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Welcome to the second volume of the International Institute for Primary Health Care-Ethiopia's (IPHC-E) Primary Health Care Digest! The purpose of the Digest is to share the latest news and research on primary health care from Ethiopia.

In our inaugural issue, we start with an editorial from senior IPHC-E staff on covid-19 vaccine hesitancy. Following that are an update on drug-sensitive and drug - resistant tuberculosis, community engagement, and nutrition services and stunting reduction at primary health care units in Ethiopia.

Thank you for your interest in and support for primary health care.
We hope you enjoy the Digest!

COVID-19 VACCINE HESITANCY

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The COVID-19 pandemic has continued to be a serious public health threat worldwide. As of 15 February 2022, there had been more than 412 million (412,351,279) confirmed cases with SARS-CoV-2 and nearly 6 million deaths (5,821,004). On the other hand, more than 10 billion doses of vaccine have been administered globally (1). Vaccination against COVID-19 lowers infection and severity of the disease including reducing hospitalization and death rates (2). The 74th World Health Assembly issued a resolution recognizing the role of extensive immunization as a global public-health goal for preventing, containing and stopping transmission of SARS-CoV-2 with due consideration of equitable distribution (3). The introduction of vaccines has added a strong arm to the prevention programs in the fight against COVID-19 pandemic. Although most of the interventions are applied in a similar way globally, the introduction of COVID-19 vaccine has brought marked variability in the availability, adoption and coverage of the vaccination.

Vaccine acceptance varies across countries and groups of populations and the existing dynamics in countries. Large variability in COVID-19 vaccine acceptance rates was reported in different countries and regions of the world. For instance, lower rates of COVID-19 vaccine acceptance were reported in the Middle East, Russia, Africa and several European countries. A sizable number of studies had reported COVID-19 acceptance rates lower than 60%, which would pose a serious problem for efforts to control the current COVID-19 pandemic (4). A study that reviewed findings from 13 countries in Africa, South Asia and Latin America compared acceptance rates with those from two countries leading vaccine research and development: Russia and the United States. The countries included low-income countries (Burkina Faso, Mozambique, Rwanda, Sierra Leone and Uganda), lower-middle-income countries (India, Nepal, Nigeria and Pakistan) and one study in an upper-middle-income country (Colombia)(5). The average acceptance rate across the full set of studies in LMICs was 80.3%, with the lowest acceptance in Burkina Faso (66.5%) and Pakistan (66.5%); moreover, the acceptance rate in every sample from LMICs was higher than that of samples from the United States (64.6%) and Russia (30.4%) (5). In the USA, more than 25% of adults are still unvaccinated against Covid-19—and repeated surveys showed that the percentage of Americans refusing to get the shot has largely remained unchanged since the vaccine's early days (6).

Africa Center for Disease Control and Prevention, in partnership with the London School of Hygiene and Tropical Medicine, conducted a review between August and December 2020, involving 15 African countries (Burkina Faso, Côte d'Ivoire, The Democratic Republic of the Congo, Ethiopia, Gabon, Kenya, Malawi, Morocco, Niger, Nigeria, Senegal, South Africa, Sudan, Tunisia and Uganda) (7). This study found considerable differences in willingness among nations and throughout the continent's five regions. Willingness ranged from 94 percent and 93 percent in Ethiopia and Niger to 65 percent and 59 percent in Senegal and the Democratic Republic of Congo, respectively. It was also found that the majority of respondents in Africa (79%) would be vaccinated against COVID-19 if the vaccines had protective benefits and were safe, making trust a key issue in COVID-19 vaccination programs (7).

Although vaccine hesitancy is not new, it remains one of the most serious dangers to global health in the era of COVID-19 pandemic. Vaccine hesitancy or resistance jeopardizes the potential to eliminate infectious diseases and affects the possibility of reaching a higher

level of herd immunity through vaccination. As the proportion of unvaccinated people remains high, the number of reservoirs for SARS-Cov-2 virus infection increases, potentially sustaining the spread of COVID-19 at any given time. (8).

Vaccine hesitancy is associated with different sociodemographic factors. Ebrahimi et al reported that males, rural inhabitants, and parents with children under the age of 18 were not willing to be vaccinated. Individuals who favor unmonitored media channels (e.g., peer-to-peer information, social media, online forums, and blogs) showed higher vaccine hesitancy than those who relied on verified sources or platforms (9). A considerable proportion (38%) of participants from 6 Arkansas primary care clinics (USA) had revealed COVID-19 vaccine hesitancy. In the same study, women, respondents with a high school diploma and below and respondents with some college or a technical degree, Black/ African Americans showed significantly higher COVID-19 vaccine hesitancy (10).

The '5C model of the causes of vaccination hesitation,' developed from studies in high-income nations, identifies five primary individual–level reasons for vaccine reluctance: Confidence, Complacency, Convenience (or restrictions), Risk Calculation, & Collective responsibility (11,12).

Perceived vaccine risk, safety concerns, doubts about the efficacies of vaccines or confusion on protection level and some severe side effects of few vaccines were associated with vaccine hesitancy (5,8,9,13). Religious beliefs, conspiracy theories and paranoid beliefs, poor health literacy, lack of awareness about the virus, misinformation or lack of accurate knowledge about the vaccines, distrusting of experts and authority figures were also associated with vaccine hesitancy (14,15). Moreover, mistrust and suspicion of medical companies, deficient legal liability from the vaccine manufacturers and lack of confidence in the vaccine preparation (political and economic intentions driving the vaccine preparation) were also associated with vaccine hesitancy (8,12). Underlying this, current evidence suggests that several factors are likely to be operating differently between those who are hesitant or resistant versus those who are accepting COVID-19 vaccine. It includes psychological dispositions, cognitive styles, emotion, beliefs, trust, and socio-political attitudes (14).

Further review indicates that medical professionals show some variability among its groups. A study to evaluate COVID-19 vaccine hesitancy among US medical students showed nearly all participants had positive attitudes towards vaccines and agreed they would likely be exposed to COVID-19; However, only 53% indicated they would participate in a COVID-19 vaccine trial and 23% were unwilling to take a COVID-19 vaccine immediately upon FDA approval (16). According to multicenter research in the Israeli population that was conducted anonymously to medical staff and civilians, the rate of acceptability for the COVID-19 vaccine among physicians and nurses was lower than the percentage of acceptance for seasonal influenza vaccination (13). The acceptance rate was higher among doctors which was comparable to the general population (75%) than nurses, 78% vs 61% respectively. Variations were also noted among different specialties. Healthcare personnel in internal medicine departments had a higher acceptance rate (91%) than those in general surgery departments (75%). Moreover, medical teams in the COVID-19 department had a higher acceptance rate (94%) than those in non-COVID-19 departments (77%). Those who were providing care to COVID-19 patients and those providers that felt at risk of infection expressed a higher acceptance rate than nurses, health care workers not providing care and parents (13). With regards to concerns, physicians and the general public are most concerned about the vaccine's safety (13). Students willing to immediately take the vaccine were more likely to trust public health experts, have fewer concerns about side effects and agree with vaccine mandates (16).

The causes behind COVID-19 vaccination acceptance and skepticism are yet unknown. As additional SARS-CoV-2 mutations emerge, the situation becomes even more complicated (17), and when new

vaccinations are released, it will be critical to strike a fine balance between conveying what is known and admitting the unknowns. Researchers and pharmaceutical companies should be as open as possible, with research data on COVID-19 vaccinations publicly accessible.

On the individual level, emphasis should be placed on the perceived risk of vaccination, and further highlight the importance of combating the inaccurate assumption of the superiority of natural immunity. Interventions on the community level impact larger numbers of individuals and should be prioritized. At this level, proposed ways to counter vaccine hesitancy include transparency in policy-making decisions regarding the vaccination program and clear provision of information about the rigorous process that underlies the approval of new vaccines (9). Taking a multi-sectoral strategy for overcoming vaccine apprehension entails establishing collaboration among various stakeholders, such as the government, private companies, religious groups, and other agencies. This approach helps to leverage knowledge, expertise, and resources, resulting in long-term public trust in vaccines (8).

Governments should be open about their COVID-19 response initiatives and vaccine availability, as well as the processes used to make crucial choices. Documenting and reporting of adverse events following vaccination is an important part of evaluating vaccination program implementation. While it's necessary to document and report these incidents, excessive media coverage may deter individuals from becoming vaccinated. As a result, the media should report in a responsible and honest manner, presenting viewers with clear and balanced information. Finally, anyone who uses the internet and social media (including scientists and physicians) should do it responsibly to avoid distributing erroneous information or using language that may be misunderstood, thus increasing vaccination apprehension (18).

Refrences

1.World Health Organization. WHO Health Emergency Dashboard. WHO (COVID-19) Home page. 15 February 2022. Covid19.who.int

2. Thanapluetiwong S, Chansirikarnjana S, Sriwannopas O, Assavapokee T, Ittasakul P. Factors associated with COVID-19 Vaccine Hesitancy in Thai Seniors. Patient Prefer Adherence. 2021; 15:2389–403. Doi: 10.2147/PPA.S334757.

3. World Health Organization, Seventy-Fourth World Assembly Provisional Agenda item 17.2: Independent oversight and advisory committee for the WHO health emergencies program. A74/16 5 May 2021. Available from: https://apps.who.int/gb/ebwha/pdf_files/WHA73/A73_R1-en.pdf

4. Sallam, M. COVID-19 Vaccine Hesitancy Worldwide: A Concise Systematic Review of Vaccine Acceptance Rates. Vaccines 2021, 9, 160. https://doi.org/10.3390/ vaccines9020160

5. Arce J.S, Warren S.S, Meriggi, N.F et al. COVID-19 vaccine acceptance and hesitancy in low- and middle-income countries | Nature Medicine.2021 Jul 16; 27: 1385-1394. https://doi.org/10.1038/s41591-021-01454-y

6. Durkee A. Here's How Covid-19 Vaccine Hesitancy Has (And Hasn't) Changed Over 2021 [Internet].

Forbes. [cited 2022 Jan 1]. Available from: https://www.forbes.com/sites/alisondurkee/2021/12/26/heres-how-covid-19-vaccine-hesitancy-has-and-hasnt-changed-over-2021/

7. Africa CDC and LSHTM. Majority of Africans would take a safe and effective COVID-19 vaccine [Internet]. [cited 2021 Nov 25]. Available from: https://africacdc.org/news-item/majority-of-africans-would-take-a-safe-and-effective-covid-19-vaccine/

8. Dhama K, Sharun K, Tiwari R, et al. COVID-19 vaccine hesitancy - reasons and solutions to achieve a successful global vaccination campaign to tackle the ongoing pandemic. Human Vaccines & Immunotherapeutic. 2021 Oct 3;17(10):3495–34999. doi: 10.1080/21645515.2021.1926183.

9. Ebrahimi OV, Johnson MS, Ebling S, Amundsen OM, Halsøy Ø, Hoffart A, et al. Risk, Trust, and Flawed Assumptions: Vaccine Hesitancy During the COVID-19 Pandemic. Frontiers in Public Health. 2021;9:700213. https://doi.org/10.3389/fpubh.2021.700213

10. McElfish PA, Willis DE, Shah SK, Bryant-Moore K, Rojo MO, Selig JP. Sociodemographic Determinants of COVID-19 Vaccine Hesitancy, Fear of Infection, and Protection Self-Efficacy. Journal of Primary Care & Community Health. 2021 Dec;12:21501327211040744. doi: 10.1177/21501327211040746.

11. Betsch C, Schmid P, Heinemeier D, Korn L, Holtmann C, Böhm R. Beyond confidence: Development of a measure assessing the 5C psychological antecedents of vaccination. PLOS ONE. 2018 Dec 7;13(12):e0208601.

12. Wiysonge CS, Ndwandwe D, Ryan J, Jaca A, Batouré O, Anya B-PM, et al. Vaccine hesitancy in the era of COVID-19: could lessons from the past help in divining the future? Human Vaccines & Immunotherapeutics. 2021 Mar 8;0(0):1–3. https://doi.org/10.1080/21645515.2021.1893062

13. Dror AA, Eisenbach N, Taiber S, Morozov NG, Mizrachi M, Zigron A, et al. Vaccine hesitancy: the next challenge in the fight against COVID-19. Eur J Epidemiol. 2020 Aug 1;35(8):775–9.

14. Murphy J, Vallières F, Bentall RP, Shevlin M, McBride O, Hartman TK, et al. Psychological characteristics associated with COVID-19 vaccine hesitancy and resistance in Ireland and the United Kingdom. Nature Communications. 2021 Jan 4;12(29)). https://doi.org/10.1038/s41467-020-20226-9

15. Dereje N, Tesfaye A, Tamene B, Alemeshet D, Abe H, Tesfa N, et al. COVID-19 Vaccine hesitancy in Addis Ababa, Ethiopia: A mixed-methods study [Internet]. 2021 Mar [cited 2021 Nov 24] p. 2021.02.25.21252443. Available from: https://www.medrxiv.org/content/10.1101/2021.02.25.21252443v1

16. Lucia VC, Kelekar A, Afonso NM. COVID-19 vaccine hesitancy among medical students. Journal of Public Health. 2021; 43(3):445–449. doi: 10.1093/pubmed/fdaa230.

17. Abdool Karim SS, de Oliveria T. New SARS-CoV-2 Variants — Clinical, Public Health, and Vaccine Implications. N Engl Med. 2021; 384 (19): 1866-1868. | NEJM [Internet]. [cited 2021 Nov 25]. Available from: https://www.nejm.org/doi/full/10.1056/NEJMc210036

18. Machingaidze S, Wiysonge CS. Understanding COVID-19 vaccine hesitancy. Nat Med. 2021 Aug;27(8):1338–9.

Recent advances in diagnostics and treatment for drug-sensitive and drug - resistant tuberculosis

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About one-third of the world population is harboring Mycobacterium Tuberculosis(TB) bacilli in a dormant form putting them at risk of developing the active disease during their lifetime (1). Although TB is a curable disease, the chances of cure become slim as the disease progresses to multidrug resistance and even worse as it becomes extensively drug- resistant (2). Only a few advances were made in developing rapid diagnostic tests and new drug discoveries for the treatment of both drug- sensitive and drug- resistant TB. In the last few decades however, modifications in drug regimens have shown promising improvements in shortening the duration of treatment in both groups i.e. drug sensitive and resistant groups. In order to understand the progress made in TB diagnostics and treatment, it is important to see some historical aspects of the different types of tests developed and new drugs and regimen modifications for the treatment of TB.

Historical facts about developments in TB diagnostics

Sputum smear microscopy

This test was developed in the 1870s and 1880s by a German Scientist, Robert Koch which he used to identify a rod-shaped bacterium, Mycobacterium tuberculosis as well as several bacteria that cause other diseases (3). Although the technique is simple and can be performed even in the low-level facilities, it is not very sensitive. A high concentration of bacilli is needed for the lab technician to detect ten or more organisms needed for a positive result making the false negativity rate higher. Despite its low sensitivity, microscopy remains the main method for the diagnosis of Pulmonary TB in developing countries (4).

Fluorescence Microscopy

Light- emitting diode FM has been proposed as a technique to increase the sensitivity of smear examinations. Previous studies showed that LED-FM was approximately 10% more sensitive than conventional microscopy using Ziehl Nelson technique and had comparable specificity. A study in Ethiopia to investigate the diagnostic performance of LED-FM in the diagnosis of smear negative pulmonary TB showed that Light-emitting diode FM detected tuberculosis bacilli in 39% of culture-positive but ZN smear negative patients (4). Thus, FM has a better sensitivity than the conventional smear microscopy and it can be used as a better screening tool.

Semi-automated and liquid culture

Liquid culture can be used with any specimen type. The primary advantage of liquid culture is that the growth of MTB cells is more rapid (10-14 days) than culture on solid media, permitting faster diagnosis. In 2007, a WHO Expert Group endorsed the use of liquid culture for the identification of MTB and DST (drug susceptibility test) based on the performance of the BD mycobacterial growth indicator tube (MGIT™). The drawbacks of the endorsement, however, was shown to require laboratories with uninterrupted power supply for critical equipment and appropriate infrastructure and biosafety procedures to prevent laboratory-acquired infections and also has a higher contamination rate (5).

Solid culture

Solid culture for isolation of Mycobacterium TB is the gold standard and allows phenotypic drug sensitivity tests for the first-line anti-TB drugs. The limitation for solid culture is the longevity for reporting the final result (about 6 weeks). Regarding which solid media is the best, a study by Moses L Joloba and et.al. showed that the MTB recovery rate among all solid media for pre-treatment specimens was similar. After 8 weeks, selective (S) 7H11 had the highest positivity rate. Latent class analysis was used to construct the primary reference standard. The 98.7% sensitivity of 7H11S and the 82.6% specificity of 7H10S were highest among the 5 solid media and the results support 7H11S as the medium of choice (6).

Xpert MTB/RIF

Since 2007, after WHO endorses commercial liquid culture and DST, new technologies were more focused on genotypic testing which showed good improvements in the detection of TB and also for DST purposes. This is shown below in the summary of technologies reviewed by WHO for drug susceptibility testing (6). The most interesting test developed in the last decade which attracted more than 50 companies to conduct research on developing rapid genotypic tests is the Xpert MTB/RIF genotypic test. It is a cartridge-based molecular assay which enables rapid detection of M. tuberculosis and simultaneous identification of rifampicin resistance directly from clinical specimens. The test requires little training and can be done in every facility. Constraints to widespread rollout include cost, need for continuous power supply, sensitivity to high temperatures, and assay throughput (6). Pooled estimates of sensitivity and specificity of the assay for tuberculosis detection from studies of patients with presumed pulmonary tuberculosis are 89% and 99%, respectively (7).

Summary of technologies reviewed by WHO for drug susceptibility testing

Year	Method	Technology reviewed by WHO
2007	Phenotypic	Commercial liquid culture and DST
2008	Genotypic	Molecular LPAs for first-line anti-TB drug resistance detection
2010	Phenotypic	selected noncommercial DST methods (MODS, CRI, NRA)
2010	Genotypic	Xpert MTB/RIF
2016	Genotypic	Molecular LPAs (Line Probe Assays) for second-line anti-TB drug resistance detection

In summary: Although TB diagnosis in many countries still relies on sputum microscopy, new diagnostics are starting to change the landscape. The success and rollout of Xpert MTB/RIF has stimulated a considerable interest in new technologies, but Research and Development (R & D) funding commitments now need to catch up with the interest expressed. The landscape looks promising with a pipeline of new tools, particularly molecular diagnostics, and well over 50 companies are actively engaged in product development. However, new diagnostics are yet to reach scale, and there needs to be greater convergence between diagnostics development and the development of shorter TB drug regimens.

Historical timelines of discovery of tuberculosis drugs and introduction of tuberculosis treatment regimens used at the programmatic level.

1946: first randomized clinical controlled trial: streptomycin monotherapy caused resistance

1952: first regimen: Streptomycin, aminosalicylic acid, and isoniazid for 24 months

1960s: aminosalicylic acid was replaced by streptomycin, isoniazid, and ethambutol for 18 months

1970s: streptomycin, isoniazid, rifampicin and ethambutol for 9-12 months

1980s: isoniazid, rifampicin, pyrazinamide, ethambutol for 6-8 months (oral)

According to the WHO Global TB report in 2021, there is progress in the development of new TB diagnostics, drugs and vaccines, but this is constrained by the overall level of investment. In August 2021, there were 25 drugs for the treatment of drug-susceptible TB, MDR-TB or TB infection in Phase I, Phase II or Phase III trials. These drugs comprise 16 new chemical entities, two drugs that have received accelerated regulatory approval, one drug that was recently approved by the US Food and Drug Administration, and six repurposed drugs. Various combination regimens with new or repurposed drugs, as well as host-directed therapies, are in Phase II or Phase III trials (8). An effective regimen for the treatment of both drug sensitive and multidrug- resistant tuberculosis is in place which took several years after a limited success. In the 1970s, an effective combination for drug-sensitive TB (isoniazid, rifampicin, ethambutol and pyrazinamide) had been proven and came to be referred to as the 'Short Course Chemotherapy' and was adopted all over the world (9). This was the first successful regimen for the treatment of TB. Modification of drug scaffolds, an approach based on activity against MTB cells in vitro, led to yield potent analogs. Some examples of scaffolds were nitroimidazoles and several newer rifampicins, isoniazid, and ethambutol analogs (9). Efforts on studying the first derivative of 5-nitroimidazole led to the discovery of CGI-17341, a bicyclic imidazofuran, which was shown to be effective against tuberculosis. Continued chemistry on this molecule led to several analogs among which PA-824 (Pretonamid) and OPC-67683 (Delamanid) have recently been registered as anti-TB drugs and are constituents of the current Multi drug-resistant (MDR) regimen (9). Based on clinical trials to shorten the duration of treatment for MDR-TB from 20-24 months, WHO adopted a 9-month regimen in 2016. However, this shorter regimen includes too many drugs (seven in number including an injectable) and repurposed anti-TB drugs including linezolid, or newly developed drugs including Delamanid and bedaquiline have been introduced for MDR-TB treatment (10). A meta-analysis of 12 non-randomized studies showed that 82% of patients treated with a linezolid-containing regimen demonstrated favorable treatment outcomes (11). Whether adding bedaquiline to fluoroquinolone would improve treatment outcomes of fluoroquinolone-susceptible MDR-TB is still being evaluated in stage 2 of the STREAM (Evaluation of a Standardized Treatment Regimen of Anti-Tuberculosis Drugs for Patients with Multidrug-Resistant Tuberculosis) trial. Along with drug resistance and the emergence of COVID-19, the progress in TB control has been shown to be compromised to a certain extent in 2020 and 2021 (8).

In summary, the last decade has seen three new drugs being licensed; bedaquiline, Delamanid and Pretonamid, and combinations of these new drugs, existing and repurposed drugs are leading to improved cure rates for the treatment of MDR-TB (12).

In Ethiopia, to date, there is no reliable and accurate point-of-care TB diagnostic tool to detect all patients with active TB leaving one-third of the estimated cases undetected. The diagnosis of tuberculosis relies on the identification of individuals who meet the clinical criteria of presumptive tuberculosis, conducting

proper evaluation for tuberculosis and other conditions followed by investigation with sensitive tools. All presumptive pulmonary TB cases should submit for bacteriologic examination with Xpert MTB/RIF assay or sputum microscopy. If Xpert service is accessible on the same day, Xpert MTB/RIF test is recommended as the initial diagnostic test for all persons with presumptive TB. If not available on the same day, sputum microscopy should be used as the primary diagnostic test for tuberculosis in the interim to avoid diagnostic delay. In the meantime, a sputum specimen should be sent for Xpert testing for eligible population groups including HIV positives, children, and previously treated or other DR-TB risk group patients to detect additional cases of TB and/or screen for possible RR-TB (Rifampicin resistant TB). All individuals diagnosed with TB should undergo a drug sensitivity screening test at least for Rifampicin at baseline using the DST technique preferable by Xpert or FL-LPA (first line-Line probe assay). Regarding treatment, Ethiopia has adopted the shorter 6-months treatment for drug-sensitive TB using Rifampicin (R), INH (H), Pyrazinamide (Z) and Ethambutol (E) for the first two months and RH for additional 4 months and the WHO-recommended 9-month regimen consisting of seven drugs for Rifampicin-resistant or multi-drug resistant TB [Kanamycin (Km), Moxifloxacin (Mfx), Clofazimine (Cfz), Ethambutol (E), Pyrazinamide (Z), High dose INH (HH) and Protionamide (Pto) for 4 months and the 6 P.O. drugs for 5 months). The shorter treatment duration is believed to benefit patients and also the health system burden as it significantly shortens the need to administer treatment for up to two years. A lot of health care workers in both treatment initiating sites (hospitals) and treatment follow up centers (health centers) are trained for the programmatic management of RR/MDR TB and household members of patients are also trained for supervising treatment adherence (13).

There are sentinel reports of pre-extensively and extensively drug-resistant TB among MDR-TB patients. One study done in the Amhara region found that overall, 6.3% of MDR-TB isolates were resistant to at least one of the second-line drugs. Pre-XDR TB and XDR-TB isolates accounted 5.7% and 0.6% respectively. Moreover, 3.4% were resistant to Fluoroquinolones and 3.4% were resistant to second-line injectable drugs (14). Second-line DST is not available for patient management services in Ethiopia unless it is for research purposes. This is a great challenge for the control of pre-XDR and XDR-TB. There is no standardized treatment for both conditions and treatment is based on individualized approaches which might include the new drugs bedaquiline, delamanid and other drugs like linezolid.

Refrences

1.FMOH Ethiopia. National Guideline for TB, DR-TB and Leprosy. 2017. 6th Edition. Nov 2017

2. T. U. Marie et al. A review of recent advances in anti-Tubercular drug development. Indian Journal of Tuberculosis. Vol 67, Issue 4, Oct 2020, Pages 539-559. https://doi.org/10.1016/j.ijtb.2020.07.017

3. Theo Smart. Background on smear microscopy in TB diagnosis. 23 March 2007. https://www.aidsmap.com/news/mar-2007/background-smear-microscopy-tb-diagnosis

4. Abebe G, Aragaw D, Tadesse M. Fluorescence microscopy for the diagnosis of smear negative pulmonary TB in Ethiopia. Afr J Lab Med. 2020; 9(1), a810. https://doi.org.10.4102/ajilm.v9i1.810

5. O. K. Chinedum et. al. A review on tuberculosis in Human Immunodeficiency Infection. Int. J. Curr. Res. Med. Sci. (2018). 4(1): 51-80

6. Moses L. Joloba et. Al. What is the most reliable solid culture medium for tuberculosis treatment trials? Tuberculosis, Vol 94, issue 3, May 2014, pages 311-316

7. Steingart KR et. al. 2014. Xpert MTB/RIF assay for pulmonary TB and rifampicin resistance in adults. Cochrane Database Sys Rev (1): CD009593

8. WHO. Global Tuberculosis Report, 2021, pages 26-27.

9. Balachandra Bandodkar et. al. Two Decades of TB Drug Discovery Efforts-What Have We Learned? Appl.Sci. 2020, 10, 5704

10. Lee et. al. Delamanid, linezolid, levofloxacin, and pyrazinamide for the treatment of patients with fluoroquinolone-sensitive multidrug-resistant tuberculosis (Treatment Shortening of MDR-TB Using Existing and New Drugs, MDR-END): study protocol for phase II/III, multicenter, randomized, open-label clinical trial. Trials. (2019) 20:57. https://doi.org/10.1186/s13063-018-3053-1

11. Sotglu G, Centis R, D'Ambrosio L, et al. Efficacy, safety and tolerability of linezolid containing regimens in treating MDR-TB and XDR-TB: systematic review and meta-analysis. Eur Respir J. 2012;40:1430-42. https://doi.org/10.1183/09031936.00022912.

12. S. Tiberi, M. J. Vjecha. A. Zumla et al. Accelerating development of new shorter TB treatment regimens in anticipation of a resurgence of multi-drug resistant TB due to the COVID-19 pandemic. Int J Infect Dis, https://doi.org/10.1016/j.ijid.2021.02.067

13. FMOH. National guidelines for TB, DR TB and Leprosy in Ethiopia, Sixth Edition, November 2017, 23-44

14. Shibabaw A, Gelaw B, Gebreyes W, Robinson R, Wang S-H, Tessema B (2020) The burden of pre-extensively and extensively drugresistant tuberculosis among MDR-TB patients in the Amhara region, Ethiopia. PLoS ONE 15(2): e0229040. https://doi.org/10.1371/journal. pone.0229040

Community Engagement as one of the key pillars of Primary Health Care in the Ethiopian health system

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Achieving Universal Health Coverage (UHC) requires multiple approaches and the primary health care (PHC) is the key approach to achieve UHC. A primary health care approach focuses on organizing and strengthening health systems so that people can access services for their health and wellbeing based on their needs and preferences, at the earliest, and in their everyday environments. A strong PHC is crucial to improve the health of all communities and reduce health inequalities between different groups and achieve UHC at large. Community engagement is one of the key pillars of PHC and ensuring UHC by strengthening PHC cannot be achieved without the meaningful involvement of the local community. Community engagement means the involvement of the community concerned in analysis, decision-making, planning, and program implementation, as well as in all the activities and sharing their needs living in a specific geographic area and establishing mechanisms to meet these needs (WHO, 2021).

Community engagement has been one of the essential components of the Ethiopian health system and different community engagement approaches have been employed for the last more than two decades through the use of voluntary community health workers (Banteyerga H, 2011 and FMOH 2021).These voluntary community health workers have been known with various names and scopes of practice, for example; community health agents, community-based reproductive health workers (CBRHA), community health promoters or volunteers, traditional birth attendants, and malaria agents were some of the voluntary community health workers during the period (FMOH, 2020). Since the beginning of the Health Extension Program (HEP) in 2003, the government of Ethiopia has made significant efforts that have brought remarkable progress in the implementation of community engagement approach in Ethiopian PHC system (MERQ, 2020).

Community Engagement is a key pillar of the Ethiopian HEP and the health extension workers are stationed at the health posts' level and spend most of their time in raising awareness within the communities, mobilizing communities and delivering services in collaboration with community-level structures and households. The Model family approach was introduced as a supporting platform for community engagement in the year 2006 and this is a training of model households that could influence their neighbors. The model households were exemplars for the rest of the community members by practicing the set of health behavior and implementing packages of services (Kassie & Klag, 2021, MERQ, 2020; Teklu et al, 2020).

Evidences revealed that the model households' training however was limited to some members of the community, unable to bring the intended change and this made the government introduce the Women development Army (WDA) as another community engagement approach that comprises six neighboring households structured in a one to five networks. Women Development Group (WDG) leader is responsible for 25- 30 households to coordinate activities like community dialogue sessions, community mobilization, promoting environmental hygiene, identifying and reporting cases (Kassie & Klag, 2021; MERQ, 2020; Teklu et al, 2020).

The HEP supported by the community engagement platform has brought commendable improvements in maternal and child morbidity and mortality, reduction of morbidity and mortality attributed to major communicable diseases and improvements in environmental health and hygiene (FMOH, 2020)

However, program reviews and reports showed that community engagement is facing different challenges. Some of the challenges include inadequate engagement of critical segments of the

population such as men and youth, informal community structures, WDG strategy has shown signs of decline, particularly in recent years, and inadequate knowledge and skills of the WDGs (Teklu A et al 2020).

To respond to the growing challenge in community engagement, the ministry of health (MOH) of Ethiopia has intended to revamp the existing strategies and design alternative approaches to advance community engagement and thereby achieve universal health coverage in Ethiopia. As part of the HEP optimization, the community engagement is redefined and six community engagement approaches were identified. These are optimization of the WDG, adding a new community engagement structure, appending men engagement strategy, youth engagement, engagement of social structures and motivation schemes. Currently, the pilot intervention of this new community engagement approach is progressing in three regions of Ethiopia.

Refrences

1. The World Health Organization (WHO). Universal Health Coverage, 2021

2. Banteyerga H. Ethiopia's health extension program: improving health through community involvement. MEDICC review. 2011;13(3):46-9.

3. FMoH. Health Sector Transformation Plan. Policy document. 2020;1.

4. MERQ Consultancy PLC. 2020. National Assessment of the Ethiopian Health Extension Program: Evidence brief for Action. Addis Ababa, Ethiopia: MERQ Consultancy PLC.

5. Kassie, G.M & Klag, M.J. 2021. Evolution of the Health Extension Program in Ethiopia: past, present, and future. Addis Ababa, Ethiopia. International Institute for Primary Health Care-Ethiopia.

6. Teklu, A.M, Alemayehu, Y.K, Medhin, G et al. 2020. National Assessment of the Ethiopian Health Extension Program: Final abridged report. Addis Ababa, Ethiopia: MERQ Consultancy PLC.

Nutrition services and stunting reduction at Primary Health Care units in Ethiopia

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In this short communication, we aim to present the key challenges in providing nutrition services (with a major focus on services related to stunting reduction) in the primary health care (PHC) settings. We will give an overview of the current burden of stunting in the country, the achievements made in reducing stunting over the past two decades and further discuss the key lessons and drivers of this change. In the end, we will provide key challenges in nutrition service provisions and further put recommendations.

Chronic malnutrition in infants and young children remains a global public health problem. Linear growth faltering often begins in utero with maternal malnutrition, which contributes to intrauterine growth restriction and subsequent low birth weight. During infancy, suboptimal feeding practices and a high burden of infectious diseases further contribute to poor growth. Linear growth stunting, defined as a height-for-age z-score (HAZ) that is ≤2 standard deviations below the mean, is a visible and easily measurable physical manifestation of chronic malnutrition. Children who are stunted have higher rates of mortality and morbidity. An estimated 17% of mortality in children under-5 years is attributable to stunting. Further, stunting has serious implications for population health, sub-optimal cognitive and motor development and the fulfillment of the intellectual and economic potential of low and middle-income countries (LMIC) (1,2).

Stunting prevalence in Ethiopia declined by 18% over the past two decades (between 2000 and 2019) (3-8). Stunting for the under-5-year-old population in Ethiopia was 50.9% in 2000, falling to 44.9% by 2005, and down to 37% by 2019. Over the recent ten years, Ethiopia has documented an average annual rate of change (which tells what is the average % point change in stunting by year) of 0.88%. Although national stunting prevalence has reduced significantly, declines were not uniform; geographic disparities do exist, with some areas of the country making more gains than others, and one region having a rise in stunting prevalence. In 2000, the two northernmost regions had the highest stunting prevalence, at 62.8% in Amhara and 61.8% in Tigray. The southern regions SNNPR, and Oromia had the next-highest stunting prevalence at 59.4% and 53.9%, respectively. Afar and Somali also had stunting prevalence of over 50% at 53.5% and 50.8%. Three regions had a stunting prevalence of over 40%: Benishangul-Gumaz (49.8%), Harari (42.1%), and Gambela (41.0%). Only two regions had stunting prevalence below 40%, and these are both cities; both Addis Ababa and Dire Dawa have stunting prevalence of 33.8% The discrepancy between the region with the highest and lowest stunting prevalence was 29.0% points (3-8).

Ten years later, in 2011, 7 regions experienced declines in stunting prevalence, but 4 regions' stunting prevalence rose. These four regions were: Tigray (51.0%), Afar (49.9%), Benishangul-Gumaz (48.1%), and Dire Dawa (35.1%). Amhara remained the region with the highest prevalence, though it declined by 2011 to 51.8% of under-5 children stunted. Addis Ababa remained the region with the lowest stunting prevalence at 22.3%. Gambela and Harari also reduced stunting prevalence to below 30% at 28.0% and 29.1%, respectively. The discrepancy between the region with the highest prevalence and the lowest prevalence dropped to 29.5% points. By 2016, no regions had a stunting prevalence of over 50%, and only four regions had a stunting prevalence of over 40%. These four regions included Amhara (47.2%), Benishangul-Gumaz (42.8%),

Dire Dawa (41.1%), and Afar (40.7%). Addis Ababa continued to be the region with the lowest prevalence at 14.7%. Gambela (23.3%) and Harari (27.0%) were the other two regions that had stunting prevalence below 30%, while stunting prevalence in Harari increased to 31.9%. The gap between the highest and lowest prevalence regions increased slightly to 32.5% (3-8).

Ethiopia is one of the exemplar countries that has shown out-performance in reducing stunting relative to peers or beyond what might be expected given context and financing. A deeper analysis of the drivers of these changes identified key services and interventions explaining the observed decline in stunting. Recent analysis on the drivers of stunting showed the following factors highly explaining the decline in the country. These factors were; (i) household food security, representing improved production of commonly consumed crops including cereals, pulses, fruits, vegetables, seeds, root crops, which may have led to improvements in both maternal and child dietary intake, (ii) Improved health worker force number, and (iii) reduced open defecation. In addition to these, parental education, maternal and newborn healthcare, economic improvements, maternal nutrition, fertility, and a few other drivers were found to be significant in their contribution to stunting decline. In summary, supportive strategies (nutrition-sensitive) contributed to 65% of the observed change while Nutrition-specific strategies accounted for 35% of the change in stunting over the past two decades (9).

Good nutrition service at PHC settings during the first 1000days is key to stunting reduction. For this, critically important is the structural readiness of health facilities at PHC settings. However, structural readiness and nutrition services provision in PHC's in Ethiopia is not optimal.

Recently, a landscape analysis was conducted to evaluate service readiness and nutrition service provision at different service provision points in PHC settings (10). The landscape analysis indicated poor structural readiness and service provision gaps in health centers and health posts. Health facilities lack essential anthropometric instruments, nutrition guidelines, registration and reporting formats. For example, a critical shortage of supplies, equipment and guidelines such as height scale, Albendazole, Ready-to-use therapeutic food (RUTF), Adolescent, Maternal, Infant and Young Child Nutrition (AMIYCN) guideline, and demonstration equipment are observed. Poor structural readiness was more prominent at health posts compared to health centers. Despite health centers having relatively better structural readiness, the level of readiness varied across different units within the health center. Likewise, a significant missed opportunity for anthropometric assessment and preventive nutrition counseling at different contact points is documented in the health centers and health posts. Such problems were more common at the immunization unit compared to other service units. In addition, sub- optimal nutrition counseling service is not uncommon in the PHC setting. The report showed a significant missed opportunity in nutrition counseling at Integrated Management of Newborn and Childhood Illnesses (IMNCI), immunization and antenatal service provision points (10).

Another key structural challenge faced in the PHC setting is related to the health workforce including training gaps, staff shortage and high staff turnover. For example, less than 50% of service providers in ANC, PNC and IMNCI service points received training on nutrition. These challenges are common in the PHC setting and resulting in burden, fatigue and poor motivation among service providers (10).

Nutrition service integration within a health facility is fundamental to improve service coverage and quality. Nutrition services integration is expected at different contact points between mothers/caregivers and providers. It is assumed that if screening is performed routinely in clinics, it creates a better opportunity for timely detection of growth faltering. However, the assessment of service provision at IMNCI indicated a missed opportunity for basic nutrition screening and counseling. For example, only 60.2% of children who came for IMNCI service had their weight measured while 40% of the children were not weighed.

In closing, stunting decline in Ethiopia is a multi-factorial story of change and requires the importance of strengthening the existing nutrition services at the PHC settings. Despite this, health centers and health posts had a considerable challenge in structural readiness and gaps to deliver integrated nutrition services. This could lead to some significant missed opportunities in reducing stunting through preventive and curative nutrition services in PHC settings.

Refrences

1. Victora CG, Adair L, Fall C, Hallal PC, Martorell R, Richter L et al.: Maternal and child undernutrition: Consequences for adult health and human capital. Lancet 2008, 371.

2. Li H, Stein AD, Barnhart HX, Ramakrishnan U, Martorell R: Associations between prenatal and postnatal growth and adult body size and composition. Am J Clin Nutr 2003, 77: 1498-1505

3. Central Statistical Authority/Ethiopia and ORC Macro. 2001. Ethiopia Demographic and Health Survey 2000. Addis Ababa, Ethiopia: Central Statistical Authority/Ethiopia and ORC Macro. Available at http://dhsprogram.com/pubs/pdf/FR118/FR118.pdf.

4. Central Statistical Agency/Ethiopia and ORC Macro. 2006. Ethiopia Demographic and Health Survey 2005. Addis Ababa, Ethiopia: Central Statistical Agency/Ethiopia and ORC Macro. Available at http://dhsprogram.com/pubs/pdf/FR179/FR179.pdf.

5. Central Statistical Agency/Ethiopia and ICF International. 2012. Ethiopia Demographic and Health Survey 2011. Addis Ababa, Ethiopia: Central Statistical Agency/Ethiopia and ICF International. Available at http://dhsprogram.com/pubs/pdf/FR255/FR255.pdf.

6. Central Statistical Agency of Ethiopia, ICF. Ethiopia Demographic and Health Survey 2014. Addis Ababa, Ethiopia; 2014.

7. Central Statistical Agency - CSA/Ethiopia and ICF. 2017. Ethiopia Demographic and Health Survey 2016. Addis Ababa, Ethiopia: CSA and ICF. Available at http://dhsprogram.com/pubs/pdf/FR328/FR328.pdf.

8. Ethiopian Public Health Institute - EPHI, Federal Ministry of Health - FMoH, and ICF. 2021. Ethiopia Mini Demographic and Health Survey 2019. Addis Ababa, Ethiopia: EPHI/FMoH/ICF. Available at https://www.dhsprogram.com/pubs/pdf/FR363/FR363.pdf.

9. Hana Tasic, Nadia Akseer, Seifu H Gebreyesus, Anushka Ataullahjan, Samanpreet Brar, Erica Confreda, Kaitlin Conway, Bilal S Endris, Muhammad Islam, Emily Keats, Afrah Mohammedsanni, Jannah Wigle. and Zulfiqar A Bhutta (2020). Drivers of stunting reduction in Ethiopia: A country case study. Am J Clin Nutr 2020;00:1–19.

10. Fenta EH, Endris BS, Mengistu YG, Sadamo FE, Gelan EH, Beyene TG, Seifu Hagos Gebreyesus, (2020). Landscape analysis of nutrition services at Primary Health Care Units (PHCUs) in four districts of Ethiopia. PLoS ONE 15(12): e0243240. https://doi.org/10.1371/journal.pone.0243240

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