An Innovative In-service Training Course on Clinical Pharmacy for Hospital Pharmacists in Ethiopia

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Background

In Ethiopia, pharmacy practice and education has long been product-focused with pharmacists having almost no involvement in direct patient care. The *Ethiopian Hospital Reform Implementation Guidelines (EHRIG)*, issued by the Federal Ministry of Health (FMOH) in 2010 which is under implementation by all public hospitals has incorporated clinical pharmacy service as a key component of hospital pharmaceutical services. It is also included in the health facility minimum regulatory standards issued by Food, Medicine and Healthcare Administration and Control Authority of Ethiopia (FMHACA).

But, Pharmacists practicing in hospitals in Ethiopia do have knowledge and skill gap to provide clinical pharmacy services. In order to initiate this service at hospitals, therefore, filling the knowledge and skill gap of practicing pharmacists was found very important. To this end, Pharmaceutical Fund and Supply Agency (PFSA) and United States Agency for International Development/Systems for Improved Access to Pharmaceuticals and Services Program (USAID/SIAPS) collaborated with School of Pharmacy of Jimma University (JU) to provide short-term in-service training on clinical pharmacy to fill the knowledge and skill gap of practicing pharmacists.

Objectives

The general objective of the training was to enable hospital pharmacists to initiate and/or strengthen Clinical Pharmacy Services in their respective hospitals.

Specific Objectives

The one-month training program is designed to enable participants to—

- Collect and interpret patient-specific clinical data
- Identify drug therapy–related problems
- Develop a pharmaceutical care plan in collaboration with patients, caregivers, and other healthcare professionals
- Communicate and implement a pharmaceutical care plan
- Monitor and evaluate therapeutic outcomes
- Document clinical pharmacy–related interventions and facilitate communication and collaboration
- Provide information on medicine use to patients and other healthcare professionals
- Participate in the hospital's quality improvement programs (e.g., drug use evaluation)
- Actively participate on the healthcare team in identifying and managing drug therapy–related problems

Training Methodology

Curriculum and Training Material Preparation

The in-service training was conducted between May 2012 and September 2014 in eight rounds. The Training was planned and organized according to SIAPS's framework for building capacity for pharmaceutical care on the basis of a country-specific need. Clinical Pharmacy unit of JU refined and modified, the original one month training curriculum designed by a consultant hired by USAID/SIAPS, to make it more practical and need based. Course materials containing trainers' and participants' guides as well as PowerPoint presentations were developed. Training course evaluation formats - daily participant feedback; class, ward based and over all course evaluation forms were also developed. Criteria's were developed to select public hospitals and trainees.

Course Organization and Delivery

A one month 167 hours innovative in-service short term training was designed. The training course had two major components: (a) class-based teaching, weeklong 49 hours didactic lectures and (b) intensive experiential training and ward attachment, three weeks long sessions including participating in morning sessions for 22.5 hours and bed side teachings and/or rounds for 96 hours.

Class Based Training Topics - 1

- Current Trends in Pharmacy Practice and Overview of Clinical Pharmacy
- Common Laboratory Tests and their Interpretation for Pharmacists
- Clinical Pharmacokinetics: IV to Oral Shift
- Clinical Pharmacokinetics: Clinical Issues in Bio-Equivalence and generic substitution
- Cardiovascular Disorders Pharmacotherapy - Hypertension, Heart Failure, Ischemic Heart Disease,
- Pharmacotherapy of Ischemic and Hemorrhagic Stroke

Class Based Training Topics -2

- Renal Disorders Pharmacotherapy - Acute and Chronic Renal Disease
- Gastrointestinal Disorders Pharmacotherapy - PUD, UGIB, End Stage Liver Disease
- Respiratory Disorders Pharmacotherapy - Asthma & COPD
- Pharmaceutical Care of Surgical Patients- Pain, Perioperative Medication Management, Surgical Antibiotic Px
- Pharmacotherapy of Epilepsy
- Pharmacotherapy of Endocrine Disorders - Diabetes Mellitus
- Cases and Introduction to experiential training and ward Attachment

Class Based Training Topics -3

- Pharmacotherapy of ID - TB, HIV/AIDs, Pneumonia, Meningitis, Infective Endocarditis, Malaria, Sepsis
- Pediatric Nutrition
- Medication Use Policy: Medication Use Evaluation and Medication Safety
- Drug Information Services
- Communication Skills in Clinical Pharmacy
- The Pharmacist Role in Patient Care – Overview of Pharmaceutical Care; Patient Assessment; Identification of Drug-related problems; ; and Development, Implementation, Monitoring, and Review of the Pharmaceutical Care Plan

The second component of the training course was the three-week ward attachment. Trainees were divided into three groups and attached to three selected wards (internal medicine, pediatrics, and surgery) for three weeks with a weekly rotation. The three disciplines were selected to align with the cases discussed during the class-based instruction. In each ward, a team of senior physicians and clinical pharmacists supervised the trainees.

During their ward attachment, trainees reviewed patient charts and interviewed patients daily in preparation for rounds and morning sessions. They attended the following rounds and morning sessions in each of the three wards—

- Multidisciplinary major teaching rounds (two hours per day for three days)
- Bedside teaching and business rounds (two hours per day for two days)
- Pharmacist-only teaching rounds (five hours per day for five days)
- Multidisciplinary morning sessions (two days per week)
- Pharmacist-only morning sessions (three days per week)

Each trainee was allowed to present cases of his or her patient for discussion during the pharmacist-only teaching rounds focusing on medication related issues. Clinical Pharmacy, Medical, Pediatric and Surgical specialists were recruited as trainers for this program. A pre- and post-test exam was used to evaluate the impact of the training on trainees' knowledge and skills.

Moreover, post in-service training follow-up and supportive supervision was designed to support trainees at their work place. A consultative meeting consisting of CEO and clinical directors of respective hospitals, stakeholders and policy makers on implementation of clinical pharmacy services in the selected hospitals was conducted. Documentation tools and instructional guide for documenting clinical pharmacy services at health facilities was also developed.

Results

A total of 200 hospital pharmacists representing 65 public hospitals in Ethiopia were trained in eight rounds **[Table 1].** Early post training follow up evaluation indicated that more than 89% of participating hospitals have initiated clinical pharmacy services depending on their practice set up.

However, up on repeat evaluation in September 2014, the trained pharmacists have managed to successfully continue the service in 51 hospitals (77.3%). Some hospitals however, reported a major setback because of an inadequate number of pharmacists to perform the other pharmaceutical duties. The main clinical pharmacy activities of the trained pharmacists include (a) reviewing patient charts, (b) participating in morning sessions and bedside rounds, and (c) providing drug information to patients and other healthcare providers. The majority of the pharmacists are attached to either medical or pediatric wards. Table 2 shows the number of DTPs identified and Figure 1 shows acceptance rate of pharmacists' intervention by the clinicians in hospitals where trainees were providing clinical services.

Table 2. DTPs identified and interventions made, Aug '12 to Dec '14 (N=37 hospitals)

Category	# DTPs	# Interventions	Percentages
Unnecessary drug therapy	904	806	89.2
Needs additional drug therapy	1,386	1,267	91.4
Ineffective drug	500	403	80.6
Dosage too low	492	471	95.7
Adverse drug reaction	332	281	84.6
Dosage too high	497	468	94.2
Noncompliance	677	662	97.8
Others	12	11	91.7
Total	**4,800**	**4,369**	**91.0**

As a result of the training intervention and consultative workshops, understanding and consensus were established among all stakeholders on the need to initiate clinical pharmacy services at all hospitals.

Moreover, because of new awareness of the importance of clinical pharmacy services, the FMOH assigned new pharmacy graduates to specifically support clinical pharmacy services. In addition, the demand from hospitals for support in clinical pharmacy services has increased since the start of the training program.

Overall, the pre-and post-test results confirmed that the training have indeed tremendously improved the knowledge of participants in all rounds [Figure 2]. Nighty nine percent of the trainees scored more than 50% after the training, compared with only 46% of trainees achieving such a score before the training. The trainers also witnessed the significant changes that trainees made in patient management during their practical attachment.

Fig 1. Acceptance rate of Pharmacist's Interventions by Clinicians, August '12 to May'14 [N=2552]

Demographics

Table 1. Distribution of Hospitals and Pharmacists Participating in In-Service Training by Region, May 2012–September 2014

Region/City Administration	Number of Hospitals			Number of Trainees			
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Total
Addis Ababa	3	5	3	8	14	5	27
Amhara	7	9	12	19	20	13	52
Dire Dawa	1	1	0	3	2	0	5
Harari	1	2	0	3	3	0	6
Oromia	8	5	13	20	9	15	44
SNNPR	7	5	3	17	11	5	33
Tigray	3	8	6	8	17	6	31
Benishangul-Gumuz	0	0	1	0	0	1	1
Afar	0	0	1	0	0	1	1
Total	30	35	39	78	76	46	200

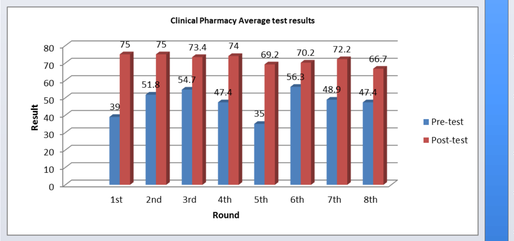

Fig 2. Average Test Results, Clinical Pharmacy In-service Training, May 2012–September 2014

Figure 3. Physicians, clinical pharmacists, and trainees at Jimma University Specialized Teaching Hospital on bedside rounds (left) and morning class room session (right) .

Conclusion

This innovative training program has enabled clinical pharmacy to be a recognized practice throughout the nation. The pharmacists are considered as an important member of the multidisciplinary team. This training program has also contributed for seamless integration of new patient oriented pharmacy graduates into hospital clinical services.

The training program enable to achieve the following:

- Increased identification and reporting of ADRs- strengthening pharmacovigilance
- Intensified patient education on rational use of medicines
- Responsive medicine supply due to better knowledge about the clinical needs of patients
- Strengthen facility level DTC and DIS activities
- Pharmacy only morning sessions contributing to transfer of knowledge and skills

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