Assessment of the knowledge and practice of Health Extension Workers regarding the medicine they handle, in selected districts of Sidama Zone, Southern Ethiopia.

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This is to certify that the thesis prepared by Ayalnesh Shuke, entitled: To assess the knowledge and practice of HEWs towards the medicines they handle in selected districts of Sidama Zone and submitted in partial fulfillment of the requirements for the degree of Master of Science in Pharmacoepidemiology and Social Pharmacy, compiles with the regulations of the university and meets the accepted standards of originality and quality.

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Abstract

The involvement of the CHW (community health workers) in drug provision has increased the availability of essential drugs lowest feasible cost to the population at the peripheral level. Some experts remain cautious about this approach, because of concerns that allowing CHWs to distribute anti-infective will increase the inappropriate use of drugs and accelerate the development of drug resistance. So this thesis assessed the knowledge and practice of HEWs regarding the medicines they handle in Sidama Zone.

A cross-sectional study was conducted from December 2011 to January 2012. A structured questionnaire was used to collect data from a total of 55 HEWs available in the health posts (HP).Thirty HPs were selected from 3 districts. Medical record review was also made.

Results showed that only 36.4% respondents were aware of the correct adult doses of Chloroquine and 29% and 40% of the respondents could not tell the dose of Coartem® and Chloroquine without referring to the treatment guideline, respectively. Fifty-two(94.5%) of the respondents did not knew the drug interaction between Coartem® and oral contraceptives and only 12.5% of the respondents were aware of food requirement while taking Coartem®. Only 3.6% and 29(52.7%) of HEWs reported correct doses of Amoxicillin and Cotrimoxazole, respectively. Of a total of 356 prescriptions, 50(14%) were not consistent with recommended guidelines.

Therefore, the Zonal health department/ Woreda Health Office should organize refresher trainings for the HEWs to improve their knowledge about doses, drug interactions and contraindications of antimalarial drugs and antibiotics. And they should also encourage the consistency of the HEWs practice to the recommended guidelines regarding appropriate treatment choices.

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List of Acronyms

AAU Addis Ababa University

AIDS Acquired Immune Deficiency Syndrome

ANC Antenatal Care

ARI Acute Respiratory Illness

BCG Bacille Calmette Guerin

BF Breast Feeding

BP Blood Pressure

CHWs Community Health Workers

CNHDE Center for National Health Development in Ethiopia

COC Combined Oral Contraceptive

DHO District Health Office

DOTs Directly Observable Treatment-Short Course

EDs Essential Drugs

FMOH Federal Ministry of Health

HEP Health Extension Program

HEW Health Extension Workers

HIV Human Immunodeficiency Virus

HP Health Professionals

HSDP Health Sector Development Program

HSEP Health Service Extension Programme

IMCI Integrated Management of Childhood Illness

OPV Oral Polio Vaccine

ORS	Oral Rehydration Salt
PCV	Pneumococcal Conjugate Vaccine
PHC	Primary Health Care
PI	Principal Investigator
PNC	Postnatal Care
RDT	Rapid Diagnostic Test
RHB	Regional Health Bureau
RRMH	Republic of Rwanda Ministry of Health
SEs	Side Effects
SNNPR	Southern Nations, Nationalities and Peoples Region
SOP	School of Pharmacy
SPSS	Statistical Package for Social Sciences
STG	Standard Treatment Guideline
STI	Sexually Transmitted Infections
TB	Tuberculosis
TT	Tetanus Toxoid
TTC	Tetracycline
VCT	Voluntary Counselling and Testing
WHO	World Health Organization
ZHD	Zonal Health Department

1. Introduction

1.1. Background

The community health worker (CHW) has been the distinguishing feature of primary health care (PHC) programmes in many developing countries since the Alma-Ata conference in 1978. Many countries launched a national scheme resulting in the nationwide training of CHWs. The general goal of these schemes was similar: to achieving "Health for All" by providing equitable, accessible and low cost health care to the majority of the population (WHO, 1978).

Essential drugs are important elements of primary health care and should be available at various levels of primary health care at the lowest feasible cost. In many countries, to attain such an objective, drugs are provided by the CHW (WHO, 1995).Access to essential drugs (ED) is fundamental to the good performance of the health care delivery system. The provision of safe, effective and affordable essential drugs of good quality in the right quantity to the whole population in particular the poor is therefore a priority in health and drug policy (Quick, 2003).

The involvement of the CHW in drug provision has two important aspects. On the one hand, the goal of making essential drugs available at the lowest feasible cost to the population at the peripheral level. On the other hand, the CHWs' involvement in drug provision may result in strengthening their position in the community. Although the concept of rational use of drugs by consumers has not been explicitly stressed in the WHO-defined PHC, this can be expected to be promoted through the availability of essential drugs as well as by the educative activities of the CHW (WHO, 1995).

Ethiopia is one of the countries in the world which has adopted PHC as a national strategy since 1978. A new initiative, the Health Service Extension Programme (HSEP), was launched in 2003 with aims to improve primary health care services in rural areas through an innovative community-based approach that focuses on prevention, healthy living and basic curative care. It, therefore, introduced a new cadre of health worker, Health Extension Worker (HEW), and defined a package of

essential interventions including provision of essential drugs for them to deliver from village health posts (FMoH, 2005a).

1.2. Statement of the problem

Access to ED is low in developing countries and it is worse in rural settings. There is no exception to Ethiopia in this regard. So involving HEWs in provision of essential medicines is not questionable to improve its accessibility. Studies showed that there is high degree of irrational drug use in Ethiopia, even in health care facilities where qualified professionals are working (FMOH/WHO, 2003). This has raised the concern over the involvement of HEWs in drug provision. The concern was pronounced mainly because of the fact that HEWs have received short period of training and the service was relatively new and majority of the drugs they handle are anti-infective (Artemeter-lumefantrine, Amoxicillin, Co-trimoxazole, etc), where there inappropriate use may create burden of drug resistance . A study conducted in Dessie regional laboratory on susceptibility of four specious of bacteria to the commonly used antibiotics showed high rate of resistance of the bacteria (72-92 %) to Amoxicillin, Chloramphenicol, Cotrimoxazole, Erythromycin and Tetracycline (Kibret and Abera,2010).

In spite of those facts there are no studies done on the knowledge and practice of HEWs regarding the medicine they handle in the country. But there are researches that are done on HEWs in different parts of the country focused on the outcomes and efficiency of the HEP, the cost effectiveness of the use of HEWs, the improvement of coverage of essential health service, and so on. So this study is aimed to fill the gaps in information on knowledge and practice of HEWs regarding the medicine they handle in selected districts of Sidama zone. The result generated will be used by policy makers and local administrators to identify the gaps and design appropriate intervention on rational use of essential drugs in the study districts in particular and the country in general.

2. Literature review

2.1. Historical background of community health workers

The concept of PHC emerged during the 1970s when ideas about health care began to change generally and specifically in relation to the developing world. The declaration of Alma-Ata was clear about the values pursued: social justice and the right to better health for all, participation and solidarity. The Alma-Ata Conference mobilized a "PHC movement" (Nikki and David, 2008).

Since then many countries have started to follow the approach of PHC to reach rural communities where most of the preventable health problems exist. This is because PHC focuses on disease prevention and health promotion. It is the type of healthcare delivery sometimes described as 'by the people, of the people and for the people.' It involves the community in the whole process of healthcare delivery and encourages them to maintain their own health (WHO, 1978).

In line with the PHC approach, there has been a considerable expansion in human resources for health. This has occurred particularly at the 'auxiliary' or 'paramedical' level in developing countries, and especially in the immediate post-Alma Ata period, in the CHW cadre. Despite this, many poor countries, especially the least developed, have too few health workers to provide universal coverage, and in all countries there continues to be significant mal-distribution of, and imbalances between, various types of health workers (Nikki and David, 2008).

CHWs are community based workers that help individuals and groups in their own communities to access health and social services, and educate community members about various health issues. WHO has elaborated the definition of CHWs as "(they) should be members of the communities where they work, should be selected by the communities, should be answerable to the communities for their activities, should be supported by the health system but not necessarily a part of its organization, and have shorter training than professional workers"(WHO,2007 *)*.

During the 1970s, in many countries CHW programmes followed a developmental approach as a way to expand access to primary health care, related to the declaration of Alma-Ata (WHO, 1978). More recently, CHWs have been seen as an extension of health systems, particularly to reach out to population groups in underserved areas.They can also provide local outreach of health services that might otherwise be unavailable; they often provide a link between communities and formal health services (WHO, 2007).

CHWs act as the first line of contact with the health system in most low and middle income countries. These workers are selected community members who are trained in general primary care functions (e.g., treatment of diarrhoea, immunisations, health education and nutrition, environmental sanitation, and malaria control) or in specific activities (for example , Directly Observable Treatment-Short Course (DOTS) supervision, family planning, rehabilitation, and nutrition) (WHO,2007).

Most developing countries and even some developed ones experimented with the use of CHW in it different approaches using different names such as Village Health Workers, Barefoot Doctors, Health Aides or Medical Assistants, among others (Kwame, 2004).

In many Africa countries, CHWs have fulfilled generalist health functions, specialist health roles, in such areas as nutrition, reproductive health, and malaria control, and wider roles as community advocates and change agents. Evidence suggests that these workers have increased coverage of a range of services over the last 30 years (CNHDE, 2006).The restricted evidence available on the use of CHWs from Gambia, South Africa, Tanzania, Zambia, Madagascar, and Ghana suggests that these workers enhance the performance of community level health programmes and some evidence shows that they are cost-effective. Health services such as condom distribution, food and hygiene counselling, distribution of insecticide impregnated bed nets, and nutrition education can safely be provided by trained community workers (Charles and Barbara, 2004).

2.2. Overview of Health Extension Program in Ethiopia

Ethiopia is a country with 85% of its population living in rural areas. Between 70% and 80% of the diseases that affect its population are preventable. Despite this, Ethiopia previously had a health policy that focused on curative and urban-centred health services until the government of the Federal Democratic Republic of Ethiopia launched its new health policy in 1993 (FMOH, 1993).

After critical analysis of health problems of the nation, the Ethiopia government develops health policy, which uses decentralization and democratization as a tool to address the problem of under privileged rural people (FMOH, 1993). This Policy has been realized after formulation of health sector development program (HSDP), a vehicle by which the national health policy was implemented and implementing. The 1st HSDP-I and the 2nd HSDP-II had been completed with encouraging results and potential experiences gained. The HSDP- II took a stock of experiences from the implementation of HSDP-I and further aimed to the delivery of cost effective preventive and promotive health care services through an integrated and articulated plan of health extension program (HEP) which was implemented almost through HSDP-III (2005/6- 2009/10) (FMoH, 2004).

In 2009/10 more than 30,000 HEWs were trained and deployed throughout the country and full coverage of all rural villages has been reached. As a result of the HEP, the health extension worker to population ratio has increased from 1: 23,775 in 2004/05 to 1: 2,437 in 2008/09. And access to improved sanitation increased from 27% at baseline to 36% (World Bank, 2011).HEP has created greater awareness of how to prevent communicable diseases such as malaria, tuberculosis (TB), HIV/AIDS and water borne diseases. It is reported that malaria is no longer epidemic and also diarrhea and other water born diseases and eye infections are decreasing. Improvements have been observed in vaccination coverage, and coverage of maternal health services (Hailom, 2011).

The main objective of HSDP is to improve equitable access to preventive essential health intervention through community /kebele/ based health services with strong focus on sustained preventive health actions and increased health awareness among

the community. The health extension service is being provided as a package focusing on preventive health measures targeting households particularly women/mothers at the kebele level through a health post to serve approximately 5, 000 people (FMoH, 2005a). Every health post is staffed by two female HEWs, who are high school graduates with one year training. The training program for the HEWs includes 16 major packages grouped under four components (FMoH, 2005b). The essential health services packages include:

1. Diseases prevention and control- to reduce morbidity, disability and mortality

    - HIV/AIDS and other STIs (sexually transmitted infections) prevention and control
    - TB prevention and control
    - Malaria prevention and control
    - First aid and emergency measures

2. Family health services-to strengthen and gradual expansion of family planning, maternal and child health, youth and nutrition services.
    - Maternal and child health
    - Family planning
    - Immunization
    - Adolescent reproductive health and Nutrition
3. Hygiene and environmental sanitation
    - Safe excreta disposal
    - Solid and liquid waste disposal
    - Water supply and safety measures
    - Food hygiene and safety measures
    - Healthy home environment
    - Control of insect and rodents
    - Personal hygiene
4. Health Education and communication- the main objective of this component is to bring about behavioral change through intensive and continued investment of knowledge to the community.

HEWs' major task is increasing knowledge and skills of communities and households to deal with preventable diseases and be able to access services available at clinics and hospitals. Since the HEP considers maternal and child health tracer indicators of good health, HEWs give special attention to family health. In addition to conducting preventive family health education and sanitation, the HEWs supervise intake of Directly Observable Treatment-Short Course for TB and antiretroviral treatment for HIV/AIDS at household/community level; conduct rapid diagnostic tests for malaria and administer anti-malaria drugs; attend uncomplicated childbirth; refer patients to nearby health centers; supply of essential drug and collect vital statistics (Hailom, 2011).

HEWs spend 75 percent of their working hours visiting families at household level and performing outreach activities for health promotion at a community level. The remaining of their time is spent providing services including immunizations and injectable contraceptives at the health posts. Moreover, they are trained to provide first aid services, conduct safe and clean deliveries, diagnose and treat malaria, diarrhoea, and intestinal parasites. In 2010 the government added the diagnosis and treatment of pneumonia to the HEP, following an evidence-based analysis of the potential impact of different packages of high-impact interventions. The addition represents a significant step toward tackling a primary cause of child mortality (FMoH, 2009).

Lists of standards medicine, other supplies and equipments for the health post first was initially prepared in 2005 and modified recently with the inclusion of additional drugs for the treatment of child pneumonia (FMoH, 2009; FMoH, 2004; FMoH, 2005a).The list of drugs include:Contraceptives (oral, injectables and implants),Oral Antimalarial drugs (Coartem and Chloroquine),ORS, Paracetamol, Cotrimoxazole, Amoxicillin and Vaccines (BCG, OPV, PENTA, TT, PCV, and Measles) (FMoH, 2009).

Knowledge and practice of Community Health Workers

Minimally trained CHWs have increasingly been introduced in many countries to increase the availability of trained health workers in mostly rural communities where their availability has been scarce (Winch et al.2005).The use of CHWs to provide treatment of variety of health problems within the patients' village is a common approach in Latin America, Asia, and sub-Saharan Africa for the control of malaria and implementation of other health interventions. Despite this evidence of the benefits of improving access to treatment using CHWs, some experts remain cautious about this approach, because of concerns that allowing CHWs to distribute anti-infective will increase the inappropriate use of drugs and accelerate the development of drug resistance (Greenwood et al, 1998;Bloland and Ettling, 1999; Umar et al, 2002). There are factors related to inappropriate drug use (irrational drug use) including drug knowledge and training which indeed major factors are and additionally out dated prescribing practices, heavy patient load, pressure from peers and patients are common.

For a correct diagnosis to be made the prescriber must have adequate knowledge, the study conducted on assessment of knowledge, attitude and skills of lady health workers in Pakistan 36% of the study participants showed that insufficient knowledge especially with regards of doses of common medicines and 78% have knowledge in relation to the vaccination schedule (Khan et al, 2006).

CHWs' drug use for common childhood illnesses surveyed in Kenya in 1998, 1999, and in 2001 showed that the proportions of children treated "adequately" were only 57.8%, 35.5%, and 38.9%, respectively, for children with a severe classification and 27.7%, 77.3%, and 74.3%, respectively, for children with a moderate classification. CHWs adequately treated 90.5% of malaria cases. Most mistakes were made in assessing symptoms, classifying illnesses, and prescribing correct doses of medications. No CHWs gave correct instructions on making and administering oral rehydration solution to caregivers whose child had diarrhoea but no dehydration; analogous results for administering Cotrimoxazole (for pneumonia) and Paracetamol (for malaria) were 33.3% and 74.7%, respectively (Kelly et al., 2001).

Another result from evaluation report of CHW in four districts in Ruwanda shows that the correct treatment dosage for age was given in 98% of the casese in Ruhango and in 97% of the cases in Kirehe . Twenty-five percent in Ruhango and 30% in Kirehe were not given the correct dosage for age respectively for pneumonia and diarrhoea. The lower performance of treatment dosage has been noticed in Gisagara (average score=81%) and lower for fever (78%) (RRMH, 2009).

3. Objective

3.1. General objective

- To assess the knowledge and practice of HEW regarding the medicine they handle in Sidama Zone, SNNPR.

3.2. Specific objectives

- To determine the knowledge of HEWs about the medicines they handle in Sidama Zone.
- To determine the drug use pattern at the health posts
- To identify appropriateness of drug treatment given to the patient by HEWs with regard to the recommended treatment guideline.

4. Materials and methods

4.1. Study area

The study was carried out in three districts of Sidama Zone in the Southern Nations, Nationalities Peoples Regional State (SNNPR). Sidam Zone is one of the 13 zones in the region and is located about 275 kms from Addis Ababa along the main highway to Moyale- Kenya. The zone is named after the Sidama people, whose homeland is located in this zone. Sidama Zone is bordered on the south by the Oromia region except for a short stretch in the middle where it shares a border with Gedeo Zone on the west by the Bilate River which separates it from Wolayita zone and on the North and East by the Oromia region. Hawassa town is the administrative center for Sidama Zone.

Administratively, the zone is organized into nineteen districts and two city administrations. During the study period there were three hospitals, 116 health centers and 507 health posts which are government owned. 1130 rural HEWs and 55 urban HEWs are deployed in 507 health posts. As per report from Zonal Health Department, Malaria, Tuberculosis, Malnutrition and HIV/AIDS fueled by overcrowding were the main health problems of the Zone.

4.2. Study design

A cross-sectional descriptive study was conducted in the health posts of selected districts of the Sidama Zone to assess the knowledge and practice of HEWs regarding the medicines they handle. The study was conducted between May 2012 – October 2012.

4.3. Population and sampling

4.3.1. Source population

All HEWs deployed in health posts located in Sidama Zone, and all patient medical records of health post in the Zone are source for the study population and patient medical records respectively.

4.3.2. Study Population

The study population includes all health extension workers working in health posts of the selected districts. Medical records of patients were used to generate drug use pattern and to assess the appropriateness of the prescription according to the recommended guidelines.

4.3.2.1. Inclusion and exclusion criteria

All HEWs working in the rural health posts of the selected districts and who were voluntary to participate in the study were included as respondents of the study.

Patient/client medical records in the selected health post which are readable and have information like; patient name, age, weight for some drugs, drug name, dose, frequency of administration, length of therapy) were included in the study.

4.3.3. Sampling

Health Post: First the region and Sidama Zone particularly were selected because of the convenience to the principal investigator interms of transport and financial requirement. The Districts in Sidama Zones were stratified according to their proximity to the zonal capital and convenience for transportation (accessibility) into remote, medium and accessible groups where each stratum consisting eight, seven and six districts respectively. Wondogenet from accessible Districts, Borecha from medium accessible Districts and Hula from remote Districts were selected randomly. Then considering the time, financial, and the transportation capacity ;10 health posts from the accessible district, 15 health posts from the medium stratum and five health posts from the remote stratum were included in the study. A total of 30 health posts were included in the study.

Health extension workers*:* All (55) HEWs, who were available during the data collection period, and working in the selected health posts were included in the study.

Lists of patient medical records from December 2011 to January 2012 were reviewed to assess the drug use pattern and appropriateness of drug treatment according to the recommended practice guideline. A total of 424 patient medical records were calculated using single population formula. This number was distributed throughout the

participating HPs.Fourteen patient medical records were selected from each HP with systematic random sampling. Only medication record of under 5 children was assessed because for over five age groups the record was not available in all of the health posts being assessed.

The following assumption was used to calculate the sample size required for patient document review:

n = number of the study subjects

Z = critical value at 95% confidence interval (1.96)

p =Assumed compliance to the recommended treatment guideline = 50 %(0.5) to get a maximum sample size as there was no previous study conducted similar to this study

d = the margin of error taken (0.05 taken).

Using a single proportion formula;

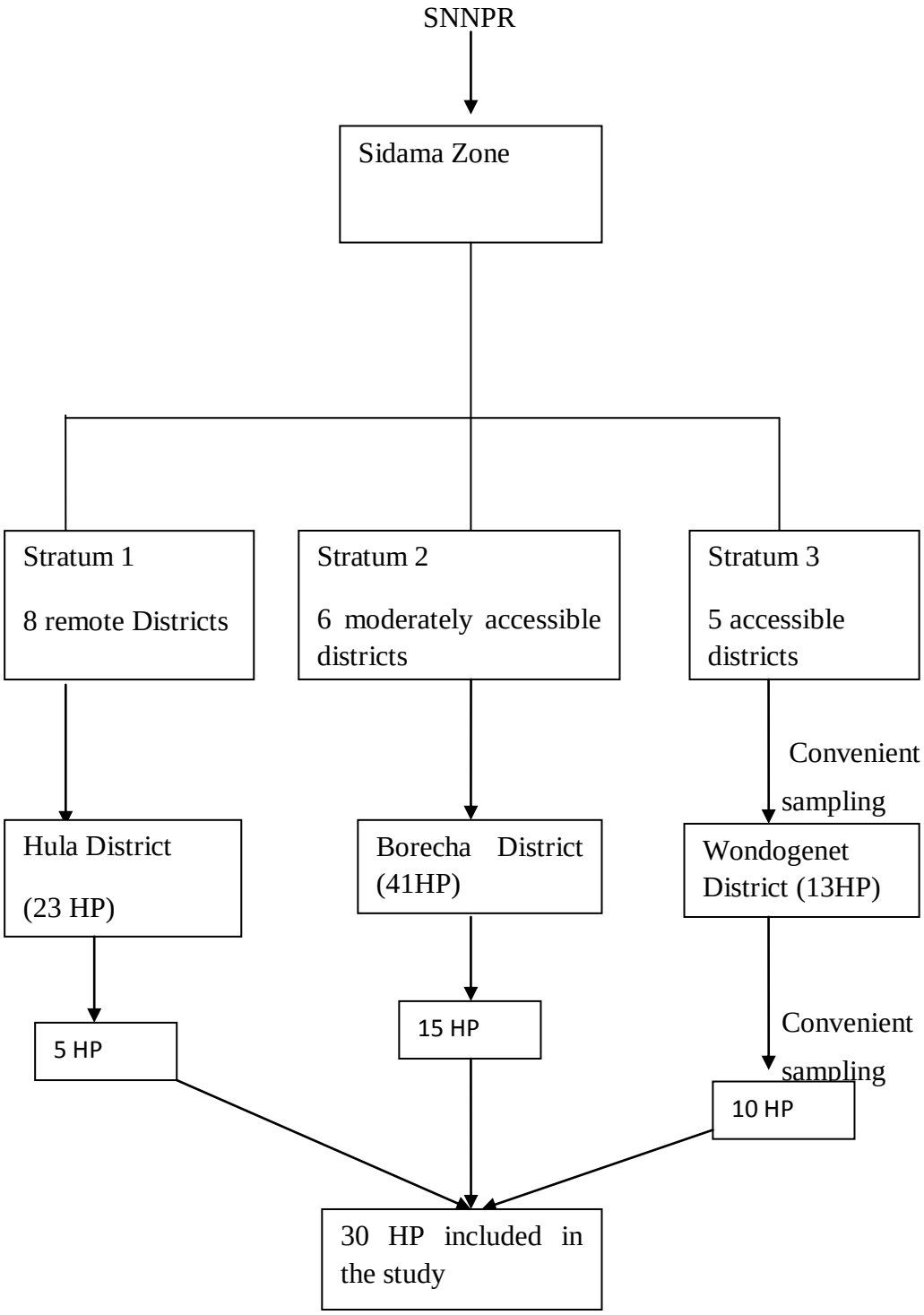
$$n = (z\,\alpha/2)\,2.\ \frac{P\,(1-P)}{d2}$$

$$n = (1.96)2.\ \frac{0.5(1-0.5)}{(0.05)\,2}$$

$$n = 384$$

And adding 10% for non response, the total sample size after the correction was **424**.

Figure 1: schematic representation of sampling steps for the districts and health post in Sidama Zone.



4.4. Operational definitions

Appropriate drug treatment: a drug treatment was considered appropriate if the prescription conformed to the recommended treatment guidelines for HEWs.

Knowledge of medicine: was in this context used as a common term, including, dosages, side effects, drug interactions and precautions.

4.5. Data collection tools and data collection

Structured check lists were used to assess the availability of drugs, equipment and materials at the health posts based on the recommended drugs and materials for the health posts (FMoH,2005a)(Annex-1).

A questionnaire was prepared based on the recommended practice and job description of the HEWs. The questionnaire was first prepared in the English, and later translated into Amharic and then to English. The questionnaire was prepared in order to capture relevant socio-demographic characteristics and knowledge related issues about drugs dispensed by HEWs. Questions covered in the knowledge section included areas like the drug choice for the treatment of diseases (Malaria, Pneumonia and Non – pneumonia), dosage of the drugs, side-effects, presence of contraindications, drug food interactions and storage conditions. In addition vaccination dose and schedule and contraceptive related questions like what are the basic principles of hormonal contraceptives? How should the client take the combined oral contraceptive pills(COC)? Side effects of COC? Contra indications for combined COC? And what would be your advice for a client who forgets to take her pills? Were included (see annex-2).

Pre-testing of the questionnaire was done to assess the clarity, understandability and completeness of each question. The pre-test was done on health extension workers working in HPs that were not included in the study. Based on the result the instrument was modified. The following were some of the amendments made after the pre-test: item 110 “Have you received any refresher training about health extension packages since you graduated?” was modified to “Have you received any refresher training

about health extension packages in last year?" a "do nothing" option in item 219 and 221 was modified to "advice to take home remedies".

Two trained degree holder nurse supervisors and six diploma level data collectors, who are pharmacy personnel with experience of data collection, were participated in the data collection process. Half day intensive training was given to the data collectors and supervisors on how to conduct the data collection. During the training, the data collectors were oriented on the objectives of the study, how to collect data and ensure confidentiality of information obtained. They were also trained how to collect the relevant information from the clinical records of clients available at the health post level.

The data collectors submitted the filled questionnaire to their respective supervisor, and then all the collected data was checked for completeness, accuracy and consistency by the supervisors and principal investigator.

Medical record review was done to assess the drug use practice at the health posts with regard to the appropriateness of the treatment choices and with respect to the standard treatment recommendations for health posts. The drug use pattern and disease pattern at the health posts were also assessed from the medical record review.

To assess the adherence of HEWs to STGs, non−pneumonia, pneumonia and malaria were chosen.

4.6. Data entry and analysis

Data collected using checklists and questionnaires were coded and entered using SPSS version 16.0. Data analysis was done using descriptive statistics including frequencies and percentage distributions.

4.7. Ethical Consideration

Ethical approval was obtained from the ethics review committee of the School of Pharmacy, Addis Ababa University. The necessary permission to undertake the study was also obtained from SNNPR health bureau, Sidama Zone health department and local district health offices. The study was conducted in the selected health facilities after permission from the health facilities. Participants of the study were asked for consent before participating in the study. During the consent process, they were provided with information regarding the purpose of the study, why and how they were selected, and what is expected of them and that they can withdraw from the study at any time. Participants were also assured about confidentiality of the information obtained in the course of the study by not using personal identifiers and analyzing the data in aggregates. Regarding clinical record review permission was obtained from HEWs coordinating the HPs and the investigator made sure that confidentiality was maintained at all times.

5. Result

5.1. HEWs knowledge regarding the medicines they handle

5.1.1. Socio demographic characteristics of HEWs

Table 1, shows the socio demographic characteristics of the study participants. Out of 57 HEWs working in the selected 30 health posts, 55 (96.5%) were available during the data collection period and have participated in the study. Almost half 28 (50.9%) of the HEWs were in age between 26-30 years. Eight (14.5%) of the HEWs have college diploma (10+3). About 86% of the HEWs were followers' of protestant religion and 72.7% were married. Of the total respondents 30(54.5%) had served in their current post as HEWs for 5-7 years, and 25 (45.5%) of them worked for 2-4 years.

Table 1, Socio demographic characteristics of health extension workers in the selected health posts in Sidama Zone, Ethiopia, 2012.

Variables	n(%)
Age	
21-25	26(47.3)
26-30	28(50.9)
31+	1(1.8)
Religion	
Protestant	47(85.5)
Others (Orthodox, Catholic, Muslim)	8(14.6)
Marital status	
Single	15(27.3)
Married	40(72.7)
Academic level	
10+1	47(85.5)
10+3	8(14.5)
Years served	
2-4	25(45.5)
5-7	30(54.5)

5.1.2. HEW's service delivery and refresher training needs

The HEWs were asked to list activities of health extension packages they think are best performed in the respective kebeles, they have been working. Accordingly, nearly 39 (70%) identified family planning and vaccination services at outreach level and while, 14 (25%) stated pit latrine construction and anti natal care. Only 12 (21%) mentioned HIV/AIDS, STI and condom distribution are among the interventions best performed in their HPs.

Maternal and child health (delivery, ANC, PNC), diagnosis and prevention of TB and HIV/AIDS were reported by 33 (60%) of the HEWs surveyed as difficult to accomplish jobs from the list of activities in HE packages. The reasons mentioned for difficulty of accomplishing the health extension packages include, shortage of supplies and equipment 27 (49.1%), lack of awareness in the society 21 (38.2%) and inadequate training 19 (34.5%). Additionally 20 (36.4%) of the respondents reported that lack of adequate skill regarding the health extension packages was the reason from the HEWs side. Other reasons identified were poor participation of the community 4 (7.3%), inadequate number of HEWs 3 (5.5%), lack of vehicles 3 (5.5%) and shortage of water and electricity 1 (1.8%).

HEWs were asked if they had refresher course in the last year prior to the study and, 40 (72%) of them reported that they have received one or two refresher trainings. None of the respondents received specific "standalone" training on rational use of drugs; however they have noted that topics related to rational drug use were discussed as a part of other trainings. Regarding the respondents need for refresher training 48 (87.3%) stated that they need to be refreshed on how to conduct a safe delivery and, 29 (52.7%) wanted to get refresher training on TB/HIV diagnosis and management, VCT and community conversation. How to administer vaccination 16 (29.1%), insertion and removal of implants 13 (23.6%), ANC 11 (20%) and drug use and supply management 10 (18.2%) were the other areas on which the HEWs wanted to get refresher training.

5.1.3. Knowledge of HEWs about antimalarial drugs

Most 39 (70.9%) respondents reported that they diagnose malaria using Rapid Diagnostic Tests (RDT), 12 (21.8%) reported use of both RDT and clinical symptom and only 4 (7.3%) reported relying on clinical symptoms.

Most of the interviewed HEWs knew the first line treatment for *P.vivax* malaria [children 53 (96.4%) and adults 52 (94.5%)] and all respondents knew the first line treatment for *P. falciparum* malaria for both adults and children. However, most respondents did not know the first line antimalarial in a pregnant women with *P.vivax* 41 (74.5 %) and 45 (81.8%) for *P. falciparum*.

As shown on Table 2, only 36.4% and 70.9% of the respondents were aware of the correct adult doses of Chloroquine and Coartem®, respectively. Nearly one-thrid (29%) and 22 (40%) of the respondents could not tell the dose of Coartem® and Chloroquine without referring the malaria treatment guideline, respectively. About 13 (23.6%) of the respondents stated incorrect doses of Chloroquine. However, all respondents were able to state the correct frequency and duration of both drugs for the treatment of malaria.

Table 2 Knowledge of health extension workers about doses of Coartem® and Chloroquine in the selected health posts in Sidama Zone, Ethiopia, 2012.

Dose	N(%)
Dose of Coartem®	
Aware of correct dose for all ages	39(70.9)
Could not tell without referring the treatment guideline	16(29.1)
Adult dose of Chloroquine	
Aware of correct adult doses	20(36.4)
Incorrect	13(23.6)
Could not tell without referring the treatment guideline	22(40)

According to 52 (94.5%) of HEWs, Coartem® is contraindicated for pregnant women. Other contraindications reported include; infants with less than 5 kg weight 27 (49.1%), breast feeding mother with infant less than 3month of age or 5 kg of weight 21 (38.2%) and person with previous hypersensitivity to the drug 10 (18.2%). Three (5.5%) of the respondents had reported that there is no contraindication for Coartem® (Table 3).

About 35 (63.6%) of the respondents reported that they always ask a woman whether she is pregnant or not before prescribing antimalarial drugs. 52 (94.5%) of the respondents did not have information about the potential Coartem®-contraceptive interaction.

The majority of the HEWs 42 (76.4%) reported that there are no specific food requirement by patients taking Coartem® and while 6 (10.9%) said that they do not know anything about the food requirement while taking Coartem®. Only 7 (12.5%) of the HEWs knew the presence of specific food requirement that patients with malaria need to take as part of their treatment with Coartem®. However, only very few 2 (3.6%) stated that fatty meal/milk was important to enhance the absorption of Coartem® (Table 3).

The health extension workers were asked regarding the advice they would give if the patient vomits out the Antimalaria drug. Most of the respondents 45(81.8%) reported that they would advise the patient to take another dose of the medication if vomiting occurred within half an hour of taking the medication.

Table 3, Knowledge of health extension workers about characteristics of antimalarial drugs in the selected health posts in Sidama Zone, Ethiopia, 2012.

Characteristics	n(%)
Contraindication of Coartem®*	
Pregnancy	52(94.5)
Infant less than 5 kg	27(49.1)
Breast feeding mother with infant < 3 m and 5kg	21(38.2)
Person with previous hypersensitivity	10(18.2)
No contraindication	3(5.5)
Know precautions of taking hormonal contraceptive with Coartem®?	
No	52(94.5)
No precaution is needed	3(5.5)
Know food requirement for Coartem®?	
Yes	7(12.7)
No	42(76.4)
Advice if the patient vomits out?	
Take the dose in less than half an hour	45(81.8)
Take the dose any time	5(9%)
Take double dose in next time of administration	3(5.5 %)
No action	2(3.6%)
Side effects?	
Know	49(89.1)
Do not know	4(7.3)
No side effect	2(3.6)

*Percent may exceed 100% as multiple answers are possible

Nearly nine out of ten of the respondents (89.1%) are aware that antimalarial drugs have side effects, but only 25 (51 %) and 31 (63 %) of the HEWs were able to mention at least one of the side effects of Chloroquine and Coartem®, respectively. Four of the respondents (7.3%) did not know of any potential side effects of antimalarial drugs and 2 (3.6 %) said antimalarial drugs do not produce any side effects (Table 4). As shown in table 4**,** nausea 9 (36%), vomiting 5 (20%) and skeletal muscle weakness 4 (16%) were some of the mentioned side effects of Chloroquine. While commonly reported side effects of Coartem® included anorexia 3 (16.6%), nausea 3 (16.6%) and vomiting 3 (16.6%). All of the respondents knew the correct storage condition of the antimalarial drugs.

Table 4 Reported side effects of Chloroquine and Coartem® by health extension workers in the selected health posts in Sidama Zone, Ethiopia 2012.

Side effects	**N(%)**
Side effects of Chloroquine (n=25)	
Nausea	10(40)
Vomiting	5(20)
Skeletal muscle weakness	4(16)
Dizziness	3(12)
Diarrhoea	3(12)
Side effect of Coartem (n=18)	
Anorexia	5(27.7)
Nausea	5(27.7)
Vomiting	3(16.6)
Head ache	3(16.6)
Dizziness	2(11)

5.1.4. Knowledge of HEWs about antibiotics

As table 5 summarizes, nearly half of the respondents knew the correct dose of Cotrimoxazole and 45 (81.8%) had stated the correct frequency and duration of administration. Only 2 (3.6%) of the respondents were able to describe the doses of Amoxicillin correctly.

Table 5 Knowledge of health extension workers about child dosage of Cotrimoxazole and Amoxicillin in the selected health posts in Sidama Zone, Ethiopia, 2012.

Drug	n(%)
Cotrimoxazole dose	
Correct	29 (52.7)
Incorrect	15 (27.3)
Couldn't tell without referring the treatment guideline	11 (20)
Amoxicillin dose	
Correct	2 (3.6)
Incorrect	41 (74.5)
Couldn't tell without referring the treatment guideline	12 (21.8)

The HEWs were asked their recommendation to treat pneumonia and most 50 (90.9%) of the respondents reported Cotrimoxazole would be the first choice of treatment. while 5 (9.1%) respondents replied Amoxicillin would be their first choice of treatment for pneumonia. On the other hand 23 (41.8%) of HEWs stated that Amoxicillin would be the choice of drug for treatment of child with non-pneumonia.

Most 44 (80%) respondents reported that Cotrimoxazole is contraindicated for children age less than 2 months old and 6 (10.9%) of respondents stated that Cotrimoxazole could be prescribed for all children irrespective of their age. When asked what they would do if they come across with child less than 2 months of age with pneumonia; nearly half of the respondents replied they would refer the case, 10

(18.2%) stated that they would prescribe Cotrimoxazole and while 15 (27.3%) of did not know what measure they would take when they come across with such cases (see table 6).

Table 6 knowledge of health extension workers regarding recommended antibiotics for the treatment of pneumonia in the selected health posts in Sidama Zone, Ethiopia, 2012.

Characteristics	n(%)
Recommended antibiotics for pneumonia?	
Prescribe Co-trimoxazole	50(90.9)
Prescribe Amoxicillin	5(9.1)
Recommended treatment for non- pneumonia?	
Prescribe Amoxicillin	23(41.8)
Advice to take home remedies	19(34.5)
Refer the case	10(18.2)
Prescribe Co-trimoxazole	3(5.5)
Cotrimoxazole age contraindication?	
Less than 2 month	44(80)
Less than 5 month	3(5.5)
No contraindication	6(10.9)
Do not know	2(3.6)
Treatment choice for < 2 m age with pneumonia?	
Refer to the case	26(47.3)
Cotrimoxazole	10(18.2)
Amoxicillin	4(7.3)
Do not know	15(27.3)

*percentages add to 100.

5.1.5. Knowledge of HEWs about vaccines

As summarized in table 7, majority (83.6%) of the respondents knew vaccines to be given at birth. All of the respondents had correctly mentioned the type of orally given vaccine and vaccine to be given to woman in child bearing age. Almost all 53 (96.4%) of the respondents reported the correct dose and schedule of immunization. Of the total respondents 53 (96.4%) had correctly described the storage condition of vaccines.

Table 7 Knowledge of health extension workers about Vaccines in selected health posts in Sidama Zone, Ethiopia, 2012.

Knowledge questions	N(%)*
Vaccines given at birth?	
OPV and BCG	46(83.6)
Only BCG	7(12.7)
Only OPV	2(3.6)
Vaccine given orally? *	
OPV	55(100)
Dose and schedule of immunization of the child?*	
Correct	53(96.4)
Incorrect	2(3.5)

*percentages add to 100

5.1.6. Knowledge of HEWs about contraceptives

Table 8 indicates that majority 52 (94.5%) of the respondents described at least one of the mechanisms of hormonal contraceptives. All of the respondents replied correctly timing that COC should be taken by a woman. Irregular menstruation 32 (58.2%), nausea 21 (38.2%), headache 20(36.4%) and weight gain19 (34.5%) were the most frequently side effects mentioned by the respondents. Four (7.3%) respondents reported that COC have no side effects. The respondents were asked to identify the contraindications of COC, 40 (72.7%) and 25 (45.5%) were able to mention high blood pressure and breast feeding as contraindications of COC, respectively. It was

surprising that only 7(12.7%) of the respondent knew the contraindication of COC in TB patients taking Rifampicin. Almost all 52 (94.5%) of respondents knew the information the advice to give to clients who forgets to take one or two successive pills.

Table 8 knowledge of health extension workers about Contraceptives in the selected health posts in Sidama Zone, Ethiopia, 2012.

Characteristics	N(%)
Mechanism of action of hormonal contraceptives?*	
Making cervical mucus too thick	42(76.4)
Prevent ovulation	29(52.7)
Making the lining of the uterus too thin	14(25.5)
Do not know	3(5.5)
Side effects of COC*	
Irregular menstruation	32(58.2)
Nausea	21(38.2)
Headache	20(36.4)
Weight gain	19(34.5)
Breast Tenderness	7(12.7)
No side effect	4(7.3)
I don't know	3(5.5)
Contra indications for COC*	
Pregnancy	52(94.5)
High BP	40(72.7)
Heart disease	29(52.7)
Breast feeding mother	25(45.5)
Women with goiter	16(29.1)
Breast cancer	8(14.5)
Women who smoke and who are over 35 years old	7(12.7)
TB patient taking Rifampicin	7(12.7)

*Percent may exceed 100% as multiple answers are possible

5.2. Availability of drugs, equipment and materials in the studied health posts

The inventory made on the available drugs in the health posts showed that antimalarial drugs: Coartem® and Chloroquine were available in 19(63.3%) and 21(70%) of the health posts, respectively. Eleven (36.7%) of the health posts reported there was Coartem stock out in the three months preceding the date of the data collection. Cotrimixazole and Amoxicillin were available in 29(96.7%) and 27(90%) of the health posts respectively.ORS was in stock in 25(83.3%) of the health posts. Five (16.7%) of the health posts reported that there was stock out of ORS in the three months preceding the study period. Tetracycline eye ointment and Paracetamol were available in 12(40%) and 8(26.7%) health posts respectively.

Refrigerator was available in 21(70%) of health posts, however the refrigerators were functional in only 14 (66.6%) of the health posts. All types of vaccines recommended to be handled at the health post level were available in 14(46.7%) health posts which have functional refrigerator. Oral contraceptives, contraceptive injection and implant were available in 24(80%), 30(100%) and 25(83.3%) of health posts respectively. About 13.3% of health posts reported stock outs of oral contraceptive in the three months preceding the study.

Guideline for malaria case management was available in majority (90%) of the health posts and IMCI chart booklet was available in all health posts.

5.3. Drug use practice for under five children at the studied health posts

A total of 401 medical record reviews of children less than five years old were made for 30 health posts in Sidama zone for which data were available. The median age of children whose medical records were reviewed was 23 month (3 month -59 month).More than half 230 (57.4%) of the children were female.

Diarrhea and malaria were the most common diagnosis made by the HEWs representing 152 (37.9%) and 104 (25.9%), respectively. Pneumonia and fever each accounted for 87 (21.7%) of the diagnosis. Cough was diagnosed in 47 (11.7%) cases,

while malnutrition and eye infection were diagnosed in 35 (8.7%) and 2 (0.5%) of the cases respectively.

A total of 422 prescriptions were made for 356 children less than five years old and 45 did not receive any drug treatment. Oral Rehydration Salt, Cotrimoxazole and Coartem® were the most commonly prescribed drugs for the children accounting for 118 (27.9%), 114 (27%) and 111 (26.3%) of the prescriptions made, respectively. Chloroquine and Amoxicillin were prescribed in 26 (6.2%) and 27 (6.4%) of the cases. The other drugs prescribed were, Paracetamol, Zinc and TTC, prescribed to less than 14 (6.2%) of the cases. In the rest (2.8%) of the cases no drug prescriptions were made.

Majority 306 (86%) of the prescribed drugs were consistent with the recommended guideline for the diagnosis made. Fifty (14%) of the treatment choice was identified to be inappropriate to the diagnosis made. The inappropriate treatment choices include prescription of Cotrimoxazole for diagnosis of 23 (5.7%) cases of cough, 20 (5%) cases of diarrhea and Coartem® was prescribed for 7 (1.7%) of cough cases.

6. Discussion

This study tried to assess the knowledge and practice of HEWs towards the medicines they handle in selected districts of Sidama Zone. Attempt was made to compare the findings of this study with information included in the different national guidelines including: National malaria diagnosis and treatment guideline for health workers in Ethiopia, IMCI guideline for HEWs, Family health extension package, and Vaccination service extension package (FMoH, 2003a; FMoH 2003b; FMoH, 2009).

The findings of this study showed that the HEWs were involved in providing different services to the community like ANC, PNC, environmental sanitation, family planning services, advice about pit latrine construction and providing vaccination at outreach level and HIV/AIDS and other STI and malaria prevention and control. More than half (60%) of HEWs reported that they had difficulty of accomplishing activities included in the maternal and child health packages. The reasons given for their inability include shortage of supplies and equipment, lack of awareness in the society, inadequate training and lack of adequate skill. About 72 % of the interviewed HEWs also reported that they received one to two refresher training in the year prior to survey date while 28% of them did not receive refresher trainings. Most reported that they want to get additional trainings on management of normal labour, on plan of vaccination programs, use of monitoring charts. HIV/AIDS and STIs control and prevention, VCT, lack of awareness in the society**,** on how to insert and remove implants and drug use and supply management are the other areas where the HEWs wanted to get refresher trainings. Motivation of health extension workers through continuing education can be enhanced by determining their needs and providing supportive work place supervision.

Majority of the respondents knew the first line treatment of malaria caused by *P.vivax*. And all respondents correctly stated the first line treatment of malaria caused by *P.falciparum*. This result shows that the knowledge of malaria treatment choice in non pregnant adult was satisfactory. However, disturbing finding of this study was that more than two-third of the respondents did not know the recommended treatment of malaria in pregnant woman. This showed that pregnant women might not properly treated which have a negative impact on both maternal and child health.

Thirty-nine (70.9%) of the respondents were aware of the correct doses of Coartem® for all ages, and 20 (36.4%) stated correct adult doses for Chloroqine. And nearly one-third (29.1%) and about 22 (40%) of the respondents could not tell the doses of Coartem® and Chloroquine respectively without referring to the malaria treatment guideline. knowledge about the dose and frequency of administration of antimalarial drug are essential bits of required information to enable proper medicine use.

Majority of HEWs knew about contraindications of Coartem® in pregnancy but only less than half of the respondents knew contraindications in breastfeeding woman with infant less than three month/5kg and in infant less than 5 kg. This could lead to irrational treatment and might result in unnecessary adverse effects to infants. HEWs knowledge about SEs were limited, about 56.4% and 43.6% of the respondents could not mention any of the side effects of Coartem® and Chloroquine, respectively, although these are quite important for medication safety, adherence and efficacy. It is important to note that some of the side effects that were reported such as headache, nausea and vomiting are also symptoms of malaria and therefore might not be as a result of the drug.

In the present study almost all (94.5%) of the respondents did not know the precaution to take while prescribing Coartem® for a woman taking hormonal contraceptive. This might reduce the effectiveness of hormonal contraceptives and might result in unwanted pregnancies. Oral absorption of Coartem® is enhanced by concomitant consumption of fat-containing food, In this study, very few respondents (12.7 %) stated that “food intake” is one of the necessary requirements for Coartem® therapy regarding type of food needed, i.e., whether “milk or fatty meal”, only 2 (3.6%) respondents were able to mention this correctly. This could increase the risk of recrudescence in the patient and contributes to drug resistance. The result of this study showed that most of the respondents were aware what to do in cases where the patients vomit out the antimalarial drug.

According to the national IMCI guideline for HEWs, the HEWs are expected to manage simple pneumonia with oral Cotrimoxazole (for children 2 month up to 12 month of age : 40 mg Trimethoprim +200 mg Sulphamethoxazole and 12 month up to 5 year: 60 mg trimethoprim + 300mg sulphamethoxazole) twice daily for 5 days and in child diagnosed with malnutrition the choice of treatment is amoxicillin (125 mg

for child 2 month up to 12 month and 250mg for child 12 month up to 5 year) ((FMoH, 2009). The present study results indicated that, the HEWs have unsatisfactory knowledge about doses of antibiotics (Cotrimoxazole and Amoxicillin). Incorrect doses of Amoxicillin (74.5%) and Cotrimoxazole (27.3%) were reported .This could lead to irrational drug use.

To assess the HEWs knowledge about IMCI guideline, they were asked their recommendation for treatment of pneumonia and non – pneumonia .The study results indicated that majority (90.9%) of HEWs reported recommendation of Cotrimoxazole which was in line with the guideline. High percentages identify a positive behavior that should be reinforced or encouraged. However, inappropriate antibiotics (Amoxicillin (41.8%) and Cotrimoxazole (5.5%)) recommendations were reported for treatment of non - pneumonia. The treatment recommended by the national IMCI guideline was home remedies, which was reported by less than one-third of the respondents. Nearly 20% of respondents said they would refer cases of non-pneumonia to the health center, which was not recommended on the guideline (FMoH, 2009). This percentage identifies the need for improvement. The knowledge of recommended treatment for non- pneumonia is very important as antibiotic use to treat this illness is costly to the health system and also contributes to the development of drug resistance.

Majority of the respondents have knowledge about Cotrimoxazole contraindication in infant less than two month of age, but results of this study showed that their knowledge regarding the treatment choice in this age group was low. Almost one-third of the respondents did not know what to recommend and about 20% recommended the contraindicated drug (Cotrimoxazole). This indicates that most of the respondents were not familiar with the IMCI guideline and this could lead to inappropriate treatment choices for infants in this age group.

The knowledge about vaccine doses, immunization schedule and type of vaccine to be given to woman in child bearing age was high. The study result (96.4%) with regard to the vaccination schedule was higher than study done in Pakistan on community health workers (lady health workers) which is (78%) (Khan et al 2006).

The results of this study showed that almost all respondents have knowledge about the mechanism of hormonal contraceptives. Majority of the respondents knew at least one of the side effects of COC. Among the reported SEs irregular menstruation (58.2%), nausea (38.2%), headache (36.4%) and weight gain (34.5%) were the common ones. Regarding the contraindications of COC, less than half of the HEWs knew contraindications of COC among breast feeding woman and 12.7% among TB patients taking Rifampicin. As TB management (including DOT) was currently being practiced by HEWs, they should have knowledge about the drug interaction between COC and Rifampicin as the interaction between the two drugs affects the efficacy of contraceptives.

The present study documented the availability of essential drugs recommended to the health posts, treatment guidelines. Majority of the health posts have the recommended drugs for IMCI, contraceptives and vaccines. Stock-outs were reported for important drugs such as Coartem® and ORS. The health posts reported shortage of TTC eye ointment and Paracetamol. Contraceptive were available in majority of the health post. Although the results reflect that there is a gap in the drug supply system between the health centers and the health posts, the over-all availability of the drugs needs to be encouraged. It is encouraging that IMCI chart booklet was available in all health posts, which will have an input to the quality of care provided by the health posts.

Results of the document review indicated that majority 306 (86%) of the prescribed drugs were consistent with the recommended guideline for the diagnosis made. The practice is satisfactory as compared with the recommendations in the STG. The IMCI guideline for HEWs recommends no antibiotic treatment to non-pneumonia and referral of diarrheal cases with dehydration and severe symptoms (FMoH, 2009). However, in 14% of the cases, the choice of the treatment was not in line with the standard treatment guideline. Cotrimoxazole was inappropriately prescribed for about 23 (5.7%) cases of cough and 20 (5%) cases of diahrrea. Coartem® was inappropriately prescribed for 7 (1.7%) cases of cough. This might result from these drugs were being given as a safeguard treatment to undiagnosed cases of bacterial infection. This finding highlights the need for refresher trainings on the need to adhere to recommended treatments in national guidelines. On the other hand only 14 (6.2%)

of cases were prescribed Paracetamol, zinc and TTC. Much lower use of these drugs was likely due to lack of availability at the health posts.

7. Limitations of the study

- Lack of similar studies in the country and worldwide made comparison of results difficult.
- The districts and HPs were selected based on their convenience for transportation. Therefore, the results of this study could not represent the national picture.

8. Conclusion

Majority of HEWs had knowledge about the first line treatment of malaria in children and non-pregnant adults. Among the important aspects of the antimalarial drugs HEWs knowledge about the age/weight specific doses and side effects were fairly limited. In addition, majority of the respondents did not know the potential drug interaction between Coartem® and hormonal contraceptives and the benefit of taking Coartem® with fatty meal. Most of the HEWs did not know about the age specific doses of Cotri-moxazole and Amoxicillin. In addition some antibiotic recommendations for treatment of non-pneumonia made by HEWs were not consistent with the IMCI guideline. Almost all of the HEWs know the doses and schedule of immunization and contraceptives. Only few had knowledge of contraindicationof COC in TB patients taking Rifampicin. Diarrhea, malaria and pneumonia are the most commonly diagnosed diseases and ORS, Cotri-moxazole and Coartem® were the commonly prescribed drugs at the health posts. Few of the prescription were not consistent with the treatment guidelines, where Cotri-moxazole and Coartem® were the drugs inappropriately prescribed.

9. Recommendations

- The ZHD/ Woreda Health Office should organize refresher trainings for the HEWs to improve their drug knowledge about doses, drug interactions and contraindications of antimalarial drugs and antibiotics they handle at the health posts.
- The Woreda Health Office should encourage the consistency of the health extension workers practice to the recommended guidelines regarding appropriate treatment choices.

References

Bloland PB, Ettling M (1999). Review: Making malaria-treatment policy in the face of drug resistance. Ann Trop Med Parasitol 93: 5–23.

Charles H and Barbara M (2004). How to bridge the gap in human resources for health. Lancet ; 364: 1451–56.

Center for National Health Development in Ethiopia (2006). Assessment of working condition of the 1st batch of health extension worker, A.A, Ethiopia, May, 2006.

FMoH (2004). Accelerated Expansion of Primary Health care coverage in Ethiopia (2005- 2009), FMoH, Addis Ababa.

FMOH/WHO (2003). Assessment of the Pharmaceutical Sector in Ethiopia, FMOH/WHO, Addis Ababa.

FMOH (2003a). Family Planning Extension Package, FMoH, Addis Ababa.

FMOH (2003b). Vaccination Service Extension Package, FMoH, Addis Ababa.

FMoH (2005a). Health Sector Strategic Plan (HSDP-III) 2005/6-2009/10, Planning and Programming Department, FMOH, Addis Ababa.

FMoH (2005b).Health service extension programme implementation guideline, Planning and Programming Department, FMOH, Addis Ababa.

FMOH (1993). Health policy of the Transitional Government o f Ethiopia,FMoH, Addis Ababa.

FMOH (2009). Integrated Management of Childhood Illness, Health Extension Workers Chart Booklet, FMoH, Addis Ababa.

FMOH (2004). Malaria Diagnosis and Treatment Guideline for Health Workers in Ethiopia, FMoH, Addis Ababa.

Greenwood BM, Greenwood AM, Bradley AK, Snow RW, Byass P, Hayes RJ, N'Jie AB (1998). Comparison of two strategies for control of malaria within a primary health care programme in the Gambia. Lancet 1: 1121–1127.

Hailom B (2011). Ethiopia's Health Extension Program: Improving health through community involvement. MEDICC Review Journal 13(3):46-49.

Jane Mk , Benta O, Renu MG, Mary JH, Jennifer JL, Samantha YR, Alexander KR and Michael SD (2001).Community Health Worker Performance in the Management of Multiple Childhood Illnesses (1997-2001): Siaya District, Kenya. American Journal of Public Health 91(10): 1617-1624.

Khan M, Saba N, Anwar A, Baseer N and Syed S (2006). Assessment of knowledge, attitude and skills of lady health workers. Gomal Journal of Medical Sciences; 4(2): 57-60.

Kibret M and Abera B (2010). Antimicrobial resistance trend of bacteria from clinical isolates: an eight-year retrospective study at dessie regional laboratory, northeast Ethiopia. Ethiopian Pharmaceutical Journal 28(1).

Kwame N (2004). Innovations in human resources development: the role of community health workers.URL:
http://www.hiv411.org/files/File/ 2011/health% 2 ag ent%20article%2 02. Pdf.

World Bank (2011). Success stories form a dynamic continent: Health extension workers in Ethiopia: improved access and coverage for the rural poor. URL:http://siteresources.worldbank.org/AFRICAEXT/Resources/2586431271798012256/YAC_Consolidated_Web.pdf

Nikki S and David S (2008).*International* perspective on primary health care over the past 30 years, School of Public Health, University of the Western Cape.URL:http://www.hst.org.za/uploads/files/chap1_08.pdf

Quick JD (2003). Ensuring access to essential medicines in the developing countries: A framework for action, Clinical Pharmacology and Therapeutics, 73 : 279-83.)

RRMH (2009). Community IMCI / Community Case Management: Evaluation report of community health workers performance, RRMH ,kigali..

Umar US, Olumide EA, Brieger WB (2002). Morbidity in rural south western Nigeria: a one year follow-up of voluntary health worker consultations in Idere, Oyo State, Nigeria. Afr J Med Sci 31: 297–300.

WHO (2007).Scaling up health workforce production: a concept paper towards the implementation of World Health Assembly resolution WHA.

WHO (2009).Global experience of community health workers for delivery of health related millennium development goals: a systematic review, countries case studies and recommendations for integration into national health systems, in collaboration with global work force alliance.URL: http://www.who.int/workforcealliance/knowledge/publications/alliance/Global_CHW_web.pdf

Winch PJ, Gilroy KE, Wolfheim C, Starbuck ES, Young MW, Walker LD, Black RE (2005). Intervention models for the management of children with signs of pneumonia or malaria by community health workers. Health Policy Plan 20: 199–212.

World Health Organization (2006).Ethiopia's human resource for health programme: Country case study, in collaboration with Global Health Work Force Alliance, Geneva, World Health Organization.

WHO (1978). Report of the International Conference on Primary Health Care, in collaboration with United Nations Children's Fund, Alma- Ata, USSR, 1978 Sep 6-12.

WHO (1995). A community health workers and drug: A case study of Thailand, Geneva, World Health Organization.

Annex

Annex 1 Check list for availability of medicines and materials for the provision of the Health extension program

Health Postcode _____ Date _____

No.	Items	Yes	No	Stock-out in last three month Yes/No
1.	**Availability of essential drugs**			
1.1.	Chloroquine tablet			
1.2.	Coartem® tablet			
1.3.	Paracetamol tab/syrup			
1.4.	Mebendazole tablet			
1.5.	Amoxicillin pediatric tab/syrup			
1.6.	Cotrimoxazole pediatric syrup/ tab			
1.7.	Tetracycline eye ointment			
1.8.	Oral Rehydration Salt			
1.9.	Zinc tablet			
1.10.	Ergometrine tablets			
2.	**Availability of contraceptives**			
2.1.	Oral contraceptive pill			
2.2.	Contraceptive injection			
2.3.	Emergency contraceptive			
2.4.	Male condoms			

2.5.	Contraceptive implant			
3.	**Availability of vaccines**			
3.1.	Polio			
3.2.	BCG			
3.3.	Measels			
3.4.	PCV			
3.5.	PENTA			
3.6.	TT			
3.7.	DPT			
4.	**Availability of reference materials**			
4.1.	Malaria treatment guideline			
4.2.	IMCI chart booklet			
5.	**Availability of refrigerator**			

Annex 2 Questionnaire for data collection on knowledge and practice of Heath Extension Workers (HEW) towards the drugs they handle

Addis Ababa University

School of Pharmacy

Department of Pharmaceutics and social pharmacy

1. Participant's code number:_____
2. Health post's code number:_____

Hello, my name is _____. I am working with the research team of the Department of Pharmaceutics and social pharmacy, School of Pharmacy, Addis Ababa University. I would like to ask you a few questions regarding your knowledge about the medicine you handle .The interview would take 25-30 minutes of your time. The purpose of this study is to assess knowledge and practice of HEWs about the drugs they handle in selected districts of Sidama Zone. This will be helpful in improving the rational use of drugs in particular and the quality of the health care services at the health post level in general. Your participation is completely voluntary. You can refuse to answer any questions and/or withdraw from the study at any time without a problem to you or the services you get in the health post. All your responses will remain strictly confidential: the health post staff will not have access to your responses, your name will not appear on the interview guide (will not be recorded), and your responses will not be linked to your identity at any time.

Do I have your permission to continue? Yes ☐ No ☐

If Yes, Continue

Date of Interview _____

Time Started _____

Time Finished _____

Result of the interview: 1. Completed 2. Partially completed

3. The interviewee refused 4. Others----------

For comments/questions please contact Ayalnesh shuke (0911 97 55 76**)** principal investigator for the study

Encircle your choice/s

Part one : Questions related to socio- demographic information		
Ser. No.	**Questions**	**Answers**
101	What is your sex?	1.Male 2.Female
102	What is your age (in years)?	_____
103	Marital Status	1. Single 2. Married 3. Widowed 4. Divorced
104	Education	1. 10+1. 2. 10+2 3. 10+3 4.Others(specify)_____
105	What is your religion?	1. Orthodox 2. Catholic 3. Protestant 4. Muslim 6. Others (specify)_____
106	How long have you been working as HEW?	_____ Years.
107	Could you list five health extension service packages that are functioning in the setup you are Working?	_____ _____

		_____ _____ _____
108	Could you list the health extension service packages were you not able to accomplish most?	_____ _____ _____ _____
109	What are the reasons for not accomplishing the health extension packages you listed above?	_____ _____ _____ _____ _____
110	Have you received any refresher training about health extension packages in last year?	Yes No
111	If your answer to question no. 110 is yes, list the type of trainings you received	_____ _____ _____ _____
112	Have you received refresher training related to the rational use of medicines?	1.Yes 2. No
113	Which area of the health extension package do you feel need refresher course?	_____ _____

		_____ _____
Part Two: Questions related to knowledge of Anti-malaria drug		
201	How many patients in total do you see per day or week? ***[Indicate either number of patients per day or per week]***	No. per day _____ No per week_____
202	In high malaria transmission period how many patients with malaria do you see per day/week? ***[Indicate either number of patients per day or per week]***	No. per day_____ No per week_____
203	How do you diagnose malaria? ***(Please check all that apply)***	1. Rapid diagnostic Tests 2. Microscopy 3. Clinical symptom 4. Others (specify) _____
204	How do you decide which anti-malaria treatment to prescribe to a patient? ***(Please check all that apply)***	1. Based on age 2. Based on weight 3. Based on availability of drugs 4. Based on diagnostic tests available 5. Others (specify)_____
205	How often you ask a woman for presence of pregnancy before prescribing coartem? ***(Please check one)***	1. Always 2. Most of the time 3. Sometimes 4.When the client requests information 5. Never

206.1	What is the first line treatment for uncomplicated vivax malaria for adults in Ethiopia?	_____	Correct? Y / N: 1	2
206.2	What is the first line treatment for uncomplicated vivax malaria for children in Ethiopia?	_____	1	2
206.3	What is the first line treatment for uncomplicated vivax malaria for pregnant women in Ethiopia?	_____	1	2
206.4	What is the treatment for uncomplicated falciparum malaria for adults in Ethiopia?	_____	1	2
206.5	What is the treatment for uncomplicated falciparum malaria for children in Ethiopia?	_____	1	2
206.6	What is the treatment for uncomplicated falciparum malaria for pregnant women in Ethiopia?	_____	1	2

207 What dose of Coartem® tablets do you prescribe/dispense to malaria patients?

Fill in the table given.

	Age / weight of the patient	Dose		Frequency		Duration	
		Y	N	Y	N	Y	N
207.1	3 months to 3 years (4–14 kg)						
207.2	3 to 8 years (15–24 kg)						
207.3	8 to 12 years (25–35 kg)						
207.4	Adult(35 kg)						

208	Contra -indication for Coartem® ***(Please check all that apply)***	1. Persons with a previous history of reaction after using the drug 2. Pregnant women 3. Breast feeding mothers with infants less than 3 months of age 4. Infants less than 3 month and 5 kg 5. Others (specify)_____ 88.Do not know
209	Do you know a precaution to take while giving Coartem® for woman taking hormonal contraceptive?	1. Yes 2. No 3. No precaution is needed
210	If your answer to question 209 is yes , please specify the type of precaution	_____
211	Is there any food requirement which should be fulfilled by a patient taking Coartem®?	1. Yes 2. No 88. Do not know
212	If your answer to question 211 is yes, please specify the type of food required?	_____

213 What dose of Chloroquine tablets/syrup do you prescribe/dispense to malaria patients?

Fill in the table given.

	Age / weight of the patient	Dose Correct?		Frequency Correct?		Duration Correct?	
		Y	N	Y	N	Y	N
213.1	5 – 6 /<4 months						
213.2	7 – 10 /4 – 11months						
213.3	11 – 14 /1 – 2 years						
213.4	15 – 18 /3 – 4 years						
213.5	19 – 24 /5 – 7 years						
213.6	25 – 35/ 8 – 10 years						
213.7	36 – 50 /11 – 13 years						
213.8	50+ /14+ years						

214	If the patient vomits out the anti malarial medicine what would be your advice? ***(Please check one)***	1. If he/she vomits less half an hour ,take another dose 2. Take the dose any time after the vomit occurs 3. Take double dose in the next time of administration 4. No action is necessary and continue with schedule 5. Others (specify) _____
215	Do you know that antimalaria drugs have side effects?	1. Yes 2. No 3. No side effect

216	What are the common side effects of Chloroquine ***?***	1. _____ 2. _____ 3. _____ 4. _____ 88. Do not know
217	What are the common side effects of Coartem®?	1. _____ 2. _____ 3. _____ 4. _____ 88. Do not know
218	Where do you think are anti-malaria drugs stored? **(*Please check one)***	1. In a refrigerator (2-8 ^{o}c) 2. At a room temperature (<30 ^{o}c) 3. In a hot and dry place 4. It can be stored anywhere without a problem
Part three: Questions related to knowledge of Antibiotics		
219	What would be your recommendation for a child with symptom of pneumonia? (***Please check one)***	1. Prescribe Amoxicillin 2. Prescribe Co-trimoxazole 3. Refer the case 4. Advise to take home remedies 5. Others (specify) _____ 88. Do not know

220 What dose of the drugs given in the table do you prescribe/dispense to patients? Fill in the table given.

No.		**Age / weight of the patient**	Dose		Frequency		Duration	
			Y	N	Y	N	Y	N
220.1	Cotrimoxazole (pediatric tablet)	2-12 month/4-6 Kg						
		12 month -5 year /10-19 Kg						
220.2	Amoxacilline (250 mg)	2-12 month/4-6 Kg						
		12 month -5 year /10-19 Kg						

221 What would be your recommendation for a child with Acute Respiratory Illness (non- pneumonia)?

(***Please check one)***

1. Prescribe Amoxicillin
2. Prescribe Cotrimoxazole
3. Refer the case
4. Advise to take home remedies
5. Others (specify)_____

88. Do not know

222 In which age group is cotrimoxazole contraindicated?

_____

Correct?

Y N

223 What would be your choice of antibiotic for treatment infant less 2 month with pneumonia?

1. Amoxicillin
2. Cotrimoxazole

	(***Please check one)***	2. Refer to the case 3. Others (specify)_____ 88. Do not know
224	Where do you think are antibiotic drugs stored? **(*Please check one)***	1. In a refrigerator 2. At a room temperature (< 30 ^{o}c) 3. In a hot and dry place 4. It can be stored anywhere without a problem
Part four: Questions related to knowledge of vaccines		
225	Which Vaccines are given at birth? ***(Please check all that apply)***	1. OPV 2. BCG 3. Measles 4. PCV 5. PENTA vaccine 6. DPT
226	Which one of the following vaccine is given orally? ***(Please check one)***	1. BCG 2. Measles 3. OPV 4. PENTA vaccine 5. PCV 6. TT 7. DPT

227	Which type of vaccine is given to women in the child bearing age? ***(Please check one)***	1. DPT 2. OPV 3. PCV 4. TT 5. BCG 6. PENTA vaccine 7. Measels

228 Write the dose and schedule of immunization of the child in the table given below

Age of vaccination	Type of vaccination	Dose	Correct Y	N
At birth			1	2
			1	2
At 6 week			1	2
			1	2
At 10 week			1	2
			1	2
At 14 week			1	2
			1	2
At 9 month			1	2
			1	2

229	Where do you think are Vaccines stored? **(*Please check one)***	1. All vaccines need to be frozen 2. Some vaccines can be stored at room temperature 3. All vaccines should be kept in refrigerator at 2 – 8^{o}c 4. It can be stored anywhere without a problem
Part five: Questions related to knowledge of Contraceptives		
230	How long does a typical appointment with your client, who come to take contraceptive, last?	Who come for first time _ minute Who come for refill _____minute
231	**D**oes a typical appointment include a discussion of family planning? **(*Please check one)***	1. Always 2. Most of the time 3. Sometimes 4. When the client requests information 5. Never
232	What are the basic principles of hormonal contraceptives? ***(Please check all that apply)***	1. Prevent ovulation 2. Making cervical mucus too thick and difficult for the sperm to pass 3. Making the lining of the uterus too thin for the fertilized egg to implant 88. Do not know
233	How should the client take the combined oral contraceptive pills?	_____.

234	Side effects of combined oral contraceptive pill ***(Please check all that apply)***	1.Nausea 2.Irregular menstruation 3.Headache 4.Weight gain 5.Breast Tenderness 6.Others (specify_____ 88. Do not know
235	Contra indications for combined oral contraceptive pills are: ***(Please check all that apply)***	1. Pregnancy 2. Heart diseases 3. High blood pressure 4. Breast-feeding mother 5. Women who smoke and who are over 35 years old 6. Others (specify)_____ 88. Do not know
236	What would be your advice for a client who forgets to take her pills? ***(Please check all that apply)*** 1. If the client forgets to take her pill, she must be told to take the missed pill and also continue on her normal schedule. 2. If the client forgets to take two successive pills she must be told to take the pills and continue her normal schedule. In addition, she must be advised to use condom. 3. If the client forgets to take her pill, she must be told continue on her normal schedule without taking the missed pills. 4. Others (specify)_____ 88 .Do not know	

END: Thank you for your cooperation!!!!!

Annex 3 Document review check list for to assess the pattern of drug use at the health post and appropriateness of the treatment according to the recommended guideline

Ser No.	Age	Weight	sex	Diagnosis							Treatment							Remark
				Fever	Diarrhea	Malaria	Pneumonia	Malnutrition	No- pneumonia	Others	ORS	Coartem	Chloroquine	Amoxacilline	Co-trimoxazole	Paracetamol	Others	
	Is the treatment consistent with the recommended treatment guideline?														Yes □ No □			

Data collectors should not fill out the shaded rows or columns

Annex 4 Amharic version of questionnaire for data collection on knowledge and practice of Heath Extension Workers (HEW) towards the drugs they handle

የጤና ኤክስተንሽን ባለሙያዎች የመድሃኒት እውቀትና ልምድ የሚዳስስ መጠይቅ፣ 2004 ዓ.ም

አዲስ አበባ ዩኒቨርሲቲ

ፋርማሲ ት/ቤት

ፋርማሲውክስ ት/ት ክፍል

የመጠይቁ መለያ ቁጥር -————————

የጤና ኬላው መለያ ቁጥር ————————

የጤና ኤክስቴንሽን ባለሙያዎች በጥናቱ ለመሳተፍ ፈቃደኝነታቸውን የሚገልፁበት ቅጽ

ጤና ይስጥልኝ እኔ ———————————— እባላለሁ አሁኑ ወቅት በአዲስ አበባ ዩኒቨርሲቲ ፋርማሲ ትምህርት ቤት የፋርማሲዩትክስ ትምህርት ክፍል የጥናት ቡድን አባል ነኝ በመስራት ላይ ያለው ጥናት የጤና ኤክስቴንሽን ባለሙያዎችን የመድሃኒት ዕውቀትና ልምድን የመገምገም ዋና አላማ ያለው ሲሆን ባጠቃላይ የጤና ግልጋሌቱን ጥራት በተለይም ፍትሃዊ የመድሃኒት አጠቃቀም ጥራትን ለማሻሻል ይረዳል ይህንን እውን ለማድረግ ለዚህ ጤና ኬላ ውስጥ የሚይሏቸውን መድሃኒቶች የተመለከተ የተወሰኑ ጥያቄቶችን ልጠይቅዎት እወዳለሁ፣ መጠይቁ ከጊዜዎ በግምት ከ25-30 ደቂቃ የሚወስድ ሲሆን በዚህ ውስጥ የርስዎ ተሳታፊነት ሙሉ በሙሉ በርስዎ ፈቃደኝነት ላይ የተመሰረተ ነው፤ በዚህ ጥናት ውስጥ መሳተፍዎም ሆነ አለመሳተፍዎ በርስዎ ላይም ሆነ ከዚህ ጤና ኬላ በሚያገኙት ማናቸውም አገልግሎት ላይ ምንም አይነት ተጽዕኖ የማይኖረው ሲሆን ቃለመጠይቁን በማንኛውም ሰአት ማቋረጥ ወይም ጥያቄዎችን አለመመለስ ይችላሉ፡፡ በጥናቱ ውስጥ ለተነሱት ጥያቄዎች የሚሰጡት ምላሽ ሙሉ በሙሉ በሚስጢር የሚጠበቁ ሲሆን የርስዎም ስም በማንኛውም መልኩ በጥናቱ ውስጥ አይገለጽም፤ እንዲሁም የሚጡት ምላሽ ከርስዎ ማንነት ጋር በማንኛውም መልኩ አይገለፅም

በጥናቱ ለመሳተፍ ፈቃደኛ ነዎት? አዎ ☐ አይደለሁም ☐

የቃለ መጠይቁ ለመሳተፍ ፈቃደኛ ከሆኑ ቃሉ መጠይቁ ይጀምራል

ቃለመጠይቁ የተደረገበት ቀን ————————

የተጀመረበት ሰዓት ————————

ያለቀበት ሰዓት ————————

የቃለ ምልልሱ ውጤት /የውይይቱ ውጤት

1. **የተሟላ**
2. **በከፍል የተሟላ**
3. **ፈቃደኛ ያልሆነ**
4. **ሌላ**

በሲዳማ ዞን ውስጥ የሚገኙትን የጤና ኤክስቴንሽን ባለሙያዎች የመድሃኒት እውቀትና ልምድ የሚዳስስ መጠይቅ፣ 2004 ዓ.ም

የመጠይቁ መለያ ቁጥር -————————የጤና ኬላው መለያ ቁጥር ————ቀን ———— የተጀመረበት ሰዓት ———————— ያለቀበት ሰዓት ————————

<u>ክፍል- አንድ እርስዎን የተለመከተ አጠቃላይ መጠይቅ</u>

101. ፆታ 1. ወንድ 2. ሴት

102. እድሜዎት ምን ያህል ነው? ——— አመት

103. የጋብቻ ሁኔታ

1. ያላገባች
2. ባለትዳር
3. አግብተው የፈቱ
4. የትዳር ጓደን በሞት ያጡ

104. በአሁኑ ወቅት ያለዎት የት/ት ደረጃ

1. 10+1
2. 10 +2
3. 10+3
4. ሌላ፤ ይገለፅ ————————-

105. ሃይማኖት

1. ኦርቶዶክስ
2. ካቶሊክ
3. ፕሮቴስታንት
4. ሙስሊም
5. ሌሎች፣ይገለፅ_____

106. በጤና ኤክስቴንሽን ባለሞያነት ሲሰሩ ምን ያህል ጊዜ ሆነዎታል?_____አመት

107. በጤና ኬላው ስር በተሻለ ሁኔታ እተተገበሩ ያሉትን አምስት የጤና አክስቴንሽን ፖኬጆችን እባክዎ ይዘርዝሩ

1. _____
2. _____
3. _____
4. _____

108. የትኞቹን የጤና ኤክስቴንሽ ፓኬጆች ነው ለመተግበር ችግር የገጠሞት? (እባክዎ ይዘርዝሩ)

1. _____ 5. _____
2. _____ 6. _____
3. _____ 7. _____
4. _____ 8._____

109. የጤና ኤክስቴንሽ ፓኬ□ቹን ለመተግበር የተቸገሩበት ምክንያት ምንድነው?

1. _____ 4. _____
2. _____ 5. _____
3. _____ 6. _____

110. ባለፈው አመት ውስጥ ስለጤና ኤክስቴንሽን ፖኬጆች ተጨማሪ ስልጠና ወስደው ያውቃሉ?

1. አዎ 2. አላውቅም

111. ለጥያቄ ተ.ቁ 110 መልስዎት አዎ ከሆነ እባክዎ ተጨማሪ ስልጠና የወሰዱባቸውን የጤና ኤክስቴንሽን ፖኬጆች ይዘርዝሩ?

1. _____ 5. _____
2. _____ 6. _____
3. _____ 7. _____
4. _____ 8. _____

112. ስለመድሃኒት ፍትሀዊ አጠቃቀም ስልት ተጨማሪ ስልጠና ወስደው ያውቃሉ?

1. አዎ 2. አላውቅም

113. የትኞቹ የጤና ኤክስተንሽን ፓኬጆች ተጨማሪ ስልጠና የሚያስፈልጋቸው ይመስልዎታል?

1. _____ 4. _____
2. _____ 5. _____
3. _____ 6. _____

ክፍል ሁለት የመድሃኒት ዕውቀትና ልምድን የተለመከተ መጠይቅ

ሀ. የፀረ-ወባ መድሃኒቶችን የተመለከቱ ጥያቄዎች

201. በቀን /በሳምንት ምን ያህል ህመምተኞችን ያክማሉ?

በቀን ———————— በሳምንት ————————

202. በ□ባ □ቅት በቀን /በሳምንት ከሚያክሚቸው ህመምተኞች ውስጥ ምን ያህሉ በወባ ህመም የተያዙ ናቸው?

በቀን ———————— በሳምንት ————————

203. የወባ ህመምን በምን መልኩ ነው የሚመረምሩት? **(ከአንድ በላይ አማራጭ ይቻላል)**

1. RDT በመጠቀም
2. ማይክሮስኮፕ በመጠቀም
3. የህመምተኛውን የህመም ምልክቶች በማየት
4. ሌላ፤ ይገለፅ ————————-

204. ለወባ ህመምተኛ የሚሰጡትን ፀረ ወባ መድሃኒት ለመወሰን የሚጠቀሙት ዘዴ የትኛውን ነው? **(ከአንድ በላይ አማራጭ ይቻላል)**

1. የህመምተኛውን ዕድሜ በማየት
2. የህመምተኛውን ክብደት በማየት
3. የመድሃኒቱን የመገኘት ሁኔታ በማየት
4. በምርመራ መሳሪያዎች ውጤት ላይ በመመስረት
5. ሌላ ፤ ይገለፅ ————————

205. የፀረ- ወባ መድሃኒት ከማዘዝዎ በፊት አንዲት ሴት ነፍሰጡር መሆን አለመሆኗን ምን ያህል ጊዜ ጠይቀው ያውቃሉ? **(አንድ አማራጭ ብቻ ይምረጡ)**

1. ሁልጊዜ
2. አብዛኛውን ጊዜ
3. አንዳንድ ጊዜ
4. ከታካሚው በሚቀርብልኝ ጥያቄ
5. ጠይቄ አላውቅም

206. ወባን ለማከም የሚመርጡትን የፀረ-ወባ መድሃኒት ከዚህ በታች በተሰጠው ሳጥን ውስጥ ይዘርዝሩ

ተ.ቁ	የወባው አይነት	የህመምተኛው አይነት	የመጀመሪያ ምርጫ የሆነው የፀረ-ወባ መድሃኒት
	ቫይዛክስ	አዋቂ	_____
		ህጻናት	_____
		ነፋሰ-ጡር ሴት	_____
	ፓልሲፓርም	አዋቂ	_____
		ህጻናት	_____
		ነፋሰ-ጡር ሴት	_____

207. አንድ በፓልሲፓርም ወባ ለተያዘ ሰው መሰጠት የሚገባውን የኮአርተም መጠንና የአወሳሰድ ሁኔታ ከዚህ በታች በተሰጠው ሳጥን መሰረት ይግለፁ

	ዕድሜ /ክብደት(ኪ.ግ)	መጠን (በኪኒን)	በቀን ስንት ጊዜ	ለምን ያህል ቀን
207.1.	ከ3ወር-3አመት(5-14ኪ.ግ)			
207.2.	ከ3-8አመት(14—24ኪ.ግ)			
207.3.	ከ8-12አመት(24-34ኪ.ግ)			
207.4.	አዋቂ (ከ 34 ኪ.ግ በላይ)			

208. በፓልሲፓርም ወባ የተያዙ ነገር ግን ኮአርተም እንዳይወስዱ የሚከልከሉት ሰዎች የትኞቹ ናቸው?**(ከአንድ በላይ አማራጭ ይቻላል)**

1. መድሃኒቱን ከዚህ በፊት ተጠቅመው አለርጂ ያስከተለባቸው ሰዎች
2. ነፍሰ-ጡር ሴት
3. ከ3 ወር/5 ኪ.ግ ክብደት በታች የሆነን ህፃን የምታጠባ እናት
4. ከ ከ3 ወር/5 ኪ.ግ ክብደት በታች ለሆኑ ህፃናት
5. በሌላ ፧ ይገለፅ ————————

6. አላዉቅም

209. ሆርሞናል የወሊድ መቆጣጠሪያ እንክብል ለምትወስድ ሴት ኮአርተም በሚሰጥበት ጊዜ መወሰድ የሚገባውን ጥንቃቄ ያውቃሉ?

1. አዎ
2. አላውቅም
3. ምንም አይነት ጥንቃቄ አያስፈልግም

210. ለ□□ቁ ተ.ቁ 209 መልስዎት አዎ ከሆነ ሆርሞናል የወሊድ መቆጣጠሪያ እንክብል ለምትወስድ ሴት ኮአርተም በሚሰጥበት ጊዜ መወሰድ የሚገባውን የጥንቃቄውን አይነት እባክዎ ይግለፁ

_____

211. አንድ ኮአርተም የተባለውን መድሃኒት እየወሰደ ያለ በፓልሲፓርም ወባ የተያዘ ህመምተኛ ሰው መመገብ ያለበት የተለየ የምግብ አይነት አለ?

1. አዎ
2. የለም
3. አላውቅም

212. ለ□□ቁ ተ.ቁ 211 መልስዎት አዎ ከሆነ እባክዎ የምግቡን አይነት ይግለጹ?

213.አንድ በቫይዛካስ ወባ ለተያዘ ህመምተኛ የሚሰጡትን ክሎሮክዊን የተባለውን መድሃኒት መጠንና የአወሳሰድ ሁኔታ ከዚህ በታች በተሰጠው ሳጥን ውስጥ ይግለፁ

	ክብደት(ኪ..ግ)/እድሜ (በአመት)	መጠን (በኪኒን፤ 150ሚ..ግ ቤዝ)			በቀን ስንት ጊዜ ?	ለምን ያህል ቀን?
		ቀን 1	ቀን 2	ቀን 3		
213.1.	5 - 6 /ከ4 ወር ያነሰ					
213.2.	7 - 10 /ከ4- 11ወር					
213.3.	11 - 14 /ከ1 - 2 አመት					

213.4.	15 - 18 /ከ3 - 4 አመት					
213.5.	19 - 24 /ከ5 - 7 አመት					
213.6.	25 - 35/ ከ8 - 10አመት					
213.7.	36 - 50 /ከ11- 13 አመት					
213.8.	ከ50 ኪግ በላይ/ከ14አመት በላይ					

214. አንድ ህመምተኛ የወሰደውን ፀረ-ወባ መድሃኒት ቢያስመልስ ምን አይነት ምክር ይሰጡታል ? **(አንድ አማራጭ ብቻ ይምረጡ)**

1. ያስመለሰው ከግማሽ ሰዓት በኃላ ከሆነ፣ ሌላ ክኒን ይወሰድ
2. ያስመለሰው በየትኛውም ሰዓት ቢሆን የታዘዘለትን /ላት ክኒን መጠን ደግሞ መውሰድ አለበት/ባት
3. ቀጥሎ ባለው የመውሰጃ ሰዓት ላይ ያስመለሰውን ክኒን መጠን ጨምሮ መውሰድ አለበት/ባት
4. ምንም አይነት ለውጥ ሳይኖረው በታዘዘለት/ላት መሰረት ይውሰድ /ትውሰድ
5. ሌላ፣ ይገለፅ _____

215. □□ረ-ወባ መድሃኒቶች የጎንዮሽ ጉዳት(side-effect) እንዳላቸው ያውቃሉ?

1. አዎ 2. አላውቅም 3. የጎንዮሽ ጉዳት □ለቸውም

216. ለጥያቄ ተ.ቁ 215 መልስዎት አዎ ከሆነ ስለ ክሎሮክዊን የሚያውቋቸውን የጎንዬሽ ጉዳት ይዘርዝሩ

1. _____
2. _____
3. _____
4. _____
5. _____

217.ለጥያቄ ተ.ቁ 215 መልስዎት አዎ ከሆነ ስለ ኮአርተም የሚያውቋቸውን የጎንዬሽ ጉዳት ይዘርዝሩ

1. _____ 4. _____
2. _____ 5. _____
3. _____ 6. _____

218. የፀረ-ወባ መድሃኒቶች መቀመጥ ያለባቸው የት ነው?**(አንድ አማራጭ ብቻ ይምረጡ)**

1. ማቀዝቀዣ ውስጥ (ከ2 — 8 ድግሪ ሴንቲግሬድ)
2. ከ30 ድግሪ ሴንቲግሬድ በታች
3. ለሞቃትና ደረቅ ቦታ
4. የትም ቢቀመጥ ችግር የለውም

ለ. የፀረ -ባክቴሪያን ዕውቀትና ልምድ የሚገመግሙ መጠይቆች

219. አንድ የሳንባ ምች ምልክት ለታየበት ህጻን የሚያዙለት የመጀመሪያ ምርጫ የሆነው መድሃኒት የቱ ነው?

1. አሞክሳሲሊን
2. ኮትራይሞክሳዞል
3. ሪፈር አደርገዋለሁ
4. ምክር መስጠት
5. ሌላ፣ ይግለፁ ——————————
6. አላውቅም

220. አንድ በሳንባ ምች ለታመመ ህመምተኛ የሚሰጡትን የፀረ-ባክቴሪያ መድሃኒቶች መጠንና የአወሳሰድ ሁኔታ ከዚህ በታች በተሰጠው ሳጥን ውስጥ ይግለፁ

	የመድሃኒቱ አይነት	ዕድሜ /ክብደት (በኪ.ግ)	መጠን (በኪ.ኒን)	በቀን ስንት ጊዜ ?	ለምን ያህል ቀን?
220.1.	ኮትራይሞክሳዞል (የህፃናት ኪኒን)	ከ 2 ወር-12 ወር/ 4-6 ኪ.ግ			
		ከ12ወር - 5 አመት/ 10-19 ኪ.ግ			
220.2.	አሞክሳሲሊን (250 ሚግ)	ከ 2 ወር-12 ወር/ 4-6 ኪ.ግ			
		ከ12ወር - 5 አመት/ 10-19 ኪ.ግ			

221. በቀላል የመተንፈሻ አካል ህመም(ጉንፋን ወይም ሳል) ምን አይነት ህክምና ነው የሚያደርጉት?

1. አሞክሳሲሊን
2. ኮትራይሞክሳዞል
3. ሪፈር አደርገዋለሁ
4. ምክር መስጠት
5. ሌላ፤ ይግለፁ _____
6. አላውቅም

222. የሳንባ ምችን ለማከም ኮትራይሞክሳዞል የተባለውን መድሃኒት መጠቀም የሚከለከለው በየትኛው ዕድሜ ውስጥ ላሉ ህፃናት ነው?

_____

223. አንድ እድሜው ከ 2 ወር በታች የሆነ፤ በሳንባ ምች የታመመን ህፃን ለማከም የሚመርጡት የፀረ-ባክቴሪያ መድሃኒት የትኛው ነው?(**አንድ አማራጭ ብቻ ይምረጡ**)

1. አሞክሳሲሊን
2. ኮትራይሞክሳዞል
3. ሪፈር አደርገዋለሁ
4. ሌላ ይገለጽ_____
5. አላውቅም

224. የፀረ-ባክቴሪያ መድሃኒቶች መቀመጥ ያለባቸው የት ነው?(**አንድ አማራጭ ብቻ ይምረጡ**)

1. ማቀዝቀዣ ውስጥ (ከ2 — 8 ድግሪ ሴንቲግሬድ)
2. ከ 30 ድግሪ ሴንቲግሬድ በታች
3. ለሞቃትና ደረቅ ቦታ
4. የትም ቢቀመጥ ችግር የለውም

ሐ. የክትባት እውቀትና ልምድ የሚገመግሙ መጠይቆች

225. የትኞቹን የክትባት አይነቶች ነው አንድ ህፃን ወዲያው እንደተወለደ መውሰድ የሚገባው?(**ከአንድ በላይ አማራጭ ይቻላል**)

1. የፓሊዮ ክትባት
2. ቢሲጂ
3. ሚዝልስ
4. ፒሲቪ
5. ፔንታ
6. ዲፒቲ

226. ከሚከተሉት የክትባት አይነቶች ውስጥ በአፍ የሚሰጠው ክትባት የትኛው ነው?

1. ቢሲጂ
2. ሚዝልስ
3. የፖሊዮ ክትባት
4. ፔንታ
5. ፒስቪ
6. የቲታነስ ክትባት
7. ዲፒቲ

227. በመውለጃ ዕድሜ ክልል ውስጥ ላሉ ሴቶች የሚሰጡት የክትባት አይነቶች የትኞቹ ናቸው?

1. ዲፒቲ
2. የፖሊዮ ክትባት
3. ፒስቪ
4. የቲታነስ ክትባት
5. ቢሲጂ
6. ፔንታ
7. ሚዝልስ

228. ለህጻናት ክትባት የሚሰጥበትን የዕድሜ ክልልና የሚሰጠውን ክትባት አይነት ከዚህ በታች በተሰጠው ሳጥን ውስጥ ይሙሉ

ክትባቱ የሚሰጥበት ዕድሜ	የክትባቱ አይነት	የክትባቱ መጠን
እንደተወለደ		
6 ሳምንት		
10 ሳምንት		
14 ሳምንት		
9 ወር		

229. ክትባቶች መቀመጥ ያለባቸው የት ነው?(**አንድ አማራጭ ብቻ ይምረጡ**)

1. ሁሉም ክትባቶች ከዜሮ ዲግሪ ሴንቲግሬድ በታች መቀመጥ አለባቸው
2. የተወሰኑት ክትባቶች ከ25-30 ዲግሪ ሴንቲግሬድ መቀመጥ ይችላሉ
3. ሁሉም ክትባቶች ከ2-8 ዲግሪ ሴንትግሬድ በሆነ ሙቀት ነው መቀመጥ ያለባቸው
4. የትም ቢቀመጥ ችግር የለውም

መ. የወሊድ መቆጣጠሪያ ዕውቀትና ልምድ የሚገመግሙ መጠይቆች

230. አንድ የእርግዝና መከላከያ ለመውሰድ ከመጣች ደንበኛዎ ጋር ምን ያህል ጊዜ ያሳልፋሉ?
    1. ለመጀመሪያ ጊዜ ለመጣች_____ደቂቃ
    2. በክክትል ላይ ላለች _____ደቂቃ
231. ከደንበኛዎ ጋር በሚኖሮት ቆይታ ስለቤተሰብ ምጣኔ ይወያያሉ?
    1. ሁልጊዜ
    2. አብዛኛውን ጊዜ
    3. አንዳንድ ጊዜ
    4. ከደንበኛዬ ጥያቄ ሲቀርብልኝ
    5. አልወያይም
232. የሆርሞን የእርግዝና መከላከያ መሰረታዊ እርግዝናን የሚከላከልበት መንገድ የትኛው ነው?**(ከአንድ በላይ አማራጭ ይቻላል)**
    1. የዕንቁላል ማኩረትን መከላከል
    2. የሴቷን የብልት ፈሳሽ በማወፈር የወንዱ የዘር ፍሬ ለማለፍ እንዲ ችግር በማድረግ
    3. የማህፀንን ግድግዳ በማሳሳት ዕንስ እንዳይፈጠር በመከላከል
    4. አላውቅም
233. አንዲት ሴት የእርግዝና መከላከያ እንክብሏን እንዴት ነው መወሰድ ያለባት?

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234. የእርግዝና መከላከያ እንክብል የጎንዮሽ ጉዳት የሆኑት የትኞቹ ናቸው?(አማራጩ ይነበብላቸው)**(ከአንድ በላይ አማራጭ ይቻላል)**
    1. ማቅለሽለሽ
    2. የተዛባ የወር አበባ ዑደት
    3. የራስ ምታት
    4. የሰውነትክብደት መጨመር
    5. የጡት መጠጠር
    6. ሌላ፤ ይግለፁ ——————

88.አላውቅም

235. የእርግዝና መከላከያ እንክብል መውሰድ ከተከለከለባቸው ምክንያቶች ውስጥ የትኞቹን ያውቃሉ?(አማራጩ ይነበብላቸው)**(ከአንድ በላይ አማራጭ ይቻላል)**

1. እርግዝና
2. የልብ ህመም
3. ከፍተኛ የደም ግፊት
4. ጡት ማጥባት
5. ዕድሜዋ ከ35 አመት በላይ ለሆነችና ለምታጨስ ሴት
6. ሌላ ፤ይግለፁ_____

88.አላውቅም

236. የእርግዝና መከላከያ እንክብል መውሰድ ለዘነጋች ሴት ምን አይነት ምክር ይሰጥ□ታል?(አማራጩ ይነበብላቸው)**(ከአንድ በላይ አማራጭ ይቻላል)**

1. የረሳችው አንድ ኪኒን ከሆነ ባስታወሰች ሰዓት ወዲያው ወስዳ ሌላውን በፕሮራሚ መሰረት መቀጠል አለባት
2. የረሳችው ለሁለት ተከታታይ ቀናት ከሆነ ረሳችውን ሁለቱንም ክኒን ወስዳ በፕሮግራሚ መሰረት መቀ□ል አለባት፡፤ በተጨማሪም ኮንደም እንድትጠቀም ትመከራለች
3. ለረሳችው ኪኒን ምንም አይነት ማስተካካያ ሳይደረግ በታዘዘላት መሰረት መቀጠል አለባት
4. ሌላ ይግለፁ ———————

88. አላውቅም

ቃለ መጠይቁ አልቋል አመሰግናለሁ!