ethiopia.

Co-Morbidity of Attention Deficit Hyper Activity Disorder and Associated Factors among Children with Seizure Disorders Attending Seizure Clinic at Gondar University Hospital, Northwest Ethiopia 2015 *Haregewoin Mulat, Nigussie Yegezaw University of Gondar.*

Background: Attention Deficit Hyperactivity Disorder (ADHD) is one of the most common mental disorders that develop in children and becomes apparent in the preschool and early school years. It is characterized by pervasive and impairing symptoms of in-attention, hyperactivity, and impulsivity. When ADHD present in epileptic children it makes the treatment complicated and the prognosis poor. ADHD among epileptic children in Ethiopia particularly in the study area has poorly understood. Hence, understanding the magnitude of ADHD and associated factors would be important to have a policy intention to wards these people and to design appropriate interventions.

Objective: The aim of the study is to assess the co-morbidity of attention deficit hyperactivity disorder (ADHD) and associated factors in children with epilepsy, Gondar university hospital.

Methods: A hospital based cross-sectional study was conducted in a total of 260 children followed in pediatric seizure clinic in four months time was included in the study. Data were collected from parents or caregivers by using interview technique with the standard disruptive behavioural disorder (DBD) rating scale 18 item was used to investigate the presence of ADHD. Patients chart also revised to get information about clinical variables and to see the detection rate of the disorder by the attending clinician.

Data was coded, entered and cleaned by using EpiData version 3.1 and exported to SPSS version 20 for further analysis. Variables with p value less than 0.2 in Bivariate analysis were fitted in to Multivariate binary Logistic regression model. Finally the variables which have significant association will be identified on the basis of OR, with 95%CI and p-value, p value less than 0.05 will considered as statistically significant association

Result: A total of 260 children attending seizure clinic to follow for different types of seizure disorders predominantly grandmal seizure were involved in the study. The mean age of participants was 10.5+ 2.7 years. More than half 158(60.8%) were males. In 135(51.9%) of individuals seizure starts suddenly and Seizure is not controlled in more than half 142(54.6%) of the participants.

Prevalence of ADHD among epileptic children is 115(44.2); out of which only 3(2.6%) were detected as having mental health problems by the clinician

Being male, having family history of seizure disorder, having family history of other mental illness, sudden onset of seizure and uncontrolled seizure with the odds of

[AOR= 2.70 95%CI (1.46-4.97)], [AOR=2.4295%CI(1.26-4.65)], [AOR=4.14(1,76-9.68)], [AOR=2.37 95% CI (1.32-4.27)], [AOR=2.55 95% CI(1.41-4.61)] accordingly have significant association with ADHD.

Conclusion and Recommendation: prevalence of ADHD is high among children with seizure disorder but detection rate was very low. being male, having family history of seizure disorder, having family history of other mental illness, sudden onset of seizure and uncontrolled seizure were found to be significantly

associated with ADHD. Assessing all epileptic children who have follow up at seizure clinic for ADHD is vital to improve the outcome of their seizure treatment and early detect and treat ADHD.

Redefining Risk Thresholds for Initiating Statins for Primary Prevention of Cardiovascular Disease: A Benefit-Harm Balance Modeling Study. *Henock Gebremedhin Yebyo, Helene E. Aschmann, Milo A. Puhan.*

Background: Many guidelines use expected risk for cardiovascular disease (CVD) during the next 10 years as a basis for recommendations on use of statins for primary prevention of CVD. However, how harms were considered and weighed against benefits is often unclear.

Objective: To identify the expected CVD risk above which low- or moderate- dose statins provide net benefit for a primary prevention population and additionally to assess their variation across different age groups, sex, and by statin type.

Methods: We performed a quantitative benefit–harm balance modeling study to determine 10-year risk for CVD at which statins provide at least a 60% probability of net benefit, with baseline risks, frequencies of and patient preferences for statin-related benefits and harms, and competing risk for non-CVD death taken into account. We took data from network meta-analysis of primary prevention trials, and a preference elicitation survey, which were conducted to inform this study as well as selected observational data.

Results: Younger men had net benefit at a lower 10-year risk for CVD than older men (14% for ages 40 to 44 years vs. 21% for ages 70 to 75 years). In women, the risk required for net benefit was higher (17% for ages 40 to 44 years vs. 22% for ages 70 to 75 years). Atorvastatin and rosuvastatin provided net benefit at lower 10-year risks than simvastatin and pravastatin.

Conclusions: Statins provide net benefits at higher 10-year risks for CVD than are reflected in most current guidelines. In addition, the level of risks where net benefit occurs varies considerably according to age, sex, statin type and populations. These results imply that the current guidelines might be over prescribing statins for a large proportion of primary prevention populations, especially for older people who likely have higher risk of harms, such as diabetes, myopathy etc., which would offset the benefit of statins.

Depression among Individuals with HIV/AIDS in Northwest Ethiopia: the Prevalence Is High Compared to the General Population. *Tesfa Mekonen, Habte Belete, Wubalem Fekadu.*

Background: The prevalence of depression is high among people living with HIV/AIDS. Depression has a significant impact on HIV clinical and immunological progression, treatment response, ability to work, and quality of life. However, mental health services are limited in most Anti-retroviral therapy (ART) clinics especially in developing countries. This is mainly due to a shortage of mental health professional and reluctance of primary health care providers to engage in mental health service provision.

Aim: To assess the proportion and determining factors of depression among individuals with HIV/AIDS in Mecha Demographic Surveillance and Field Research Center, Ethiopia.

Method: The comparative cross-sectional study was conducted among 1,026 randomly selected participants. The proportion of depressive symptoms was compared between samples of the general population and peoples living with HIV/AIDS. Data were collected by pre-tested interviewer-administered questionnaire. Patient Health Questionnaire (PHQ-9) was used to assess the presence of depressive symptoms. Chi-square was used to compare simple frequencies in both groups and P-value was used to show the significance of comparison. Multivariable logistic regression analysis was done to control for confounding. The strength of associations is indicated by Odds Ratio (OR) with 95% confidence interval. Variables with P values < 0.05 are considered as statistically significant.

Results: The overall proportion of depression was 13.3%. The proportion was significantly higher in people living with HIV/AIDS (16.6%) as compared to the community sample (9.7%), p = 0.001. Variables significantly associated with depression were older age [Adjusted Odds Ratio (AOR) = 2.3, 95% CI: 1.1, 5.1], people living with HIV/AIDS [AOR = 1.7, 95% CI: 1.1, 2.6], single marital status [AOR = 1.9, 95% CI: 1.1, 3.5], divorced/widowed [AOR = 2.3, 95% CI: 1.5, 3.5], poor social support [AOR = 3.9, 95% CI: 1.7, 9.8].

Conclusions: The proportion of depressive symptoms was higher in individuals with HIV/AIDS and negatively associated with older age, marital status, and poor social support. It is necessary to include mental health care and screening in the routine HIV/AIDS care.

Keywords: Depression, HIV/AIDS, Ethiopia.

A Systematic Analysis on Prevalence and Sub-Regional Distribution of Undiagnosed Diabetes Mellitus among Adult Individuals in Africa, *Getenet Dessie.*

Background: Despite the high prevalence of undiagnosed Diabetes in Africa, the extent of undiagnosed Diabetes in the region is still poorly understood. So that this systematic review and meta-analysis was designed to determine the pooled prevalence of undiagnosed diabetes mellitus among adult individuals in Africa.

Methods: A systematic desk review and electronic web-based search of PubMed, Google Scholar, EMBASE, and the World Health Organization's Hinari portal (which includes the SCOPUS, African Index Medicus, and African Journals Online databases) identified peer-reviewed research studies on the prevalence of undiagnosed Diabetes among adult individuals using pre-defined quality and inclusion criteria. We addressed this all articles from June 1, 2018 to September 30, 2018. The I^2 test was used to assess heterogeneity across studies. A random effects model was used to estimate the pooled prevalence of undiagnosed diabetes mellitus at a 95% confidence interval (CI). Funnel plot asymmetry and Egger's tests were used to check for publication bias.

Results: Our search identified 1436 studies, of which 20 articles were eligible for inclusion in the final meta-analysis. The average pooled estimate of undiagnosed diabetes mellitus among adult individuals was 4.62 (95% CI: 3.67 – 5.57). The pooled prevalence of undiagnosed diabetes mellitus based on geographic location was 9.48 (95% CI: 4.16 - 14.8) in Western Africa and 1.46(95%CI: 0.57,2.34) in southern Africa respectively.

Conclusion: Our findings indicate high prevalence of undiagnosed diabetes in Africa and suggests that it may be more prevalent there than elsewhere. Given the high levels of undiagnosed diabetes in the Africa region, more attention should also be paid to incorporating diabetes screening and treatment service into existing diabetes related programs to reduce undiagnosed diabetes prevalence.

Keywords: Diabetes, undiagnosed, meta-analysis, Africa.

Incidence of Depression in People with Newly Diagnosed Tuberculosis in Ethiopia: A Cohort Study. *Fentie Ambaw Getahun.*

Background: Cross-sectional studies show that the prevalence of comorbid depression in people with tuberculosis (TB) is high. The hypothesis that TB may lead to depression has not been well studied. Our objectives were to determine the incidence and predictors of probable depression in a prospective cohort of people with TB in primary care settings in Ethiopia.

Methods: We assessed 648 people with newly diagnosed TB for probable depression using Patient Health Questionnaire, nine-item (PHQ-9) at the time of starting their anti-TB medication. We defined PHQ-9 scores ten and above as probable depression. Participants without baseline probable depression were assessed at two and six months to measure incidence of depression. Incidence rates per 1000-person months were calculated. Predictors of incident depression were identified using Poisson regression.

Results: Two hundred and ninety-nine (46.1%) of the participants did not have probable depression at baseline. The incidence rate of depression between baseline and two months was 73.6 (95%CI= 42.8, 104.3) and between baseline and six months was 24.2 (95%CI= 14.9, 33.5) per 1000 person-months respectively. Female sex (adjusted ß= 0.22; 95%CI= 0.16, 0.27) was a risk factor and perceived social support (adjusted ß= -0.14; 95%CI= -0.24, -0.03) was a protective factor for depression onset.

Conclusion: There was high incidence of probable depression in people undergoing treatment for newly diagnosed TB. The persistence and incidence of depression beyond six months needs to be studied. TB treatment guidelines should have mental health component.

Key terms: depression, tuberculosis, incidence, primary care, Ethiopia

Impact of Perinatal and Recurrent Maternal Common Mental Disorders on Educational Outcomes of Primary School Children in Rural Ethiopia: A Population-Based Cohort Study. *Habtamu Mekonnen[1, 2], Girmay Medhin[3], Mark Tomlinson[4], Atalay Alem[1], Martin Prince[5] and Charlotte Hanlon[1, 5] 1Department of Psychiatry, School of Medicine, College of Health Sciences, Addis Ababa University; 2. Department of Psychology, College of Education and behavioral science, Jimma University, Jimma 3Centre for Global Mental Health, Institute of Psychiatry, King's College London 4Aklilu-Lemma Institute of Pathobiology, Addis Ababa University 5Department of Psychology, Stellenbosch University, Stellenbosch, South Africa.*

Background: The postnatal period is a critical period for exposure to maternal common mental disorders (CMD; depression and anxiety symptoms) leading in many cases to enduring effects on the child regardless of subsequent maternal mental health. However, some studies find ongoing repeated exposure to maternal CMD during early childhood to be more strongly associated with adverse child outcomes than simply early postnatal exposure.

Aim: To examine the independent associations between antenatal, two months postnatal and repeated exposure to maternal CMD in early childhood on child educational outcomes between 7 and 9 years of age.

Methods: Out of 1234 eligible women in the third trimester of pregnancy living in the Butajira Demographic Surveillance Site, Ethiopia, 1065 (86.3%) were recruited between July 2005 and February 2006 and have been followed up to date. One antenatal and nine postnatal assessments were carried out on mother-child dyads. Cumulative maternal CMD was defined as the number of assessment time points participant scoring 6 or more on a validated measure of CMD excluding the 2 months postnatal time-point. Educational outcomes of the child were obtained from the mother when the child was aged between 7 and 8 years (2013/14 academic year) and from school records when the children were aged between 8 and 9 years (2014/15 academic year).

Results: Antenatal CMD (Risk Ratio (RR) 1.06; 95% Confidence Interval (CI): 1.05, 1.07) and postnatal CMD (RR 1.07; 95% CI: 1.06, 1.09) were significantly associated with child absenteeism at T2. Recurrent exposure to pre-school maternal CMD was not associated with absenteeism after adjusting for antenatal and postnatal CMD. Non-enrolment at T1 (Odds Ratio 0.75; 95% CI: 0.62, 0.92) was significantly but inversely associated with postnatal maternal CMD. There was no association between maternal CMD and child academic achievement or drop-out.

Conclusions: Our findings support the hypothesis of a critical period of exposure to maternal CMD for adverse child outcomes and indicate that programs aimed at enhancing regular school attendance need to address maternal CMD from pregnancy onwards.

Keywords: Child Education, Absenteeism, Maternal Mental Health, Depression, postnatal depression, sub-Saharan Africa.

Survival Analysis of Time to Develop Cardiovascular Complications and its Predictors among Adult Hypertensive Clients Attending at Ayder Comprehensive Specialized Hospital, Tigray, Ethiopia, 2018: Retrospective Cohort Study. *Degena Bahrey Tadesse.*

Background: Cardiovascular disease is a disorder of cardiac and blood vessels which includes myocardial infarction, heart failure and stroke. Annually 17.7 million deaths in the world were caused by cardiovascular disease. Of these 80 % death were in sub-Saharan Africa. Ethiopia had also 22% of cardiovascular complications among hypertensive clients. Though hypertension is the leading cause for cardiovascular complications, there is limited evidence on different factors which could cause cardiovascular complications. On top of this, time to develop different cardiovascular complications among hypertensive clients is not adequately investigated in Ethiopia in general and in Tigray in particular.

Objective: The aim of this study was to assess time to develop cardiovascular complications and its predictors among adult hypertensive clients at Ayder Comprehensive Specialized Hospital, Tigray, Northern Ethiopia, 2018.

Method: Five years retrospective cohort study was conducted on 578 hypertensive clients who had follow –up at Ayder comprehensive specialized hospital. Medical records review was used to collect the required variables. Data were entered and cleaned using Epi-data manager version 4.2 and analysed by SPSS version 23 and STATA version 13. Every independent variable was tested in log-rank test against dependent variable and all variables with P-value <0.25 were taken to the Cox regression model. Then Cox-regression analysis was performed to estimate the hazard ratio and finally, statistical significance was declared at P-values < 0.05.

Result: A total of 578 records of hypertensive clients were taken from cardiac follow -up and followed for total months of 60 and for 28 months median time. From the total of 578 of hypertensive clients considered, 25.4% of them developed complications while the rest 74.6% were censored. The overall survival and hazard probability was 64%, and 36% at 95% CI, (60% - 69.8%), 95% CI, (30.2%-39.9%) respectively in 60 months follow up time. The incidence rate was 8.25 per 1000 per person month. After adjustment, the independent significant predictors of cardiovascular complications among hypertensive clients were age [AHR(95% CI) = 1.03 (1.016- 1.046)], baseline cardiovascular complication [AHR=3.03 (95%CI= (2.009- 4.870)], protein urea [AHR=3.9(95%CI= 1.3- 11.68)], baseline systolic blood pressure [AHR(95% CI)=1.01(1.003,2.012)], and   baseline diastolic blood pressure [AHR (95%CI= 1.013 (1.005, 2.021)].

Conclusion: The major predictors that affect the cardiovascular complications are; baseline cardiovascular complication, diastolic blood pressure, systolic blood pressure, proteinuria and age. Early screening and treatment is the basic to prevent and control of CVC among hypertensive clients. **Keywords*:* Ayder Comprehensive Specialized Hospital, Ethiopia, Cardiovascular complications, Hypertension, Survival analysis

Positive Interpretation Serving as a Tool for Clients Identifying and Replacing Inaccurate Thoughts: The Case of Clients at Erk Mead Psychosocial Support Center in Ethiopia. *Solomon Abebe Woldemariam* .

Back ground: lack of positive interpretation can cause negative impacts such as deteriorating the mental health status of clients suffering from different psychosocial problems. In line with this, positive interpretation has a potential to create a stable mental strength: managing thoughts, regulating emotions, and behaving productively despite our circumstances. The objective of this study is to understand the power of positive interpretation among depression clients to identify and replace inaccurate thoughts.

Method: This study employed an ethnographic study among 140 clients attending at *Erk Mead* psychosocial support center. The study was conducted from August 1, 2017 to August 1, 2018. Initially the therapist recorded clients' personal interpretation of their problem during first round of interviews. Then, the therapist supported the clients to interpret their problem positively and critically observed clients' change across the five-stage consultation of Positive Psychotherapy (PPT). The five stages include: distancing/observation, Inventory, situational encouragement, verbalization and broadening of goals. Also, clients were requested to re interpret their problem after undergoing PPT.

Result: During the first round of interview negative thoughts and common thinking errors was observed among clients, among these were all-or-nothing thinking, overgeneralizing, filtering out the positive, mind-reading, catastrophizing, emotional reasoning, labeling, fortune-telling, and personalization. Most of the clients explained that positive interpretation created a real value in their life and helped them to identify and build skills that last much longer than a smile. Most of the respondents affirmed that positive interpretation supported them to develop other life skills and gave them increase sense of possibilities. Respondents mentioned that positive interpretation supported them to diminish routine stress and boosted their confidence. A significant number of respondents mentioned that positive interpretation ignited their mind to develop new skills and resources. Several respondents explained that positive interpretation enabled them to create a peaceful and balanced life principle across their body, achievement, social contact and spirituality.

Implication: Positive interpretation can serve as a guide to shape clients' thought distortions or thinking errors.

Keywords: positive interpretation, thoughts

Survival Time of Adult Ischemic Stroke Patients and Associated Risk Factors: A Retrospective Cohort Study at Felege Hiwot Referral Hospital. *Daniel Asmealsh Gebretensae.*

Background: Stroke is a major public health and clinical problem that represents the third leading cause of disease worldwide among adult non-communicable diseases Stroke in the developing world is becoming a leading cause of death from infectious diseases that affects mainly adults and adult disability. Ischemic stroke is the most common form of strokes approximately about 80%–85% of all stroke cases.

Methods: A retrospective cohort study was conducted at the Felege Hiwot Referral Hospital among 232 ischemic stroke patients who started treatment between September 2014 and August 2016. Information on relevant variables was collected from adult ischemic stroke patients paper based medical cards and registries. The Kaplan-Meier survival curves and log-rank test used to compare the survival time of different category of predictors, and Cox's regression model employed to identify the effect of covariates on the survival time of ischemic stroke patients.

Result: A total of 232 adult ischemic stroke, patients were included in the study. Out of the total 232 individuals, 69 (29.74%) died and the remaining 163 (70.26%) were censored at the end of follow-up period. Based on Cox proportional hazards regression model, age (AHR =1.015, CI: 1.001 − 1.0304), diabetes (AHR=1.353, CI: 1.1938– 1.643), hypertension (AHR =1.607, 95% CI: 1.003–1.0053), structural heart disease (AHR =2.231, 95% CI: 1.158 − 4.593), and history of previous ischemic stroke (AHR = 1.84, 95% CI: 1.088 − 3.113) were significantly associated with the mortality of adult ischemic stroke patients.

Conclusion: Based on the Cox Proportional Hazards regression model the following prognostic factors, age, diabetes, hypertension, structural heart disease, fibrillation, and history of previous ischemic stroke were the risk factors for survival time of ischemic stroke patients

Keywords: Cox Proportional Hazard Models, Ischemic Stroke, and Survival Function

Prevalence and Determinants of Gestational Diabetes Mellitus in Africa Based on the Updated International Diagnostic Criteria: A systematic review and meta-Analysis. *Achenef Asmamaw Muche*

Background: Gestational diabetes mellitus is defined as glucose intolerance first discovered in pregnancy**.** Globally, the prevalence of gestational diabetes mellitus is rising which is a severe and neglected threat to maternal and child health. There was no prior systematic review and meta-analysis studies conducted in Africa using the updated international diagnostic criteria. Therefore, this systematic review and meta-analysis were conducted to estimate the prevalence and determinants of gestational diabetes mellitus using the published studies carried out in African countries by using new diagnostic criteria.

Methods: This study used a systematic review and meta-analysis of published studies in Africa from January 2013 to November, 2018. The databases used were; PubMed, Scopus, Cochrane Library, EMBASE, Google Scholar, CINAHL, Web of Science, Science direct and African Journals Online using the relevant search terms. Data were extracted using the Joanna Briggs Institute tool for prevalence studies. The meta-analysis was conducted using STATA version 14 software. The heterogeneity and publication bias was assessed using the I^2 statistics and Egger's test respectively. Random effects model was used to estimate the pooled prevalence and the associated factors of gestational diabetes mellitus.

Result: The overall pooled prevalence of gestational diabetes mellitus in Africa was 13.61% (95% CI: 10.99, 16.23), and 14.28 % (95% CI: 11.39, 17.16) in the sub-Saharan African region. The prevalence was highest in the Central African (20.4%), and the lowest was in Northern Africa (7.57%) sub- regions. Factors associated with gestational diabetes mellitus included overweight and obesity (OR =3.51; 95% CI =1.92, 6.40), ever had macrocosmic baby (OR =2.23; 95%CI = 1.12, 4,45), having family history of diabetes mellitus (OR =2.69; 95%CI=1.84, 3.91), having history of still birth (OR =2.92; 95%CI =1.23, 6.93), having history of abortion or miscarriage (OR = 2.21; 95%CI = 1.68, 2.92), chronic hypertension (OR = 2.49; 95% CI=1.35, 4.59) and previous history of gestational diabetes mellitus (OR =14.16; 95% CI=2.39, 84.08).

Conclusions: The prevalence of gestational diabetes mellitus is high in Africa. Factors associated with gestational diabetes mellitus included overweight and obesity, ever had macrocosmic baby, having family history of diabetes mellitus, having history of still birth, having history of abortion or miscarriage, chronic hypertension and previous history of gestational diabetes mellitus. Interventions that target these factors are important in reducing gestational diabetes mellitus.

Keywords: Gestational diabetes mellitus, determinants, overweight and obesity, macrocosmic, abortion, still birth, chronic hypertension, systematic review, Meta-analysis, Africa

Sexually Transmitted Infections among Cervical Cancer Suspected Women: Sero-Prevalence and Associated Risk Factors, Gondar, Northwest Ethiopia. *Setegn Eshetie*

Background and Objectives: Sexually transmitted infections (STIs) have continued a significant public health problem, especially in areas with substandard infection prevention and control programs. It is known that STIs are largely associated with the increasing occurrence of cervical cancer. To date, little is known about the burden of STIs among cervical cancer suspected women in Ethiopia. This study was aimed to assess the seroprevalence of STIs and associated risk factor among cervical cancer suspected women with special emphasis on HIV, HBV, HCV, and Syphilis.

Methods: A hospital-based cross-sectional study was conducted among cervical cancer suspected women at University of Gondar Hospital from February to April 2017. A pre-tested and structured questionnaire was used to collect data on patients' characteristics (socio-demographic, clinical and environmental factors). A standard volume of blood sample was collected and tested for HIV using first response, uni-gold, and VIKIA. Besides, patients were also tested for HBV, HCV, and syphilis using enzyme-linked immunosorbent assay. In all aspects, the standard operational procedure was strictly followed. Data were analyzed using SPSS version 20 software and presented using tables, and charts. Statistical associations were measured using Chi-square test, bivariate and multivariable logistic regression. A p value of less than 0.05 was considered as statistically significant.

Results: A total of 403 cervical cancer suspected women with the mean age of 42.54 (SD+11. 24) years were enrolled in the study. The overall prevalence of STIs was 16.6% (67/403) and the prevalence of HIV, HBV, HCV, and syphilis was 36/403 (8.9 %), 10/403 (2.5 %), 4/403 (1 %) and 29/403 (7.2 %) respectively. History of multiple sexual partners (AOR=3.02, 95%CI 1.57-5.79, P=0.001), alcohol addiction (AOR=2.2, 95%CI 1.07-4.5, P=0.031), history of STI (AOR= 3.38; 95% CI: 1.76-6.47, P<0.001) and not use of condom (AOR= 4.99; 95% CI: 1.5-16.16, P= 0.007) were significantly associated with STIs.

Conclusion and Recommendation: The prevalence of STIs was generally higher among cervical cancer suspected patients. Health education needed to be encouraged to promote awareness about the prevention of STIs.

Keywords: Sexually transmitted infections, cervical cancer, Northwest Ethiopia

Survival Analysis of In-Patient Diabetics in Felege Hiwot Referral Hospital, Bahir Dar, Ethiopia: A Retrospective Cohort Study. *Kidanemariam Berhie.*

Background: Diabetes is a serious, chronic disease that occurs either when the pancreas does not produce enough insulin (a hormone that regulates blood sugar, or glucose), or when the body cannot effectively use the insulin it produces.

Methodology: The purpose of this study was to identify factors that affect the survival time of in-patient diabetics in BFHRH. Among 3730 inpatient diabetics who were followed in Bahirdar Felegehiwot Referral Hospital during September 2011 to August 30 2017, 480 samples (47 children and 433 adults) were selected from 366 children and 3364 adult inpatient diabetic populations respectively. The samples from the two groups of population were selected using proportional sample size allocation formula. After selecting proportional samples from the two groups of populations, systematic random sampling method was employed to select patients that were participant in the study. To determine factors that affect the survival time of in-patient diabetics, compare the survival time as well as examine the association between the survival time with different demographic and clinical variables, the Kaplan Meier estimation method and the parametric regression model were applied.

Result: The result from Kaplan-Meier estimation revealed that the survival time of IDM patients is significantly related with age, diabetic disease complication, place of residence, family history of DM, systolic & diastolic blood pressure, HIV/or TB co-infection, cholesterol level and type of diabetic disease diagnosed. The Log rank result also indicates that the survival time of diabetic patients is not statistically different in experiencing the death event among group classified by sex. The result of the Weibull regression model indicated that complication of DM, family history of DM, systolic blood pressure, HIV / or TB Co-infection and cholesterol level significantly contributed to shorter survival time of DM patients.

Conclusion: the findings of this study shows that diabetic disease complication, family history of DM, systolic blood pressure, HIV/or TB co-infections and cholesterol level are major factors that affect the survival time of in-patient diabetics. The researcher recommended that the people should be aware on the burden of those risk factors and well informed about the disease.

Keywords: In-patient diabetics, survival time, Weibull survival regression model.

Molecular Epidemiology of Human Papillomaviruses from Cervical Samples in Ethiopia: A Systematic Review. *Awoke Derbie.*

Background: Over 99% of cervical cancer cases are associated with infections of Human papillomaviruses (HPVs). In order to draw up optimal vaccination strategies and HPV based cervical cancer screening, collected data on the genotype distribution of HPVs is crucial that is otherwise missed in Ethiopia. Therefore, the aim of this study was to review and compile the results of studies conducted on HPV genotyping in Ethiopia.

Methods: Published articles were systematically searched starting from conception to 27 July 2018 using comprehensive search strings from PubMed/Medline and SCOPUS. Besides, other databases like Google Scholar and the Google databases were also searched manually for grey literatures. Two of the authors of this review independently appraised the studies for scientific quality and extracted the data using the Joanna Briggs Institute (JBI) tools. The pooled HPV genotype distribution was presented with descriptive statistics and summary measures.

Results: The included studies were undertaken in three different areas of the country (Central, Southwest and South) between 2010 and 2014. Some 859 women (age range 15-85 years) with different kinds of cervical abnormalities were included, from whom a total of 534 HPV sequences were reported. Of the reported genotypes, the proportion of HR-HPVs was at 80.4 to100%. The top five genotypes were HPV 16 (45.3%; 95%CI: 41.1-49.6%), HPV 52 (9.4%; 95%CI: 7.2-12.1%), HPV 18 (8.2%; 95%CI: 6.2-10.9%), HPV 58 (6.9%; 95%CI: 5.1-9.4%) and HPV 45 (5.2%: 95%CI: 3.7-7.5%). The combined prevalence of HPV 16/18 was at 53.6% (95%CI: 49.3-57.8%). Some other reported high risk HPV groups were HPV 31 (3.9%), HPV 33 (2.8%), HPV 39 (2.4%), HPV 51(1.1%), HPV 56 (3.7%) and HPV 68 (2.4%). HPV 6 at 2.8% (95%CI: 1.7-4.9%) was the predominant low risk type.

Conclusions: In this review, HPV 16 in particular, but also HPV 52 and 18, warrant exceptional consideration in vaccination and HPV based cervical screening programs in Ethiopia. To the best of our knowledge, this review represents the first of its kind to establish the genotype distribution of HPV from different kinds of cervical lesions in Ethiopia although it is synthesized out of very few studies. Hence, additional nationwide data are needed to strengthen our finding.

Tuberculosis Patients are Physically Challenged and Socially Isolated: A Mixed Methods Case-Control Study of Health Related Quality of Life in Eastern Ethiopia. *Aklilu Abrham Roba.*

Introduction: Pulmonary tuberculosis (TB) impairs respiratory physiology and functional ability, resulting in economic and social dependence upon others. Patients with tuberculosis especially multi drug resistant (MDR-TB) suffer from social isolation, stigma, lack of support and economic constraints. In Ethiopia, the trend of MDR TB is increasing and becoming a serious public health problem. However, little is known about patients except treatment outcomes, financial burden and psychological distress with serious deficiency of data on Health Related Quality of Life (HRQOL). Hence, the aim of this study was to assess HRQOL of MDR TB patients in comparison with drug sensitive pulmonary TB (DSTB) patients.

Methods: We included 100 cases of MDR and 300 controls with DSTB who were matched by sex. Data were collected using SF- 36v2 TM questionnaire and analysed with SPSS version 20. Independent t-test and conditional logistic regression analysis was done considering P-values of less than 0.05 statistically significant. Eight in-depth interviews were also conducted with both groups and represented with verbatim quotations and narrative texts.

Results: There were no statistically significant differences in mean scores for health related quality of life between cases and controls (57.61 ± 16.42 and 59.13 ± 22.10) nor were there significant differences in physical functioning, role disruption due to physical problems, vitality, social functioning, role disruption due to emotional distress, or overall mental health. Individuals with MDR-TB were significantly more likely to be single, a current student, and with lower education and families with more than 5 people than individuals with Drug sensitive TB, allof which were significantly associated with poorer HRQOL ($p<0.05$). There was good internal consistency of the scale scores, with a Cronbach's alpha value of 0.73.

Conclusion: Individuals with MDR-TB reported statistically worse general health but less bodily pain than individuals with Drug sensitive TB. To regain the role function they lost, we recommend that health facilities, media and all other stakeholders educate the community, households and students about pulmonary tuberculosis, treatment, prevention methods and therapeutic approaches towards TB patients, specifically MDR-TB.

Existing, Emerging and Reemerging Communicable Diseases

Current Treatment of Multidrug Resistant Tuberculosis in Ethiopia: an Aggregated and Individual Patients' Data Analysis for Outcome and Effectiveness of the Current Regimens. *Setegn Eshetie.*

Background and Objectives: The programmatic management of Multidrug-resistant tuberculosis (MDR-TB) is entirely based on a WHO-recommended long-term, 18-24 month lasting treatment regimen. However, growing evidence shows that low treatment success rate and high rates of adverse events are associated with this regimen. Up to date, the MDR-TB treatment outcome is not sufficiently understood in Ethiopia. Therefore, this analysis aimed to determine the pooled estimates of successful (cure, completed, or both), and poor outcomes (death, failure, and defaults).

Method: A systematic search was performed to identify eligible studies reporting MDR-TB treatment outcomes in Ethiopia. Relevant studies for our analysis were retrieved from PubMed database search, Google Scholar and institutional repository sites of Ethiopian universities up to March 15, 2018. The primary outcome was treatment success, referring to a composite of cure and treatment completion. A random effect model was used to calculate pooled estimates.

Results: Six studies reporting treatment outcome on the 1,993 MDR-TB patients were included in this analysis. Of the cases, the 1288 and 442 patients had a successful and poor outcome, respectively. In the pooled analysis, treatment success was observed in 59.2% (95%CI, 48.1 - 70.4) of patients, while 23.3% (95%CI, 19.7 – 27.0) of patients had a poor outcome. in sub-group analysis, 46.1% (95%CI, 34.2 – 58.0) were cured, 12.8% (5.7 – 20.0) treatment completed, 14.3% (11.5 – 17.2) died, 7.5% (3.7 – 11.3) defaulted, and 1.6% (1.1 – 2.2%) experienced treatment failure. However, 25.0% (14.6 – 35.5) patients whose treatment outcome was not assessed (on treatment or transfer-out).

Conclusion: The result of this study highlight treatment success among MDR-TB is below acceptable range. To update the current treatment regimen, the levels of evidence need to be replicated through meticulous surveillance systems.

Epidemiology of Tuberculous Lymphadenitis in Africa: A systematic Review and Meta-analysis.

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Introduction: The WHO African region has the highest TB morbidity and mortality rates, accounting for most (23/30) of the high TB/HIV burden countries in the world. The rather slow decline in TB control in Africa can only be accelerated if the epidemiology of tuberculous lymphadenitis (TBLN) is better understood. Tuberculous lymphadenitis is the most frequent form of extra-pulmonary TB and accounts for a considerable proportion of all TB cases. Investigation into its epidemiology has however been neglected due to the high emphasis to pulmonary TB form as a source of transmission. We conducted a systematic review of the literature on the epidemiology of TBLN in Africa.

Methods: Any article that characterized TBLN with respect to demographic, exposure and clinical variables was included. The search for original research articles was restricted to epidemiological work conducted in African countries, published in peer reviewed journals in the English language irrespective of publication year. The articles were retrieved from the electronic database of PubMed, Scopus, Cochrane library and Lens.org. Random effect pooled prevalence with 95% CI was computed based on Dersimonian and Laird method. To stabilize the variance, Freeman-Tukey double arcsine root transformation was done. The data were analyzed using MetaXL and Stata 14.

Results: Of the total 833 articles retrieved; twenty-eight were included in quantitative analysis. Tuberculous lymphadenitis data were available from 12 African countries; of which, majority were from eastern Africa. A total of 6746 TBLN cases were identified. The majority of the cases, 4762 (70.6%) were from Ethiopia. Over 77% and 88% of identified TBLN were cervical in type and naïve to TB drugs. Among TBLN cases, 53% were female, 68% were in the age range of 15-44 years, 52% had a history of livestock exposure, 46% had a history of consuming raw milk/meat and 24% reported BCG vaccination. The proportion of HIV co-infection among TBLN cases was much lower in Ethiopia (21%) than in other African countries (52%). Fever was recorded in 45%, night sweating in 55%, weight loss in 62% and cough for longer than two weeks in 49% of the TBLN cases.

Conclusion and Recommendations: This review is the first comprehensive meta-analysis that reported pooled prevalence estimate of key demographic, exposure and clinical variables of TBLN. TBLN was more common in females and the high prevalence of TBLN in Ethiopia did not show directional correlation with HIV. A meta-analysis of intervention and observational studies is warranted to better define the risk factors driving TBLN in Africa.

Keywords: Tuberculous Lymphadenitis, Epidemiology, Africa, systematic review and meta-analysis

Perceived Quality of Life among Visceral Leishmaniasis and HIV Coinfected Migrant Male-workers in Northwest Ethiopia: A Aualitative study. *Mekuriaw Alemayehu Tefera*

Background: There is paucity of data on quality of life as a dimension of treatment outcome among Visceral Leishmaniasis and HIV coinfected patients. This study sought to explore perceived quality of life among Visceral Leishmaniasis and HIV coinfected male migrant workers in Northwest Ethiopia.

Methods: Twenty Visceral Leishmaniasis and HIV coinfected study participants took part in the in-depth interviews at Visceral Leishmaniasis and HIV treatment centers. Ten participants were on antiretroviral treatment (ART) and the remaining 10 have not yet started ART. All interviews were recorded, transcribed and translated for analysis. Data were analyzed by qualitative content analysis using Open Code software version 3.4.

Result: Participants reported on four aspects of quality of life: live ability of the environment, utility of life, life ability of a person and appreciation of life. Respondents living environment, therapeutic side effects of Visceral Leishmaniasis drugs, poverty and stigma negatively affected their quality of life. On the contrary, good treatment response and financial security were reported to positively affect their quality of life.

Conclusion: Challenges related to the living environment, financial limitations and sub-optimal response of Visceral Leishmaniasis drug and relapse of Visceral Leishmaniasis disease are factors most negatively affecting the quality of life of Visceral Leishmaniasis and HIV coinfected patients. Micro-financing and other socio-economical support programs should be launched to assist the unemployed males migrating to Visceral Leishmaniasis endemic and relatively higher HIV prevalent areas to work as daily laborers. HIV prevention programs in HIV positive-living counseling programs should target such high risk migrant workers in the endemic areas.

Prevalence and Determinants of Anti-Tuberculosis Treatment Non-Adherence in Ethiopia: A Systematic Review and Meta-Analysis. *Abriham Zegeye*

Background: Tuberculosis is a global public health problem. One of the overarching dilemmas and challenges facing most tuberculosis program is non-adherence to the treatment. However, in Ethiopia there are few studies with variable and inconsistent findings regarding non-adherence to treatment for tuberculosis.

Methods: This systematic review and meta-analysis was conducted to determine the prevalence of non-adherence to tuberculosis treatment and its determinants in Ethiopia. Biomedical databases including PubMed, Google Scholar, Science Direct, HINARI, EMBASE and Cochrane Library were systematically and comprehensively searched. To estimate the pooled prevalence, studies reporting the prevalence of adherence or non-adherence to tuberculosis treatment and its determinants were included. Data were extracted using a standardized data extraction tool prepared in Microsoft Excel and transferred to STATA/se version-14 statistical software for further analyses. To assess heterogeneity, the Cochrane Q test statistics and I^2 test were performed. Since the included studies exhibited high heterogeneity, a random effects model meta- analysis was used to estimate the pooled prevalence of non-adherence to tuberculosis treatment. Finally, the association between determinant factors and non-adherence to tuberculosis treatment was assessed.

Results: The result of 13 studies revealed that the pooled prevalence of non-adherence to tuberculosis treatment in Ethiopia was found to be 21.29% (95% CI: 15.75, 26.68). In the subgroup analysis, the highest prevalence was observed in Southern Nations and Nationalities of Ethiopia, 23.61% (95% CI: 21.05, 26.17) whereas the lowest prevalence was observed in Amhara region, 10.0 % (95% CI: 6.48, 13.17.0 ;). Forgetfulness (OR = 3.22, 95% CI = 2.28, 4.53), fear side effect of the drugs (OR = 1.93, 95% CI = 1.37, 2.74), waiting time ≥ 1 hour during service (OR = 4.88, 95% CI = 3.44, 6.91) and feeling distance to health institution is long **(**OR = 5.35, 95% CI = 4.00, 7.16) were found to be determinants of non-adherence to tuberculosis treatment.

Conclusion: In this meta-analysis, the pooled prevalence of non-adherence to tuberculosis treatment in Ethiopia was high. Forgetfulness, fear of side effect of the drugs, long waiting time (≥1 hour) during service and feeling distance to health institution is long were the main risk factors for non-adherence to tuberculosis treatment in Ethiopia. Early monitoring of the side effects and other reasons which account for missing medication may increase medication adherence in patients with tuberculosis in Ethiopia.

Keywords: Prevalence, Non-adherence, Tuberculosis medication, Determinants, Ethiopia

Clinical Outcome of Hospitalized HIV/AIDS Patients in Selected Ethiopian Tertiary Care settings: A prospective Cohort Study. *Getandale Zeleke (B.pharm, Msc), Teshale Ayele (B.pharm, Msc), Admasu Tena (MD, internist)*

Background: Evidences from developed countries showed that non- Acquired Immuno Deficiency Syndrome (AIDS) related illnesses are becoming the leading cause of death among hospitalized Human Immune virus (HIV)/ AIDS patients. However; there is limited evidence regarding this outcome among HIV infected patients admitted to hospitals in low-income countries like Ethiopia.

Objective: To determine clinical outcome of admitted HIV/AIDS patients in selected Ethiopian tertiary care settings.

Methods: A prospective cohort study was conducted among admitted HIV/AIDS patients from April 1 to August 31, 2018 in Jimma University Medical Center (JUMC) and Tikur Anbessa Specialized Hospital (TASH). Data of 136 patients was collected on socio-demographic, clinical characteristics and drug related variables. Data was entered into EpiData version 3.1 and analyzed using SPSS version 21. Study participants were categorized into two groups, as AIDS and non-AIDS related admissions. Kaplan-Meier and Cox regression was used to compare survival experience of the patients and identify independent predictors of mortality. Hazard ratio was used as measure strength of association and p-value of <0.05 was considered to declare statistical significance.

Results: Of 136 patients, 80 (58.8%) were females. The overall in-hospital mortality was 39(28.7%). In-hospital death rates were 30.3% and 27.1% for AIDS (66 patients) and non-AIDS (70 patients) related admissions, respectively (p=0.68). The median survival time among patients with non-AIDS related admissions was 35[53, 23] days and 32 days for AIDS-related admissions (log rank p=0.599).

The need of non-invasive ventilation (AHR: 2.99, 95%CI; [1.24, 7.28]; p=0.015) and body mass index (BMI) of less than 18.5(AHR: 2.6, 95%CI; [1.03, 6.45]; p=0.04) were independent predictors of mortality.

Conclusion: Similar to studies conducted in low-income countries, AIDS-related illnesses remain the leading cause of death. The need of non-invasive ventilation and low body mass index (BMI) were found to be independent predictors of mortality.

Keywords: clinical outcome, Human immune virus, Acquired immunodeficiency syndrome, Jimma University Medical Center, Tikur Anbessa Specialized Hospital

Helicobacter Pylori Infections in Ethiopia; Prevalence and Associated Factors: A Systematic Review and Meta-Analysis. *Addisu Melese.*

Background: Helicobacter pylori infections are prevalent and recognized as major cause of gastrointestinal diseases in Ethiopia. However, Studies conducted on the prevalence, risk factors and other clinical forms of H.pylori on different population and geographical areas are reporting conflicting results. Therefore, this review was conducted to estimate the pooled prevalence of H.pylori infections and associated factors in Ethiopia.

Methods: PubMed, Embase, Google scholar, and Ethiopian Universities' repositories were searched following the Preferred Items for Systematic review and Meta-analysis (PRISMA) guideline. The quality of included studies was assessed using the Newcastle-Ottawa Scale in meta-analysis. Heterogeneity between studies was assessed using Cochrane Q test and I^2 test statistics based on the random effects model. Comprehensive meta-analysis 2.0 and Review Manager 5.3 were employed to compute the pooled prevalence and summary odds ratios of factors associated with of H.pylori infection.

Results: Thirty seven studies with a total of 18,890 participants were eligible and included in the analysis. The overall pooled prevalence of H.pylori infection was 52.2% (95% CI: 45.8 – 58.6). In the subgroup analysis by region, the highest prevalence was found in Somalia (71%; 95% CI: 32.5 – 92.6) and the lowest prevalence was reported in Oromia (39.9%; 95% CI: 17.3 – 67.7). Absence of hand washing after toilet (OR = 1.8, 95% CI; 1.19-2.72), alcohol consumption (OR = 1.34, 95% CI; 1.03-1.74) and gastrointestinal (GI) symptoms (OR = 2.23, 95% CI; 1.59-3.14) were associated with H.pylori infection. The trend of H.pylori infection showed a decreasing pattern overtime from 1990 to 2017 in the meta-regression analysis.

Conclusion: The prevalence of H.pylori infection remains high; more than half of Ethiopians were infected. Although the trend of infection showed a decreasing pattern; appropriate use of eradication therapy, health education primarily to improve knowledge and awareness on the transmission dynamics of the bacteria, behavioral changes, adequate sanitation, population screening and diagnosis using multiple tests are required to reduce H.pylori infections. Recognizing the bacteria as a priority issue and designing gastric cancer screening policies are also recommended.

Keywords: Helicobacter pylori, systematic review, meta-analysis, Ethiopia

Community-based Sero-prevalence of Hepatitis B and C Infections in South Omo Zone, Southern Ethiopia. *Adugna Endale Wodegiorgis.*

Background: Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) are the leading cause of liver-related morbidity and mortality throughout the world. The epidemiology of HBV and HCV infections in Ethiopia has not been well studied at community level. This study aimed to investigate the sero-prevalence and associated risk factors of HBV and HCV among community members in South Omo Zone, Southern Ethiopia.

Methods: A community-based cross-sectional study was conducted in three districts from March to May 2018. The study participants were selected using systematic random sampling. Structured questionnaire was used to collect relevant clinical and socio-demographic data. About 3 ml of blood sample was collected and screened for HBV and HCV using One Step Hepatitis B Surface Antigen (HBsAg) Test Strip for the detection of HBsAg and One Step HCV Test Strip for the detection of antibodies against HCV (anti-HCV). HBsAg positive samples were further tested using immunoassay of Alere Determine™ HBsAg (Alere Inc., USA) which is more specific than the primary screening test. Data was analyzed using SPSS version 25.0.

Results: A total of 625 (51.4% males, mean age ± SD = 30.83 ± 13.51 years) individuals participated in the study. The sero-prevalence of HBV infection was 8.0% as detected using HBsAg Test Strip, while it was 7.2% using Alere Determine™ HBsAg test. The sero-prevalence for HCV infection was 1.9%. Two (0.3%) of the participants were co-infected with HBV and HCV. Significantly higher sero-prevalence was detected in those having body weakness and fatigue (AOR = 4.96; 95% CI: 1.49, 16.51) for HBV and age group 25-34 (AOR = 13.26; 95%b CI: 1.37, 128.60) for HCV infections.

Conclusion: this study revealed higher-intermediate endemicity of HBV and low to intermediate endemicity levels of HCV infections in South Omo Zone. Individuals having body weakness and fatigue (for HBV) and older individuals (for HCV) were at higher risk. Provision of health education, screening and vaccination (HBV) of high-risk groups has paramount importance.

Keywords: community, sero-prevalence, hepatitis, risk factors, Southern Ethiopia.

Incidence and Predictors of Tuberculosis among Human Immunodeficiency Virus Positive Adults on Antiretroviral Therapy at Debre Markos Referral Hospital, Northwest Ethiopia, 2018: A Retrospective Follow up Study. *Belisty Temesgen Delel*

Background: Tuberculosis is the leading cause of morbidity and mortality among people living with human immunodeficiency virus. Despite this fact, in Ethiopia, particularly in our study area there is a scarcity of information regarding the incidence and predictors of TB among peoples living with HIV. Thus, this study aimed to assess the incidence and predictors of tuberculosis among HIV positive adults.

Methods: An institution based retrospective cohort study was conducted among 544 HIV positive adults on ART at Debre Markos Referral Hospital. The data extraction format was adapted from ART intake and follow up forms. Data were entered into Epi-Data version 4.2 and analysis was done using STATA Version 13. The Kaplan-Meier survival method was used to estimate the TB free survival time. Log-rank tests were used to compare the survival curves of different categorical explanatory variables. Both the bi-variable and multivariable Cox-proportional hazard regression models were used to identify predictors of the time to develop TB.

Results: At the end of follow-up, 16.9% of the study participants developed TB. The incidence rate of TB was found to be 6.5 (95%CI: 5.2, 8.0) per 100-person years. Advanced WHO clinical disease stage (III and IV) (AHR: 2.1, 95% CI: 1.2, 3.2), being ambulatory and bedridden (AHR: 1.8, 95% CI: 1.1, 3.1), baseline opportunistic infections (AHR: 2.8, 95% CI: 1.7, 4.4), low hemoglobin level (AHR: 3.5, 95% CI: 2.1, 5.8), and not taking IPT (AHR: 3.9, 95% CI: 1.9, 7.6) were found to be predictors to develop TB.

Conclusion: There was a high rate of TB occurrence as compared to previous studies conducted in Ethiopia. Advanced HIV disease stage (III and IV), being ambulatory and bedridden, having opportunistic infections, having a low hemoglobin level, and not taking IPT were found to be predictors of the time to develop TB.

Sero-Prevalence and Trend of Human Immunodeficiency Virus among Blood Donors in Ethiopia: A Systematic Review and Meta-Analysis. *Henok Mulugeta*[1], Getenet Dessie[2], Fasil Wagnew[1], Dube Jara[3], Cheru Tesema Ieshargie [4], Ayenew Negesse[5]*

Background: Blood transfusion is one of the routine therapeutic interventions in the hospital that can save the life of a patient. However, there is a risk of several transfusion transmissible infections. Human immunodeficiency virus is one of the major public health problems associated with blood transfusion that affects the safety of blood for the recipient. The objective of this systematic review and meta-analysis is to estimate the pooled sero-prevalence and trend of immunodeficiency virus among blood donors in Ethiopia.

Methods: Studies on the prevalence of human immunodeficiency virus among blood donors were accessed through search from PubMed, Cochrane Library, Google Scholar, EMBASE and CINAHL databases published from 2000 to 2017 with keywords: "Sero-prevalence" AND "trend" AND "HIV" OR "human" AND "immunodeficiency" AND "virus" OR "human immunodeficiency virus" AND "blood donors" OR "blood donors" OR "Ethiopia". Qualities of each article were assessed by using a modified version of the Newcastle-Ottawa Scale. All statistical analyses were done using STATA version 12 software.

Results: The overall estimated pooled sero-prevalence of Human immunodeficiency virus among blood donors in Ethiopia was 2.69% (95% CI (1.79% - 3.58%)). The overall sero-prevalence of human immunodeficiency virus infection shows a significant declining trend from 2000 to 2017.

Conclusion: The analysis showed that the overall sero- prevalence of Human immunodeficiency virus among blood donors in Ethiopia was high. Therefore, routine screening of donor blood for transfusion-transmissible infections is essential for blood transfusion safety.

Keywords: Blood donor, Human immunodeficiency virus, Sero-prevalence, Ethiopia.

Determinants of Virologic Failure among Adult HIV Patients on ART at Wag Himera Zone, North Ethiopia: A Case-Control Study. *Yaregal Animut Abebil.*

Introduction: Virologic failure defined as viral load above 1000 copies/mL based on two consecutive viral load measurements in 3 months apart, with adherence support following the first viral load test is .The primary goal of ART is to reduce the viral load in HIV infected patients with the purpose of promoting quality of life, as well as reduction of HIV-related morbidity and mortality. High rate of virologic failure was reported in Wag Himera Zone, Northwest Ethiopia in viral load assessment conducted among HIV-infected patients on HAART in Amhara region. However, there is limited evidence on the determinants of virological failure in the study area.

Objective: The aim of this study was to identify the determinants of virological failure among HIV-infected patients on Antiretroviral Therapy in wag Himera zone, North Ethiopia, 2018

Methods: An institutional-based unmatched case control study was conducted from June 8 to July 30, 2018. Cases were HIV patients on ART who had already experienced virological failure; controls were those without virological failure. Data was extracted from 90 cases and 181controls through chart review using pretested and structured checklist. The data was entered using Epi info version 7, and exported to SPSS version 20 for analysis. A multivariate logistic regression analysis was carried out to identify factors associated with virological failure, and variables with a *p*-value <0.05 were considered statistically significant.

Results: In this study patients who had shown poor adherence to HAART (AOR=9.34, 95% CI: 4.49,19.46), had taken HAART for longer than five years (AOR=2.47, 95% CI: 1.17, 6.04), had drug toxicity (AOR =5.81 95% CI: 2.51, 13.68), age of patient (AOR= 1.05 95% CI: 1.01,1.09),peak CD4 count <200 cells/mm^3(AOR=5.18, 95% CI: 1.56,17.22) were factors which shown higher odds of virologic failure.

Conclusion and recommendation: This study showed that poor adherence to treatment, longer duration on HAART, experiencing drug toxicity ,older age of patients and peak CD4 < 200 cell/mm^3 are factors which increases the risk of Virologic failure. Therefore identifying the cause of non-adherence and increasing adherence to HAART would help to suppress viral replication. Special attention should be given for patients with history of drug toxicity, stay longer on HAART, and low peak CD4 count.

Keywords: Virologic failure, Determinants, ART, Wag Himera

Multidrug Resistant Tuberculosis Treatment Outcome: A systematic Review and Meta-Analysis. *Abebe Megerso Adlo.*

Introduction: Anti-tuberculosis drug resistance is a major public health problem that threatens the progress made in tuberculosis care and control worldwide. There is a paucity of evidence that assessed studies on the treatment of multidrug-resistant tuberculosis (MDR-TB), which focus on the effectiveness of the directly observed treatment, short-course (DOTS)-Plus program. Therefore, it is crucial to assess and summarize the overall treatment outcomes for MDR-TB patients enrolled in the DOTS-Plus program in recent years.

Objective: The objective of this study was to thus assess and summarize the available evidence for MDR-TB treatment outcomes under DOTS-Plus.

Method: A systematic review and meta-analysis of published literature was conducted. Original studies were identified using the databases MEDLINE®/PubMed®, Hinari, and Google Scholar. Those articles published in the last ten years that meet our inclusion criteria were analyzed. Heterogeneity across studies was assessed using the Cochran's Q test and I^2 statistics. Pooled estimates of treatment outcomes were computed using the random effect model. Sub group analysis was made as a result of high heterogeneity,

Result: Based on the 39 observational studies included in the meta-analysis, it was determined that 15764 patients reported treatment outcomes. Of these, the pooled prevalence, 53.76% (95% CI: 47.84, 59.67%) successfully completed full treatment (cured or treatment completed). The treatment outcome was worse in extensively drug resistant and HIV co-infected patients; 38.00 (21.38, 54.61) and 49.54 (20.50, 78.57) respectively.

Conclusion: This study revealed that patients with MDR-TB exhibited a very low treatment success rate compared to the World Health Organization 2015 target of at least 75 to 90%. Almost 50% of the treated patients were having unsuccessful treatment outcome. Conducting further meta-analysis is recommended to identify factors contributing for the low treatment success rate.

Keywords: Tuberculosis, Multidrug resistance, Multidrug-resistant tuberculosis, Treatment outcomes.

Delivering Basics of HIV/AIDS, Sexual and Reproductive Health and Life Skill Course Has Positive Effect in Reducing Risky Sexual Behavior among University Students in Northeast Ethiopia: Comparative Cross-Sectional Study. *Bereket Kefale Abitew.*

Background: The magnitude of risky sexual behavior in Ethiopian Higher Education Institutions ranges from 17.0% to 65.8%. To reduce this problem some Universities are delivering HIV/ AIDS and Sexual and Reproductive Health and Life skill Course. Since the course is new, there was no study regarding the influence of the course on risky sexual Behavior.

Objective: the aim of this study was to assess and compare risky sexual behavior and associated factors among University students with and without Basics HIV/AIDS, Sexually Reproductive Health and Life skill course, Northeast Ethiopia

Methods: An institutional based comparative cross-sectional study was conducted among a total of 724 students from April 11 – May 11, 2018. Stratified with simple random sampling technique was used to select study participants. The data were collected using pretested self-administered structured questionnaire. The data were using SPSS version 23. Descriptive analysis, bivariable and multivariable binary logistic regression were performed. Adjusted odds ratio with its 95 % confidence interval was used to measure strength of association. Variables with P-value less than 0.05 were taken as statistically significant.

Result: The overall magnitude of risky sexual behavior was [21.0 %, 95% CI: (18.1%, 23.9%)]. The magnitude of risky sexual behavior among students with and without Basics of HIV/AIDS, Sexually Reproductive Health and Life skill course was [12.9%, 95% CI: (9.8%, 16.4%)] and [28.9%, 95% CI: (23.2%, 33.9%)] respectively. Being male [AOR=2.91, 95% CI: (1.42, 5.96)], drinking alcohol [AOR=2.75, 95% CI: (1.61, 5.96)], attending night club [AOR=7.90, 95% CI: (4.22, 14.80)], experiencing peer pressure [AOR=2.43, 95% CI: (1.41, 4.19)], good knowledge on HIV/AIDS [AOR=0.14, 95% CI: (0.08, 0.24)], taking Basics of HIV/AIDS, Sexually Reproductive Health and Life skill course [AOR= 0.36, 95% CI: (0.22, 0.60)] had statistically significant association with risky sexual behavior.

Conclusion: Many University students are engaged in risky sexual behavior. The magnitude of risky sexual behavior among students without the course is higher than students with the course. Incorporation of Basics of HIV/AIDS, Sexually Reproductive Health and Life skill course to Universities curricula and strengthening behavioral change communication are recommended

Keywords: Risky sexual behavior, University students, Basics of HIV/AIDS, Sexual and Reproductive Health and Life skill course, Northeast Ethiopia.

Effect of Late HIV Diagnosis on HIV-Related Mortality among Adults in General Hospitals of Central Zone Tigray, Northern Ethiopia: A Retrospective Cohort Study. *Mebrahtu Abay Siyum.*

Background: The global incidence of HIV infection is not significantly decreasing, especially in sub-Saharan African countries, including Ethiopia. Though there is availability and accessibility of free HIV services, people are not being diagnosed early for HIV, and hence patients are still dying of HIV-related causes. This research is aimed at verifying the effect of late diagnosis of HIV on HIV-related mortality in Central Zone Tigray, Ethiopia.

Methods: A retrospective cohort study among adult (≥15 years old) HIV patients in three general hospitals of Tigray was conducted. Record reviews were carried out retrospectively from 2010 to 2015. Sample size was determined using stpower Cox in Stata software. Data were entered into EpiData version 3.1 software and transferred to Stata version 12 for analysis. Both bivariable and multivariable analyses were performed using Cox regression model to compare the HIV-related mortality of exposed (cluster of differentiation 4 cells count <350 cells/mm^3) and non-exposed (≥350 cells/mm^3) patients using adjusted hazard ratio (AHR) at 95% confidence interval (CI).

Result: In all, 638 HIV patients were analyzed, contributing 2,105.6 person-years. Forty-eight (7.5%) patients died of HIV-related causes with a mortality rate of 2.28 per 100 person-years. In the multivariable Cox regression model, patients with late diagnosis of HIV had a higher risk of mortality (AHR =3.22, 95% CI: 1.17–8.82) than patients with early diagnosis of HIV. Rural residence (AHR =1.96, 95% CI: 1.05–3.68), unemployment (AHR =2.70, 95% CI: 1.03–7.08), bedridden patients (AHR =2.98, 95% CI: 1.45–6.13), ambulatory patients (AHR =2.54, 95% CI: 1.05–6.15), and baseline hemoglobin level of <11 mg/dL (AHR =3.06, 95% CI: 1.51–6.23) were other independent predictors of mortality.

Conclusion and Recommendations: Late diagnosis of HIV increased HIV-related mortality. Rural residence, unemployment, bedridden and ambulatory patients, and baseline hemoglobin level <11 mg/dL were also independent predictors of HIV-related mortality.

Keywords: HIV, early/late diagnosis, CD4 cell count, HIV-related mortality, Tigray, Ethiopia

Determinants of Tuberculosis Cases and its Variation Across Districts of Jimma Zone: Using Bayesian Approach. *Endale Alemayehu Ali.*

Introduction: Tuberculosis is the long-lasting infectious disease caused by bacteria called Mycobacterium tuberculosis*.* Globally, in 2016 alone, approximately 10.4 million new cases have occurred worldwide. In 2016 only 182 (ranging, 128-245) thousand TB incidence, of which 14 (9.6-19) was related to HIV co-infection has occurred in Ethiopia and the estimated notified co-infected people was 103330 (81%). The rate incidence of the cases for the same year is found to be 177/100000. Africa has shared around 25% of the incidence and specifically in Ethiopia around 82,000 was caught by Tuberculosis.

Objectives: This study has been aimed to model the counts of Tuberculosis cases using Bayesian hierarchical approach. It is also designed to determine the influential predictors of TB cases. The study has also aimed to see the variation of TB incidences across districts of Jimma zone.

Methods: The study has been conducted in Jimma zone of entire districts and the data is basically secondary which is obtained from Jimma zone health office. The counts of Tuberculosis cases have been analyzed with factors like gender, HIV co-infection, Population density and age of patients. The Integrated Nested Laplace Approximation (INLA) method of Bayesian approach which has been used to determine the influential determinants of TB cases.

Results and Conclusion: The descriptive results indicated that, without considering the effect of sex and ages, Nono bench district accounted minimum (2%) TB cases, whereas

Sero-Prevalence of Rubella among Pregnant Women in Sub-Saharan Africa: A Meta-Analysis.

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Background: Rubella infection is still one cause of preventable congenital birth defects and permanent organ damage especially in developing countries. The women are infected before conception and during the first trimester of pregnancy, the unborn child to develop up to 90%   chance of congenital rubella syndrome.

There is limitation of data regarding sero- prevalence of rubella for pregnant women in Sub-Saharan Africa. Therefore, this study was done to determine the pooled sero- prevalence of Rubella for pregnant women in Sub-Saharan Africa.

Methods: The PRISMA guidelines protocol was followed to write the systematic review and meta-analysis. Published studies were searched in Medline, PubMed, Google scholar, advance google, HINARI and Cochrane Library. The study search terms are: "rubella" OR "rubeo*" AND "seroepidemiology* "OR" seroprevalen* "OR "prevalen* "OR "seroimmun* "OR "rubella antibod*" AND "pregnan*"AND "Sub-Saharan Africa". The heterogeneity of studies were weighed using Cochran's Q test and I^2 test statistics. Publication bias was assessed by Egger's test.

Results: Twenty-eight studies were included in this meta–analysis of Rubella virus. The pooled sero-positivity prevalence of rubella IgG &IgM for pregnant women in Sub-Saharan African was 89.0% (95%CI: 84.6-92.3) and 5.1% (95%CI: 2.6-9.9), respectively.

Conclusion: This meta-analysis showed that sero-negativity of rubella for pregnant women in sub-Saharan Africa is high compared to other studies and WHO threshold of women of child bearing age. This findings call for primary health care providers teach the community vulnerable of rubella and its burden, sub-Saharan Africa countries shall be introduce rubella vaccination strategy.

Key word: Meta-analysis, Rubella virus, pregnant women, Sub-Saharan Africa

Poster Presentations

Patients' Satisfaction and Associated Factors among Private Wing and Regular Services of the Outpatient Department in Addis Ababa Public Hospitals, Addis Ababa, Ethiopia. *Demiss Mulatu Geberu[1], Tsegaye G/medhin [1], Gahaw Andargie Biks[1] [1]Department of Health Service Management and Health Economics, College of Medicine and Health Sciences, University of Gondar, Gondar, Ethiopia*

Background: Patient satisfaction is one of the established yardsticks to measure the success of the services being provided in the healthcare services. Since health care system is changing globally and it is a competitive world, studying what satisfies patient repeatedly is important for providers to fill their gap.

Objective: To assess patients' satisfaction and associated factors among private wing and regular services of adult outpatient departments in Addis Ababa public hospitals, Addis Ababa, Ethiopia, 2018.

Method: Institution based comparative cross-sectional study was conducted from March to April 2108. A total of 955 patients above the age of 18 years enrolled both in the private wing and regular outpatient departments during the study period were interviewed by using interviewer-administered structured questionnaire. The study participants were selected by using systematic random sampling. The data were analyzed by logistic regression using a 95% confidence level and P-value less than 0.05 and multivariable analysis models were used to identify the associated factors.

Result: The overall patients' satisfaction was 89.3% at 95 % CI (87.2 -91.2). At regular and private wing outpatient departments it was 88.3 % at 95 % CI (85.4 - 91.2) and 90.4 % at 95 % CI (87.6 - 93), respectively. The overall patients' satisfaction was affected by sex (AOR: 2.03, 95% CI (1.06,3.88)), waiting time (AOR:0.36,95% CI (0.15,0.87)), information on the prevention of recurrent illness (AOR:2.38,95% CI (1.09,5.23)), information gained on drug use and side effects (AOR:0.43,95% CI (0.20,0.90)). At regular services it was affected by sex (AOR:7.78,95% CI (2.89,20.93)), waiting time (AOR:0.22,95% CI (0.07,0.73)), information on the prevention of recurrent illness (AOR:14.16,95% CI (4.58,43.83)) and information gained on drug use and side effects (AOR:0.22,95% CI (0.08,0.63)). At private wing it was affected by age (AOR: 2.04, 95%CI (2.03, 148.15), educational status (AOR: 4.69, 95%CI (1.04, 21.26)), availability of drugs (AOR: 0.14, 95% CI (0.04, 0.58)) and accessibility of latrine (AOR: 6.56, 95% CI (1.16, 37.11).

Conclusion and recommendation: The percentage of patients' satisfaction with healthcare services delivered at regular and private wing adult outpatient department of the hospital was not statistically different. Therefore, it is better if the government should investigate the implementation of private wing outpatient department services.

Keywords: Patients' satisfaction, private wing, regular services, OPD, Addis Ababa

Patient Satisfaction with Nursing Care in Ethiopia: A Systematic Review and Meta-Analysis.

Henok Mulugeta*[1], Getenet Dessie[1], Fasil Wagnew[1], Henok Biresaw[2]

Background: Patient satisfaction is the most important indicator of quality healthcare service. Patient satisfaction with nursing care has been considered as the most important predictor of the overall patient satisfaction with hospital service. In Ethiopia, nurses comprise the majority of the healthcare force. However, the overall level of patient satisfaction with nursing at the country level remains unknown. Hence, the objective of this systematic review and meta-analysis was to estimate the pooled proportion of satisfied patients with nursing care in Ethiopia.

Methods: The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline was followed during this meta-analysis. Studies were accessed through an electronic web-based search strategy from PubMed, Cochrane Library, Google Scholar, and CINAHL by using combination search terms. Qualities of each article were assessed by using a modified version of the Newcastle-Ottawa Scale. All statistical analyses were done using STATA version 14 software. The pooled proportion of satisfied patient was presented in forest plots.

Results: A total of 15 studies with 6091 participants included in this meta-analysis. The overall estimated pooled level of patient satisfaction with nursing care in Ethiopia was 55.15% (95% CI (47.35, 62.95%)). Based on the subgroup analysis result the highest estimated level of patient satisfaction was observed in studies done in Addis Ababa (61.84% (95% CI: 44.49,79.2)). Patients who have one nurse in charge, with no history of previous hospitalization, living in the urban area, / and those who have no comorbid disease were more likely to be satisfied with nursing care than their counterparts.

Conclusion: This meta-analysis revealed that the overall level of patient satisfaction with nursing was relatively moderate. Therefore, the concerned body should give more emphasis to the quality of nursing care in order to increase patient satisfaction which is important to improve the overall quality of healthcare service.

Keywords: Nursing care, patient satisfaction, Ethiopia.

Technical Efficiency of Neonatal Health Services in Primary Health Care Facilities of South West Ethiopia: A Two Stage Data Envelopment Analysis. *Kiddus Yitbarek, Gelila Abraham, Ayinengida Adamu, Gebeyehu Tsega, Melkamu Berhane, Sarah Hurlburt, Mirkuzie Woldie*

Background: Disparity in resource allocation is an issue among various health delivery units in Ethiopia. To sufficiently address this problem decision-makers require evidence on efficient allocation of resources. It has an implication the neonatal health service and mortality, which accounts for nearly half of the under-five mortality in Ethiopia. Therefore, the purpose of this study was to assess the technical efficiency of primary health care units providing neonatal health services in Southwest Ethiopia.

Methods: Two-stage data envelopment analysis was conducted based on one year (2016/17) data from 69 health posts and 23 health centers in Southwest Ethiopia. Health facilities were selected following the world health organization's guideline for assessment of district health system. Input and output data were collected from each of the facility, respective district health offices and finance, and economic cooperation offices. Technical efficiency scores were calculated using data envelopment analysis software version 2.1. Tobit regression was then applied to identify determinants of technical efficiency. STATA version 14 was used in the regression model and for descriptive statistics.

Results: By utilizing the best combination of inputs, eight health posts (11.59%) and eight health centers (34.78%) were found to be technically efficient in delivering neonatal health services. The mean technical efficiency score of the health posts was 0.42 (± 0.31) with 17.39% pure technical and 11.59% scale efficiency. On the other hand, mean technical efficiency score for the health centers was 0.75 (± 0.26). Out of the total health centers, 65.22% were pure technically efficient and 34.78% were scale efficient. Compared with others included in the analysis, inefficient health delivery units were using more human and non-salary recurrent resources. The regression model indicated that there was a positive association between efficiency and the health facility's size of catchment population [β = 0.00002, 95% CI, 2.13E-06, 2.98E-05]. Waiting time at the health posts [β = -0.011, 95% CI, -0.018, -0.004] was found to negatively affect efficiency.

Conclusions: Most of the health posts and the majority of health centers were found to be technically inefficient in delivering neonatal health services. This indicates issues with the performance of these facilities with regards to the utilization of inputs to produce the current outputs. Either the existing resources could be used to serve additional neonates, or the inefficient facilities could reduce their inputs without affecting the neonates cared for.

Keywords: Technical efficiency, Data Envelopment Analysis, neonatal health services, Primary health care units, Southwest Ethiopia.

Implementation Status and the use of Ambulance Service for Emergency Referral of Maternal and Newborn Care in Ethiopia; A Health Facility Level Assessment. *Atkure Defar Deghebo, Theodros Getachew Zemedu, Geremew Gonfa Ayana, Abebe Bekele Belayneh*

Background: A well-functioning referral system is characterized by an efficient use of transportation and management of resources, and quality clinical management of referred cases. This study evaluated the referral transport services for maternal and newborn care in Ethiopian health facilities.

Methods: The study used 2016 Ethiopian Emergency Obstetric and Newborn assessment. The survey was a cross-sectional census of public and private health facilities that provided maternal and newborn health services. The final data analysis was done for 3,804 facilities.

Results: Overall, only 17% of facilities had their own dedicated functioning ambulance (motor vehicle, motorcycle, or tricycle ambulance). Among these, reports of using the ambulance for non-emergency transport were common. Use of the ambulance for transporting client's home was reported by 48% of facilities. District Health Offices provided ambulance services for 62% of health facilities overall.

There is no relation between institutional delivery and availability of ambulance on-site (ρ=0.14). Hospitals/MCH centres had almost 5 times (95% CI: 3.16,7.12) more likely to have ambulance on-site than health centres/specialty clinics and the same for urban located facilities (aOR =2.86, 95% CI: 2.29, 3.58).

Availability of ambulance on-site in public facilities was found to be 80% and 63% less to that of private owned and private-for profit health facilities. Facilities that didn't provide onsite obstetric surgery were also less likely to have an ambulance on-site. There was no significance difference on ambulance availability for the facilities that have referred in/out and in provision of 24/7 service for emergency obstetric and new born care.

Conclusions: Very lower percent of health facility in Ethiopia had ambulance onsite. No effect of referral transport service on institutional deliveries was noted. Ambulance is mandatory for interconnected health centres to hospital referrals. However, this needs to be backed up with adequate supply of basic and emergency obstetric care at all facilities.

Community-Based Health Insurance Coverage, Dropout Rate and Factors Associated With among Households in Selected Districts of West Shoa Zone, Ethiopia 2017/18. *Teka Girma Terfasa*

Background: Community based health insurance is emerging as the most preferred form of health financing mechanism in situations where private out-of-pocket expenditures on health are significantly high and cost recovery strategies affect the access to healthcare. However, in low- and middle-income countries, the majority of health insurance schemes are unable to extend coverage to every segment of the population. The aim of this research project was to assess the community based health insurance coverage, dropout rate, and   factors affecting it in the study area.

Methodology: A Multi-stage community based cross sectional study was conducted in West Shoa Zone from February 1-30/2018. Single population proportion formula was utilized to   calculate sample of 610 study subjects.   The kebeles was selected lottery methods and probabilities proportional to their population size and systematic random sampling techniques was utilized to select the households. The collected data was entered into SPSS version 20 for analysis .Descriptive statistics and vicariate and multiple logistic regression analyses were performed.

P- Values less than 0.05 and 95 % confidence intervals were used to determine associations between dependent and independent variables.

Result: - Out of 610 sample size, 587 participants participated in the survey making the response rate of 96.2 %. The median age of the respondents was 36 ranging from 18 to 63 years with SD 11.4 years, and 362 (61.7%) were males. About 33.2% of the study participants were ever joined community health insurance and 22.1% were currently health insurance beneficiaries. 317(69.4) were willing to join the proposed community based health insurance in the future. From the current users, 47%, 41.3%   and 11.6% renewed their membership for 1st, 2nd and 3rd time respectively. Education status, existence of chronic illness and difficult concern of the households for covering health care cost were significant factors for program coverage

Conclusion and recommendations;-the study showed that household's coverage were22.1% and dropout were very high to join community based health insurance. So we recommend the Ethiopian health insurance agency , FMoH and regional and local health insurance agency should have to improve the benefit package and service quality the households can get from the scheme

Key terms: kebele, community based health insurance, coverage

Behavioral Science and Communication

Common Metal Disorders and Associated Factors among Adults Residents of Benchi Maji Zone, South Nation and Nationality People Representative Region, South West Ethiopia, 2017/18.
Wondwossen Niguse Asmare.

Introduction: common mental disorders are the most common mental disorders worldwide. Globally the magnitude of common mental disorder is estimated to be 29%. Among these 322 million is attributed to depression. Unipolar depressive disorders alone lead to 12.15% of years lived with disability, and rank as the third leading contributor to the global burden of diseases. The risk is higher among the poor, homeless, the unemployed, persons with low education, victims of violence, migrants and refugees, indigenous populations, children and adolescents, abused women and the neglected elderly.

Objective: the objective of this study was to assess the prevalence of common mental disorders and associated factors in Benchi-Maji zone, south west Ethiopia, 2017/2018.

Methods: A community based cross-sectional study was conducted in Bench Maji Zone from February 1st, 2018 to May 1st, 2018. A total of 1026 respondents were employed using multi stage sampling technique. Data was collected using the pre designed tools like Oslo social support scale and self-reporting questionnaire version 20. Data was entered using Epi data version 3.1 and transferred to statistical package for social science version 21 for analysis. Bivariate and multivariate logistic regressions were employed and odds ratio with 95% confidence interval was used to assess degree of association between variables. P value of less than 0.05 will be considered as statistically significant.

Result: Among 1,026 respondents 193 (18.82%) of them full fill criteria of common mental disorder. Factors like: family history of mental illness [AOR= 0.58, 95% CI (0.35, 0.97)], current use of tobacco [AOR= 0.45, 95% CI (0.24, 0.84)] and social support [AOR= 2.75, 95% CI (1.35, 5.37)], were significantly associated with common mental disorder.

Conclusion and recommendation: This study revealed that prevalence of common mental disorder found to be high when it is seen from Ethiopian context as developing nation. Family history of mental illness, social support, and current tobacco use are significantly associated with common mental disorder. And Benchi-Maji zone Health Bureau should give special consideration for individuals who has family history of mental illness during outreach activities.

Keywords: common mental disorders, factors, Ethiopia.

Predictors of Cervical Cancer screening practice among HIV Positive Women Attending Adult Anti-retroviral Treatment Clinics in Bishoftu town, Ethiopia: The Application of a Health Belief Model. *Kalkidan Solomon Deribe, Mulugeata Tamire, Mirgissa Kaba Kalkidan Solomon Deribe, Mulugeata Tamire, Mirgissa Kaba.*

Background: Cervical cancer is a global public health problem and the second most common cancer causing morbidity and mortality in Ethiopia. Few available evidences revealed that despite distribution and severity of cervical cancer among HIV-positive women and the ease with which it can be prevented, cervical cancer screening practice in Ethiopia among HIV positive women is considerably low. Therefore this study aims to assess predictors of cervical cancer screening practice among HIV positive women by applying health belief model concepts.

Methods: Facility based cross-sectional study was conducted at health facilities in Bishoftu. Data were collected from 475 women who visit the health facilities for anti-retroviral services using interviewer-administered questionnaires. Descriptive statistics were used to describe findings. Independent sample t-test was used to determine whether mean differences existed between perceptions of HIV-positive women who have 'ever screened' and 'never screened' for cervical cancer. Crude odds ratios and 95% confidence intervals were considered to measure associations for each variable with the cervical cancer screening practice. Perception of study participants was measured using health belief mode constructs and treated as continuous variables. Multi-variable logistic regression was run to identify predictors of cervical cancer screening practice by controlling possible confounders.

Results: Cervical cancer screening practice among HIV-positive women in this study was 25%. Health professionals were the main source of information about cervical cancer and its screening. There was a difference between the 'ever' and 'never' screened groups in mean scores of their perceived severity, perceived benefit, perceived barrier, perceived self-efficacy, perceived threat and net-benefit towards screening (P < 0.05). Perceived self-efficacy (AOR 1.24, 95%CI 1.13-1.37), perceived threat (AOR 1.08, 95%CI 1.05-1.12) and perceived net-benefit (AOR 1.18, 95% CI 1.12, 1.24) were the predictors of cervical cancer screening practice.

Conclusions: The findings of this study show a low screening level compared with the National Ministry of Health goal. Moreover, patients' perceptions on cervical cancer screening practice had a significant influence on the utilization of cervical cancer screening service. Therefore, much work needs to be done by responsible bodies to overcome this problem.

Keywords: Cervical cancer, Screening, HV/AIDS, Health belief model.

Intention to Receive Cervical Cancer Screening Services and its Predictors among Child Bearing Age Women in Bahir Dar City, North West Ethiopia *Wallelign Alemnew Getnet*

Introduction: Cervical cancer is a major public health problem worldwide especially in the developing world including Sub-Saharan Africa. Cervical cancer screening has been consistently shown to be effective in reducing the incidence rate and mortality from cervical cancer by 90%. However, very few women undergo cervical cancer screening in the developing world.

Objective: This study aims to assess the intention of women to receive cervical cancer screening and its predictors in Bahir Dar city, North West Ethiopia.

Methods: A community based cross sectional study was conducted from March to April, 2018 on 845 women using a multi stage sampling method. Data were collected through face-to-face interview by trained data collectors. Data were entered and analyzed using EpiData and SPSS version 20.0. Simple and Multiple linear regression analyses were done to identify predictors of intention at 95% confidence level and $P < 0.05$ was used to determine statistically significant association

Results: In this study more than half of the respondents 458 (55%) [95% CI 51.7-58.3] scored above the mean score for intention questions. Perceived behavioral control (B=0.21, p<0.001), subjective norm (B=0.06, p<0.001), attitude (B=0.11, p<0.001), respondents' occupation government (B=0.37, P<0.05), husband educational status; tertiary level 12[+] (B=0.60, P<0.05), and past screening experience (B=0.60, P<0.001) were significant predictors of intention for cervical cancer screening service utilization.

Conclusion: Perceived behavioral control, attitude towards the behavior, subjective norm, respondents' employment and husbands' educational status, and past experience were the predictors of intention to receive cervical cancer screening service.

Keywords: *Cervical cancer screening, intention, theory of planned behavior*

Health Information Systems

Challenges and Opportunities to Capture Cause of Death in Ethiopia. *Wubegzier Mekonnen Ayele.*

Background: although Ethiopia has established civil registration and vital events agency for enforcing vital event registration law, majority of the deaths have not been reported and registered. Moreover, evidences on capturing the causes of death data and the actual practice in the community are not well-understood. Therefore, the present study aimed at exploring opportunities and challenges on capturing causes of death data in Ethiopia.

Methods: a qualitative study was conducted on purposefully selected 24 key informants. The key informants were individuals working in the Federal Ministry of Health (FMOH), Vital Event Registration Agency (VERA) and Central Statistics Agency (CSA), St. Paul Millennium Medical College, Zewditu and Ghandi Memorial hospitals. In addition, some of the key informants were selected from the Addis Ababa City Administration Health Bureau, Lideta Sub-City and Woreda Four health offices, as well as from Arada and Kerra Woreda Vital Events Registration offices and the community. Semi-structured interview guide was used to collect data from August 6 to 4th September 2018.Verbatim transcribed data were coded and analyzed using ATLAS qualitative data analysis software and the findings of the study were presented thematically. Direct quotes were used in order to represent the participants' voice.

Results: Capturing cause of death data in Ethiopia has different challenges and opportunities. The main challenges were grouped under: system related challenges- in health and vital event registration system *(leadership and management, lack of integration, problems related to coverage and access, lack of electronic recording system and resources, lack of attention and feedback, and lack of awareness).* But the system has opportunities like *availability of legal mandate, being part of the system's priority agenda, and the presence of well-established administrative structure to the lower level.* There were challenges related to service provision, such as *value and perception related to vital event registration, lack of awareness, workload, and lack of skilled human resources and data quality. Further education, concern for data quality and motivation to support* were mentioned as opportunities related to death registration service provision. In the community- deceased persons' care taker related challenges were *lack of awareness, cultural norm, and service inaccessibility and long waiting time, absence of enforcing mechanisms/ no linkage of death registration with social services.* But the availability of social institutions in the community was mentioned as opportunities to strengthen the death registration system.

Conclusion: cause of death registration and notification is a complex procedure which involves multilevel and multi-sector performers. Challenges and opportunities related to the system, service provision and community are extremely interconnected. Therefore, working on the challenges and using the existing opportunities along with persistent awareness creation and linking death registration with other social services need to be considered as a way forward.

Perception and Acceptability of Mhealth Tool among Health Extension Workers in Southern Ethiopia: A Qualitative Study. *Israel Mitiku Hatau, Ashenafi Tadesse, Tewodros Belachew, Lianna*

Background: There is considerable optimism in the potential of mobile health (mHealth) to overcome health systems' deficiencies to ensure access to safe, effective and affordable health services. WEEMA International, in partnership with D-tree International, developed a mobile-based decision support tool for health extension workers (HEWs). The tool incorporates the Ethiopian Integrated Community Case Management (iCCM) approach to child health through the application of checklists and decision information. The mobile iCCM tool is designed to improve adherence to recommended steps in the assessment, diagnosis, and treatment of children presenting with symptoms commonly linked to childhood morbidity and mortality.

Methods: We conducted a qualitative study to explore the perceptions and experience of the mHealth pilot intervention among the HEWs and caregivers of children under-five in Tembaro woreda. In-depth interviews were held with 12 HEWs who have been using the iCCM mobile tool for over 1 year, as well as four caregivers who caregivers whose under-five children have been assessed using the iCCM mobile tool. Two FGDs were conducted with caregivers whose under-five child have been assessed and treated using the iCCM mobile tool/application or know someone close whose child has been treated using the mobile tool/application. Data were analyzed using the content analysis approach

Results: The finding of this study suggests acceptability of the iCCM mobile tool among the HEWs and caregivers. HEWs reported that the tool to be easy to use, important and has the potential to improve the quality of assessment and treatment of children under-five for the iCCM illnesses. The mobile tool ensures assessment of children under-five for all the signs and symptoms of the iCCM illnesses and recommends treatment appropriate for the age, weight, and illness of the child. Reduced unnecessary referrals and improved caregivers' treatment-seeking behaviour for sick under-five children were among the reported benefits of the iCCM mobile tool. The caregivers perceive that the iCCM mobile tool helps their child recover fast from their illnesses. The HEWs believe that the tool builds their confidence in treating under-five children as they perceive that they are getting new knowledge and skills. However, contextual factors including internet accessibility and availability of consistent power source for charging of the phones are expected to influence the use of mHealth tools. Moreover, some HEWs report the need for ongoing technical and supervisory support.

Tabor, Elizabeth McGovern.

Conclusions: The mobile-based iCCM tool is acceptable and has the potential to improve the quality of assessment and treatment of children under-five. Ongoing training and tailored technical support are important to strengthen the positive effects of the mobile tool. The use of the tool is highly influenced by the contextual factors. Findings from this study may help guide future design and implementation of mHealth interventions in Ethiopia and optimizing their chances for success.

Does Short Message Service Improve Focused Antenatal Care Visit and Skill Birth Attendance? A Systematic Review and Meta-analysis of Randomized Clinical Trials *Fasil Wagnew.*

Background: In low resource circumstances, non-adherence for available health services is a major cause of inefficiency in health care delivery. MHealth has been projected as a possible solution to support women during pregnancy, birth and puerperium period, to increase the uptake of essential maternal services.

Objectives: This systematic review and meta-analysis study was aimed to determine the effectiveness of short message services (SMS) on Focused Antenatal Care (FANC) visits and the attendance of skilled birth professionals in Low and Middle Income Countries (LMICs).

Methods: We searched a broad body of literature from electronic databases–Cochrane review, CINAHL, PsycINFO, PubMed and Google Scholar-to collect comprehensive evidence on the role of SMS on FANC visits and skilled birth attendance (SBA). We extracted data from randomized clinical trials (RCTs) only. Meta-analyses were conducted using random-effects models with inverse-variance method in Review Manager (RevMan) computer software. Qualities of the included studies were determined by GRADEpro, and risk of bias was assessed using Cochrane Collaboration risk of bias tool.

Results: Of the 1,224 non-duplicated articles screened, only 7 RCT studies representing 8,324 participants met eligibility criteria and included in this synthesis. On aggregate, there were statistically significant associations in experimental group in that pregnant mothers who received text messaging had a 174% increase in FANC visits (OR = 2.74 (95% CI: 1.41, 5.32) and 82% in SBA (OR = 1.82 (95% CI: 1.33, 2.49). The I^2 test result indicated high heterogeneity I^2=78% (P<.001). The overall qualities of included studies were moderate, and had low risk of bias.

Conclusions: SMS has positive effects for the uptake of FANC visits and SBA in LMICs. A short messaging service targeting pregnant woman is an invaluable, affordable intervention to improve maternal healthcare seeking behaviors.

Keywords: SMS, Focused Antenatal Care, systematic review and meta-analysis

Maternal Health and Population Studies

Pregnancy Outcomes in Multiparous Women: Does Parity Matter? A comparative Study *Nigus Bililign, Abel Gedefaw, Zelalem Tenaw.*

Background: While grand multiparty is low in developed nations, it is still a common condition in developing countries. Recent reports fail to show clear evidence on the contribution of grand multiparty to adverse pregnancy outcomes. This study aimed to compare maternal and perinatal outcomes in grand multiparous and low multiparity women in Hawassa University comprehensive specialized hospital and Adare General Hospital.

Methods: Comparative cross-sectional study design was employed from February to June 2018. Four hundred seventy one (471) mothers (157 grand multiparas & 314 low multiparas) were included. Data were collected by structured questionnaire using interview and from patient charts. Data were entered and analyzed using EPI-DATA v 4.4.2.0 and STATA v 14.1 respectively.

Results: About 39% (95% Confidence interval: 34.6%-43.5%) and nearly one-fourth (24.9%) (95% Confidence interval: 21.1%-29.1%) mothers had at least one adverse maternal and perinatal outcome, respectively. Previous medical illnesses [adjusted OR: 3.07 95% CI 1.19, 7.90], previous cesarean delivery [adjusted OR: 7.85 95% CI 3.42, 18.00] and high birth weight [adjusted OR: 3.91 95% CI 1.21, 12.61] were independent predictors of adverse maternal outcome. Mothers' education level, income and low birth weight also statistically significant variables with adverse maternal outcome. Similarly, less than four prenatal visit and previous home delivery were independent predictors of adverse perinatal outcome (AOR: 1.74 95% CI 1.04, 2.92 and 1.87: 1.04, 3.33, respectively). However, parity did not show statistically significant difference in both maternal and perinatal outcomes.

Conclusion and Recommendations: This study identified socio-economic and obstetric independent predictors of adverse pregnancy outcomes. However, parity did not show statistically significant difference in pregnancy outcomes. Women empowerment, promoting health facility delivery and meticulous counseling on the advantage of prenatal care, high-risk conditions are recommended. Further large-scale researches are needed to support this finding.

Keywords: maternal outcome, perinatal outcome, parity.

The Effect of Gender on Food Insecurity among HIV-Infected People Receiving Anti-Retroviral Therapy: A Systematic Review and Meta-Analysis. *Dube Jara.*

Background: HIV-infected adults receiving antiretroviral therapy have a high prevalence of food insecurity in both high- and low-income settings., Women bear an inequitable burden of food insecurity due to lack of control over resources and over household food allocation decision-making. A few studies conducted on the association between food insecurity and gender among HIV-infected adults have inconclusive findings. Therefore, the objective of this systematic review and meta-analysis was to estimate the pooled effect of gender on food insecurity among HIV-infected adults receiving antiretroviral therapy.

Method: We conducted an electronic, web-based search using PubMed, CINAHL, PopLine, MedNar, Embase, Cochrane library, the JBI Library, the Web of Science and Google Scholar. We included studies which reported the association between food insecurity and gender among HIV-infected adults receiving antiretroviral therapy whose age was greater than 18 years. The analysis was conducted using STATA 14 software. A random effects model was used to estimate the pooled effect a 95% confidence interval (CI). Forest plots were used to visualize the presence of heterogeneity. Funnel plots and Egger's and Begg's tests were used to check for publication bias.

Results: A total of 776 studies were identified of which seventeen studies were included in the meta-analysis, with a total of 5827 HIV infected adults receiving antiretroviral therapy. We found that the gender of HIV-infected adults receiving anti-retroviral therapy had statistically significant effects on food insecurity. The pooled odds of developing food insecurity among female HIV infected adults receiving anti-retroviral therapy was 53% higher than male HIV infected adults (OR: 1.53, 95% CI: 1.29, 1.83). Our analysis indicates the findings of studies conducted in the high-income countries showed weakest associations between gender and food insecurity than those conducted in low- and middle-income countries.

Conclusion: Our systematic review and meta-analysis showed statistically significant effect of gender on food insecurity among HIV-infected adults receiving anti-retroviral therapy in which odds of food insecurity was higher among female HIV infected adults compared to male HIV-infected adults. These findings suggest that the need to include within food and nutrition interventions for HIV-infected adults receiving antiretroviral treatment, culture- and context-specific gender-based policies to address the sex/gender related vulnerability to food insecurity.

Keywords: Food insecurity, Gender, Effect, HIV, Anti-retroviral therapy

Seeking Health Care for Pelvic Floor Disorders and its Associated Factors among Women Living in Kersa District, Eastern Ethiopia *Merga Aga Dheresa*.

Introduction: Pelvic floor disorders (PFDs) negatively affect physical, psychosocial, and economic wellbeing of women. In developing countries less than a quarter of women with PFDs seek health care for their problem. Most often they seek care latterly when they fail to adapt with their problem. Lack of knowledge about PFDs, economic constraints and cultural taboo, attributed for not seeking health care. Health care seeking for PFDs, and its associated factors, is little known in Ethiopia. This study aimed to assess health care seeking for PFDs, associated factors, and deterrents for seeking care.

Methods: We conducted community based cross sectional study to identify PFDs and its associated factors among women living in Kersa HDSS form August 10 to September 4, 2016. Study participants were selected through stratified multi stage sampling procedure and interviewed face to face with pretested questionnaire. Seven hundred four participants with PFDs were drawn from this large study to assess their care seeking behaviors. Poisson regression model was used to investigate the association of the independent variable with health care seeking behaviors. The results are reported in crude and adjusted prevalence ratio with 95% confidence intervals.

Result: Two hundred twenty five (32%; CI: 26.8-35.5) women sought care for their PFDs. Majority 160 (71%) of them seek care from government health facilities. Nearly half 208 (43.6%) of women who did not seek health care, mentioned lack of knowledge about PFDs treatment as deterrents of care seeking. Middle wealth index (APR=1.4, CI: 1.1, 1.8), autonomous decision making on own health (APR=1.3, CI:1.1, 1.7), longer existed PFDs (APR=1.5 CI:1.1, 2.2), and sever impact of PFDs on quality of life (APR=1.4, CI:1.1, 1.9) were identified as associated factors for health care seeking.

Conclusion: A large number of women with pelvic floor disorder did not seek health care due to lack of knowledge about PFDs' treatability, economic constraints or shyness to disclose their condition to health care providers. Informing about treatment options, including conservative treatment, and providing accessible, free gynecological morbidity services may help women to overcome the health care seeking obstacles.

Keyword: Health care seeking, pelvic floor disorder, Ethiopia, HDSS, Women.

Adherence to Iron-Folate Supplementation and Associated Factors among Pastoralist's Pregnant Women in Burji Districts, Segen Area People's Zone, Southern Ethiopia: Community Based Cross Sectional Study. *Negussie Boti Sidamo*.

Background: Iron deficiency anemia among pregnant women is one of the most common public health problems in developing country particularly in Ethiopia. Iron /Folic Acid supplementation with optimal adherence is the main cost-effective strategy for prevention and control of iron deficiency anemia in pregnant women. However, level of adherence to iron/folic acid supplementation and its associated factors were not well identified in study area. Therefore, the aim of this study was to determine the level of adherence to iron /folic acid supplementation and associated factors among pregnant women in Burji Districts, southern Ethiopia.

Methods: A community-based cross-sectional study was conducted among 317 pregnant women in Burji Districts from March to April 2017 using interviewer administered questionnaires. Data were entered into Epi Info 3.5.1 and exported to SPSS version 20.0 for analysis. Binary and multivariable logistic regression was used to identify factors associated with iron /folic acid supplementation. Adjusted odds ratio (AOR) with 95% confidence interval (CI) and p-value <0.05 were used to declare statistical significance.

Results: Among women participated in the study, 163(51.4%) were adherent to iron/folate acid supplementation. Factors significantly associated with adherence to iron and folic acid supplementation were maternal educational status (AOR: 2.47, 95% CI: 1.13-4.97), early registration for ANC (AOR: 2.49, 95% CI: 1.45 – 4.27), history of anemia during current pregnancy (AOR: 2.02, 95% CI: 1.09-3.72) and knowledge about iron and folic acid supplementation (AOR: 1.96, 95% CI: 1.02-3.76). Forgetfulness and fear of side effects were among the leading reasons of pregnant women for non-adherence to iron and folic acid supplementation.

Conclusions: This study revealed that adherence to iron /folic acid supplementation found to be 51.4%. Maternal educational status, early registration for ANC, history of anemia during current pregnancy and knowledge about iron and folic acid supplementation were significant factors associated with adherence to iron /folic acid supplementation among pastoralist's pregnant women. Therefore, anemia prevention strategy should strengthening giving awareness, counseling, strengthening community health education and participation in health programs are necessary to improve the uptake of iron/folic acid supplements.

Magnitude of Postnatal Care Services Utilization and Associated Factors among Women IN Debre Markos Town, East Gojjam, North West, Ethiopa,2017. *Mehret Tesfu Legesse.*

Introduction: Postnatal care is a care provided to women and their babies within 42 days after delivery. More than half a million women die every year worldwide from complications in pregnancy and childbirth; most of these deaths are happening during the postnatal period. Post natal care services (PNC) utilization would avert the death of mothers and their new born; Therefore, this study were designed to assess the magnitude and associated factors of postnatal care services utilization in the study area.

Objective: The main objective of the study was to assess the magnitude of postnatal care services utilization and associated factors among women in Debre Markos town, 2017.

Methods: Community based cross-sectional study was conducted from March 1 to 30/ 2017 in all the seven kebeles of Debre Markos town. A total of 997 Women who gave birth and had surviving children less than 1year were included in the study. Data were collected using interviewer administered and a pre–tested questionnaire. Data was entered, cleaned and coded into EPI-DATA version 3.1 and exported to Statistical Package for social since (SPSS) version 20 for analysis. Frequency distributions and descriptive analysis was done. Bivariate and multivariate logistic regression was done to identify factors that were associated with Post natal care utilization. Odds ratio at 95% confidence interval was used to determine the association and the statistical significance was declared at p-value of 0.05.

Result: The magnitude of Post natal care utilization was 29%. Results of this study revealed that majority of mothers, 261 (68.15%)   attended antenatal care service during their recent pregnancy and 378 (98.694%) delivered at health facility. History of ANC follow up(AOR= 2.223, 95%CI=1.297,3.811) and history of abortion (AOR=2.505,95%CI=1.179,5.320) were the determinant factors for PNC services utilization .

Conclusion: This study revealed that more than half of the respondents were not utilized PNCs. History of Antenatal care (ANC) follow up and history of abortion were the determinant factors for PNC services utilization.

Recommendation: Community level awareness creation program needs to be implemented by the zonal health bureau Woreda health office, local health professionals and other partners.

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. Therefore, the aim of this study was to determine the prevalence of antenatal depression and its determinants among pregnant women in Ethiopia.

Methods: In this systematic review and meta-analysis, 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 considerable heterogeneity, a random effect meta- analysis model as used to estimate the pooled prevalence of antenatal depression. Finally, the association between determinant factors and antenatal depression were assessed.

Results: The overall pooled 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: The pooled prevalence of antenatal depression, in Ethiopia, was relatively 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 determinants of antenatal depression in Ethiopia.

Keywords: Prevalence, Antenatal depression, Determinants, Ethiopia.

Utilization of Obstetric Analgesia in Labor Pain Management and Associated Factors among Obstetric Caregivers in Public Health Facilities of Kembata Tembaro Zone, Southern Ethiopia

Teketel Ermias Geltore, Ayanos Taye, Abraham Getachew Kelbore

Background: Nowadays, obstetric analgesia is provided routinely in most developed countries. However, in developing countries, labor pain management is not a well-established service. The poor utilization of labor analgesia in low-income countries including Ethiopia results in laboring mothers in unmeasured suffering, let alone analgesia. The aim of this study was to assess utilization of obstetric analgesia in labor pain management and associated factors among obstetric caregivers in public health facilities of KembataTembaro Zone, Southern, Ethiopia.

Methods: A facility-based cross-sectional study design was conducted among all obstetric caregivers at Kembata Tembaro Zone in public health facilities from March to April 2017.Data were collected by a pretested, self-administered, and structured questionnaire. A convenient sampling technique was used and descriptive analysis was done to characterize the study population. Bivariate and multivariate logistic regressions were used to identify factors associated with utilization of labor analgesia. The adjusted odds ratio with 95%CI was used to show the strength of the association and a *P* value <0.05 was used to declare the cutoff point in determining the level of significance.

Results: Three hundred forty respondents participated in the study with a response rate of 93%. The prevalence of labor analgesia use by the respondents was 37.9%. On multivariable logistic regression analyses, inadequate knowledge, positive attitude, and unavailability of labor analgesia drugs were significant independent predictors of obstetric analgesia utilization.

Conclusion: Proportion of analgesia utilization was low; inadequate knowledge, positive attitude, and unavailability of analgesia drugs in the facilities were significantly associated with obstetrics analgesia utilization. Health institutions and health personnel should work on provision of training for those obstetric care providers, and necessary drugs should be available in each facility.

Keywords: pain management, analgesia, obstetric caregiver, Ethiopia.

Timing and Factors Associated with First Antenatal Care Visiting among Pregnant Women Attending Antenatal Care in Public Health Facilities in Addis Ababa, Ethiopia, 2017. *Simegnew Asrie Adugna, Graduate Ethiopia Field Epidemiology Training Program, Addis Ababa health bureau, Department of Public Health emergency management.*

Introduction: Early starting Antenatal care is key indicator to identify risk factors in pregnancy and to improve maternal and child health. Many pregnant women in sub-Saharan Africa start antenatal care attendance late. In Ethiopia early initiation of antenatal care was low. However, the evidence on the problem yielded inconsistent finding which is difficult to establish a conclusion.

Objective: To assess timing and factors associated with first antenatal care visiting among pregnant women attending antenatal care in public health facilities in Addis Ababa, Ethiopia.

Methods: Institution based cross sectional study was conducted from October 29 to November 30, 2017 by using pre-tested and interviewer administer semi-structured questionnaire. Pregnant women were interviewed at exit from antenatal clinic those attending antenatal care service at selected public health centers using systematic Sampling technique. Data was checked for completeness, cleaned manually and entered in to EPI INFO 7 and exported to SPSS 21 for further analysis. Multivariable logistic regression model was used to predict initiation time and associated factors .Odds ratio and 95% CI was used to measure strength of associations.

Result: Of 597 participant, 42% of them were age group of 25-29 with Median age of 25yrs (IQR 23-29). Among them 253 (42.4%) pregnant mothers initiated early (≤12 weeks). Getting information from friends (AOR=1.81(1.16, 2.83)), deciding to initiate first ANC visit by their own (AOR=9.84 ((4.04, 23.98)), family size less than three (AOR=1.88(1.01, 3.49)) and age of 30-34 years (AOR=0.142(0.053, 0.379)) were found to be statistical significant factors for timely initiation.

Conclusion and recommendation: Proportion of pregnant mothers who practiced timely initiation of first ANC is low. Getting information from friends, deciding to initiate first ANC visit by their own, family size <3 were associated factors. Improving initiation of first ANC visit by providing accurate information, maintain appropriate family size through strengthen family planning program.

Keywords: Initiation time, Antenatal care, Factors, Addis Ababa, 2017

Determinants of Maternal Near Miss among Women in Public Hospital Maternity Wards in Northern, Ethiopia: A Facility Based Case-Control Study. *Dejene Ermias Mekango.*

Background: In Ethiopia, 20,000 women die each year from complications related to pregnancy, childbirth and post-partum. For every woman that dies, 20 more experience injury, infection, disease, or disability. "Maternal near miss" (MNM), defined by the World Health Organization (WHO) as a woman who nearly dies, but survives a complication during pregnancy, childbirth or within 42 days of a termination, is a proxy indicator of maternal mortality and quality of obstetric care. In Ethiopia, few studies have examined MNM. This study aims to identify determinants of MNM among a small population of women in Tigray, Ethiopia.

Methods: Unmatched case-control study was conducted in hospitals in Tigray Region, Northern Ethiopia, from January 30-March 30, 2016. The sample included 103 cases and 205 controls recruited from among women seeking obstetric care at six (6) public hospitals. Clients with life-threatening obstetric complications, including hemorrhage, hypertensive diseases of pregnancy, dystocia, infection, and anemia or clinical signs of severe anemia (in women without hemorrhage) were taken as cases and those with normal obstetric outcomes were controls. Cases were selected based on proportion to size allocation while systematic sampling was employed for controls. Binary and multiple variable logistic regression ("odds ratio") analyses were calculated at 95% CI.

Results: Roughly 90% of cases and controls were married and 25% experienced their first pregnancy before the age of 16 years. About two-thirds of controls and 45.6% of cases had gestational ages between 37-41 weeks. Among cases, severe obstetric hemorrhage (44.7%), hypertensive disorders (38.8%), dystocia (17.5%), sepsis (9.7%) and severe anemia (2.9%) were leading causes of MNM. Histories of chronic maternal medical problems like hypertension, diabetes were reported in 55.3% of cases and 33.2% of controls. Women with no formal education [AOR=3.2; 95% CI: 1.24, 8.12], being less than 16 years of age at first pregnancy [AOR=2.5; 95% CI: 1.12, 5.63], induced labor [AOR=3.0; 95% CI: 1.44, 6.17], history of cesarean section [AOR=4.6; 95% CI: 1.98, 7.61] or chronic medical disorder [AOR=3.5; 95% CI: 1.78, 6.93], and women who traveled more than 60 minutes before reaching their final place of care [AOR=2.8; 95% CI: 1.19, 6.35] had higher odds of experiencing MNM.

Conclusions: Macro-developments like increasing road and health facility access as well as expanding education will all help reduce MNM. Work should be continued to educate women and providers about common predictors of MNM like history of C-section and chronic illness as well as teenage pregnancy. These efforts should be carried out at the facility, community, and individual levels. Targeted follow-up with women with history of chronic disease and C-section could also help reduce MNM.

Keywords: Maternal near miss, MNM, severe obstetric hemorrhage, hypertensive disorder, C-section, Tigray, Ethiopia.

Prevalence of Hypertensive Disease of Pregnancy and Pregnancy Outcomes in Sub-Saharan Africa: A Systemic Review and Meta-Analysis. *kasiye shiferaw Gemechu, Nega Assefa, Bizatu Mengistie*

Background: Hypertensive disease of pregnancy (HDP) is multisystem diseases, which include chronic hypertension, superimposed preeclampsia on chronic hypertension, gestational hypertension, preeclampsia, and eclampsia. Studies have revealed that hypertension increased risk of preterm birth, small for gestational age, stillbirth and neonatal death. But, pooled prevalence of hypertensive disorders and their pregnancy outcomes in Africa have not been well understood. Therefore; this review aimed at analyzing prevalence of hypertensive disease of pregnancy and pregnancy outcomes in sub-Saharan Africa.

Method: A systematic review of articles using PubMed, EMBASE, AJOL and Google scholar was done. This analysis was conducted on observational facility based studies from sixteen countries between 2000 and 2018 in sub-Saharan Africa. Independent extraction of articles by reviewer authors using predefined inclusion criteria were done. Adjusted odds ratio with 95% confidence intervals for each study were calculated and across studies using the random effects model with the comprehensive meta-analysis version 2 package. Heterogeneity (I^2) was calculated for combined studies.

Result: The analysis included 59 studies. The overall pooled prevalence of hypertensive disease of pregnancy was 4.1% (95% CI = (3.1%, 5.3%)), but the meta-analysis has high heterogeneity, I^2 = 99.45% P-value < 0.0001. Compared with normotensive pregnant women, women with hypertensive disease of pregnancy were associated with increased risk of maternal mortality, OR = 17 (95% CI = (9.6, 28.8)), cesarean section, OR = 3.1 (95% CI = (1.7, 5.6)), perinatal mortality, OR= 8.2 (95% CI = (2.8, 24)), low birth weight, OR = 3.2 (95% CI = (2, 5)) and preterm delivery, OR = 7.8 (95% CI = (2.5, 25.3)) according to this analysis.

Conclusion: The pooled prevalence of hypertensive disease of pregnancy was high compared to those reported from other region. Maternal mortality, cesarean section, perinatal mortality, low birth weight and preterm delivery have been significantly associated with hypertensive disease of pregnancy. Therefore; creating awareness on hypertensive disease of pregnancy among pregnant women is mandatory. Pregnant women with hypertensive disease of pregnancy need due attentions to manage the disease appropriately in order to have favorable outcomes.

Non-Adherence to Iron/Folate Supplementation and Associated Factors among Pregnant Women Who Attending Antenatal Care in Selected Public Health Institutions at Hosanna Town, Southern Ethiopia, 2016. *Birhanu Jikamo bBego*

Background: Despite the largely preventable causative factors, maternal mortality is still a problem in many societies in the world. Anemia during pregnancy is one of the risk factors for maternal mortality and morbidity. Iron supplementation alone or in combination with folic acid is the strategy to alleviate iron deficiency anemia during pregnancy. However, non-adherence is an issue for not reducing the problem in these populations.

Objective: To determine non-adherence to Iron/Folate Supplementation and associated factors among pregnant women who attending antenatal care in selected public health institutions at Hosanna Town, Southern Ethiopia.

Methodology: The study was conducted at public health facilities in Hossana town, Southern Ethiopia. An institutional based cross-sectional study was performed. Randomly selected three hundred and a sixty five (365) pregnant women were included in the study. Collected data were edited, coded and entered to Epi info version 3.1 and exported to` STATA Version 14 for further analysis. The association of every independent variable with the response variable was evaluated using bivariate binary logistic regression analysis. Multiple binary logistic regressions were used to identify factors associated with non-adherence to Iron/Folate. Presence of confounders and interaction effects was investigated by computing relative changes on ß coefficients at a cutoff point 15%. Statistically significant variables were considered at p-value<0.05.

Results: Among women participated in the study, 30.41% were non adherent to iron/folate supplementation. Compared to women aged 15-24 years, women above 35 years of age 4.16 (95% CI: 1.24, 3.95) had higher non adherence than adhered women. Women who didn't get nutrition counseling 3.19 (95% CI: 1.16, 3.74) and women lacking knowledge of anemia 16 (95% CI: 4.34, 6.92) were associated with a higher likely hood of non-adherence as compared with those adhered women.

Conclusions and Recommendations: Considerable proportion of pregnant women was non-adhered. Age, income, knowledge about hemoglobin status, knowledge about anemia and nutritional counseling were significant predictors for non-adherence. Therefore, promoting the benefits of iron/folic supplementation, increasing the awareness of women about anemia and nutrition counseling through health education activities is vital for decreasing non adherence.

Keywords: IFA, Iron /Folic acid supplement, Non adherence, Pregnancy, Anemia.

Family Planning Utilization and Factors Associated among Women Receiving Abortion Services in Health Facilities of Central Zone Towns of Tigray, Northern Ethiopia: A Cross Sectional Study.

Teklit Grum Weldemariam

Background: Abortion remains among the leading causes of maternal death worldwide. Post-abortion contraception is significantly effective in preventing repeat unintended pregnancy and abortion if provided before women leave the health facility. However, the status of post-abortion family planning (PAFP) utilization and the contributing factors are not well studied in Tigray Region. So, we conduct study aimed on family planning utilization and factors associated with it among women receiving abortion services.

Methods: A facility based cross-sectional study design was conducted among women receiving abortion services, central zone of Tigray, December 2015- February 2016. A total of 409 abortion clients were selected using systematic random sampling technique and women were interviewed at exit. The data were collected by a pre-tested, interviewer administered questionnaire. Data were coded and entered in to Epi info 7 and then exported to SPSS for analysis. Descriptive statistics, frequencies and mean were computed. Bivariate logistic regression was used and variables statistically significant at $p<0.05$ were checked in multivariable logistic regression to identify associated factors.

Results: A total of 409 abortion clients were included in this study. Majority 290 (70.9%) of study participants utilized contraceptives after abortion. Type of health facility, the decision maker on timing of having child, knowledge that pregnancy can happen soon after abortion and husband's opposition towards contraceptives were significantly associated with Post-abortion family planning utilization.

Conclusions: About one-third of abortion women failed to receive contraceptive before leaving the facility. Private facilities should strengthen the post abortion care service. Health providers should provide counseling on fertility-return following abortion before abortion women left the facility. Women empowerment through enhancing community's awareness focusing on own decision making in the family planning utilization including the partner should be strengthened

Keywords: Post abortion contraceptive use, women, health facilities, Ethiopia.

Early Initiations of First Antenatal Care Visit and Associated Factor among Mothers Who Gave Birth in the Last Six Months Preceding Birth in Bahir Dar Zuria Woreda North West Ethiopia. *Yibeltal Alemu Bekele, Amanu Aragaw Emiru.*

Background: timing of Antenatal care booking is one of the basic components of antenatal care services; that helps to early detection, managing, and prevention of problems during the pregnancy and helps the mother to receive full packages of antenatal care services. However, in the world including Ethiopia, significant numbers of pregnant mothers were not booking the follow up on the recommended time. The main aim of this study was to assess the prevalence and factors that associated with the early timing of antenatal care visit in Bahir Dar Zuria District, North West Ethiopia

Methods: a community-based cross-sectional study was conducted. A total of 410 mothers have participated. Data were collected through the interview from March 1 to 30/2018 using a structured and pre-tested questionnaire. Data were clear, code, and enter into Epi-info version 7.1 and export to SPSS for farther analysis. Both bivariate and multivariate analyses were used. On bivariate analysis p-value, less than 0.2 were used to select the candidate variable for multivariate analysis. P-value and confidence interval were used to measure the level of significance on multivariate analysis and those variables whose P-value <0.05 were considered as statically significant.

Results: the prevalence of early timing of ANC in the study area was 46.8%; with [95% CI 40.5, 51.8]. Distances [AOR 2.47, 95 % CI; 1.4, 4.2], Knowledge on the timing of ANC [AOR 2.1; 95 % CI; 1.2, 3.7], No under-five children [AOR 2.7; 95% CI; 1.3, 5.8], having one under-five children [AOR 2.2; 95% CI; 1.1, 4.5], and wanted pregnancy [AOR 2.4, 95% CI, 1.3, 4.7] were affects the early timing of ANC

Conclusions: the prevalence of early timing of ANC was high when compared to the national figure and the Sub-Saharan country. Accessibility of health services, knowledge on the timing of ANC, under-five children, and desire for pregnancy were factors that affect the early timing of ANC.

Policy action will be required to farther improve the timely booking of ANC.

Keywords: ANC, Maternal health, pregnancy, utilization, Ethiopia.

Women's Decision-Making Power and Health Service Utilization in USAID Transform Primary Health Care Project Areas. *Girma Kassie Gebrie, Kidest Lulu Hagos, Bekele Belayihun Tefera, Habtamu Zerihun Demeke, Ismael Ali Beshir.*

Background: Pervious evidences attempted to explore the barriers of healthcare service utilization, from demographic and economic, sociocultural and behavioral perspectives. Several studies emphasizing the role of women decisions-making power on health service utilization. Some studies showed the importance of independency of women on decision making. USAID Transform: Primary Health Care project, funded by the United States Agency for International Development, recognizes the importance of gender as a key social determinate of health by addressing gender gaps and opportunities to improve healthcare service utilization. The aim of this study is to describe the association between women's decision-making power and utilization of healthcare service among women in project target areas. The result will be used for project planning

Method: A cross sectional multistage simple random sampling technique was used. Samples of 3,433 households were randomly selected. Wife's in selected households asked about their decision-making power on their own health care. It is assumed that if a wife has ability to decide on their own health she can also decide for family members, for her children. Data on family planning use for women of age 15-49 years, place of delivery for women with children under two years and health seeking behavior for children who were sick in the last two weeks before the data of data collection were collected that can be used to measure household level service utilization practices. Data collection was conducted from October 01- December 31, 2017 as part of project follow up visit activities. Household questionnaire/ checklist was used to collect the required data.

Results: Family planning use, institutional delivery and health seeking behavior for sick child were 48.4%, 71.3% and 62.6%, respectively, while Wife's decision making power for own health care is 82.8%. Modern family planning use, institutional delivery and health seeking behavior are 50.6%, 75% and 65.5%, respectively, among married women who are found in households with wife's decision-making power, versus 37.9%, 53.6% and 50.4%, in the same order, among women who are found in households without wife's decision-making power. The odds rations are (OR=1.3, 95% CI:1.01-1.69), (OR=2.4, 95% CI:1.74-3.43) and (OR=1.7, 95% CI [0.99-2.77]), in the same order, which is statistically significant except health seeking behavior for sick children.

Conclusion: This study showed that improved women's perception towards own health decision making improves households service uptake. In line with this, the project is advised to implement intervention that can improve women's decision-making power which in turn increase service uptake in project areas.

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Occupational Exposure to Sharps Injury among Healthcare Providers in Ethiopia Regional Hospitals *Getaneh Baye Mulu.*

Background: Sharps injury is a penetrating stab wound from needle, scalpel, or another sharp object that may result in exposure to blood or other body fluids. According to World Health Organization the annual incidence of sharps injury in Africa was ranged from 2.10 to 4.68 per person per year, but research data in Ethiopia is limited. The aim of the study was to investigate sharps injury prevalence and associated risk factors.

Objective: To assess the prevalence and determinants of sharp injuries among health care providers in Debre Berhan town from February to June 2016.

Methods: Institution based cross-sectional study was conducted with 200 healthcare providers (HCP) in central Ethiopia. Proportionate stratified sampling was used to select HCP. Data was collected from April to May 2016 using self-administered questionnaire adapted from World Health Organization best practices for injections and related procedures tool kit. Bivariate and multivariate logistic regression analysis was carried out to identify sharps injury associated risk factors. Epi Info version 3.5.1 software package was used for data coding and entry whereas Statistical Package for Social Sciences (SPSS) version 20 software package was used for analysis.

Results: In total, 195 HCP participated with a response rate of 97.5%. The prevalence of sharps injury was 32.8%.lack of in-service job training and previous exposure to sharps injury was statistically significant risk factors for sharps injury. HCP who had no in-service job training were 4.7 times more likely sustained sharps injury compared with those who had in-service job training (p< 0.001, OR = 4.7, 95% CI = 2. 05–10.56). HCP who had previous exposure to sharps injury were 3.7 times more likely sustained sharps injury compared with those who were not exposed (p-value = 0.002, OR = 3.7, 95% CI = 1.62–8.27).

Conclusions: This study revealed 32.8% or at least three out of ten HCP exposed to sharps injury. This was found statistically significant among HCP who had no in-service job training and who had previous exposure to sharps injury. Training HCP perhaps increases skill and curiosity to reduce exposure to sharps injury.

Keywords: Sharps injury, Healthcare providers, Prevalence.

Children's Health Study in Ethiopia: current progress, preliminary results and future plans.
Abera Kumie, Lynn Atuyambe, Etienne Rugigana, Augustine Afullo, Alemayehu Worku, Worku Teferra, Meskir Tesfaye, Kristin Dessie, Solomon Teferra, Jonathan Patz, Jonathan Samet, Kiros Berhane.

Background: We present preliminary findings from the Ethiopian Children Health Study that is being conducted in Addis Ababa, Ethiopia - modeled after the Southern California Children's Health Study. The study followed a multi-level design based on primary school-children from ten sub-cities in Addis Ababa (Ethiopia) – representing a diverse pollution profile due to variations in levels of traffic-related, industrial and indoor pollution sources. This study is being conducted as part of the Global, Environmental and Occupational Health (GEOHealth) for Eastern Africa.

The health assessment involved lung function measurements among 1086 children aged 9-13 years old from primary schools and questionnaire based ascertainment of information on socio-demographic factors, household characteristics, usual activities, and respiratory health of the children and their families in 969 households. We measured ambient air pollution exposure using $PM_{2.5}$ levels at each of the study schools using E-samplers. In addition, household level air pollution are levels are being measured using a combination of fixed and personal monitors at strategically selected sites of 30% of homes of study subjects to enable spatio-temporal modeling for estimation of exposure for all study homes.

Results: The mean age of children was 10 years (SD=1.00) (range 9-13) with male: female ratio of 1:1.2. the majority of mothers' of children have no education (80%), while 54% of them were employed at the time of data collection. 80% of fathers' of children had employment. The proportion of reported respiratory illness differed by typology: wheezing-1.1%; asthma-0.2%; allergy-7.3%, coughing- 8%, and bronchitis 0.41%. About 98% homes of children are urban based.

A significant 81% of the homes of children are characterized as shared compound with average number of 1.7 (0.97) rooms. 81% of children share bed rooms with adults. Animals (mainly cat and dogs) are kept in 37% of the homes of children.

The usual type of cooking fuel greatly varied by the purpose of cooking. Charcoal and electricity are the common types of fuel for breakfast (79% of households), lunch (76%) and dinner (85%), while Injera baking involved electricity and wood. The traditional coffee ceremony used charcoal in 78% of households. The index child was reported to be at home while events of cooking takes place in 61-91% of homes. Home heating was reported in 29% of households using charcoal mainly during cooking events. About 50% of study subjects had mobility of living in different sub-cities during their lifetime.

Conclusion: Biomass fuel use is the predominant fuel source for all types of cooking. The home environment does not appear to be supportive of the respiratory health in children.. Future analyses will focus on the direct examination of the impact of air pollution on children's respiratory health outcomes by using data from both the health assessment and air quality monitoring process.

Evaluation of the Consumption and Contamination Level of Vegetables and Fruits in Ethiopia

Firehiwot Abera Derra, Tesfaye Legesse Bedada, Redwan Muzeyine Edicho, Samson Girma Gabre, Waktola Gobena Sima, Rahel Fekade Mahder, Tigist Yohannes Negassi, Almaz Gonfa Biegna.

Background; Vegetables and Fruits have got major acceptance in the modern scientific world nowadays and advisable to use more per daily food consumption. Their nature of harbouring different antioxidants and vitamins which are capable of preventing health risk diseases associated with consuming more protein and fatty foods (animal products), make them be selected to use more in recent time. Most people become a vegetarian or lacto vegetarian to avoid such general risks especially when they become around adulthood ages.

Although these food products have got more acceptance, their preparation and sanitation before consumption at household level have to get proper attention. This is because vegetables and fruits which are sold in the market can bring other side health risks since it mostly acts as a reservoir for many microorganisms. In most of the study, it is reported that these food types have higher microbial loads as the result of using different unclean water sources; from the rivers, ponds or other similar sources which have easily in contact with animal fecal matters. Their contact with dust and soil has also played a major role as a contamination source since soil harbours millions of parasites and bacteria which are capable in surviving these environments, like roundworms and several bacterial pathogens.

Objective: The objective of this study was to assess the microbial load of vegetables and fruits which were submitted at the Public health microbiology laboratory of Ethiopian Public Health Institute, within the period of 2008 to 2013.

Methods: Vegetables and fruits samples were collected and submitted to the public health microbiology laboratory for the purpose of monitoring and regulating their microbial quality, based on the standard protocol. All samples were analyzed and checked for the presence of Mold/yeast count, Aerobic plate count, Total coliform count, fecal coliform count and *E.coli* count, to determine their microbial contamination level, according to the American Public Health Association (APHA) protocol for viable bacteria count and the Nordic committee for National Reference laboratory (NMKL) protocol for the remaining; using a pour plate enumeration culture technique.

Result: a total number of sixty-three processed and final products were received per five to six years, which is around 4% (63/ 1554), out of the overall food types which were submitted in those indicated periods. From all tested samples around 12.7% (8/63) of the samples showed unacceptable microbial quality by mesophilic aerobic plate count, which is the highest percentage, followed by total coliforms 6.3% (4/63), fecal coliforms 3.2% (2/63), *E.coli* 1.6% (1/ 63%) and the mold count that is 1% (1/63), by referring acceptable reference protocols (ICMSF) per each test parameters under this food category. Around 90% of the samples were collected from Addis Ababa city, six samples from SNNPR (Southern Nation and Nationality of People Region) and one sample from Harar.

Discussion and Conclusion: Although vegetables and fruits are currently proved to be the best healthy foods worldwide and are available with low cost, in the developing countries like Ethiopia, their consumption rate is overwhelmed by cereals and animal products based on the life status of the community. The sample size per this food category can prove this fact. Only 4% of these food types were

submitted to the laboratory per five to six years for the quality monitoring, by the regulatory body. In addition to these, even though the submitted food products are processed and ready to use for human consumption, around 3.2% of all harbours fecal coliform indicators, (which can be either one of these genus *Klebsiella, Enterobacter, Escherichia or Citrobacter*). The presence of one of the above four genera can also indicate the possibility of detecting *Salmonella* and *Shigella*species in these food elements. Similarly, the best sanitation defect indicator; mesophilic aerobic plate count, which was calculated as around 12.7%%, also further proves us around one-fifth of the samples were microbiologically contaminated.

Therefore, joint efforts have to be exerted by different branches of MOH (Ministry of Health) for encouraging the community to use vegetables and fruits as its main food source for better health and to reduce nasty illnesses like diabetes, obesity, heart diseases and so on. However, while doing so, series health education has to be provided on sanitation procedures like immediate cooking or disinfection before consumption to prevent the community from environmental associated risks.

User Participatory Organic Waste and Grey Water Management Amidst Cultural Indifference to Cope with Increasing Effect of Climate Change. *Alemneh Teshale Habebo.*

Many scholars argue that agricultural sector has been adversely affected due to increasing effect of climate change. In effect, consequence of drought, occasional flooding, increase pests and diseases devastate poverty in developing world. In addition to this, there has been far more issues threaten the development and persistence of vast number of population, particularly smallholding farmers, such as: inadequate education, lack of technology, poor sanitation and unsustainable utilization of water resource. The aim of this study is highlighting the challenges and implications of user participatory grey water and organic waste management practice to overcome effects of climate change. Thus, various field experiments were conducted at family owned private compound at House Hold Level, from April 2016-December 2018, in Hosanna town, Ethiopia. This study is part of study by the same author of the paper, titled **"**Adopting Vermicomposting Techniques for Household Waste Management". Appropriate user participatory organic waste and grey water management practices were practiced discernibly day to day basis. Vermicomposting techniques and finished compost were applied for smallholding garden, at HH level. Experience from user participatory organic waste and grey water management practice presented in five major themes: 1) Cultural indifference on HH waste management; 2) Appropriate worm collecting and vermicomposting devices; 3) Advocacy, intervention and technology as a tool for HH waste management-collecting, sorting and composting process; 4) Economic and environmental advantage of HH waste management; 5) Who is responsible to apply appropriate organic waste and grey water management for agricultural land productivity? Field trial suggests important consideration of user participatory grey water reuse and organic waste management, in terms of overcoming increasing effect of climate change, by increasing productivity of smallholder agricultural land through application of bio fertilizer. User participatory HH waste management is important for HHs with subsistence farming in the town, enhances utilization of indigenous knowledge, protect environmental health; and harmonize vermicomposting and waste management strategies at HH level by overcoming cultural indifference. Adequate and inclusive HH waste management practice would become means to generate income for resource poor HHs; and micro and small enterprises working on urban agriculture. Further work is needed to confirm this finding.

Keywords: Advocacy, Agriculture, Grey water reuse, Household waste management.

Assessment of Self-Reported Health Symptoms and its Determinant Factors among Hairdressers in Nifas Silk Lafto Sub City, Addis Ababa, Ethiopia *Sara Buyo, Abera Kumie. Tekele.*

Background: Hairdressing is a worldwide job, with predominantly female staffs of the younger age group, who are exposed to different physical and chemical hazards present in their work environment , which affect their health seriously. However, there is no information regarding Ethiopian situation.

Objective: To assess self-reported work-related health symptoms and its determinant factors among hairdressers working in beauty salons of Nifas Silk Lafto Sub City, Addis Ababa.

Methods: Descriptive cross-sectional study was conducted using interviewer-administered, pre-tested, structured questionnaire prepared in English and translated to local language (Amharic), to assess 480 stratified, proportionately sampled hairdressers, from April 15 to June 15, 2015. Checklist was used to assess the work environment. Variables on socio-demographic characteristics, work-related symptoms, and preventive methods employed, work duration and conditions, and risk factors for ill health were collected after ethical clearance was obtained from Addis Ababa University, school of Public Health College of Health Sciences. Information collected was processed and analyzed using SPSS-version 20, Chi-x^2 test and P value was used to compare the values. Multivariate analysis and logistic regression was done for the risk factors.

Results: Musculoskeletal symptom (at least one symptom) was reported by 372 (77.5%) hairdressers. Back and foot/leg pain/discomfort was reported by the majority; 63% & 54.4% respectively. Uncomfortable body posture at work (AOR= 4.256 (95%CI = 2.544 – 7.119)), and non-use of ergonomic tools (AOR, 2.082 (1.148 –3.773)), were major factors associated with musculoskeletal symptom. Hand allergy/eczema was reported by 103 (21.5%) of hairdressers. Of whom 39(38%) of them were those who were engaged in hair washing activity   and 61 (59.2%) of them were those who worked more than 8 hours a day. Prevalence of respiratory symptom (at least one symptom) was 207(43.1). Rhinitis (32%) and breathing difficulty at night (11%) were frequently reported symptoms. More than 22% of the hairdressers reported nasal symptom with hair spray and dye application/preparation. Reproductive health problems were reported by 44% (n=25) of hairdressers.

Conclusions and Recommendations: The study showed that the hairdressers suffer multiple health symptoms of multifaceted origin, which needs organized and coordinated intervention, yet the profession is neglected. Therefore, ensuring proper work organization and design, and safe work environment is recommended. Awareness Creation regarding musculoskeletal and respiratory symptom is emphasized. Hence, preparing guideline on Occupational Health and Safety of hairdressers' salon, and update of the training manual has paramount importance.

Biosafety Poly Frame work in Ethiopia Current Development, *Yakob Gebregziabher Tsegay.*

At the national level, regulations affecting agricultural biotechnology will have to reflect a country's policy objectives for the development of biotechnology capacity, and society's desires on how technology will affect it. Prior to designing regulatory systems, governments will have to determine their objectives for the use of biotechnology in social and economic development. Regulatory systems must be designed to meet those policy objectives, as well as a country's obligations under international treaties (CBD/CPB).

Ethiopia ratified the Convention of Biodiversity (CBD) through Proclamation No. 98/1986 and signed the Cartagena Protocol on May 24, 2000. This Protocol was also ratified by the House of People's Representatives as Proclamation No. 362/2001.Ethiopia prepared its Biosafety Law in 2009 as Proclamation No. 655/2009 and it was ratified by the Parliament. The Proclamation N0. 655/2009 was amended as Biosafety (Amendment) Proclamation No. 896/2015 on the 14th of August 2015 through house of people's representative on the parliament.

The main objective of the Biosafety law is protecting human and animal health, biological diversity and in general, the environment, local communities and the country at large by preventing or at least managing down the adverse effects of modified organisms to levels of insignificance and enhancing access to and transfer of technologies, including modern biotechnology, that serve for conservation and sustainable use of biological diversity.

To facilitate this objective, a conceptual frame work was developed as a tool to help in design and implementation of Biosafety system in Ethiopia. This frame work identifies five critical areas to development of an effective national Biosafety system.

1. Strong national policy, strategy ,regulation and research agendas regarding Biosafety and Biotechnology
2. A national monitoring and evaluation system
3. Conversation of indigenous knowledge, skill and capacity to develop and implement Biosafety system
4. Development of national law and regulation on Biosafety
5. Implementation of national policy

Findings: There is a need to develop the Biosafety expertise of key government officials within existing regulatory agencies to help them handle increasing volumes of applications. The concern is about the entry of transgenic organisms into Ethiopia outside of regular channels, such as Genetically Modified (GM) grain arriving as food aid, which could subsequently be planted by farmers. The National Biosafety advisory Committee (NBAC) currently takes a cautious approach to risk assessment. It needs to look at the potential benefits of GMOs and also the risks associated with not adopting some GM products for the future productivity and sustainability of agriculture and for the competitiveness of the economy in Ethiopia. As in most countries, public understanding of biotechnology and GM is limited. Ethiopia is well placed to take the lead in Biosafety initiatives in horn of Africa.

Keyword: Biosafety, Biotechnology, Genetically modified (GM), GMO, and Risk Assessment.

Climate Variability Associate with Childhood Diarreha in Southern Ethiopia. **Hunachew Beyene, Wakgari Deressa, Abera Kumie, Delia Grace *College of Health Sciences, Hawassa University, P.O. Box 1560, Hawassa, Ethiopia.*

Background: Diarrhea has been associated with climate factors. However, there is a lack of evidence at the local level in developing countries. The current study investigated the relationship between climate factors and childhood diarrhoea in southern Ethiopia.

Methods: We assessed the association between childhood diarrhoeal incidence and climatic factors in Southern Ethiopia in March 2018. Diarrhoeal morbidity report for 19 districts was obtained from the Health Management Information System database of the regional health bureau from July 2011 to December 2016). Mean monthly precipitation, maximum and minimum temperature for the same year was obtained from the Ethiopian Metrological Agency. A negative binomial regression model was used to establish the relationship between monthly diarrhoeal incidence and climatic factors.

Result: The estimated incidence rate ratio (IRR) of under-five diarrhoea increased by a factor of 1.27 (95%CI: 1.10, 1.47) with a unit change in the log of the population density while holding all other variables in the model constant. With a 1 $^{\circ}$C increase in the mean monthly maximum temperature, the childhood diarrhoea IRR increased by a factor of 1.03 (95% CI: 1.02, 1.05). There was a significant inverse relationship between childhood diarrhoea and monthly mean precipitation (IRR: 0.9992, 95%CI: .9989, .9997) at one month lag and the mean monthly minimum temperature at one month lag (IRR: 0.9682, 95% CI: 0.9488, 0.9881). Winter and autumn seasons compared to spring, while holding the other variables constant in the model, had 1.312 (95% CI: 1.177, 1.462) and 1.595 (95% CI: 1.437, 1.772) greater IRR of childhood diarrhoea.

Conclusion: Our study identified the seasonality of childhood diarrhoea and the existence of health-climate interactions. Targeting mitigation and adaptation strategies need to be made to tackle under-five diarrhoea. The findings could be applicable to other areas with similar geographical and climatic features.

Spatiotemporal Analysis of Under-Five Diarrhoea in Southern Ethiopia: Based on the Health Management Information System Morbidity Data. *Hunachew Beyene*

Background: Description of diarrhoeal clusters in time and space and understanding seasonal patterns can improve surveillance and management. The present study investigated the spatial and seasonal distribution, and purely spatial, purely temporal, and space-time clusters of childhood diarrhoea in Southern Ethiopia.

Methods: We analyzed data from the Health Management Information System (HMIS) under-five diarrhoeal morbidity reports from July 2011 to June 2017 in 19 districts of Sidama Zone, southern Ethiopia. The Kulldorff's SaTScan software with a discrete Poisson model was used to identify statistically significant special, temporal, and space-time diarrhoea clusters.

Results: A total of 202,406 under-five diarrhoeal cases with an annual case of 5,822 per 100,000 under-five population were reported. An increasing trend of diarrhoea incidence was observed over the six years with seasonal variation picking between February and May. The highest incidence rate (135.8/1000) was observed in the year 2016/17 in Boricha district. One statistically significant most likely spatial cluster and six secondary clusters were identified. One statistically significant temporal cluster (LLR = 2,109.93, p < 0.001) from December 2013 to May 2015 was observed in all districts. Statistically significant spatiotemporal primary hot-spot was observed in 5 districts in different time periods.

Conclusion: Childhood diarrhoea was not distributed randomly over space and time, and showed an overall increasing trend of seasonal variation peaking between February and May. The health departments and other stakeholders at various levels need to plan targeted interventional activities at hotspot seasons and areas to reduce morbidity and mortality.

Eastern African GEOHealth Hub: Preliminary Findings from Continuous PM2.5 measurements in Addis Ababa. *Abera Kumie, Lynn Atuyambe, Etienne Rugigana, Augustine Afullo, Alemayehu Worku, Worku Teferra, Meskir Tesfaye, Kristin Dessie, Solomon Teferra, Jonathan Patz, Jonathan Samet, Kiros Berhane.*

Background: The GEOHealth Hub for Eastern Africa is tackling growing challenges from environmental and occupational health hazards through research on air pollution in Ethiopia, Uganda, Rwanda and Kenya. Ambient air pollution in Addis Ababa is understood to be in the increasing side due to household fossil burning and vehicular emissions. The road structure, topography, socio-economic status and temperature inversion are believed to be some factors that contribute to the rising air pollution levels. Even though there exists some data on air pollution levels in Addis Ababa using short duration averaging times, the GEOHealth Hub has established one of the first continuous monitoring stations that could fill critical data gaps by providing the time series profile of $PM_{2.5}$ for Addis Ababa.

Methods: We used a Beta Attenuator Monitor (BAM) to measure the hourly $PM_{2.5}$ level since April 2017 by mounting on roof slab surface, at height of 12m, in the premises of Tikur Anbessa Hospital. BAM is an accredited instrument by the Environmental Protection Agency (EPA/USA), which is a standard method next to gravimetric counterparts, and is guaranteed high quality and accurate information on air quality. The hourly averages were aggregated to provide 24-hour daily averages in order to characterize the temporal profile of pollution using different scales of temporality. Standard operative procedures were developed for data downloading, cleaning and analysis. Descriptive statistics and time series smoothening plots were analyzed examine the temporal pattern in the data.

Results: We present findings from the just completed one year $PM_{2.5}$ profile (April, 2017-March, 2018. Over 5000 data points were used for the daily mean estimation. The annual mean (SD) was 43.4 (7.9) $\mu g/m^3$. There exists variations by day of week, month, and season. Increasing level of $PM_{2.5}$ was observed on Monday's; and Tuesday's for the week days, while low levels were observed on weekends including Friday's. Wet months, including July, August, and September had increased level of PM, while the lowest was on April and May. There existed visible differences in the amount of PM by season, wet season showing the high level. Short-term maximum concentration was observed as high as 131.1 $\mu g/m^3$ on September.

Conclusions: The increased level of PM above the proposed WHO guideline is a concern of policy debate. The time series PM data linking with a daily cause of hospital admission and acute deaths will be an opportunity for researchers. Similar studies in Hub partner countries in East Africa will provide comparisons in the trend of air pollution and health.

Effects of Environmental Factors on the Prevalence and Spatial Distribution of Trematode Infection in Freshwater Snails in Omo Gibe River Basin, Southwest Ethiopia *Seid Tiku Mereta*

Determination of infection rates of snail populations is one of the basic tools for studies on the epidemiology of snail borne diseases. In this study, we opted to determine the trematode infection of freshwater snails found in the OMO-Gibe river basin, Southwest Ethiopia. This study is based on a dataset of 130 samples collected from lakes, wetlands, rivers, dam reservoir shores and irrigation canals. The snails were examined for trematode infections by cercarial emergence immediately after collection. Habitat conditions, water quality and human water contact practices and other human activities were assessed at each observation site. A total of 3045, snails belonging to five species, were collected. The most abundant species was *Biomphalaria pfeifferi*, representing 66 % of the total collection. Overall, 109 (3.6%) of the snails were found to infected with trematodes (cercariae). *Biomphalaria pfeifferi* was found to be the most heavily infected, accounting 85% of the total trematode infection. A total of eight morphologically different types of cercariae were recovered. The type of cercariae recorded were *Echinostome*, *BAD (Brivifurcate Affaringeate Diastome)*, *Amphistome* cercariae, *BAM (Brivifurcate Affaringeate Monostome)*, *Xiphidiocercaria*, *Longifurcate Pharynge*ate Distome (LPD), Strigea cercariae and unidentified cercariae. *BAD (Brivifurcate affaringeate diastome)* and *Echinostome* cercariae were the most abundant cercariae, accounting 36.8% and 34% of the total infection respectively. Overall, the abundance, occurrence and infection rate of snail species were largely influenced by water physicochemical quality, sanitation and water contact behaviour of the inhabitants. Human activities such as open field defecation, urination, livestock grazing, farming, and swimming were important predictors for the abundance of cercariae. Therefore, proper containment of excreta (urine and faeces), reducing human and animal contacts to surface water should halt trematode infection and reduce snail borne diseases transmission.

Keywords: Biomphalaria pfeifferi; Cercariae, Freshwater, Schistosomiasis, Snail, Trematode.

Nutrition and Food Science

Optimum Breast Feeding Practices and Barriers in Ethiopian Women: Systematic Review and Meta-analysis. *Abdu Oumer Abdu*

Background and Objectives: Optimum breast feeding reduces 40-44% of all cause neonatal mortality mainly through exclusive breast feeding (EBF) practice. Even if there are numbers of small scale surveys has been conducted, this review paper is prepared to show overall national trends of breast feeding practice in the country.

Methods: Relevant literatures on Breast feeding practices were searched using Google, Google scholars, PubMed central using MeSH words: "breast feeding practice in Ethiopia", "Exclusive breast feeding practice", "optimum Breast feeding", and the like. The data from each study was abstracted and entered in to comprehensive met analysis software version 3. Then meta-analysis was done using fixed effect model with estimation of breast feeding practices 95% Confidence interval. Eight studies were included in the final analysis using inclusion checklist.

Results: Eight studies were included in the final analysis using inclusion checklist. The overall prevalence of Exclusive breast feeding was found to be 58.5% (95% CI:57% to 60%, P value less than 0.0001). This is also similar with the national estimate on national survey 2016. When compared with 2012, global target for increasing EBF rate to 50% in 2025, this is promising even if some methodological issues may overestimate it. Even if ever breast feeding is almost universal, early initiation of breast feeding is not universal. About 14.2% of children have been given pre lacteal feeding like butter, water with sugar and cow milk. Wrong perception that the child will not get adequate milk, maternal health problems and maternal employment were found to hinder EBF.

Conclusion: Generally the rate of exclusive breast feeding was promising and early initiation of breast feeding is not universal. Significantly high number of infants is fed with pre lacteal feeding. Many efforts are needed to increase proper IYCF indicators coverage in the country.

Keywords: Optimum Breast feeding, Meta-analysis, Ethiopia.

Altitude Adjusted Prevalence of Anemia and its Associated Factors among School-Age Children in Different Climatic Zones of Arba Minch Zuria District, Southern Ethiopia. *Eshetu Zerihun Tariku, Getaneh Alemu Abebe, Zeleke Aschalew Melketsedik, Befikadu Tariku Gutema*

Background: School-Age Children in Ethiopia are affected by a wide range of health and nutrition-related problems that constraint their ability to thrive and benefit from education. Anemia has been shown to be a major public health concern in Ethiopia. Altitude of residence site of healthy individuals is critical for the definition of anemia. The objective of this study was to assess the prevalence of anemia, with consideration of altitudinal variations, and to identify factors associated with anemia among school-age children.

Methods: A community based cross-sectional study was conducted from April to May 2017 among randomly selected 391 school-age children (6 to 14 years) in Arba Minch Health and Demographic Surveillance Site, Southern Ethiopia. Hemoglobin concentration was measured on the spot using portable hemoglobinometer (HemoCue Hb 201). The hemoglobin cut off values, adjusted for child age and altitude, were used to define anemia. Stool microscopic examination was done for investigation of intestinal parasites. A binary logistic regression model was used to assess the possible association of independent and outcome variables.

Results: The overall prevalence of anemia, after the hemoglobin value adjusted, was 146 (37.3%; 95% CI: 32.5, 42.2), out of which, 110 (28.1%) and 35 (9%) had mild and moderate anemia respectively; and a single case of severe anemia. Fifty-seven (46.3%) of children living in an altitude >2,500 meters above sea level were anemic. Children who were positive for intestinal parasitic infections were 3.3 times more likely to be anemic (AOR=3.30, 95% CI: 2.04, 5.35) compared to non-infected children. The likelihood of anemia was also higher among children not-enrolled (AOR= 2.05, 95%CI: 1.26, 3.32) than children who were enrolled in schools. Anemia was less common among children who had no habit of eating vegetables in the last week prior to the survey (AOR= 0.35, 95%CI: 0.14, 0.84).

Conclusions: More than one-third of school-age children were suffering from anemia. Intestinal parasitic infections and school non-enrollment were among the major factors associated with anemia among school-age children in the study area. Interventions, focusing on identified contributing factors need to be implemented by integrating with other school or community-based health programs.

Keywords: Anemia; school-age children; altitude; Ethiopia.

Association between Child Malnutrition and Household Latrine Availability among Under Five Children in Ethiopia: A Systematic Review and Meta-Analysis. *Dube Jara*

Background: Under five malnutrition continue to be one of the leading public health problems worldwide, especially in developing countries. The finding of a few studies conducted on the association between malnutrition and latrine availability among under-five children in Ethiopia presented inconsistent finding. Therefore, the objective of the current systematic review and meta-analysis was to determine the pooled estimate on the association between child malnutrition and latrine availability among under-five children in Ethiopia.

Methods: We accessed both published and unpublished studies through electronic search from databases such as Medline, Hinari, Scopes, PubMed CINAHL, PopLine, MedNar, Embase, Cochrane library, the JBI Library, the Web of Science and Google Scholar. We included all observational studies that were conducted on the association between malnutrition and latrine availability among under-five children in Ethiopia. The data entry and analysis were conducted using the STATA 14.1 version. A random effects model was used to estimate the pooled estimate with a 95% confidence interval (CI). Forest plots were used to visualize the presence of heterogeneity. Funnel plots and Egger's and Begg's tests were used to check for publication bias.

Results: A total 1610 published and unpublished studies were identified of which sixteen of them fulfilled inclusion criteria and included in the meta-analysis. The overall pooled estimate indicates the odds of developing malnutrition among children from households who had latrine was 38 percent or lower as compared with those children from the household who had no latrine (OR: 0.62, 95% CI: 0.49, 0.77).

Conclusion: The systematic review and meta-analysis found a statistically significant association between child malnutrition and household latrine availability among under-five children in Ethiopia, in which odds of developing malnutrition was lower among children from the household who had latrine compared to children from the household who had no latrine. These findings indicate that the need to work to increase latrine coverage and strengthen the education on the appropriate latrine utilization. In addition, the findings indicate the importance of culture- and context-specific latrine preparation and latrine utilization education.

Keywords: Malnutrition, under-five, latrine availability, Ethiopia.

Prevalence of Undernutrition and Associated Factors among Preschool Children in Jimma Town, South West Ethiopia *Bedatu Gemechu (Bsc), Mr .Melese Sinaga (B.Pharm, Msc) & Dr. Kalkidan Hassen (PhD).*

Background: Undernutrition is a major public health problem disproportionately high in developing world. In Ethiopia, child undernutrition remained a key public health problem despite lots of interventions. According to 2016 EDHS, 38% of children under age 5 are stunted; 10% is wasted, and 24% are underweight. Data specific to the nutritional status of preschool children in Jimma zone as well as the country is limited. Moreover the shift in public health nutrition programs from under 5 to under 2 years of age strains attentions which could be extended to this age groups.

Objective: The main objective of this study was to assess prevalence undernutrition and associated factor among preschool children in Jimma town, 2018.

Methods: A community-based cross-sectional study was conducted among 408 preschool children 36-59 months aged in Jimma town from March 1-April 15/2018 G.C. Systematic sampling techniques were used in selecting the study participants. A pre-tested interviewed questionnaire was used to collect data assessing undernutrition, socio-demographic, economic status, health-related and feeding practice, Data were exported from EPI data version 4.1 to SPSS version 20 for statistical analysis. Anthropometric data were analyzed by WHO Anthro (2006) and principal component analysis was done to generate household wealth index. Both descriptive and multivariable logistic regressions were used to identify independent predictors of nutritional status. Finally variable with p-value <0.05 was statistically significant.

Results: the prevalence of stunting, underweight and wasting were about 21.8%, 15.2%, and 17.2% respectively. This study showed that children from food insecure households were 3.7 times stunted [AOR=3.731; (95% CI= 2.037-6.836)] similarly, children whose mothers had no formal education were 3.9 times stunted [AOR= 3.98; (95% CI=1.206-13.127)] In addition, children who share food from the same plate were 2.2 times stunted than counterparts [AOR= 2. 228;(95%CI= 1.251-3.971)] and children who feed one to two times per day were 2.8 times more likely to be stunted as compared to those who feed four to five times per day [AOR= 2.82 (95% CI= 1.251-3.971)]. Furthermore children from low socioeconomic status were 3.4 times wasted as compared to those children from high socioeconomic household [AOR = 3.453 (95%CI =1.255-9.510)], children from family size of five and above were 3 times wasted than those children from family size less than five [AOR =3.090 (95% CI= 1.198-7.972)]. In addition, children having fever prior to the study period were 2.3 times wasted as compared to their counterpart [AOR= 2.353 (95% CI= 1.081-5.2)]. And the odds of being wasted among children whose maternal age 31-40 were 2.2 times as compared to those children whose maternal age 20-30 years [AOR=2.244 (95% CI=1.135-4.438)].

Conclusion and recommendations: There existed a substantial level of stunting and wasting among preschool children. Maternal education, feeding from the same plate, frequency of feeding per day and household food security status was associated with stunting. While wasting were family size, wealth index, the age of mother and fever during past 2week. Promotion of optimal feeding, food security measures and better health care delivery are vitally important in such a setting.

Keyword: undernutrition, Preschool children, associated fact

Household Food Insecurity and Coping Strategies among Pensioners in Jimma Town, South West Ethiopia *Melese Sinaga Teshome.*

Background: Food and nutrition security exists when all people at all times have physical, social and economic access to food, which is consumed in sufficient quantity and quality to meet their dietary needs and food preferences, and is supported by an environment of adequate sanitation, health services and care, allowing for a healthy and active life. Ethiopia is currently fronting new challenges related to urban poor food insecurity. However, there is no empirical evidence on Jimma Town pensioner's household food insecurity and coping strategies.

Objective: To assess the household food insecurity, associated factors and coping strategies among Pension user households in Jimma Town, South West Ethiopia.

Methods: A community based cross-sectional study was conducted among pension users household in Jimma town from March, 01 – 28, 2017. Simple random sampling technique was used to select study participants. Structured questionnaire was used to collect data. Data were entered into EPI data version 3.1 and analyzed using SPSS (Version 20.0).HFIAS Scale was categorized as mildly food insecure (0 - 11), moderately food insecure (11-16), severely food insecure ($\geq$ 17). Binary logistic regression analyses were used to determine the association of food insecurity with different independent variables using odds ratio and 95 % of confidence intervals. Variables with $p \leq 0.25$ in the bivariate analyses were entered into a multivariable regression analysis to control for confounding variables. Those variables having a p-value < 0.05 in multivariate logistic regression was consider significance association with dependent variable.

Results: Findings of this study showed that 83.5 % of households were food insecure. Findings of multivariable logistic regression analysis also showed that educational status (AOR = 11.02, 95 % CI: 2.96, 41.02), occupational status (AOR = 4.006, 95 % CI: 1.38, 11.65), family size (AOR = 3.74,95 % CI: 1.27, 10.99), marital status (AOR = 1.03, 95 % CI: 1.43, 3.49), and means of livelihood (AOR = 2.44, 95 % CI: 1.102, 5.38) were the significantly factors associated with household food insecurity among pension user of Jimma town. Food insecure households were using coping strategies like changing consumption pattern (44 %) eating inexpensive food (72.4 %), reducing meal frequency (62.4 %) and selling household assets (30.8 %).

Conclusions and Recommendations: Factors like household heads education, family size and means of livelihood were significantly associated with household food insecurity status. Food insecure households used different coping strategies like reducing meal frequency and selling assets. Therefore, national policies and programs need to focus on the how to improve income and social life of this vulnerable groups to malnutrition.

Keywords: Pensioners, Determinants, Food insecurity, Jimma.

Feeding Practice and Associated Factors among Children Aged 6–59 Months at Dabat Health and Demographic Surveillance System Site: A Community Based Cross-Sectional Study. *Esmael Ali Muhammad.*

Introduction: The World Health Organization (WHO) has recommended optimal feeding practices during and after common childhood illnesses to prevent rapid deterioration of nutritional status associated with illness/convalescence. However, studies were not specifically focused on meal frequency and dietary diversity practices among children who had a recent infection of common childhood illnesses. Therefore we aimed to assess feeding practice and its associated factors among children aged 6–59 months on illness in Dabat Health and Demographic Surveillance System (HDSS) site, northwest Ethiopia.

Methods: A community based cross-sectional study was conducted in Dabat HDSS site by including 1,174 mother-child pairs. A multistage stratified sampling followed by a systematic random sampling technique was employed to select the study participants. A binary logistic regression model was fitted to identify factors associated with children's feeding practice. Crude and adjusted odds ratio with its 95% confidence interval was calculated to see the strength and significance of the identified factors.

Result: The overall prevalence of a minimum dietary diversity practice and a minimum meal frequency was 27 % (95%CI: 24.4, 29.7) and 83.7 %(95%CI: 91.7, 86.0), respectively. Having ANC follow up (AOR = 1.6; 95% CI: 1.18, 2.27) and health institution delivery (AOR = 2.6; 95% CI: 1.85, 3.55) increased the probability of the child to practice an adequate dietary diversity. On the contrary, the odds of practicing an adequate dietary diversity was lower among a household who got their food from their own garden (AOR = 0.4; 95% CI: 0.29, 0.52) and among those who were breast feeding (AOR = 0.6; 95% CI: 0.42, 0.78). The probability of having a minimum meal frequency was increased among children's in the first two years (AOR = 10.8; 95% CI: 6.81, 17.28), and among children's who fed alone (AOR = 1.9; 95% CI: 1.29, 2.69

Conclusion: The proportion of children who received the minimum dietary diversity was found to be low while mother's tendency of feeding their children following a minimum meal frequency was relatively good. Providing a health and nutrition counseling on Infant and Young Child Feeding (IYCF) during maternal ANC services are recommended for achieving the recommended dietary practices.

Keywords: meal frequency, dietary diversity practice, cross-sectional study, University of Gondar.

Survival Status and Predictors of Mortality among Children with Severe Acute Malnutrition Admitted to General Hospitals of Tigray, Northern Ethiopia: A Retrospective Cohort Study.

Gebremicael Guesh1, Getu Degu2, Mebrahtu Abay3, Berhe Beyene3, Ermyas Brha.

Background: Despite the presence standard protocol for the management of severe acute malnutrition case-fatality rates in African hospitals remain unacceptably high. The case in Ethiopia is not different from the others. Assessing survival status and identifying predictors of mortality may help to overcome this problem. Therefore, this study was aimed to assess survival status and predictors of mortality among children with severe acute malnutrition admitted to stabilization centers of general hospitals in Tigray region, northern Ethiopia.

Methods: 24 months retrospective longitudinal study was conducted among 569 randomly selected medical records of children admitted to stabilizing centers. Data were entered into Epi Info7 and analyzed by STATA version 11.A life table was constructed to estimate the probabilities of death over time. Kaplan–Meier survival curve together with log-rank test was fitted. Both bi-variable and multivariable Cox regression analysis was conducted to identify the independent predictors of mortality. Proportionality of Hazard assumption was tested. The goodness of fit of the final model was checked by Nelson–Aalen cumulative hazard function against Cox-Snell residual. Association was summarized by using AHR, and statistical significances were declared at 95% CI and P-Value< 0.05.

Results: During follow up, 456 [82% (95% CI=78.6-85.3)] of children had got cured and discharged, 37[6.65 %(95% CI=4.8-8.8)] were absconded and 21[3.8% (95% CI= 2.2-5.6)] were died. The cumulative probability of survival at the end of the 1st, 2nd and 3rdweek was 98%, 96.4%, and 92.7% respectively. The overall mean survival time was 41.93 [95% CI =40.17- 43.68] days. Impaired conscious level [AHR=6.69, 95%CI = 2.43-19.93], development of comorbidity after admission [AHR 12.71, 95% CI=2.79-57.94] and Being urban in residence [AHR=2.73, 95%CI =1.12-6.64] were the independent predictors of mortality.

Conclusions: Treatment outcomes were in an acceptable level of national and international standards. Impaired consciousness level, development of comorbidity after admission and being urban in residence were the independent predictors of mortality. Interventions to reduce further mortality should focus on children with impaired consciousness level and developed comorbidity after admission.

Infants and Young Children Feeding practice and Associated Factors among HIV Positive Mothers of Children 0-23 Months in Health Centers of Gulele Sub-City, Addis Ababa, Ethiopia
Samuel Negash Nigussie.

Background Infants feeding practice in the context of communities living with HIV still remained lacking consideration as expected to be for the last decades. In addition to that, there is paucity of information on the magnitude of feeding practice and associated factors of HIV exposed infants and young children in low income countries like Ethiopia including the study area due to limited efforts spent concerning this issue.

Objective The objective of this study was to assess the magnitude of feeding practice and associated factors of HIV exposed infants and young children aged 0-23 months among HIV positive mothers attending Anti-Retro viral Therapy follow up in public health centers of Gulele sub-city, Addis Ababa Ethiopia from February 1 to 28, 2018.

Methods A health facility based cross sectional study design was used among 358 randomly selected HIV positive mothers of 0-23 months aged infants and children from four health centers. Data were collected using structured pretested questionnaire and entered into EPI data version 3.1 and exported to SPSS version 20 computer software for analysis. Binary and multivariate logistic regression was run and p<0.05 was used as statistically significant.

Result The magnitude of recommended way of infant feeding practice among HIV positive mothers attending public health centers in Gulele sub-city is 37.4%, 95% CI(32.26-42.67). Statistically significant correlates of HIV exposed infant feeding practice of mothers in this study are knowledge of mother on HIV exposed infant feeding practice AOR=1.80 (95%CI =1.04-3.01), head of family being father AOR= 0.17(95 %CI=.03-0.87), having family (relatives) support AOR= 2.05(95% CI=1.00-4.18) and information on HIV exposed infant feeding , practice AOR=1.77(95%CI=1.07-2.93) were found to be independently associated (p-value < 0.05) with recommended way of infant feeding practice.

Conclusion The magnitude of recommended way of infant feeding practice among HIV positive mothers in the study area was very low. Knowledge and information on infant feeding practice, head of family being father and family support of relatives were potential determinants. HIV positive mothers should be provided with adequate information to select the best feeding option for their infants and to successfully carry out their infant feeding decisions.

Keywords; ANC, Ethiopia, Feeding practice, HIV, Infant.

Exclusive Breastfeeding Practice in Ethiopia and its Association with Antenatal Care and Institutional Delivery: A Systematic Review and Meta-Analysis. *Animut Alebel Ayalew .*

Background: In Ethiopia, study findings regarding the prevalence of EBF have been inconsistent and highly variable. Antenatal care and institutional delivery are the most important factors contributing to the practice EBF however; their effect has not been investigated yet. Therefore, this systematic review and meta-analysis aimed to estimate the pooled prevalence of EBF and its association with antenatal care and institutional delivery in Ethiopia.

Methods: In this systematic review and meta-analysis, international databases, including PubMed, Google Scholar, Science Direct and the Cochrane Library were systematically searched. Two authors independently extracted all necessary data using a standardized data extraction format. STATA Version 13 statistical software was used to do the meta-analysis. The Cochrane Q test statistics and I^2 test were used to assess the heterogeneity of the included studies. A random effects meta-analysis model was computed to estimate the pooled prevalence of EBF. Moreover, the association of ANC and institutional delivery with EBF was determined.

Results: The findings from 32 studies reported that the pooled prevalence of EBF in Ethiopia was 59.3% (95% CI: 53.8, 64.8%). The subgroup analysis of this study also indicated that the highest prevalence was observed in Afar region (65.6%), followed by SNNP (63.8%), and then by Oromia (61.8%). Additionally, mothers who attended ANC visit were 2.1 times more likely to practice EBF as compared to their counterparts (OR: 2.1, 95%CI: 1.5, 2.8). Moreover, mothers who gave birth at health institution were 2.2 times more likely to practice EBF as compared to mothers who gave birth at home (OR: 2.2, 95%CI: 1.3, 3.5).

Conclusion: In this meta-analysis, EBF practice in Ethiopia was significantly low as compared to the global recommendation level of exclusive breastfeeding. Mothers who attended ANC visits and who gave birth at health institutions were significantly associated with the better EBF practice.

Keywords: Prevalence, exclusive breastfeeding, meta-analysis, systematic review, Ethiopia.

Undernutrition and Associated Factors among Adult Peoples Attending Highly Active Anti-Retroviral Therapy In Health Facilities of Bench Maji Zone, South West Ethiopia, 2018. *Tilahun Mekonnen Regassa.*

Background: Malnutrition is a condition in which a nutrition deficiency, excess or imbalance of energy, protein, and other nutrients causes adverse effects on tissue/body form. Nutritional issues are common in HIV disease. At some point, almost everyone living with HIV will face challenges in maintaining good nutrition.

Objective: To assess under nutrition and associated factors among Adult Clients on Highly Active Antiretroviral Therapy in Health Facilities of Bench Maji Zone, South West Ethiopia,2018.

Methods: Institutional based cross sectional study design with quantitative data collection was employed from May 01 – June 30/2018. A total sample size was 1007 and the participants were selected by using consecutive sampling technique from selected health facilities. EpiData Statistical software version 3.1 and Statistical Package for Social Sciences (SPSS) software version 21.0 were used for data entry and analysis. Logistic regression analysis was used to identify factors associated to under nutrition in adults attending ART. Odds ratios with 95 % confidence intervals were used to examine associations between dependent & independent variables. P. value less than 0.05 was considered significant.

Result: The magnitude of under nutrition among peoples on ART in this study was 154 (16.0% [13.8-18.3]). In multivariable logistic regression analysis, factors contributing to under nutrition were identified; Age [AOR 2.4, 95% CI (1.1-5.4)], marital status[AOR 2.2, 95% CI (1.3-3.7)], occupational status[AOR 0.4,95% (0.2-0.9)], developing GI symptoms [AOR 2.6, 95% CI (1.5-4.5)] and WHO clinical stage [AOR 3.1, 95% CI (1.4-6.8)] were found to have statistically significant association with under nutrition among peoples on ART.

Conclusion and Recommendation: significant numbers of peoples on ART drugs in the study area were under nutrition. Age, marital status, occupational status, WHO clinical stage of disease and developing gastro intestinal symptoms were identified factors of under nutrition among adult people on ART. The health care workers and experts work on the ART clinic should focuses on patient counseling about early prevention, detection and treatment of opportunistic infection, early health seeking behaviors before AIDs stage.

Budget: The allowed budget for this study was 68760.30 ETB.

Keywords: Under nutrition, associated factors, HAART, MTU, Ethiopia

Biomedical Science

The Prevalence and Phenotypic Characterization of Enterococcus Species Isolated from Clinical Samples of Pediatric Patients in Jimma University Specialized Hospital, South West Ethiopia.
Milkiyas Toru Tantu.

Background: Drug resistant *enterococci* have emerged as nosocomial pathogens over the last decade all over the world. Now they can also be significant pathogens, causing community and hospital acquired infections. To our knowledge there is no available data related to prevalence, resistance pattern and virulence factors of *Enterococci* in pediatric patients in Ethiopia.

Objectives: The aim of this study is to determine prevalence and phenotypic characterization of *Enterococcus species* isolated from clinical samples of pediatric patients in Jimma University Specialized Hospital, Southwest Ethiopia

Methods: A cross-sectional study was conducted on 403 pediatric patients under fifteen years of age recruited by consecutive sampling, from April 1 to September 30/2016 at Jimma University Specialized Hospital. Different clinical samples were obtained and questionnaire-based face to face interviews were conducted with guardian of the children. Enterococcal isolation, identification, and antimicrobial susceptibility tests were done using standard bacteriological procedures. The isolates were characterized phenotypically for possession of some virulence factor. Data was analyzed by using SPSS software version 16.0.

Results: The overall prevalence of *Enterococci* was 5.5% (22/403) of which 5 (22.7%) were vancomycin resistant *Enterococcus*. Haemolysin and gelatinase production was seen among 45.5% and 68.2% isolates respectively, while 77.3% isolates formed biofilm. The overall rate of resistance was 21 (95.5%). High resistance was observed to norfloxacin (87.5%), streptomycin (86.4%), gentamicin and tetracycline (77.3%) and low resistance (36.5%) was observed to ciprofloxacin. Eighteen (80.8%) of the isolates were multi-drug resistant.

Conclusion and recommendation: This study revealed high prevalence of *Enterococci* and vancomycin resistance strains as well as their virulence factor. Length of current hospitalization was associated with vancomycin resistant *Enterococcus* infection. Therefore, timely monitoring and early detection of vancomycin resistant *Enterococcus*, knowing virulent strains, rational use of antibiotics and adherence to infection control practice will help in preventing the establishment and spread of multidrug resistant *Enterococcus species* among the communities.

Keywords: Prevalence, *Enterococcus species*, VRE, virulence factor, resistance, pediatrics.

Genotypes and Clinical Significance of Giardia Duodenalis in Symptomatic Giardiasis Patients in Southern Ethiopia   *Mengistu Damitie[1,2], Zeleke Mekonnen[3], Seid Tiku[1], Dante Santiago[2], Luc Leyns[1]* *[1]Vrije University Brussel, Belgium, Faculty of Bio-science Engineering [2]Jimma University, Institute of Health Sciences, Faculty of Public Health, Department of Environmental Health and Technology [3]Jimma University, Institute of Health Sciences, School of Medical Laboratory Sciences.*

Introduction: *Giardia duodenalis* is the most frequently reported intestinal parasite that causes gastrointestinal disorder in humans, particularly in developing countries where permissible circumstances promote transmission of parasites. However, there is insufficient information regarding the parasite in these areas, thus this study aimed at determining the clinical significance of *Giardia duodenalis* genotypes in Southern Ethiopia.

Methods: From February to May 2016, ten health facilities in the region were selected randomly and stool samples were collected from 70 giardiasis patients who were seeking medical care in the facilities. The isolates were genotyped using *Giardia duodenalis* triosephosphate isomerase gene nested-polymerase chain reaction assay and the patients' clinical history and related data were collected through pre tested structured questionnaire. The data was analyzed using Pearson Chi-Square tests and multinomial logistic regression model.

Results: The genotyping results showed that 44.3% (31/70) of the isolates were assemblage A, 38.6% (27/70) assemblage B and 17.1% (12/70) combination of both assemblages. Symptoms of giardiasis showed correlations with assemblages. Cases with assemblage A infection associated with the occurrence of diarrhea, assemblage B with abdominal pain and nausea/vomiting. Mixed infection of both assemblages correlated concurrently with the occurrence of diarrhea and abdominal pain. The distribution of assemblages and clinical symptoms of the disease however did not differ with sex and age of patients.

Conclusions: The genotyping analysis showed that assemblages A and B are the predominant genotypes of *Giardia duodenalis* among patients in Southern Ethiopia. Cases with assemblages A and B infections differ in their associations with the clinical symptoms of giardiasis. Infection with assemblage B associated with greater numbers of giardiasis symptoms than infection with assemblage A. However, the present study recommends the need for further investigations regarding other factors, such as host factors that may influence the clinical manifestations of the disease.

Keywords: *Giardia duodenalis*, assemblages, giardiasis symptoms, clinical significance, Ethiopia.

In Vivo Antimalarial Activity of the 80% Methanol Leaves Extract and Solvent Fractions of Stephania Abyssinica Quart.-Dill. & A. Rich. (Menispermaceae) Against Plasmodium Berghei Infection in Mice *Eshetie Melese Birru[1*],Mekuanent Zemene[1], Mestayet Geta[11]Department of Pharmacology, School of Pharmacy, College of Medicine and Health Sciences, University of Gondar.*

Background: Malaria is one of the most a serious global public health problem and it is the main cause of acute illness and disease in African region. The emergence of drug resistant malaria parasite and insecticide resistant mosquitoes urged a continuous search for alternative leads particularly from plants. The current study, thus, aimed to evaluate the anti-malarial activity of *Stephania abyssinica.*

Methods: The leaf was extracted by maceration using 80% methanol and the crude extract was then successively fractionated using solvents of differing polarity. Prophylactic and 4-day suppressive models were employed to assess the *in vivo* anitmalarial activity of hydromethanolic extract and solvent fractions of the plant at different doses (100, 200 and 400mg/kg/day) against *Plasmodium berghei* (ANKA strain).

Results: The hydromethanolic extract and the hexane, chloroform and ethyl acetate solvent fractions at 400mg/kg doses exhibited a statistically significant ($p < 0.001$) chemosuppressive activities which was 45.60%, 42.50%, 55.80% and 51.44% percentage suppression, respectively. Likewise, in chemoprophylactic models, 400 mg/kg dose of hydromethanolic extract and chloroform fraction significantly ($p < 0.001$) suppressed the level of parasitemia compared to the vehicle-treated groups with a percent inhibition of 54.41%, and 57.59% %, respectively. Furthermore, mice treated with solvent fractions and crude extract revealed a promising effect on mean survival time in both models.

Conclusions: The current study evidenced that the plant has a promising antiplasmodial activity against *P.berghei*, which upholds traditional claims and justifies a need to undertake advanced pharmacological and toxicological investigations.

Keywords: Antimalarial, Stephania abyssinica, Plasmodium berghei, herbal medicine.

Celiac Disease Autoimmunity among Pregnant Women in Central and South East Oromia Region, Ethiopia. *Adugna Negussie Gudeta, Taye Tolera Balcha, Daba Muleta Feyisa, Daniel Agardh.*

Background: Celiac disease (CD) is a chronic autoimmune disorder caused by an inflammatory T-cell response to the storage proteins in wheat (gliadin), rye (secalin), and barley (hordein), which are collectively called "gluten" and characterized by the presence of typical autoantibodies and histological alterations of the small bowel mucosa. Genetic, immunological, and environmental factors are necessary for the expression of the disease. Ingestion of gluten by genetically predisposed people notably HLA-DQ2 and/or HLA -DQ8 precipitates an uncontrolled T-cell-driven inflammatory response that leads to disruption of the structural and functional integrity of the small bowel mucosa. The prevalence of celiac disease autoimmune disease is not known in Ethiopian population.

Objective: The aim of the present study was to determine the prevalence of celiac disease in women undergoing antenatal care in selected Ethiopian health institutes.

Method: Serum samples from 1942 Ethiopian women undergoing antenatal care were evaluated for celiac disease serological markers; IgA and IgG-tissue transglutaminase antibody (t-TGA), using a radio immune binding assay using Micro beta rpm counter was performed in Clinical Research Center, Malmo, Sweden. SPSS version 23 were used for statistical analysis.

Results: Serum from1942 female populations with median age of 25 ± 5.206 years old were included in the study. At the time of analysis, undiagnosed celiac autoimmune disease was observed in 5 (0.3%) of the 1942 study women population as screened by IgG-tTG antibody. Two (0.2%) of them was positive for both IgA-tTG and IgG-tTG. The mean of anti-IgA- tTG and anti-IgG-tTG value was 0.182 U/ml and 0,894 U/ml, respectively.

Conclusion: The seroprevalence of celiac disease autoimmune disease in Ethiopian female population is 0.3% (3 in 1000). Celiac autoimmune disease are underdiagnosed in Ethiopian population.

Keywords: Autoimmune disease, Celiac disease, Women.

Moringa : The Promising plant for Diabetes. *Hailemeskel Mekonnen, PhD Fellow (CDT-Africa/AAU); Prof Eyasu Makonnen (PhD); Dr. Workineh Shibeshi (PhD).*

Natural products have received considerable attention for the management of diabetes and its complications. Ethiopia is endowed with great biodiversity and the population has access to potentially many plant species with both nutritional and medicinal benefits. *Moringa stenopetala* is one of the most valuable and multi-purpose plants. *M stenopetala (Baker f) Cufodontis* belongs to family Moringaceae is commonly grown in Southern parts of Ethiopia known by different vernacular names. The leaves of *M stenopetala* are cooked and eaten as vegetables and the leaves and roots are used traditionally to treat number of ailments including diabetes among others. A project that will enable to jointly work on Moringa value chain development as a means of improving the nutrition status and economic empowerment of rural communities in Ethiopia has already been launched.

Phytochemical screening tests on the crude aqueous leaf extracts and butanol fraction of *M. stenopetala* detect the presence of various secondary metabolites. The most active component, Rutin, a common dietary flavonoid has caught scientific attention as a potential therapeutic agent in experimental diabetes primarily because it is effective in reducing glycemia and hyperlipidemia in rodent models. The objective of this review was to review the evidences for the use of M. stenopetala for the treatment of diabetes and its effect on various organs and tissues as well as on histo-biochemical parameters. To this effect more than 100 publications retrieved with the search term "Moringa and its organ effects`` from the MEDLINE, EMBASE, the Cochrane Controlled Trials Registry, and searches of reference lists in 2017/18. The crude aqueous and butanol extract moreover, chronic administration of the n-butanol fraction of ethanol extract of *M stenopetala* leaves in alloxan-induced diabetic mice showed anti-hyperglycemic and antihyperlipedimic effects with wide margins of safety, indicating its potential for long term management of diabetes. As there are several evidences for the plants` antidiabetric effect on animal studies, we planned and proposed to do clinical trial as part of drug innovation project of CDT-Africa.

Hematological Abnormalities of Pulmonary Tuberculosis Patients with and without HIV at University of Gondar Hospital, Northwest Ethiopia *Bamlaku Enawgaw Walie, Feven Abay, Aregawi Yalew, Agumas shibabaw.*

Background: Hematologic abnormalities are common in pulmonary tuberculosis (PTB) patients; which is one of the major public health problems worldwide. However, there is paucity of information about the hematologic profile of PTB patients with and without HIV in the study area. Therefore, this study aimed to assess hematological abnormalities of pulmonary tuberculosis patients with and without HIV at the university of Gondar hospital, Northwest Ethiopia.

Methods: A comparative cross-sectional study was conducted at university of Gondar hospital. Socio-demographic data was collected using a pre-tested, structured questionnaire. Five milliliter of venous blood sample was collected and divided in to 3ml EDTA tube for complete blood count with Cell Dyne 1800 hematological analyzer and 2ml citrated tube for erythrocyte sedimentation rate determination. Data were entered into EPI info version 3.5.3 and then transferred to SPSS 20 for analysis. Independent sample t-test was used to compare the mean values of hematological parameters between PTB patients and PTB-HIV coinfected patients.

Result: A total of 100 study subjects (50 PTB and 50 PTB-HIV coinfected) were included with mean age of 31.3 ± 10.3 years for PTB patients and 32.1 ± 9.2 years for PTB-HIV co-infected patients. In this study, there were significantly lower mean values of Hgb (P = 0.049), platelet count (P < 0.001) and neutrophils counts (P = 0.007) among PTB-HIV coinfected patients when compared with PTB patients. From PTB infected patients 46% were anemic, 6% leucopenic, 22% neutropenic, 8% lymphopenic and 8% thrombocytopenic. On the other hand, from PTB-HIV coinfected patients 60% were anemic, 14% leucopenic, 66% neutropenic, 12% lymphopenic and 20% thrombocytopenic. ESR value was increased in all patients.

Conclusion: This study demonstrated high prevalence of neutropenia, anemia and thrombocytopenia among PTB-HIV coinfected patients. HIV con-infection worsen hematological abnormalities of PTB patients. Assessment of hematological parameters can be used as an indicator in the diagnosis and follow up of PTB patients coinfected with HIV. We recommended assessment of PTB patients with or without HIV for various hematological disorders.

Keywords: Hematological parameters, Pulmonary Tuberculosis, PTB/HIV co-infection, Gondar.

Metabolic Syndrome and its Components among the Ethiopian Population of Various Study Groups: A Systematic Review and Meta-Analysis. *Sintayehu Ambachew .*

Background: Anemia in children continues to be a major public health challenge in most developing countries, particularly in Africa. In the early stages of life, it leads to severe negative consequences on the cognitive as well as growth and development of the children, which may persist even after treatment.

Objective: The main aim of this study was to assess the prevalence and associated factors of anemia among hospitalized children attending at university of Gondar comprehensive and specialized referral hospital, Northwest Ethiopia.

Method: Across sectional study was conducted on 384 hospitalized children from February to June, 2018. Data of socio demographic characteristics and clinical conditions of the study individuals were collected using questionnaire after taking appropriate written informed consent and assent. Then 3ml of blood was collected for complete blood count analysis and also stool examination was done for intestinal parasites. Data were coded, cleared and entered into SPSS version 20 for analysis. Bivariate and multivariate logistic regression models were used to identify associated factors of anemia. P-value ≤ 0.05 was considered as statistically significant.

Result: The overall Magnitude of anemia among hospitalized children was 225 (58.6%); of them 127 (56.4%) were males. Of anemic children, 63 (28%) were had mild, 115 (51.1%) moderate and 47 (20.9%) severe anemia. The Magnitude of anemia among children aged 6 – 59 months, 5 – 11 years and 12 – 14 years was 54.1%, 58.9% and 67.5%, respectively. In this study anemia was associated with parasitic infection (AOR= 2.541; 95% CI: 1.363, 4.737), not eating meat and animal product (AOR = 1.615; 95% CI: 1.014, 2.574), were positively associated with anemia.

Conclusion: Anemia among hospitalized children in this study was found to be severe public health problems. It was strongly associated with intestinal parasitic infection and not eating meat and animal products. Focused polices and strategies should be designed to reduce anemia among hospitalized children.

Keywords: Anemia, Hospitalized children, associated factors, Gondar, Northwest Ethiopia.

Anemia and its Associated Factors among Hospitalized Children Attending University of Gondar Hospital, Northwest Ethiopia. *Bamlaku Enawgaw Walie, Eyuel Mekuria, Sisay Tadesse, Yaregal Workineh, Ayenew Addisu, Meaza Genetu.*

Background: Anemia in children continues to be a major public health challenge in most developing countries, particularly in Africa. In the early stages of life, it leads to severe negative consequences on the cognitive as well as growth and development of the children, which may persist even after treatment.

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Keywords: Anemia, Hospitalized children, associated factors, Gondar, Northwest Ethiopia

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Magnitude of Female Genital Mutilation in Ethiopia: A Systematic Review and Meta-Analysis.

Achenef Asmamaw Muche, Abadi Kidanemariam Berhe, Getachew Mullu Kassa, Gedefaw Abeje Fekadu.

Background: Female Genital Mutilation (FGM) is a major harmful traditional practice which affects the health and well-being of women and girls. FGM is widespread across Ethiopia with a varying degree. Even though, there are various studies conducted on prevalence of FGM in Ethiopia, it has inconsistent findings. Therefore, this review was conducted to identify the pooled prevalence of FGM among women and children and its regional variations in Ethiopia

Methods: The Preferred Reporting Items for Systematic Reviews and Meta-Analyses guideline was followed to review published and unpublished studies conducted in Ethiopia. The databases used were; PubMed, Google Scholar, CINAHL an AJOL. Search terms used were female genital mutilation, cutting, circumcision, harmful traditional practices, infibulation and/or Ethiopia. The meta-analysis was conducted using STATA version 14 software. Descriptive information of studies was presented in narrative form and quantitative results were presented in forest plots. The Cochran Q test and I^2 test statistics were used to test heterogeneity across studies. The pooled estimate prevalence with 95% confidence interval were computed using a random effect model of analysis.

Results: A total of 25 studies were included in the analysis. Twenty articles included with 44,283 participants and 14 articles with 38,230 participants to estimate pooled prevalence of FGM among women and children less than 15 year respectively. The pooled prevalence of FGM among women and children aged less than 15 years in Ethiopia was 84.6% (95% CI: 80.51%, 88.7 %%) and 49.79% (95% CI: 41.91%, 57.68%) respectively. The highest prevalence of FGM among women was observed in Somali region (91.09 % (95 % CI: 85.75, 96.44)), and the lowest reported in Harari region (79.50% (95 % CI: 76.77, 82.23)). The highest prevalence of FGM among children less than 15 years was observed in South Nation Nationalities and Peoples Region (SNNPR) (82.20% (95 % CI: 79.52, 84.88)) and the lowest reported in Harari region (19% (95 % CI: 16.35, 21.65)).

Conclusions: The prevalence of FGM is high in Ethiopia with a wide variation was observed across regions. Attentions should be emphasized to stop or reduce the practice, mainly at the high FGM clustered regions of Ethiopia.

Keywords: Female genital mutilation, Harmful traditional practice, Ethiopia, Systemic review, Meta-analysis.

Predictors of Undernutrition among Under Five Children in South Ethiopia: Does Pregnancy Intention Matter? A Community Based Case-Control Study. *Mohammed Feyisso Shaka.*

Background: Child undernutrition including stunting, underweight and wasting contribute for nearly half of all childhood mortality and the survivors are also liable to impaired physical growth and intellectual development. Stunting, which is a deficient height for age, is an indicator of chronic malnutrition. It mainly develop as a result of prolonged food deprivation or chronic disease or illness. Unintended pregnancy and unplanned birth can endanger the health of women and their families, and it also have negative impact on nutritional status of children.

Objective: This study was aimed to determine the effect of unintended pregnancy and other family and child characteristics on nutritional status of under five children.

Method: Community based unmatched case-control study was conducted among children aged 6-59 months in Wonago town, Gedeo Zone, South Ethiopia. Cases were randomly selected from stunted children and controls were randomly selected from non-stunted children. The sample size was determined using two population proportion formula and the total sample size is 302 i.e. 151 cases and 151 controls. Different characteristics of respondents were descriptively compared using chi-square and multivariable logistic regression was used to assess the effect of unintended pregnancy on stunting after controlling for the other variables at p-value of 0.05.

Result: The result revealed that unintended pregnancy is found to be among predictors of stunting where children from unintended pregnancy were about three times more likely to be stunted [AOR: 2.62, CI: (1.26, 5.45)]. The other predictors identified in this study were educational status of the father, wealth index of the household and daily meal frequency. From the finding, children from illiterate fathers [AOR: 3.43, CI: (1.04, 11.29)], children from poorer household economic status [AOR: 2.32, CI: (1.20, 4.49)] and children whom their daily meal frequency is below the recommended number of feeding [AOR: 4.50, CI: (1.31, 15.49)] were found to be more stunted.

Conclusion: From the result of this study, children delivered from unintended pregnancy were significantly at higher risk of stunting. The result also implies that parental education, households' economic status and child feeding behavior have significant effect on child nutritional status. Hence preventing unintended pregnancy have great role in decreasing the risk of stunting among children.

Keywords: unintended pregnancy, stunting, under five, Wonago.

Determinants of Adolescents Reproductive Health Service Utilization in Ethiopia: A Systematic Review of Quantitative Evidence. *Gelila Abraham Tefera, Kiddus Yitbarek Kehali, Morankar Sudhakar.*

Introduction: Adolescents in Ethiopia face many health problems which emanate from low knowledge and awareness of their reproductive health, though there are additional factors contributing to the problem. Provision of adequate, friendly and quality reproductive health services to this group of young people is vital to have healthy and productive generation. This systematic review aimed to assemble the top obtainable evidence for the determinants of adolescent reproductive health services utilization in Ethiopia.

Methods: Systematic review of literature searches in major databases, MEDLINE, CINAHL, EMBASE, and Popline was conducted. English language articles published from 2010 onwards were sought. Socio-demographic and behavioral related outcomes were our interest. Fixed effect model with mantel Haenszel method was used to conduct meta-analysis using Revman5 software. Records were assessed for eligibility by two independent reviewers, with a third reviewer resolving disagreements.

Result: Four community-based cross-sectional studies were included in the review. Results of the meta-analysis showed that adolescents whose educational level was primary were 57% less likely to use Reproductive Health services than adolescents whose educational level was secondary and above. In-school adolescents were 2.39 more likely to utilize Family Planning services than adolescents who were out-of-school. Moreover, adolescents who ever discussed on Reproductive Health issues with relatives/family/health workers were 3.63 more likely to utilize the services than adolescents who didn't discuss with anyone else.

Conclusion: We found adolescents' educational level; schooling status and ever discussion on reproductive health issues were associated with Reproductive Health service utilization in Ethiopia. Health information/education should be given in a regular manner to adolescents in schools and out of school on the availability and need for reproductive health services. Developing the culture of discussion on Reproductive Health issues within the community may help adolescents to be aware and utilize the available services.

Keywords: Adolescents, Ethiopia, factors, reproductive health, utilization.

Predictors of Neonatal Sepsis in Public Referral Hospitals of East and West Gojjam Zones: A Case Control Study. Tadesse Yirga Akalu

Background: Despite remarkable progress in the reduction of death in under-five children, neonatal mortality has shown little or no concomitant reduction globally. It is also one of the most common causes of neonatal death in Ethiopia. Little is known on predictors of neonatal sepsis. Risk based screening and commencement of treatment appreciably reduces neonatal death and illness. Therefore, the main aim of this study was to identify predictors of neonatal sepsis in public referral hospitals of North west Ethiopia.

Methods: Institutional based unmatched case-control study was conducted among a total of 231 neonates in Debre Markos and Felege Hiwot referral hospitals from March 2018- April 2018. Neonates who fulfill our preset criteria for sepsis were considered as cases and neonates diagnosed with other medical reasons except sepsis were controls. For each case, two consecutive controls were selected by lottery method. Data was collected using structured pretested questionnaire through a face to face interview with index mothers and by neonatal record review using checklists. It was entered into Epi data version 3.1 and exported to STATA/ SE software version 14. Finally, it was analyzed by logistic regression model. Variables with $p < 0.25$ in bivariate analysis, were entered to multivariable logistic regression. Statistical significance was declared at $P < 0.05$.

Results: In this study**,** 77 neonates as cases and 154 as controls with their mothers were included with the overall response rate of 100%. After multivariable logistic regression analysis, significantly associated variables with sepsis were; Number of maternal antenatal care service <3 (AOR=4.4, 95%CI=1.7-11.5), Duration of rupture of membrane > 18hours (AOR=10.4, 95%CI= 2.3-46.5), meconium stained amniotic fluid (AOR =3.9, 95%CI=1.5-9.8), urinary tract infection during pregnancy (AOR=10.8, 95% CI=3.4-33.9), intranatal fever (AOR=3.2, 95% CI=1.1-9.5),first minute APGAR score <7 (AOR=3.2, 95% CI=1.3-7.7), resuscitation at birth (AOR= 5.4, 95% CI= 1.9-15.5), nasogastric tube (NGT) insertion (AOR=3.7, 95% CI=1.4-10.2).

Conclusions/Recommendations: In this study, neonatal invasive procedures, neonatal and maternal variables were found to be significantly associated with the risk of neonatal sepsis. Therefore, Professionals should give attention for neonates born from women with fever during labor and adhere to aseptic technique while carrying out invasive procedures. Potential researchers on sepsis should include neonates in the community which may increase external a validity of the study.

Keywords: Case control, North West Ethiopia, neonatal sepsis, predictors.

Neonatal Survival in Aroresa District, Southern Ethiopia. *Desalegn Tsegaw Hibstu.*

Background: In Ethiopia, though a significant reduction in under-five mortality was noticed within the last fifteen years, still the neonatal mortality accounting for 47% of under-five mortality. Neonatal factors like birth size, birth rank and birth interval and maternal complication during labour as well as health seeking behavior are the potential determinants of neonatal mortality. The aim of this study was to determine neonatal survival in Aroresa District, Southern Ethiopia.

Methods: A community based prospective follow up study was conducted among a cohort of term pregnant mothers and neonates delivered from January 1/2018 to March 30/2018. A total of 586 term pregnant mothers were selected with a multistage sampling technique and 584 neonates were followed-up for a total of 28 days, with 12 twin pairs. Data were coded, entered cleaned and analyzed using SPSS version 22. Kaplan–Meier survival curve was used to show pattern of neonatal death in 28 days. Independent and adjusted relationships of different predictors with neonates' survival were assessed with Cox regression model. The risk of mortality was explored and presented with hazard ratio and 95% confidence interval and P-value less than 0.05 were considered as significant.

Result: The overall neonatal mortality was 41 per 1000 live births. Hazards of neonatal mortality was high for neonates with complication (AHR=3.643; 95% CI, 1.36-9.77), male neonates (AHR=2.71; 95% CI, 1.03-7.09), small sized baby (AHR=3.46; 95% CI, 1.119-10.704), neonates who had initiated EBF after one hour (AHR=3.572; 95% CI, 1.255-10.165) and with mothers who had no postnatal care (AHR=3.07; 95% CI, 1.16-8.12).

Conclusion: Neonatal mortality in study area 4.1% which is high and immediate action should be taken towards achieving Sustainable Development Goals. To improve neonatal survival, promotion of maternal service utilization, essential newborn care and early initiation of exclusive breast feeding were recommended

Magnitude and Trends of Measles in North West of Tigray Region, Ethiopia- A Four-Year Surveillance Data Analysis, 2012-2015. *Guteta Degefa Buta*

Introduction: Globally, measles is the leading causes of morbidity and mortality despite the availability of safe and effective vaccine. In Ethiopia, measles remains a disease of public health importance with an annual incidence of 15 per 100,000 populations. This study aimed to identify the magnitude and trends of measles in the Northwest zone of Tigray region.

Methods: We conducted a descriptive surveillance data analysis from 2012-2015 in the Northwest zone of Tigray region. We reviewed line list records and Health Information Management System reports. A suspected measles case was defined as any person with fever, rash, cough and either conjunctivitis or coryza. Laboratory confirmed cases had measles-specific IgM antibodies and epidemiologically confirmed cases were those linked to a laboratory-confirmed case. We collected data by a standardized checklist, analyzed using Epi-info 7.1.5 and Microsoft Excel worksheet. We presented the analyzed data using frequencies, proportions, median and range.

Results: We identified 757 measles cases with an annual incidence of 39 and 16 per 100,000 in 2012; 77 and 67 per 100,000 in 2015 in the <5 and >15-year-old respectively. Among these cases, 380(62%) were unvaccinated. Among <5 children, 27(3.6%) were <9-month infant ineligible for routine measles vaccination. Measles occurrence had a cyclical pattern from November to April, with high peaks from February to April.

Conclusion: Children <5 years and adults aged ≥ 15 years were more affected in a cyclical occurrence of measles. Routine and supplementary immunization activities for more affected age groups including at-risk adults and early preparedness before November may limit occurrence and spread of measles.

Health Care Providers' Knowledge, Perception, Practice towards Aefi Reporting and to Identify Factors and Challenges Affecting Health Care Provider for Reporting Aefi in Gambella, Majang Zone, 2018. *Muluken Asres Alemu.*

Primary health care workers are the first to come in contact with parents and should provide evidence-based information on the benefits and risks of vaccines, demonstrate to have competence and identify properly Adverse Events Following Immunization (AEFI). The knowledge, perceptions, and practices of health workers towards surveillance of AEFI influence the quality and safety of the vaccination services.

This study aimed to assess health care providers' knowledge, Perception, Practice towards AEFI reporting and to identify factors and challenges affecting Health Care Provider for reporting AEFI.

The study is conducted in Gambella Regional State Majang Zone of Godere and Mengesh Woredas. The study included all those HEWs working in Health Posts, Focal Persons of EPI, Surveillance and Health Management Information System in the Zone, Woreda, Hospital and Health Centers and Head of Health Centers and Hospitals. Cross sectional survey type employed for conducting the study and a total of 109 health care providers included in the study. Data were analyzed using descriptive statistics and binary logistic regression model.

This study revealed that out of all respondents 102 (94%) had good knowledge on causes of AEFI and 75 (69%) had good knowledge on the sign and symptoms of AEFI while 46 (42.2%) had poor knowledge on AEFI case treatment, 50 (45.9%) did not know about case investigation and 48 (44%) did not know on AEFI reporting. Also 67 (61.5%) of them did not know as vaccine reaction cause AEFI and 66 (60.6%) of them did not know adrenaline to manage anaphylaxis shock. Using all knowledge indicators, 94(86.2%) respondents had good knowledge and all (100%) had positive perception towards AEFI reporting which was above the mean value. Similarly, taking all perception indicators all (100%) had positive perception towards AEFI reporting which was above the mean value. However, 31(60.6%) of them thought reporting of AEFI can lead to personal consequence and 81 (74.3%) believed reporting of AEFI such as injection abscess will make him/her guilty. Regarding to practice of AEFI reporting, of all respondents, 94 (86%), 100 (92%), 99(91%), 76 (70%) had poor practice on Case exposure, Logistic supply, Reporting and Documentation of AEFI related aspects respectively while 80 (73%) had good AEFI Prevention Practice but taking all perception indicators 92 (84%) respondents had poor practice in AEFI surveillance. Even if the FMOH Ethiopia requires active AEFI reporting through the existing health system the majority of Health Care Providers were not reporting AEFI to next higher levels because of a number of reasons which hinder them and the majors were; there was no training, no report form and lack of knowledge on AEFI, no transportation to travel to next level and no follow up or supervision from Woreda Health Office. Factors which showed association during bivariate analysis were Level of Education, Location of Institution, Distance of Health Facility, Electricity and Training on AEFI but only availability of Partners Support (p< 0.05) and knowledge to AEFI Case Management (p<0.05) were significantly associated in multivariate analysis.

Intensive AEFI training has to be given to enhance the knowledge and capacity of Health Care Providers on AEFI and necessary logistic for AEFI surveillance such as guideline and reporting formats have to be supplied through government and partners working on immunization and surveillance

Knowledge of Neonatal Danger Signs among Postpartum Mothers Attending Immunization at Public Health Facilities in Ambo Town, Central Ethiopia. *Gizachew Abdissa Bulto.*

Background: Neonatal mortality has remained high in Ethiopia in spite of different efforts being undertaken to reduce this negative trend. Early detection of neonatal illnesses has an important step towards improving new born survival. Toward this end there is a need for postpartum mothers to be able to identify signs in neonates that signifies severe neonatal illnesses. There is limited information about knowledge of post-partum mothers on neonatal danger signs and associated factors in the study area. Therefore the aim of this study is to assess knowledge on neonatal danger signs and its associated factors among postpartum mothers attending immunization units in Ambo Town, Ethiopia, 2018.

Methods: Institution based cross-sectional study design was used. Systematic random sampling technique was employed to select 404 study participants and data was collected through face to face interview by using structured questionnaire. Both bivariate and multivariable logistic regressions were utilized to identify associated factors.

Results: One fifth 82(20.3%) of postpartum mothers have good knowledge about neonatal danger signs. Only 60.5% of mothers whom their baby developed danger sign taken their baby to health facility immediately. Mothers who have diploma or more education (AOR=5.25, 95% CI:1.48-18.59), current baby developed danger signs (AOR=3.18 95% CI:1.06-9.52), having PNC follow-up (AOR=2.29, 95% CI:1.24-4.24) and receiving counseling on newborn care after delivery (AOR=1.78, 95% CI: 1.04-3.04) were factors associated with having good knowledge.

Conclusions and Recommendation: The level of postpartum mother's knowledge on neonatal danger sign is low and mother's education, PNC follow-ups, counseling on newborn care and baby developed danger signs were factors significantly associated. Therefore provision of health education and counseling or advices for mothers after delivery, during postnatal care follows-ups to improve their health care seeking behavior and knowledge were the key areas of intervention.

Prevalence of Malaria and Associated Risk Factors among Febrile Children Under 5 Years in Gamo-Gofa, Ethiopia: An Institutional Based Cross Sectional Study. *Adisu Nedu[1], Weynshet Tafesse[2], Ashenafi Abossie [1], Tsegaye Yohanes[1] [1]Arba Minch University, College of Medicine and Health Sciences, Department of Medical Laboratory Science, Arba Minch, Ethiopia [2]Wachamo University, College of Medicine and Health Sciences, Department of Medical Laboratory Science, Hosanna, Ethiopia.*

Background: Malaria is a major public health problem affecting all age groups of individuals. Children <5 years old are the most vulnerable groups to malaria infection because of poorly developed immune system. According to WHO malaria control strategies, countries have set targets that led to malaria control and elimination with interventions at high risk groups, particularly for children <5 years. Despite the intervention strategy, malaria infection remains high and continues to pose a major public health challenge in those areas.

Objective: This study aimed at determining the magnitude of malaria and associated factors among febrile children under five years old in Gamo-Gofa Zone, South Ethiopia.

Method: This cross-sectional study was conducted from April to May, 2017 in Arba Minch "Zuria" district. Blood sample were collected from 271 systematically selected febrile children < 5 years old. Thin and thick blood smears were prepared, stained with 10% Giemsa and examined under light microscope. Socio-demographic data, associated factors, and knowledge and prevention practices of malaria were collected using a pre-tested structured questionnaire. The analysis was performed using binomial/multinomial regression model in SPSS version 25 statistical software.

Result: Among those febrile children, 22.1% (60/271,) were positive for malaria; 50.0%, 48.33 % and 1.66 % of them were positive for *P.falciparum, P. vivax* and mixed infection of both parasites, respectively. Malaria infection was significantly associated with nearby presence of stagnant water to residents (AOR=10.4531, 95% CI= (4.492,24.326), *P*<0.0001). Children who slept under insecticide-treated mosquito nets (ITNs) were more likelihood to be protected from malaria infection than those did not sleep ITNs (AOR =8.597 95% CI = (3.913-18.888), *P*<0.0001).

Conclusion: There was high prevalence of malaria infection in children <5 years old. The presence of stagnant water near to residence and not using ITN are the determinant factors for malaria infection. Improved access to malaria interventions and education how to interrupt its transmission is needed at the community level. In addition, the control and elimination strategies should focus on the at risk groups.

Keywords: Malaria, *Plasmodium*, Children, Febrile illness, Gamo-Gofa, Ethiopia.

Creating Safe Space for Adolescent Girls Impacts their Lives Positively: A Best Practice from Her Space Project. *Abebe Kassa (MPH), Kidest Lulu (MD, MPH), Getaneh Assefa (MA/MPH).*

In developing countries like Ethiopia, girls are disproportionately affected by multilayered socio-economic problems. High unmet need for family planning, early pregnancy, and childbearing are common problems in Ethiopia. Harmful traditional practices such as child, early and forced marriage and female genital mutilation are highly prevalent.

To address these challenges, Pathfinder International piloted Her Space Project with the purpose of improving personal, social, health, safety, education and financial outcomes of girls.

The Intervention: Funded by UKAID/DFID and in collaboration with the Ministry of Health, the pilot project was implemented from January to June 2017 in 40 kebeles of Amhara and Oromia regions.

The project reached 2,000 girls aged 11-14 years in two cohorts – 1000 in Amhara and 1000 in Oromia. Each cohort included 500 girls of age 11-12 years and 13-14 years.

Eighty safe spaces – maximum of 25 girls per space – were established. Two mentors were assigned per space. The girls were enrolled based on a set of vulnerability criteria.

The Mentors' manuals and girls' handbooks were uniquely designed for each cohort to guide the girls' session and focused on communication and negotiation skills, reproductive health, safety, savings, and visiting places. Communities, parents, guardians, and gatekeepers were engaged.

Forty girls' sessions over six months, two sessions of parental consultations, two sessions of stakeholders' consultations, two mentors' review meetings and two sessions of boys' sensitization meetings were conducted.

Result: Girls became aware of factors, consequences and available services pertaining to gender-based violence, unintended pregnancies. They gained knowledge and skill on menstrual hygiene management and nutrition.

Self-confidence and academic performance of the girls improved. The girls started negotiating and discussing openly with their families. The girls built a positive relationship and networking with each other and with others. Some girls opened a bank account and started saving.

Siblings started to help their sisters in the domestic chores. Parents became aware of harmful traditional practices including early and child marriage and their consequences.

Lessons Learned, Conclusions and Implications of the Intervention

- Younger cohorts 11-12 years old girls – were participating more actively in the project without fear and reservation as compared to the older cohorts 13-14-year-old girls – revealing the need to focus on early adolescence for program success.

- Early community sensitization creates a sense of belongingness and ownership and paves the road for program's success.
- Parental consultation and involvement of community and kebele officials in the sensitization workshops have improved girls' attendance in the safe space sessions.
- The involvement of school communities played a key role in the program success.
- Involving boy about the program makes them play a positive role in the life of girls.

Designing high impact and the low-cost program will build resilience in the community and ensures program sustainability with minimum cost when there is a lack or abrupt stopping of funding.

Non-communicable Diseases, Mental Health and Substance Use

Time to Acute Kidney Injury and its Predictors among Newly Diagnosed Type 2 Diabetic Patients at Government Hospitals in Harari Region, East Ethiopia. *Lemma Demissie Regassa[1*], Yigzaw Kebede Gete[2], and Fantahun Ayenew Mekonnen [2] [1]Haramaya University, Collage of Health and Medical Sciences, Ethiopia [2] University of Gondar, Collage of Medicine and Health Sciences, Ethiopia.*

Introduction: The incidence of Acute Kidney Injury (AKI) among Type 2 DM significantly increasing with multiple consequences. The long standing diabetic before diagnosis and sub clinical nature of disease, prevent the early detection and prevention of acute kidney injury. Previous studies were mainly focusing on the admitted patients which may hinder the true nature of the acute kidney injury among T2D. The aim of this study is to determine the time to acute kidney injury and its predictors among newly diagnosed type 2 DM patients on follow up from January 1, 2013 to December 31, 2017 in Government Hospitals of Harari Region.

Methods: This study was conducted in public Hospitals of Harari region retrospectively on the 502 newly diagnosed type two DM record from 2013 to 2017. Data was collected from the patients' records by pre tested checklist. Quality of data was monitored from the beginning of data collection to the analysis stage. Data was entered using Epi info and analyzed in R software. Incidence was estimated and survival curves was compared between different exposure groups using Kaplan-Meier and log-rank test. Weibull regression models was used to determine the predictors and variables with p value less than 0.2 were fitted to multivariable model.

Results: Overall 14.5% (95%CI, 11.7-17.9) of the total study population was developed acute kidney injury. The total follow up time was 14409 parson-year. The incidence rate was about 6 per 100 PY with median survival time of 57 months. Significant predictors were Physical activity [Adjusted Time Ratio (ATR) 0.61, (95%CI, 0.49-0.75)], Congestive heart failure [ATR 0.84, (95%CI, 0.71-0.99)], Chronic kidney disease [ATR 0.77, (95%CI, 0.65-0.91)], Hypertension [ATR 0.78, (95%CI, 0.65-0.91)], Obesity [ATR 0.84, (95%CI, 0.74-0.96)], Diabetic nephropathy [ATR 0.80, (95%CI, 0.65-0.98)], Diuretics & Beta Blockers [ATR 0.85, (95%CI, 0.74-0.97)], and Delay initiation of follow up [ATR 0.97, (95%CI, 0.96-0.98)].

Conclusions and recommendations: Incidence of the acute kidney injury among type two diabetes mellitus was high. Physical activity, congestive heart failure, chronic kidney disease, hypertension, obesity, diabetic nephropathy, diuretics and delay for follow up were the predictors for the acute kidney injury. Identification and controlling comorbidities along with regular monitoring of kidney function is needed to prevent or delay the risk of acute kidney injury in type 2 diabetes.

Prevalence of Lifetime Substances Use among Students in Ethiopia: A Systematic Review and Meta-Analysis. *Hirbo Shore Roba, Addisu Shunu Beyene, Asnake Ararsa, Berhe Gebremichael*.

Background: The use of substances is a growing concern in Ethiopia and their impacts on younger generation have been a concern of different professionals. Even though students are at high-risk of substance abuse, there is lack of comprehensive evidence for policy decision on substance use in students. Therefore, the aim of this systematic Review and Meta-analysis was to estimate the prevalence of common substances among students in Ethiopia.

Method: A comprehensive literature searches were done from electronic biomedical databases; Google scholar, PubMed/Medline, HINARI, African Journal Online, Ethiopian Journal of health development, African Journal of Health Science and Science Direct for article published until 31/12/2017. Reference list of identified studies were searched to obtain additional studies. Two authors autonomously selected studies, extracted data, and evaluated quality of studies. Q and I^2 were computed to measure the extents of between study variations. The prevalence of lifetime substances use was estimated using random effects model.

Results: A total 676 study articles were identified from electronic databases, and 28 of them were included in meta-analysis. The analysis revealed that the lifetime prevalence of any substance use was 52% (95% CI: 42-62, I^2=98.80%, *P*<0.00). Analysis by types of substances showed that the pooled lifetime prevalence of khat, 25.0% (95% CI: 22.0-28.0, I^2=95.40%, *P*<0.00), alcohol 46.0% (95%CI: 39.0-54.0, *I^2=98.70%, P<0.00*), and smoking cigarette, 15.0% (95%CI: 11.0, 18.0, *I^2=96.67%, P<0.00*). However, the analyses showed there were no statistically significant publication bias.

Conclusion: The pooled estimates of this meta-analysis highlighted the extent of lifetime prevalence of any substance, khat, alcohol and cigarette smoking among students in Ethiopia. Policy makers should devise and implement strictly binding regulation to curb widespread of substances around educational institution premises at national level. To clearly understand the magnitude, trajectory and consequences of substance use among students, national survey should be conducted in educational institutions at regular interval.

Systematic review registration: PROSPERO CRD42018082635

Quality of Life and Associated Factors among Patients with Schizophrenia Attending Follow up Treatment at Jimma University Medical Center Psychiatric Clinic Jimma, South West Ethiopia, 2018: A Cross-Sectional Study. *Defaru Desalegn, MSc, Department of Psychology.*

Background: *Schizophrenia is one of the most severe, chronic and disabling mental disorder found globally. The chronic nature of the illnesses significantly interferes with functioning in domains like physical, psychological, social and economic at last results in poor quality of life.*

Objectives: *To assess quality of life and associated factors of patients with schizophrenia attending follow up treatment at Jimma University Medical Center psychiatric clinic, Jimma, South West, Ethiopia, 2018.*

Methods: A hospital based cross sectional study design was employed. Data was collected by interviewer administered pre-tested semi structured questionnaire from 352study participants who were selected by systematic random sampling technique. Quality of life was assessed by using the World Health Organization Quality of Life assessment Brief version (WHOQOL-BRIEF) and severity of symptoms (psychopathology) and medication adherence was assessed by positive and negative syndrome scale and Morisky medication adherence scale respectively. Data entry and analysis was done using Epi data version 3.1 and statistical package for the social sciences (SPSS) 20 statistical software. Different assumptions of linear regression model were checked. Linear regression analysis was performed to determine an association between independent and dependent variables.

Result: A total of 351 patients with schizophrenia were participated in this study with 99.7 % of response rate. The mean ± Standard Deviation (SD) age of the participant was 33.57 ± 7.96 years, and ranges from 18 to 54.The mean (± SD) score of the WHOQOL-BREF scale in this study was 74.34 ± 15.83. Patients with schizophrenia had lowest mean score on the social relationship domain of WHOQOL-BREF scale. Income (β: 5.81, 95% CI: 3.45-8.18) was found to be positively associated with QOL. On contrary positive symptoms (β: -0.33, 95% CI: -0.49-(-0.17)), negative symptoms (β: -0.26, 95% CI: -0.45-(-0.06)), general psychopathologies (β: -0.22, 95% CI: -0.32-(-0.12)), comorbid physical illness (β: -4.69, 95% 95% CI: -8.50-(-0.88)), ever use of tobacco (β: -3.95, 95% CI; -5.34-(-0.95)), ever use of Khat (β: -3.95, 95% CI; -6.02-(-1.88)) and medication non-adherent(β: -5.81, 95% CI: -8.24-(-3.41))were found to be negatively associated with QOL.

Conclusion and recommendation: The domain of social relationship was the lowest domain of quality of life for patients with schizophrenia. Therefore, in schizophrenic patients, priority interventions to improve the social deficits are important.

Key words: Quality of life, schizophrenia, WHOQOL-BREF, Jimma, Ethiopia.

Prenatal Depression and its Effect on Birth Outcomes in Low and Middle-income Countries: A Systematic Review and Meta-analysis Abel Fekadu Dadi12* Emma R Miller1 Lillian Mwanri1.
Abel Fekadu Dadi.

Background: Depression during pregnancy has not generally been considered as a priority area of intervention in low income countries as it is not fatal and not well documented. We aimed to comprehensively present the burden of prenatal depression and its consequences on birth outcomes.

Methods: CINHAL, MEDLINE, EMCare, PubMed, Psychiatry online and Scopus databases were systematically searched for depression during pregnancy and its association with adverse birth outcomes. We included observational studies with good quality, conducted in low and middle income countries, written in English-language, and published in between January 1st 2007 and December 31st 2017. We excluded studies in which the main outcomes were not measured following a standardized approach. We used Higgins and Egger's test to identify any heterogeneity and publication bias. Primary estimates were pooled using a random effect meta-analysis. All analysis were conducted in Stata 14. The study protocol was registered in PROSPERO with protocol number CRD42017082624.

Result: We included 64 studies (among 44, 035 women) on prenatal depression and nine studies (among 5,540 women) on adverse birth outcomes. Prenatal depression was higher in the lower income countries (Pooled Prevalence (PP) =34.0%; 95%CI: 33.1%-34.9%) compared to the middle income countries (PP= 22.7%, 95%CI: 20.1%-25.2%) and it was increased over the three trimesters. Pregnant women with history of economic difficulties, poor marital relationship, common mental disorders, poor social support, bad obstetric history, and exposure to violence were at higher risk of developing prenatal depression. The risk of having adverse birth outcomes (low birth weight/preterm birth) was 59% higher among depressed pregnant mothers (Pooled Relative Risk (PRR) = 1. 59; 95%CI: 1.34-2.92). Preterm birth (2.41; 1.47- 3.56) and low birth weight (1.66; 1.06-2.61) were the main types of adverse birth outcomes observed in depressed mothers relative to mothers without depression.

Interpretation: Prenatal depression was higher in low income countries and found to be a risk factor for low birth weight and preterm birth. While they may be a demanding agenda for health policy makers in low-income countries, interventions for depression during pregnancy are vitally important, in order to prevent the poor maternal and perinatal outcomes identified by our analyses.

Keywords: Prenatal depression, adverse birth outcomes, systematic review, Meta-analysis, Low and Middle-income countries.

Strong Association between Stigma and Depression among Adults People Living with HIV/AIDS in Ethiopia: A systematic review and Meta-analysis. *Degefaye Zelalem Anlay.*

Background: Depression is one of the major mental health disorders and predicted as a second disease burden in the globe by the year 2020, but it is neglected mental disorders among HIV patients in Sub-Sahara Africa. Depression in HIV patients lead to poor engagement to care and poor health outcomes. There are various studies conducted on the prevalence and factors associated with depression among HIV patients. However, there is limited study which shows the national estimate of depression and the association of stigma and depression among Adult HIV/AIDS in Ethiopia. Therefore, this review is conducted to assess the pooled prevalence of depression and the association of stigma and depression among Adult HIV/AIDS in Ethiopia.

Method: The Preferred Reporting Items for Systematic Reviews and Meta-Analyses guideline was followed to review published and unpublished studies conducted in Ethiopia. To access primary studies, MEDLINE through PubMed, Google Scholar, HINARI, CINAHL and African Journals Online, and University library (repository) were used as a source. Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument was used for critical appraisal. Observational studies that report on prevalence of depression and odds ratio to see the association of stigma and depression among HIV infected adults were searched systematically. Data were extracted by using Microsoft excel sheet. Stata/se version 14 was used for analysis. Variability between the studies was assessed by using forest plot and I-squared heterogencity test. Subgroup and sensitivity analysis was done when I^2 >50. Small studies publication bias was checked subjectively through funnel plot and objectively through egger's test. The pooled estimate prevalence and odds ratio with 95% CI were computed using random effect model of analysis.

Result: a Total of 1779 articles were identified, of which, 17 studies were eligible for full review. Eleven articles were used for analysis. Of the 11 articles only four articles used to estimate the pooled odds ratio. The pooled prevalence of depression was 19.95 %(95% CI: 6.31%, 33.59). Whereas, the pooled effect size of depression among stigmatized patient was 2.52(95% CI: 1.9, 3.34).

Conclusion: The pooled prevalence of depression among HIV/AIDS patients in Ethiopia was found to be high and stigma was significantly associated with depression. Programs offering support to PLWHA in Ethiopia should screen for stigma and depression in order to provide comprehensive support to at risk patients.

Keywords: Depression, Ethiopia, HIV infected patients, Meta-analysis, Stigma, systematic review.

Postnatal Depression and its Effect on Infant Health Outcomes in Low and Middle Income Countries: A Systematic Review and Meta-analysis. *Abel Fekadu Dadi.*

Background: Postnatal Depression (PND) is a serious mood disorder that steals motherhood after delivery and affects the health and development of a newborn. While its impact on motherhood and newborn in developed countries is well described its epidemiology and consequences on infant health in Middle and Low Income countries is not well known and it is for this reason that we intended to conduct this review.

Methods: We searched for observational studies written in English language and conducted in middle and low income countries through December 1st, 2007 to December 31st, 2017. CINHAL, MEDLINE, Emcare, PubMed, Psych Info and Scopus Data bases were searched for the following search terms: Postnatal depression, acute respiratory infection, pneumonia, diarrhea, exclusive breast feeding, common infant illnesses, and malnutrition. We excluded studies in which the main outcomes were not measured following a standardized approach. We have meta-analyzed the estimates from primary studies by correcting the pooled estimates for possible publication bias and heterogeneity following Egger's and Higgins test, respectively. All analysis were conducted in STATA 14. The study protocol was registered in PROSPERO with protocol number CRD42017082624.

Result: Fifty-eight studies on PND prevalence (among 63,293 women) and 17 studies (among 32,454 infants) on infant health outcomes were included. PND prevalence was higher in the low income countries (Pooled prevalence (PP) = 25.8%; 95%CI: 17.9% – 33.8%) than in the middle income countries (PP= 20.8%; 95%CI: 18.4% – 23.1%) and reached pick in five to ten weeks after birth. Bad obstetric history, poor social support, low economic and educational status of the mother, and exposure to any form of violence were associated with an increased risk of PND. The risk of having adverse infant health outcomes was 31% higher among depressed postnatal mothers (Pooled relative risk (PRR) = 1.31; 95%CI: 1.17-1.48). Malnutrition (1.39; 1.21 – 1.61), non-exclusive breast feeding (1.55; 1.39 – 1.74), and common infant illnesses (2.55; 1.41 – 4.61) were the main types of adverse infant health outcomes observed in infants of depressed postnatal mothers relative to postnatal mothers without depression.

Interpretation: One in four and one in five postnatal mothers were depressed in low and middle income countries, respectively and its cause could be explained by different social, maternal and psychological constructs. High risk of adverse infant health outcomes are associated with PND. Timely screening of new mothers for PND and evidence based interventions is a pressing need for postnatal mothers of low and middle income countries.

Keywords: Postnatal depression, adverse infant health outcomes, systematic review, Meta-analysis, Low and Middle-income countries.

Road Traffic Injured Patients with Severe GCS and Organ Injury Had Poor Prognosis: A Retrospective cohort study. *Kissanet Tesfay[1], Mulubirhan Assefa[2] and Dawit Zenebe[2]*

Introduction: Road traffic injury has economic impact on the patients and their families. Such economic burden might result from the duration of time to recovery. The aim of the study is to assess median time to recovery and its predictors.

Method: A retrospective cohort study design was employed. The study population was all admitted road traffic injured patients. Using simple random sampling technique 322 charts of admitted road traffic injured patients from 2015 to 2017 were collected. Descriptive statistics, life table, Kaplan-Meier, log rank test and assumptions of Cox proportional hazard model was applied. Bivariate and multivariate Cox regression analysis, hazard ratios and associated 95% CI were estimated.

Result: Male to female ratio was 3:1. Of the total 258(80.1%) had been recovered and the median survival time to recovery was 15 days (IQR 7-29). From those recovered, 104(40.3%) had been referred from another health facilities. Availability of referral form linkage [AHR=1.5, CI (1.1-1.9)], mild and moderate glass coma scale (GCS) [AHR=2.3, CI (1.3-3.9)], conservative management [AHR=1.6, CI (1.2-2.1)], and without organ injury [AHR=1.6, CI (1.1-2.3)] were associated with time to recovery in multivariate analysis.

Conclusion: Median time to recovery of road traffic injured patients was relatively good. Being referred from another health facility, mild and moderate GCS, conservative management and without organ injury was positively associated with time to recovery of road traffic injured patients. ACSRH should strengthen attention to patients with severe GCS and with organ injury.

Keywords: Road traffic injury, Glass coma scale, Mekelle.

Effect of Perinatal Depression on Birth and Infant Health Outcomes: A Systematic Review and Meta-analysis of Observational studies from Africa. *Adhanom Gebreegziabher Baraki.*

Introduction: Perinatal depression is associated with intrauterine growth retardation, preterm birth and low birth weight. Infant born to mothers with perinatal depression may suffer from malnutrition and other health problems. Even though there are few single studies conducted so far, a systematic review of these studies is highly important to highlight the effect of perinatal depression on birth and infant health outcome in Africa.

Methods: We used the Preferred Report Items for Systematic Review and Meta-analysis (PRISMA) when conducting this study. Databases CINAHL (EBSCO), MEDLINE (via Ovid), PsycINFO, Emcare, PubMed, Psychiatry Online, and Scopus were searched as well as Google Scholar and references from a list of eligible studies. We included observational studies published between 2007 and 2018, in English language and with good quality based on Newcastle Ottawa Scale. Heterogeneity and publication bias were assessed. Meta-analysis with a random effect model was employed to determine the pooled effect size with 95% confidence interval. The review protocol has been registered in PROSPERO number CRD42018106714.

Result: We included three studies (1,511 participants) and 11 studies (22,254 participants) to determine the effect of antenatal depression on birth outcomes and perinatal depression on adverse infant health outcomes, respectively. The risk of having adverse birth outcome was 2.26 (95% CI: 1.43, 3.58) times higher among pregnant mothers with depression. From this, the risk of preterm birth and low birth weight was 1.77 (95% CI: 1.03, 3.04) and 2.98 (95% CI: 1.60, 5.55) times, respectively. Similarly, the risk of having adverse infant health outcomes (malnutrition and febrile illness) was 1.61 (95% CI: 1.34, 1.95) times higher among mothers with perinatal depression.

Conclusions: We have found a significant association between perinatal depression and adverse birth and infant health outcomes. The most commonly associated outcomes were preterm birth, low birth weight, malnutrition, and febrile illnesses.

Keywords: Antenatal depression, Postnatal depression, Adverse birth outcomes, Adverse infant health outcomes, Systematic review, Meta-analysis

Prevalence and Determinants of Diabetic Foot Ulcer among Diabetic Patients in Ethiopia. A Systematic Review and Meta-Analysis. *Henok Mulugeta*[*1], Fasil Wagnew[1], Haymanot Zeleke[1], Bekele Tesfaye[1], Cheru Tesema Leshargie[2], Henok Biresaw[3], Getenet Dessie[4]*

Background: Diabetic foot ulcer, one of the complications of diabetes mellitus, is a major health problem and is one of among the leading reasons for admission, amputation, morbidity, and mortality among diabetic patients in Ethiopia. The objective of this systematic review and meta-analysis is to estimate the pooled prevalence of diabetic foot ulcer among diabetic patients in Ethiopia.

Methods: We searched PebMed, Google Scholar, Cochrane Library CINAHL, Embase, and PsycINFO databases for studies of diabetic foot ulcer prevalence published up to August 30, 2018. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline was followed during this meta-analysis. Qualities of each article were assessed by using a modified version of the Newcastle-Ottawa Scale. All statistical analyses were done using STATA version 14 software. The pooled estimated prevalence of foot ulceration was presented using a forest plot.

Results: A total of 13 studies with 4077 participants were included in this study. The overall pooled prevalence of diabetic foot ulcer among diabetic patients in Ethiopia was 13.97% (95% CI (9.46, 18.49%)) with significant heterogeneity between studies (I^2=96.3, P=0.001). Based on the subgroup analysis, the highest prevalence [19.02% (95%CI: 44.49, 79.2), I^2 = 98.9%)] was found in Addis Ababa. Participants' residence [OR: 3.40, (95%CI (2.09, 5.54))] and duration of the disease [OR: 3.91, (95%CI (2.03, 7.52))] had a significant association with a diabetic foot ulcer.

Conclusion: The analysis revealed that the overall prevalence of diabetic foot ulcer among diabetic patients in Ethiopia was high. Therefore, the ministry of health should design a concerted multi-sectoral approach and strategies to reduce the risk of foot ulceration and to improve the health care delivery for people with diabetes.

Keywords: Diabetes mellitus, foot ulcer, prevalence, Ethiopia.

Undiagnosed Diabetes, Impaired Fasting Glucose and Associated Risk Factors in Koladiba Town of Dembia District, Northwest Ethiopia. *Abebaw Worede Belay.*

Background: According to 2013 International Diabetes Federation Atlas, there are 1.9 million diabetes cases of 20-79 years age and 34,262 diabetes related deaths in Ethiopia. Of which 1.2 million of them are in the rural setting. More than 1 million of these people are living with undiagnosed diabetes mellitus. The number of people with diabetes is increasing in every region of Ethiopia.

Objective: To assess the prevalence of undiagnosed diabetes mellitus, impaired fasting glucose and associated risk factors in the population of Koladiba town of Dembia, Northwest Ethiopia

Methodology: A community based cross-sectional survey was performed using a multistage cluster random sampling strategy on 392 adults aged 20 years and above from February. After getting informed written consent, each participant was questioned for socio-demographic characteristics and associated risk factors. The levels of glucose, total cholesterol and triglycerides were measured using enzymatic colorimetric assay using Mindray BS-200 chemistry analyzer. Data was entered and analyzed using SPSS version 16. Possible risk factors were assessed using logistic regression. P-value <0.05 was considered as statistically significant.

Results: A total of 392 (173 males and 219 females) individuals were participated in this study. The prevalence of undiagnosed DM, using the ADA fasting criteria, was 2.3% (4.62% in males and 0.46%. in females). The prevalence of impaired fasting glucose was 12% (13.29% in males and 10.95% in females). BMI (overweight (AOR = 4.817, 95% CI = 1.463-15.857, obesity (AOR = 5.825, 95% CI = (1.239-27.385)), high TG level (AOR = 2.75, 95% CI = 1.407-5.379) and systolic blood pressure (AOR = 3.634, 95% CI = 1.513-8.727) were significantly associated with impaired fasting glucose.

Conclusion: The prevalence of impaired fasting glucose (12%) and newly diagnosed DM (2.3%) in Koladiba town of Dembia district was high. This result indicates a need for greater emphasis on the early detection (screening) and timely intervention in order to effectively control the diabetes epidemics.

Key words: Impaired fasting glucose, undiagnosed DM, Koladiba.

Factors Associated with Epilepsy in Meinit Shasha Woreda, Bench Maji Zone, Southwest Ethiopia. *Biniam Degito Mamo.*

Background: Epilepsy is a syndrome characterized by recurrent (two or more) unprovoked seizure attacks, due to a chronic, underlying process in the brain. Epilepsy is one of the most common and serious brain disorders in the world affecting at least 50 million people in the world. This study primarily aimed to assess factors associated with epilepsy in Meinit Shasha woreda, and present the findings to decision makers.

Objective: The objective was to identify factors associated with Epilepsy at Meinit Shasha woreda, Bench Maji Zone, Southern Ethiopia from May 10, 2018 to July 25, 2018.

Methods: unmatched case control study was conducted from May 10, 2018 to July 25, 2018. Total populations of Meinit Shasha woreda were the source population. A total of 157 cases and 315 controls (case to control ratio of 1:2) were recruited for the study. Those who were diagnosed at Hospital or Health center with epilepsy (cases) and those who were residing permanently in the same area to cases but screened negative for epilepsy (controls) were the study population. We used simple random sampling to select cases. Data were collected using previously validated questionnaire and entered into Epinfo version7 and exported to and analyzed by SPSS version 20. To identify independent predictors, multivariable logistic regression was done. Odds Ratio (OR) was calculated to measure the strength of association between predictors and outcome variable. P-value at the level of significance of 5% was used to define statistical associations between dependent and independent variables.

Result: A data 0f 157 epilepsy cases and 315 controls were collected. During multivariate logistic regression analysis, the following variables were found to be statistically significant: Home delivery, AOR=4.76[95%CI=2.17-10.45], history of head injury with associated loss of consciousness, AOR=4.34[95%CI=1.86-10.11] and family history of epilepsy, AOR=3.09[95%CI=1.36-7.04].

Conclusion and Recommendation: Our study found that history of head injury, home delivery and having positive family history of epilepsy had significant positive association with epilepsy. Therefore, Meinit shasha woreda Health Office and Bench Maji Zone Health Department shall give health education on the benefits of institutional delivery and awareness creation activities to the community on the dangers of fight injuries and devise interventions focusing on educating the community about prevention of head injuries which may have significant association with the development of epilepsy.

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Magnitude and Associated Factors of Awareness with Recall under General Anesthesia in Amhara Regional State Referral Hospitals, 2018. *Tadese Tamire Negash.*

Introduction: Awareness with recall of intraoperative events is an infrequent but potentially devastating complication of general anesthesia, with a reported incidence of 0.1–0.2% in low risk patients. Higher incidence is expected in resource limited operation room setups and in high risk patients. Awareness can result in significant distress to patients and long-term psychological consequences, including symptoms associated with posttraumatic stress disorder, anxiety, night mares, night terror, dissatisfaction with surgical service and sometimes even suicide.

Objective: To assess the magnitude and associated factors of awareness with recall under General Anesthesia in Amhara regional state referral hospitals.

Method: An institution based cross sectional study was conducted on 1065 patients who underwent surgery under general anesthesia from January 1 to June 30, 2018. The study participants were selected by systematic random sampling from 4 referral hospitals. The modified Brice questionnaire was used to detect awareness under general anesthesia. Interviewer administered structured questionnaire and chart review were employed. Data with complete information were entered in to SPSS version 20 computer software. Descriptive statics, bivariate and multivariable analysis were computed. P-value less than 0.2 were used to select candidate variables for multivariable logistic regression. P-value less than 0.05 was used to declare statistical significance.

Result: 1065 patients were included in the study which makes the response rate of 90.7 %. The magnitude of awareness with recall under general anesthesia was found to be 8.2% of which 4.9%, 2.6% and 0.7% of patients reported hearing voice, pain and sensation of breathing tube respectively. Lack of premedication was the only significantly associated factor for awareness with recall under general anesthesia (AOR = 3.014, 95% CI (1.201 to 7.565)).

Conclusion and Recommendation: our study showed higher magnitude of awareness with recall under general anesthesia. Lack of premedication was the only associated factor with awareness with recall under general anesthesia. Anesthetists should give emphasis to prevent the possibility of awareness under general anesthesia by providing premedication. Cohort studies should be done including the consequences of awareness with recall under general anesthesia.

Keywords: General Anesthesia, Awareness under anesthesia, Awareness with recall, intraoperative awareness.

Incidence and Predictors of Major Adverse Drug Events among Drug-Resistant Tuberculosis Patients on Second-Line Anti-Tuberculosis Treatment in Amhara Regional State Public Hospitals; Ethiopia: A Retrospective Follow-Up Study; 2010-2017. *Mehari Woldemariam Merid, Mehari Woldemariam Merid.*

Background: An adverse drug event is any untoward medical occurrence in a patient administered a pharmaceutical product that does not necessarily have a causal relationship with this treatment. Second line anti tuberculosis drugs are complex, long term and more toxic. Poor treatment outcome due to adverse drug events become major public health problem globally. Limited evidence is available on incidence and predictors of adverse drug events associated with these drugs in Ethiopia. Thus, this study assessed the incidence and predictors of major adverse drug events among drug resistant tuberculosis patients on second line anti-tuberculosis treatment in Amhara Regional State public hospitals, Ethiopia

Methods: An institution based retrospective follow up study was conducted on 570 Drug Resistant tuberculosis Patients (DR-TB). Data were entered to EPI-Data version 4.2.0.0 and exported to Stata version 14 for analysis. Proportional hazard assumption was checked. The univariate Weibull regression gamma frailty model was fitted. Cox-Snell residual was used to test goodness of fit and AIC for model selection. Hazard ratio with 95% CI was computed and variables with P-value <0.05 in the multivariable analysis were taken as significant predictors for adverse drug event.

Results: A total of 570 patients were followed for 5045.09 person-month (PM) observation with a median survival time of 8.23 months (IQR=2.66-23.33). The overall incidence rate of major adverse drug event was 5.79 events per 100 PM (95% CI: 5.16, 6.49). Incidence rate at the end of 2nd, 4th, 6th months was 13.73, 9.25, 5.97 events per 100 PM observation, respectively. Age (25-49) years (AHR= 3.36, 95%CI: 1.36, 8.28) and above 50 years (AHR= 5.60, 95%CI: 1.65, 19.05) respectively, co-morbid conditions (AHR= 2.74 CI: 1.12, 6.68) and anemia (AHR= 3.25 CI: 1.40, 7.53) were significantly associated with occurrence of major adverse drug event.

Conclusions/Recommendations: The incidence rate of adverse drug events in the first two to six months of treatment was higher than the subsequent months. Older age, base line anemia, and co-morbid conditions were independent risk factors associated with the occurrence of adverse drug events. Thus, addressing the significant predictors and strengthening continuous follow-up is highly recommended in the study setting.

Keywords: Adverse drug event, DR-TB patients, second-line drugs.

Incidence and Predictors of Mortality among Human Immunodeficiency Virus Infected Children on Antiretroviral Therapy in Amhara Regional State Referral Hospitals, Northwest Ethiopia, 2017: A Retrospective Follow Up Study. *Animut Alebel Ayalew.*

Background: In Ethiopia, despite the availability of highly active antiretroviral therapy for more than 13 years there is still a scarcity of data in related to the mortality rate among human immunodeficiency virus infected children on antiretroviral therapy. Therefore, the study assessed the incidence and predictors of mortality among human immunodeficiency virus infected children on antiretroviral therapy in Amhara regional state referral hospitals, Northwest Ethiopia.

Methods: An institution-based retrospective follow up study was conducted among 553 among human immunodeficiency virus infected children on antiretroviral therapy from January 1, 2012 to February 28, 2017. A simple random sampling technique was employed to select the study participants. Data were entered into Epi-data version 3.1 and analysis was done using STATA 13. Kaplan-Meier survival curve was used to estimate the survival time. Log rank tests were used to compare the survival curves between different predictor variables. The bivariable and multivariable Cox-proportional hazard regression models were fitted to identify predictors of mortality.

Results: Among 538 children, records included in the final analysis, 7.1% of them died. In The overall mortality rate of this study was 3.2 (95% CI: 2.3, 4.3) per 100 child-years. Baseline opportunistic infection (AHR: 2.5, 95% CI: 1.0, 5.6.0), low hemoglobin level (AHR: 3.1, 95% CI: 1.4, 6.7), CD4 cell count or percent below the threshold (AHR: 4.4, 95% CI: 1.7, 11.7), severe stunting (AHR: 3.3, 95% CI: 1.4, 8.0), severe wasting (AHR: 3.1, 95% CI: 1.3, 7.3) and advanced disease stage (III and IV) (AHR: 95% CI: 3.0 (1.3, 7.1) were found to be predictors of mortality.

Conclusion: There was a high rate of mortality. Baseline opportunistic infection, low hemoglobin level, CD4 count or percent below the threshold, severe wasting, severe stunting and advanced disease stage were found to be the predictors of mortality.

Keywords: ART, Children, HIV, mortality, Northwest Ethiopia.

Survival Status and Treatment Outcome of Multidrug Resistant Tuberculosis among Patients Treated in Treatment Initiation Centres in Amhara Region: Ethiopia. *Daniel Bekele ketema1*, Animut Alebel A, Cheru Tessema Lasharge, Getiye Dejenu Kibret, Moges Agazh.*

Background: The emergency of drug resistant tuberculosis is a major public health threat, however, little is known about predictors of survival of drug resistant tuberculosis cases in Amhara region, even in Ethiopia. This study aimed to describe the treatment outcome, determine the survival status and its predictors in drug resistant tuberculosis patients in Amhara region, Ethiopia.

Methods: Institutional based retrospective cohort study was carried out among laboratory confirmed drug resistant TB patients (n=498) who registered for second-line anti-tuberculosis treatment from September 1 through December 31 2017. Information on relevant variables was collected from patients' charts and registries. Data were analysed using Stata Version 14.1. Kaplan-Meier was used to estimate the cumulative survival of the patients. Log rank test was used to compare the survival function of the patient based on different baseline categorical variables. Cox proportional model was fitted to compute hazard ratios with their 95% confidence interval. Proportionality assumption was tested by global test based on scheonfeld residuals. Goodness of fit of the final model was checked by Nelson Aalen cumulative hazard function against Cox Snell residual.

Results: A total of 498 with a median age of 29.30 of [IQR: 23-41] years were analysed. The overall treatment success rate of 498 study participants was 61.41% (cure 54.13% treatment completion 7. 28%). About 14.7% deaths were reported in the follow up time with incidence rate of 8.20 [95% CI=7.62-20.50] per 1000 Person-months. Cigarette smoking (Adjusted Hazard Ratio (AHR)= 1.39: 95%CI:1.27, 3.18], Tuberculosis related complication [AHR=9.31 95%CI: 5.11, 16.97], anaemia [AHR=3.04 95%CI: 1.14, 9.20], HIV Positive [AHR=1.34 95%CI: 1.25, 3.35], and diabetes mellitus [AHR=1.8595% CI: 1.24, 5.71] were predictors of time to mortality.

Conclusion: There was a high rate of early mortality of DR-TB patients. Patients with TB related clinical complications, with baseline anaemia, HIV positive, diabetes mellitus and history of smoking were predictors of time to mortality in the course of DR-TB therapy. There should be close follow up in the early phase of treatment of patients with DR-TB

Keyword: survival status, Mortality, second line, Amhara region, predictors.

The Protective Effect of Isoniazid Preventive Therapy on Tuberculosis Incidence among HIV Patients on ART in Ethiopian Settings: A Meta-Analysis. *Demeke Geremew Debebe.*

Background: Tuberculosis (TB) and HIV makeup a deadly synergy of infectious disease, and the combined effect is apparent in resource limited countries like Ethiopia. Previous studies have demonstrated inconsistent results about the protective effect of isoniazid preventive therapy (IPT) on active TB incidence among HIV patients on ART. Therefore, the aim of this meta-analysis was, first, to determine the protective effect of IPT on active tuberculosis incidence, and second, to figure out the pooled incidence of active TB among HIV patients on ART with and without IPT intervention in Ethiopia.

Methods: PubMed, Google scholar and Cochran library databases were searched from April 1 to 30, 2018. Two authors, DG and SE searched and assessed the studies for eligibility, and extracted data based on predefined criteria. Heterogeneity of the included studies was checked by I^2 statistics, whereas publication bias was determined by funnel plot and Egger's regression test. A random effects model was used to estimate risk ratios and pooled incident TB with the respective 95% confidence intervals using Stata version 11.0 statistical software.

Results: Totally, 423 titles were retrieved and 7 studies met the inclusion criteria. Accordingly, IPT has decreased the risk of active TB incidence by 73%, risk ratio (RR) 0.27 (95% CI; 0.16%–0.43%), compared to no IPT group. Moreover, IPT treatment for 12 months has reduced incident TB by 91% (RR: 0.09, 95% CI: 0.04 to 0.21), whereas 6 months IPT intervention has averted TB incidence by 63% (RR: 0.37, 95% CI: 0.26 to 0.52). The overall pooled incidence of active TB among HIV patients on ART with and without IPT was 3.79% (95% CI; 2.03%–5.55%) and 16.32% (95% CI; 11.57%–21.06%) respectively.

Conclusion: IPT has reduced the risk of incident TB among HIV patients on ART in Ethiopian settings. Moreover, the duration of IPT intervention has effect on its protective role. Thus, scaling up the isoniazid preventive therapy program and its strict compliance is necessary to avert HIV fueled tuberculosis in Ethiopia.

Keywords: Tuberculosis, HIV, ART, Isoniazid preventive therapy, Meta-analysis.

Tuberculosis and its association with CD4+ T cell count among adult HIV positive patients in Ethiopian settings: a systematic review and meta-analysis. *Demeke Geremew Debebe.*

Background: Tuberculosis (TB) and HV have been intertwined and makeup a deadly human syndromic worldwide, especially in developing countries like Ethiopia. Previous studies have reported different TB incidences and its association with CD4^{+} T cell counts among HIV positive patients in Ethiopia. Thus, the goal of this meta-analysis was, first, to determine pooled incident TB among adult HIV positive patients, and second, to assess the association between incident TB and baseline CD4^{+} T cell count strata's.

Methods: We searched PubMed, Cochran library, Science Direct and Google scholar databases from June 1 to 30, 2018. The I^2 statistics and Egger's regression test was used to determine heterogeneity and publication bias among included studies respectively. A random effects model was used to estimate pooled incident TB and odds ratio with the respective 95% confidence intervals using Stata version 11.0 statistical software.

Results: A total of 403 research articles were identified, and 10 studies were included in the meta-analysis. The pooled incident TB among adult HIV infected patients in Ethiopia was 16.58% (95% CI; 13.25%–19.91%). Specifically, TB incidence in Pre-ART and ART was 17.16% (95% CI; 7.95%–26.37%) and 16.24% (95% CI; 12.63%–19.84%) respectively. Moreover, incident TB among ART patients with baseline CD4^{+}T cell count less than and greater/equal to 200 cells/mm^3 was 28.86% (95% CI; 18.73%–38.98%) and 13.7% (95% CI; 1.41%–25.98%) correspondingly. The odds of getting incident TB was 2.88 (95% CI; 1.55%–5.35%) for patients with baseline CD4^{+} T cell count less than 200 cells/mm^3 compared to patients with baseline CD4^{+} T cell count greater/equal to 200 cells/mm^3.

Conclusion: High incident TB among adult HIV positive patients was estimated, especially in patients with CD4^{+} T cell count less than 200 cells/mm^3. Therefore, Early HIV screening and ART initiation, as well as strict compliance with ART and increasing the coverage of TB preventive therapy to more risky groups are important to prevent the problem.

Trial registration: Study protocol registration: CRD42018090802.

Keywords: Tuberculosis, HIV, CD4^{+} T cell, Meta-analysis, Ethiopia.

Relapsing Fever Outbreak Investigation and Response in Woreda Six, Akaki Kality Sub-City, Addis Ababa, Ethiopia, 2017. *Debalke Abate Chekol.*

Background: Louse born Relapsing Fever is endemic in the mountains of Ethiopia and it accounts 27% of hospital admission. Most of the times, it occurs in the form of outbreak. In February 2017, a rise of louse-born Relapsing Fever cases was reported to Akaki Kality sub city from Akaki Kality woreda six districts. The aim of this investigation was to identify the source of infection, risk factors and recommend preventive measures to challenge the problem.

Methods: We defined suspected cases as abrupt onset of rigors with remittent fever, headache, arthralgia and myalgia and compared each of them to two unmatched Controls randomly selected from health facilities based on screening result. A total of 37 cases and 74 Controls (screened negative for Relapsing Fever clinically and by the laboratory) were interviewed. We run a Bivariate and Multivariate test to identify risk factors. We assessed the residency place, living condition, environmental sanitation and personal hygiene of the participants.

Results: We identified 70 total cases and interviewed 37 cases. The median age of cases was 20 (IQR=4). The attack rate was 16/100,000 population. Participant who was slept with greater six persons were 5.5 times more likely to develop relapsing fever than control (95% CI, 1.1, 28.0; P value 0.0379). Those individuals bathed at least weekly were 96% less likely to be affected, than those who do not take body both at all (AOR= 0.04(0.002,0.8). No significant association was observed with monthly income, contact history, change cloth at night or not, washing clothes frequently or not, age groups and sex of the respondent.

Conclusion: We verified the existence of Relapsing fever outbreaks in Akaki Kality Sub city Woreda six which was significantly associated with mass sleeping and poor Hygiene. Close follow up of disease trend is recommended to minimize the impact.

Intestinal Parasites among School Children in Wonago District, Gedeo Zone, Southern Ethiopia: Multilevel Cross-Sectional Study. *Hiwot Hailu1,2 *, Teferi Abegaz1, Bernt Lindtjørn2 1 Hawassa University, Hawassa, Ethiopia, 2 University of Bergen, Bergen,*

Background: More than 24% of the world population, and 25 million school-aged children are affected by intestinal parasites. The prevalence is about 40% in Africa. In Ethiopia the prevalence ranges between 18-81%. The aim of this study was to assess the prevalence of intestinal parasites and their risk factors among rural school children in Wenago District in South Ethiopia.

Methodology: A random sample of 864 students from the Wenago district was included in this survey using multi stage sampling. We used the Kato-Katz and formalin-diethyl ether concentration technique to detect eggs or cysts of the parasites. Measurements such as weight, height and haemoglobin were made. Information about socio-demographic characteristics, household assets, hygiene, and past child illness was collected from parents or guardians. Epi-data version 3.1 was used for data entry, and the data was analysed using SPSS and STATA software. Multilevel logistic regression model were applied to detect the predictors of intestinal parasite

Result: Out of 850 children examined, 479 56% (95% CI: 53% - 60%) were infected with intestinal parasites. Two hundred seventy six (57.6%) of the infected children were boys. The most frequent intestinal parasites were *Trichuris trichiura* 42.4% (360 children), followed by *Ascarislumbricoides* 18.7% (159), *Taenia species* 10.2% (87), *Hookworm species* 4.4% (37), *Strongyloides stercoralis 3.9% (33)* and *Hymenolepis nana* 0.2% (2). The mean egg intensity of *Ascaris lumbricoides* was 302.9 eggs per gram of stool (95% CI: 118.8 - 487.1), *Trichuris trichiura* 160.3 (95% CI: 129.6 -191.1), *Taenia species* 155.3 (95% CI: 127.8, 182.8), *Hookworm* 83.7 (95% CI: 68.3 - 99.1) *and Strongyloides stercoralis* 57.8 (95% CI: 36.8- 78.8) were observed. Multiple infection of intestinal parasite was observed among 30% (144) of the children. The odds of intestinal parasitic infection increased by 50% among anaemic children [AOR: 1.5 (95% CI: 1.04, 2.28). Thin or wasted children also had higher odds of intestinal parasitic infection [AOR: 1.82 (95% CI: 1.09, 3.04). ($p < 0.05$).

Conclusion: The prevalence of intestinal parasites was high among school children in South Ethiopia. Higher mean intensity of *Ascarislumbricoides* eggs was observed. Higher odds of intestinal parasite infections were observed among anaemic and thin children.

Key words: Intestinal parasites, Kato-Katz, Formalin-Diethyl ether concentration, School children, Southern Ethiopia.

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Malaria and its Determinant Factors in Children under the Age of Five Years in Low transmission areas of Wogera District; Northwest Ethiopia, 2017. *Adino Tesfahun Tsegaye, Andualem Ayele.*

Background: Malaria is a major public health concern in the world and children are more vulnerable. Most studies conducted in Ethiopia by different researchers mostly focused on the adult population and high transmission areas. Hence, this study aimed to determine the prevalence and associated factors of malaria in children's under the age of five years in low transmission areas.

Method: A facility based cross-sectional study was conducted in Wogera district from September to October 2017. Health facilities were selected by stratified cluster sampling while systematic random sampling technique was held to reach under-five clients (with a minimum sample size of 585) attending public health facilities. Data were collected by a structured questionnaire containing sections of socio-demographic risk factors and knowledge and prevention practices of malaria. Binary logistic regression was used to identify the determinant factors of malaria.

Result: Of 585 children who provided blood samples, 51/585 (8.7 %) were confirmed for malaria parasites. The predominant Plasmodium species were P.falciparum 33 (65%) and P.vivax 18 (35%). Regularly sleeping under Insecticide Treated Nets (ITN) (AOR=0.08, 95% CI: 0.01-0.09) was significantly associated with decreased odds of malaria infection. However, an increased odds of malaria infection was observed among children living in households where there is stagnant water in the compound (AOR=6.7, 95% CI: 3.6-12.6) and children staying outside during night time (AOR=5.5, 95% CI: 2.7-11.1) compared to their counterparts.

Conclusion and Recommendation: Prevalence of malaria in under -five children in Wogera was high. Regularly Sleeping under a bed net, staying outside during night time and presence of stagnant water around the household are the main factors associated with malaria that requires due attention in preventing malaria. Therefore, low transmission areas should get better attention in terms of malaria prevention activities on modifiable factors such as ITN distribution, environmental management and changing attitude through health education.

Keywords: Malaria, under-five children, low transmission area, Wogera, Ethiopia.

Home Management Practice of Diarrhea and Associated Factors among Doba Woreda Residents, Oromia, Ethiopia, 2017, Comparative Cross-Sectional Study. *Waktole Kebede Fufa.*

Introduction: - Diarrhea is the first cause of illness and second cause of death in under-five children. Home interventions can prevent 57% of mortality related to diarrhea. However, malpractices were common and reason for its underutilization was unclear. Scarce studies were available and knowledge and real practice of the local community was unknown. Thus, this study aimed at to assess the magnitude of home management practice and associated factors. This result will be important in community based intervention and health promotion.

Methods: The community-based comparative cross-sectional study was conducted in Doba woreda, Ethiopia, from February, 25 to March 15, 2017. Multistage cluster sampling technique used to study 559 caregivers. An interviewer administered pre-tested structured questionnaire was used to collect data on food and fluid intake and zinc supplementation after getting consent form. Diploma holders were participated in data collection. Collected data was entered into Epi Ifo version 3.5.1 and exported to statistical package for social sciences (SPSS) version 20.0 for analysis. Bi-variate and multi-variable logistic regression analysis was conducted. In bi-variate analysis p-value<0.25 was taken and included in multivariable analysis. Adjusted odds ratios with their corresponding 95% of CI were used to report results with significance level of p-value<0.05.

Result:-Total of 559 caregivers (184 from urban and 375 from rural) included in study. The mean age of caregivers was 27+6.1(SD) years. Caregivers with good knowledge were 81% for urban and 38.7% for rural residents. Poor home management practice was 91(55.8%) for urban and 286(85.6%) for rural residents among children with diarrhea in last one year. On multivariable analysis, knowledge level (AOR=2.7(1.3, 6.5) and AOR=13.4(5.3, 34.0)) and not easy to prepare ORS (AOR=4.0(1.4, 11.0) and AOR=2.4(1.3, 5.3)) were associated to home management practice both in urban and rural respectively. In urban, mothers of male index child (AOR=2.3(1.2, 4.7) and age of the mother 26-35years (AOR=0.26(0.09, 0.8) were associated to home practice and in rural, inaccessibility to zinc supplementation (AOR=2.4(1.2, 5.0)) was associated with home management practice of diarrhea.

Conclusion: - This study revealed poor home management practice of diarrhea was high in both urban and rural residents of Doba. It was higher in rural compared to urban residents. Poor practice was associated with knowledge level, age of the mother, sex of the index child and accessibility of zinc. Health education and community mobilization on home management of diarrhea is important to increase awareness and improve practice level.

Keywords: Home management practice, diarrhea, comparative, Ethiopia.

Incidence and Predictors of Attrition from Antiretroviral Care among Adults in St Paul's Hospital, Addis Ababa, Ethiopia: A Retrospective Cohort Study. *Aman Yesuf Endries.*

Background: In Ethiopia the scale up of free antiretroviral therapy (ART) services has been one of the greatest achievements of the Human Immunodeficiency Virus (HIV) programme response over the last decade. However, retention (1-attrition) is the major challenge of the ART program. Retention in care is necessary to optimize clinical outcomes in people living with HIV. More recently, it has highlighted as an important element of clinical success for the patient and the program. In Ethiopia, little is known about the long-term attrition and its predictors. Therefore, this study assesses the incidence and of predictors of attrition rate.

Methods: Retrospective cohort studies were used among adults (age ≥ 15 years) on ART. Records of adults who start treatment between June 2010 and May 2015 were retrieved. The Kaplan–Meier method used to estimate the probability of retention at different time points. The Cox proportional hazards model was used to identify factors associated with attrition.

Result: A total of 1026 HIV patients were enrolled in the ART program between June 2010 and May 2015. At the end of the 60 months of the program initiation, 77% of the patients retained on treatment, 4.8% died, and 18.2% were lost to follow up. Low body mass index (adjusted hazard ratio (AHR) was 2.93; 95% CI: 1.45–5.9); WHO stage IV (AHR 1.9; 95% CI: 1.4–3.4)) and ambulatory functional status (AHR = 1.63; 95% CI: (1.05, 2.55) were predictors of attrition.

Conclusion: the five-year attrition rates among patients living with HIV and enrolled into care were still higher, and substantial magnitude of lost to follow up was observed. Malnutrition, ambulatory functional status, and advanced WHO stage were significantly increasing the rate of attrition from treatment. Early HIV testing could help to avoid advanced WHO stage at treatment initiation. Moreover, provide and strengthening comprehensive nutritional support could be implementing to increase body mass index to normal levels which in turn improve retention in HIV care and treatment.

Prevalence of Schistosoma Mansoni Infection and Associated Factors in Irrigation Workers Gamo Gofa and South Omo Zone, 2017: A Community Based Parasitological Survey. *Eskezyiaw Agedw Getahun.*

Introduction- Schistosomiasis is one of the most prevalent parasitic diseases and an important public health problem in many developing countries. In this era of global warming and climatic change, the epidemiology of temperature-dependent infectious diseases could be changing implying the possibility of new transmission area in the world in general and in Ethiopia in particular.

Objective: To assess prevalence of *Schistosoma mansoni* infection and associated factors in irrigation workers in Gamo Gofa and South Omo Zone, 2017.

Methods: Community based cross-sectional parasitological survey was conducted from March to June; 2017. Data was collected by using pre tested structured questionnaire and stool sample was collected from each participant for laboratory investigation. Kato-katz technique was used as recommended by world health organization for stool laboratory investigation to relevant variables. Descriptive frequencies like cross tabulation was calculated to describe the study population. Binary and Multivariable logistic regression analysis was undertaken to assess the presence and degree of association between dependent and independent variables.

Result:: The prevalence of *schistosoma mansoni* was 14% [95%CI; (12.2, 15.8)] and the rest have negative stool result after conducting stool concentration. Respondents with poor knowledge AOR; 2.18 (1.12, 4.85), who were not wearing shoes (bare foot) AOR; 1.44(1.15, 4.12) and who have not moving from one agricultural site to other sites; AOR 0.38(0.15, 0.35) were identified significant associated factors with *schistosoma mansoni* infection.

Conclusion and Recommendations: The prevalence of *schistosoma mansoni* infection is moderate based on world health organization schistosoma prevalence classification. Improving community knowledge on prevention methods and considering adult agriculture workers in South Omo Zone Nary River basin for mass drug treatment. Improving habit of wearing protective shoes, avoiding frequent contact with contaminated water bodies during bathing, swimming and crossing of water bodies' were essential behavioral factors to reduce the infection *schistosoma mansoni.*

Keywords: *Schistosoma mansoni*, Irrigation workers, Parasitological survey.

Magnitude of Helicobacter Pylori Infection and Associated Risk Factors among HIV Patients, in Yeka Health Center Cross sectional Study. *Getachew seid1, kassu desta2, aster tsegaye2 1. Ethiopian public health institute 2. Addis Ababa University College of Health Science.*

Background: *Helicobacter pylori* is a spiral bacterium with flagella and a potent producer of urease. HIV-1 infected patients experience many form of opportunistic infections including gastro intestinal symptoms. The overall prevalence of *H. pylori* is suggested to be correlated with socioeconomic conditions. This study aims to assess the magnitude of *H.pylori* infection among HIV-patients and its correlation with hemoglobin level and associated risk factors for the prevalence of the infection.

Methods: A cross sectional study was conducted at *Yeka sub city* which is located in north east of Addis Ababa. A cross sectional study was conducted to determine the prevalence of *Helicobacter pylori* based on stool antigen detection on HIV patient who were on ART follow up from January, 2017 to June, 2017.

Result: A total of 370, study participants were enrolled in this study, which 126(34.0%) were males and 244 (66.0%) females. The mean (SD) age of the study subjects was 37(10.44) years with the range of 18 - 70 years. We did not register statistically significant differences regarding the level of education (p=.416), siblings (p=0.785), alcohol consumption (p=0.618), cigarette smoking and lack of employment (p=0.673) between *H.pylori* positive and negative subjects. The mean Hemoglobin of the study participant was 11.6 g/dl. The mean Hemoglobin of *H.pylori* positive and negative subjects was 11.1 g/dl and 11.9 gm/dl respectively.

Conclusion: The overall stool antigen prevalence of *H. pylori among HIV patients* at *Yeka* Health center was 31.6%. In our study we did not got any significant association between *H.pylori* and its risk factors like Cigarette smoking, WHO stage, alcohol drinking and others which needs further study.

Keywords: HIV, Helicobacter pylori, Prevalence, Stool Antigen Test, Hemoglobin.

Is Tuberculosis a Burden to the Shopkeepers in Bahir Dar City, Northwest Ethiopia: A Cross-Sectional Survey. *Mulusew Andualem Asemahagn.*

Background: Tuberculosis, an infectious disease caused by Mycobacterium Tuberculosis, is a disease of all humankind, age groups, gender, and body parts. Despite several interventions at different levels, it continues to be a major global public health concern, with greater burdens in developing countries.

Objective: This study was aimed at assessing pulmonary TB prevalence and associated factors among shopkeepers in Bahir Dar City, Northwest Ethiopia.

Methods: A cross-sectional study was conducted in 2016 among 520 shopkeepers who had suggestive TB signs and symptoms. Data were collected by face to face interview using a pretested questionnaire, and sputum samples processing. Shopkeepers were considered TB positive if two sputum slides became positive. Data were edited and analyzed using the SPSS version 23. Various descriptive statistics were computed to describe study variables. Bivariate and multivariable logistic regression analysis were used to identify factors associated with TB infection. The significant association was described using the odds ratio at 95% CI.

Results: A total of 520 shopkeepers, 57.0% of females, were interviewed and gave sputum samples. The mean age of the shopkeepers was 30±5 years and 49.2% were under ≤30 years age category. About 22.0% of the shopkeepers can read and write, 65.0% were Muslims, and 32.0% originated from the rural areas. The pulmonary TB prevalence was 7.0% (37/520) with a positivity proportion of 57.0% (21/37) in males and 70.0% (26/37) in urban residents. Less than half (42.0%) of the shopkeepers had contact with TB cases, and 70.0% of them were non-ventilated. Smaller (44.0%) shopkeepers got health education on TB. Illiteracy, no health education, contact history, cigarette smoking, non-ventilated shops, and comorbidities history were statistically significant factors for TB infection (p-value < 0.05).

Conclusions and Recommendations: TB has infected significant numbers of shopkeepers in the study area. Factors for TB infection are summarized as personal, comorbidities and environment related. Therefore, TB officials need to especially emphasize on awareness creation, occupational health, identifying possible risky areas, and scale-up of early screening to prevent TB infection in the study area.

Keywords: TB, prevalence, factors, shopkeepers, Bahir Dar City, Ethiopia.

Predictors of Time to First Line Antiretroviral Treatment Failure among Adult Patient Living with HIV in Public Health Facility of Arba Minch Town, Southern Ethiopia; Retrospective Cohort Study. *Negussie Boti Sidamo.*

Background: Antiretroviral therapy is a proven medication given for Human Immunodeficiency Virus positive individuals. However, first-line antiretroviral treatment failure becomes a public health issue and early detection of treatment failure is crucial for timely actions. Therefore, this study aims to identify the predictors of time to first-line antiretroviral treatment failure among adult patient living with HIV in public health facilities of Arba Minch town.

Methods: Institution-based retrospective cohort study was employed among 396 adult patients that were selected using simple random sampling. The data on relevant variables were extracted from patient medical cards. The bi-variable and multivariable Cox proportional hazard regression analyses were used to identify predictors.

Findings: The median survival time was 21 months. History of substance use (AHR=2.94, 95% CI=1.62 to 5.32), advanced WHO clinical stage (AHR=2.02, 95% CI=1.02 to 4.00), under nutrition (AHR=3.78, 95% CI=1.99 to 7.17), CD4 count less than 200 cell/mm3(AHR=1.99, 95% CI=1.05 to 3.75), bedridden functional status (AHR=2.71 95% CI=1.33 to 5.51), poor adherence to ART (AHR=1.99, 95% CI=1.05 to 3.76) and time since HIV diagnosis (AHR=2.19 95% CI=1.01 to 4.79) were independent predictors of time to first line ART treatment failure.

Conclusions: History of substance use, lack of disclosure status, time since HIV diagnosis, low CD4 counts, opportunistic infection, bedridden functional status, poor adherence to ART, and under-nutrition affect the time to first-line treatment failure. Therefore, strengthen the early screening and giving nutritional intervention as well as maintain CD4 count in the normal range is very important.

Treatment Delay and Associated Factors among Adult Drug Resistance Tuberculosis Patients at Treatment Initiating Centres, Amhara Region, Ethiopia. *Kenaw Tegegne Tefera[1*], Nebiyu Mesfin[2], Mebratu Mitiku Reta[2], Malede Mequanent Sisay[3] Koku Sisay Tamirat[3], Temesigen Yehunie Akalu[3]* *[1] University of Gondar Comprehensive Specialized Hospital, Gondar, Ethiopia [2] Department of Internal Medicine, School of Medicine, College of Medicine and Health   Sciences, University of Gondar, Gondar, Ethiopia.*

Background: Delayed initiation of tuberculosis treatment results in higher morbidity, mortality, and increased person-to-person transmission. The aim of this study was to assess treatment delay and its associated factors among adult drug resistant tuberculosis patients in Amhara Region, Ethiopia.

Methods: An institution based cross sectional study was conducted among all adult drug resistance tuberculosis patients who were initiated treatment from September 2010 to December 2017. Data were collected from patient chart, registration book, and computer data base using abstraction sheet. Data entered using Epi-info version 7 and exported to SPSS version 20 for analysis. Summary statistics like median was carried out. Binary logistic regression was fitted; adjusted odds ratio (AOR) with 95% CI was also computed. Variables with p-value less than 0.05 in the multi variable logistic regression model were considered as significantly associated with treatment delay.

Results: The median time to commence treatment after drug resistance tuberculosis diagnosis was 8 (IQR: 3-37) days. The prevalence of treatment delay was 48.3% [95% CI: 44.0%-52.8%]. Diagnosed by Line probe assay [AOR=5.59; 95% CI: 3.48- 8.98], Culture [AOR=5.15; 95% CI: 2.53-10.47], and history of injectable anti-TB drug [AOR=2.12; 95% CI: 1.41- 3.19] were found to be significant factors associated with treatment delay.

Conclusion: Considering the infectiousness of the disease, drug resistance tuberculosis treatment expected to be commenced immediately after diagnosis. However, in this study treatment delay was longer and nearly half of the patients experienced treatment delay. Prior history of injectable anti-TB drug and diagnostic modalities were significantly associated with treatment delay. This suggests that the need of universal accesses of rapid molecular diagnostic test such as, expert and it may be good to provide intensive health education especially for those who had previous history of injectable anti-TB drug.

Keywords: Drug resistant tuberculosis, Treatment delay, Amhara Region.

Oral Presenters

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Abrham Getachew Dullo
Abriham Zegeye
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Addisu Melese
Adugna Endale Wodegiorgis
Aklilu Abrham Roba
Alemnesh Hailemariam
Amha Admasie Gelaye
Andamlak Dendir Egata
Anene Tesfa Berhanu
Animut Alebel Ayalew
Ashenafi Assefa
Atkure Defar Deghebo
Awoke Derbie
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Tesfa Mekonen
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Teshome Wakjira Tike
Tewodros Yosef
Theodros Getachew Zemedu
Wote Amelo Rike
Yaregal Animut Abebi
Yeneneh Getachew Haile
Yilkal Tafere Gualie
Zegeye Abebe Abitew
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Zemenu Yohannes Kassa

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Degefaye Zelalem Anlay
Dejene Ermias Mekango
Demeke Geremew Debebe
Demiss Mulatu Geberu
Desalegn Tsegaw Hibstu
Dube Jara
Ermyas Brhane Reda
Eshete Melese Biru
Eshetu Zerihun Tariku
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