Epidemiology: Open Access

Gelaw et al., Epidemiology (Sunnyvale) 2017, 7:5
DOI: 10.4172/2161-1165.1000323

Research OMICS International

Knowledge, Attitudes and Practice of Physicians towards Clinical Pharmacy Services in Ten Public Hospitals in Oromia Regional State, Ethiopia

Belayneh Kefale Gelaw[1*], **Gobezie Temesgen Tegegne**[1], **Amsalu Degu Defersha**[1]

[1]*Department of Pharmacy, College of Medicine and Health Science, Ambo University, Ambo, Ethiopia*

[*]**Corresponding author:** Belayneh Kefale Gelaw, Department of Pharmacy, College of Medicine and Health Science, Ambo University, Ambo, Ethiopia, Tel: +251913805290; E-mail: bkefale5@gmail.com

Received date: September 1, 2017; **Accepted date:** September 8, 2017; **Published date:** September 18, 2017

Abstract

Objective: The purpose of this study was to assess knowledge, attitudes and practice of medical doctors in some selected public hospitals towards Clinical Pharmacy Services in Ethiopia.

Methodology: Cross sectional study design was employed to assess knowledge, attitude and practices of medical doctors towards clinical pharmacy services. The study population was selected using simple random sampling technique. Self-administered questionnaires were used to extract relevant information from the study subjects. The data was entered, cleaned and analyzed by using SPSS version-20.

Results: The mean age of the study participants was 28.2 ± 5.2 years with a range between 20-53 years and 87.1% were males. 89.6% of the respondents are general practitioner and 8(8.6%) with different specialization with year of experience 2.94 + 3(0.5-22 year). Majority of respondents are knowledgeable regarding to clinical pharmacists as a member of medical teams and their services in reducing medication related errors and health related costs. More than 74% of the respondents were highly satisfied by the role of clinical pharmacists in counseling of patients regarding to safe and appropriate use of medications, prevention, detection and management adverse drug reactions. The present study depicted that lack of support from administration (70%); shortage of staff (63.4%) and lack of adequate support by the health care team (62.4%) were the major limitations to practice clinical pharmacy service in the hospitals.

Conclusions: Physicians undoubtedly considered that pharmacists are drug information experts. Nevertheless, their anticipation of pharmacists as providers of quality clinically-focused pharmacy services was little. Physicians were willing to collaborate with clinical pharmacists in monitoring drug therapy and improving patient care by identifying medication errors.

Keywords: Clinical pharmacy service; Patient oriented; Drug product information; Pharmaceutical care

Abbreviation

CPS: clinical pharmacy services; DRP: Drug related problem; KAP: Knowledge, Attitude and practice; MOH: Ministry of health; PASW: Predictive analytics software; SPSS: Statistical package for social science; UAE: United Arab Emirates; CEO: Chief Executive Officer

Introduction

Background information

Managing medicines safely, effectively and efficiently is central to the delivery of high-quality care that is focused on the patient and gives value for money. Clinical pharmacy is a health science discipline whereby pharmacists provide patient care that optimizes medication therapy and promotes health, wellness, and disease prevention [1]. The practice of clinical pharmacy embraces the philosophy of pharmaceutical care; it blends a caring orientation with specialized therapeutic knowledge, experience, and judgment for the purpose of ensuring optimal patient outcomes. This field of pharmacy practice focuses on patient-oriented rather than drug product-oriented service [2]. The discipline arose out of dissatisfaction with old practice norms and the pressing need for a competent health professional with a comprehensive knowledge in the therapeutic use of drugs. Clinical pharmacists are a primary source of scientifically valid information and advice regarding the safe, appropriate, and cost–effective use of medications [1,3]. In the developed countries, rational use of drugs is a habitual practice due to the high level of interaction between physicians and pharmacists [3].

How does clinical pharmacy differ from pharmacy?

The discipline of pharmacy embraces the knowledge on synthesis, chemistry and preparation of drugs. But Clinical pharmacy is more oriented to the analysis of population needs with regards to medicines, ways of administration, patterns of use and drugs effects on the patients. Clinical pharmacy is a relatively new discipline in the pharmacy profession which is patient rather than drug oriented and aims to improve the quality of drug therapy [4].

The focus clinical pharmacy moves from the drug to the single patient or population receiving drugs. The goal of clinical pharmacy activities is to promote the correct and appropriate use of medicinal products and devices [5].

Pharmacists in Ethiopia practice in various settings, including community pharmacy, hospital pharmacy, drug information service, pharmaceutical industry, marketing, sales, regulatory agencies, academia, and drug distribution. There are few clinical pharmacists working in the public sector in Ethiopia and virtually none in the private sector. Thus, clinical pharmacy is in its infancy stage of development in Ethiopia and hence it requires greater attention to achieve the objective of pharmaceutical care [6].

Statement of the problem

Many studies have shown that physicians are receptive to several clinical services provided by pharmacists if these services were provided in the form of consultation or in a supportive role [7]. However, the relationship between the physician and community pharmacist has been described as a 'complex one' [8-10] and few studies have reported the existence of communication gap between pharmacists and medical doctors [11-13].

A study conducted in some Arabian countries revealed that patient care was exclusively delivered by physicians and nurses. Nevertheless, the input of pharmacists in managing drug therapy depends on the physician's willingness [13]. In Sudan, physicians were not interested with pharmacists about their recommendation regarding to prescription medications [14]. However, in Jordan 63% of physicians anticipate the pharmacist to educate their patients with regard to the safe and appropriate use of drugs. In addition, approximately half of the physicians agreed that pharmacists were always a reliable source of drug information [15]. In contrast, although the role of the community pharmacist seems to be changing in many countries, 48.2% of physicians in Kuwait are still uncomfortable with pharmacists' suggestion about the use of prescription medications to patients. Furthermore, one third of physicians do not expect the pharmacist to be available for consultation during rounds [16,17]. Doctors and community pharmacists have little interaction in Libya and UAE, based on the findings of one particular study [18] which showed that almost 70 and 60% of doctors in Libya and UAE, respectively, either 'rarely' or 'never' discussed patients' drug therapy with a pharmacist. Furthermore, it would appear that there is some skepticism about the appropriateness of pharmacists being involved in monitoring blood pressure and providing a therapeutic substitute. In Ethiopia, despite their increasing demand for clinical pharmacy professionals, there was no study about the satisfaction level of physicians about the patient oriented pharmacy service. This triggered an immense interest to do further assessment in this area.

Objective

General objective: To evaluate the knowledge, attitude and practices (KAP) of the medical doctors towards clinical pharmacy in Oromia regional state, Ethiopia.

Specific Objective:

- To assess attitude of medical doctors towards clinical pharmacy service
- To determine the level of medical doctors' awareness on clinical pharmacy service
- To identify factors affecting KA of medical doctors towards clinical pharmacy service
- Do physician attitude correlates with their knowledge

Methods

Description of the study area and period

The study was conducted in Oromia Regional State, one of the largest regional states in Ethiopia. It is the homeland of 35 million populations, in which the number of males and females are almost proportional. In 2014, there are 67 functional hospitals in Oromia regien. Most of them are general hospitals. The study facilities were ten public hospitals found in Oromia regional state, Ethiopia. The study was conducted from May 01- 30/2015.

Population

Source population: All medical doctors working in the selected hospitals

Study population: Medical doctors working in the selected hospitals during the study period.

Inclusion and exclusion criteria

Inclusion criteria: All medical doctors working in ten public hospitals and consented to participate in the study during the study period were included.

Exclusion criteria: Jimma University specialized hospital physicians.

Study variables

Independent variables: Sex, Age, Educational Level, Religion.

Dependent variables: Practice, Knowledge, Attitude.

Study design

A cross sectional study was conducted to assess knowledge, attitude and satisfaction of medical doctors towards clinical pharmacy services using interview.

Sample size and sampling technique

Ten public hospitals which offer clinical pharmacy services were selected by simple random sampling.

Data collection procedures

Data was collected using self-administered structured questionnaire. The questionnaire includes both closed and open ended questions, and consists of a series of questions prepared by the researchers with one version targeted at medical doctors. It was prepared in English. The questionnaire includes information on socio - demographic characteristics, knowledge, attitude and practice towards clinical pharmacy service.

Data processing and analysis

Data were cleared, coded, and entered into predictive analytic software (PASW) (formerly SPSS) window version 20 for management and analysis. Descriptive statistics including frequency, mean, range,

and standard deviation were used to summarize patients' baseline socio-demographic data and evaluate distribution of responses. Odds ratio and 95% confidence interval was used to check significant association between dependent & independent variables using univariate and multivariate analysis by logistic regression model. In all cases, P-value<0.05 were considered to be statistically significant.

Data quality management

Semi-structured questionnaire was pretested in 5% of the participants, and then the input was used to prepare the final questionnaire. Training was given for the data collectors and the quality of each data was checked by the principal investigators.

Ethical consideration

Ethical approval of the research proposal was obtained from the ethical review committee of Ambo University. Then the letter written from the college of medicine and health science coordinator was given to the CEO of the selected public hospitals to solicit their collaboration. In addition, data collection supervisors clarified the objectives of the study to the hospitals, verbal consent was obtained from the study participants and those voluntary to participate provided the questionnaire to fill. The confidentiality was assured by excluding their names and the right not to participate in the study was respected.

Result

Out of 101 questionnaires administered, 93 were completed and retrieved thereby giving response rates of 92.1%. The mean age of the study participants is 28.2 ± 5.2 years (20-53 years). Majority of the respondents were (83, 89.6%) general practitioner. They do have an average of 2.94 + 3 year (0.5-22 yr) of experience (Table 1).

Variable	Category	N (%)
Age group (years)	20-29	68 (73.12)
	30-39	19 (20.43)
	≥ 40	6 (6.45)
Gender	Male	81 (86.2)
	Female	12 (12.8)
	Non response	1 (1.1)
Level of education	General practitioner	83 (88.3)
	Special	8 (8.5)
	Non response	2 (2.15)
Year of experience in practice (years)	<1	3 (3.28)
	1-5	79 (84.9)
	>5	6 (6.45)
	Non response	5 (5.37)

Table 1: Socio-demographic information of participant physicians.

Most physicians (>50%) are knowledgeable regarding to clinical pharmacists as a member of medical team, their services in reducing medication related errors and health related costs, and improving patients' quality of life. But less than half of them have good awareness on clinical pharmacist participation in ambulatory ward and intensive care unit (Table 2).

Physicians knowledge	Yes (%)	No (%)
Have you heard about clinical pharmacy service in Ethiopia?	91 (97.8)	2 (2.2)
Is there patient oriented pharmacist in your hospital?	85 (95.5)	4 (4.5)
Do you think that pharmacists are integral part of medical teams?	88 (94.6)	5 (5.4)
Do you know that pharmacists attend ward round?	60 (65.2)	32 (34.8)
Do you know that pharmacists attend morning session?	53 (57)	40 (43)
Do you know that pharmacists improve the patient's quality of life?	83 (89.2)	10 (10.8)
Do you know that pharmacists are capable of offering primary care to the patients?	64 (68.8)	29 (31.2)
Do you have information regarding to pharmacists role in ambulatory ward?	42 (46.2)	49 (53.8)
Do you have information regarding to pharmacists role in intensive care unit?	48 (51.6)	45 (48.4)
Do you know that involvement of pharmacists can reduce adverse drug event?	87 (93.5)	6 (6.5)
Do you know that involvement of pharmacists can reduce health care costs?	85 (91.4)	8 (8.6)

Table 2: Physicians' knowledge towards the current clinical pharmacy service.

Most of the physicians (>50%) have good attitude on clinical pharmacists' service in monitoring patient response to drug therapy from toxicity, roles in patient education and counseling and provide relevant drug information to health care professionals. However, less than half of the respondents said the current set up (infrastructure and environment) of their hospital is appropriate for the provision of clinical pharmacy services (Table 3).

Given statements of attitude	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
Do you think that Clinical pharmacists' involvement in ward round is desirable?	32 (34)	37 (39.4)	19 (20.2)	4 (4.3)	1 (1.1)
Do you think that Clinical pharmacist can play important role in patient education and counseling?	37 (39.4)	50 (53.2)	4 (4.3)	1 (1.1)	1 (1.1)
Do you think that Clinical pharmacist can monitor patient response to drug therapy from toxicity/side effects perspective?	42 (44.7)	46 (48.9)	3 (3.2)	0	1 (1.1)
Do you think that Clinical pharmacist can monitor patient response to drug therapy from effectiveness perspective?	29 (30.9)	49 (52.1)	12 (12.8)	3 (3.2)	0
Do you think that clinical pharmacist can involve in drug selection (drug, dosage form) based on patient and drug factors?	38 (40.4)	32 (34)	14 (14.9)	7 (7.4)	1 (1.1)
Do you think that Clinical pharmacist can provide relevant drug information to health care professionals?	33 (35.1)	48 (51.1)	9 (9.6)	0	1 (1.1)
Do you think that Clinical pharmacist can detect and prevent medication use errors?	37 (39.4)	37 (39.4)	16 (17)	1 (1.1)	1 (1.1)
Do you think that Clinical pharmacy services enhance patient's satisfaction?	24 (25.5)	47 (50)	15 (16)	5 (5.3)	1 (1.1)
Do you think that Clinical pharmacist should take patient's medication history at admission?	29 (30.9)	27 (28.7)	19 (20.2)	15 (16)	1 (1.1)
Do you think that Clinical pharmacists should have access to patient's chart and have a place to document their services?	22 (23.4)	34 (36.2)	27 (28.7)	8 (8.5)	1 (1.1)
Do you think that Clinical pharmacist analyzes patient treatment and suggest changes of therapy when necessary?	19 (20.2)	39 (41.5)	16 (17)	17 (18.1)	1 (1.1)
Do you think that Pharmacists should also focus on patient care not only drug products?	22 (23.4)	42 (44.7)	22 (23.4)	5 (5.3)	1 (1.1)
Do you think that the current set up (infrastructure and environment) of your hospital is appropriate for the provision of clinical pharmacy services?	13 (13.8)	20 (21.3)	34 ()36.2	16 (17)	9 (9.6)
Do you think that Clinical pharmacy service implementation is desirable in health care system?	26 (27.7)	42 (44.7)	19 (20.2)	4 (4.3)	1 (1.1)
Do you think that Clinical pharmacists can improve over all patient outcome/ quality of patient care?	26 (27.7)	52 (55.3)	1 1(11.7)	2 (2.1)	1 (1.1)
Do you appreciate the presence of clinical pharmacists in the wards all the times important for patient care?	24 (25.5)	39 (41.5)	14 (14.9)	11 (11.7)	3 (3.2)
Do you feel confidence when there is clinical pharmacist in the ward/OPD?	31 (33)	35 (37.2)	20 (21.3)	4 (4.3)	1 (1.1)

Table 3: Physician's, attitude/perception towards the current clinical pharmacy services.

Greater than half of the participants are satisfied with pharmacists' role as counselor of patients regarding to safe and appropriate use of medication, involvement in side effect prevention and management, and preventing, detecting and resolving adverse drug reactions. But they were poorly satisfied with participation of pharmacists in round, patient counseling during discharge, and documenting their services (Table 4).

Pharmacists' activity	Excellent (%)	Very good (%)	Good (%)	Satisfactory (%)	Poor (%)
Clinical pharmacists present in the ward	5 (5.3)	13 (13.8)	15 (16)	20 (21.3)	35 (37.20
Clinical pharmacists actively participate in ward rounds with the health care team	7 (7.4)	6 (6.4)	14 (14.9)	25 (26.6)	36 (38.3)
Clinical pharmacists provide timely information on drug availability	9 (9.6)	10 (10.6)	15 (16)	26 (27.7)	29 (30.9)
Clinical pharmacists provide information on appropriate route of drug administration	7 (7.4)	9 (9.6)	20 (21.3)	27 (28.7)	27 (28.7)
Clinical pharmacists participate in preventing, detecting and resolving ADR	11 (11.7)	8 (8.5)	15 (16)	28 (29.8)	27 (28.7)

Clinical pharmacists involve in side effect prevention and management	10 (10.6)	10 (10.6)	14 (14.9)	26 (27.7)	29 (30.9)
Clinical pharmacists counsel patients regarding safe & appropriate use of medication	11 (11.7)	9 (9.6)	15 (16)	32 (34)	22 (23.4)
Clinical pharmacists counsel patients during discharge	4 (4.3)	6 (6.4)	13 (13.8)	20 (21.3)	46 (48.9)
Clinical pharmacists document their service in patient care card	4 (4.3)	7 (7.4)	10 (10.6)	24 (25.5)	43 (45.7)
Clinical pharmacists participate in dose calculation for patients	3 (3.2)	10 (10.6)	17 (18.1)	29 (30.9)	30 (31.9)
Clinical pharmacists identify and report ADR	7 (7.4)	10 (10.6)	16 (17)	20 (21.3)	35 (37.2)
Clinical pharmacists provide information on alternative drug regimen	5 (5.3)	10 (10.6)	21 (22.3)	30 (31.9)	24 (25.5)
Clinical pharmacists advise on cost effective medications	5 (5.3)	10 (10.6)	21 (22.3)	30 (31.9)	24 (25.5)
Clinical pharmacists participate in dose adjustment for pediatric and renal/liver failed patients	4 (4.3)	6 (6.4)	15 (16)	29 (30.9)	34 (36.2)
Clinical pharmacists actively participate in bedside discussion to assist clinicians on therapeutic care plan and drug selection	4 (4.3)	6 (6.4)	15 (16)	29 (30.9)	34 (36.2)

Table 4: Physicians' level of satisfaction on the current performance of pharmaceutical care providers.

Lack of support from administration (70%), shortage of staff (63.4%) and lack of adequate support by the health care team (62.4%) are the major limitation of clinical pharmacy service (Tables 5).

Questions	Yes (%)	No (%)
Lack of clinical knowledge on disease management	15 (16.1)	78 (83.9)
Lack of clinical knowledge on drug related issue	9 (9.7)	84 (90.3)
Lack of active communication skill	22 (23.9)	70 (76.1)
Lack of confidence to interact with the health care team	25 (26.9)	68 (73.1)
Absenteeism on working area	35 (37.6)	58 (62.4)
Lack of interest to provide clinical pharmacy service	35 (37.6)	58 (62.4)
Lack of support from administration	65 (69.9)	28 (30.1)
Lack of adequate support by the health care team	58 (62.4)	35 (37.6)
Lack of proper documentation	37 (39.8)	56 (60.2)
Shortage of staff	59 (63.4)	34 (36.6)
Inconvenient hospital setup for provision of clinical pharmacy service	42 (45.2)	51 (54.8)
Other justification	2 (2.2)	91 (97.8)

Table 5: Limitations of the current clinical pharmacy service.

Factors affecting KA of physicians

From logistic regression, it is found that level education (p=0.996) and length of service year (p=1.000) are not determinant factor for physicians' knowledge regarding to current clinical pharmacy service.

From logistic regression, it is also found that level education (p=0.994) and length of service year (p=1.000) are not determinant factor for physicians' attitude regarding to current clinical pharmacy service. Moreover, the correlation between physicians' knowledge and attitude is insignificant.

Discussion

Globally, World Health Organization (WHO) is making attempts to deliver cost-effective quality health care globally [19]. The involvement of pharmacist in health care team has been proved cost-effective rather than an extra cost added to the treatment cost, which is evident because of treatment success, avoidance of adverse drug events, optimization of complex regimens, designing of adherence programs, and recommendation for cost-effective therapies. The health care team members need synchronization and alliance in order to fulfill their responsibilities. Patient care can be improved by coordinated work

between physicians and pharmacists. Due to varying side effects of numerous medications, it is imperative that the pharmacist and physicians work together to reduce health care cost as well as provide the best available care to patients. Medication related health problem requires close interaction between physicians and pharmacist to be avoided and resolved [20]. This interaction demands an expanding role for the pharmacist to ensure cost effective and potential patient cares. As a result, it is very important for the physicians to be willing to accept clinical pharmacy services.

The practice of pharmacy has changed significantly in recent years. This, invariably, will necessitate changes in procedures and training, and may require more resources, imaginative use of pharmacy skills, and involvement of clinical pharmacists at prescribing and dispensing stages [21].

Interestingly, the present study revealed that there was a strong belief among medical doctors that clinical pharmacists were an important part of the clinical team to minimize medication errors, improve the patient's quality of life, offer primary care to the patients, and reduce adverse drug event and health care costs in a hospital setting. Another study done in United Arab Emirates reported that 75% medical students perceived that the clinical pharmacists are important part of the healthcare team. On the other hand, 82% believed that clinical pharmacists can help improve the quality of medical care in hospitals [22]. Furthermore, a study done by Bleiker & Lewis revealed that general practitioners have a positive attitude towards pharmacists about their insertion into the primary health care panel and an expansion of their role in relation to medicines; however, there was small support for the thought of pharmacists undertaking screening and running therapeutic monitoring clinics [23].

The finding was also comparable in study done in Pakistan and Jordan, which demonstrated that majority of general practitioners (>90%) thought that clinical pharmacist should be a source of clinical medicines information to general practitioners such as adverse effects of medicines and selection of a medicine for a particular disease state [24]. But in a study done in Sudan and Kuwait, physicians were found to be 'uncomfortable' with pharmacists' suggestion or recommendation on prescription medications to their patients, even if they are involved in the treatment of minor illnesses [25]. This might be due to lack of awareness on pharmaceutical care service.

In this study, participants had poor awareness on clinical pharmacist role in ambulatory and intensive care unit. However, other studies showed that clinical pharmacists started contributing to patient care in the hospitals by conducting ward rounds, monitor drug therapies and most importantly educate patient by the bedside. Moreover, they also perform a major role in provision of ambulatory clinical setups by providing intensive patient education and consultation to the prescribers [26]. This may be due to, in the developed countries, the improved interaction among physicians and pharmacist has resulted in a more cost effective and safe drug therapy [27].

Participated physicians agreed on clinical pharmacists' service on monitoring toxicity of medications (94.6%), patient education and counseling (93.5%) and provision of relevant drug information to health care professionals (87%). This is in line with studies done in United Arab Emirates, in which 75% medical personnel perceived that the clinical pharmacist is an important part of the healthcare team while 82% believed that clinical pharmacists can help to improve the quality of medical care in hospitals [28]. Furthermore, a study done in Pakistan showed that most physicians (70.8%) consider that involvement of clinical pharmacist in medication management is undoubtedly good [29].

In this study most of the respondents replied that there was no organized clinical pharmacy service in their setups. Interestingly, this study was in line with the study done in UAE in which 53% of the respondents reported that they did not have better setup for clinical pharmacy services in their institutions. Nevertheless, there was substantial willingness among physicians and nurses to cooperate with clinical pharmacists [30].

The study revealed that 95.5% of the medical doctors knew about the clinical pharmacy services in their institutions. This may be attributed to the presence of patient-oriented services by pharmacists. Although the findings demonstrated that physicians generally have good attitude towards clinical pharmacy service, such practice was relatively common only in public health care facilities. This is due to the virtual lack of clinical pharmacists in private hospitals in Ethiopia.

Findings from this study also further support the need for clinical pharmacists to perform specific duties that have been suggested in previous studies, e.g., patient education and minimizing medication errors [30,20]. Another study in Pakistan showed that physicians were ambivalent about the government policies and did not believe that the current policies give sufficient recognition to patient care approach. The government should develop strategies to strengthen doctors-pharmacists relation, thereby enhancing the role of pharmacists in clinical care.

Regarding to the level of satisfaction in clinical pharmacy service, (%) physicians were satisfied role played by pharmacists with patients counseling concerning to safe and appropriate use of medication, involvement in side effect prevention and management, and preventing, detecting and resolving adverse drug reactions. Nevertheless, they were poorly satisfied with pharmacists' participation in ward rounds with other health care team, patient counseling during discharge, and documenting their services.

The present study depicted that lack of support from administration (70%); shortage of staff (63.4%) and lack of adequate support by the health care team (62.4%) were the major limitations to practice clinical pharmacy service in the hospitals.

The present study revealed that level education ($p>0.05$) and length of service year ($p>0.05$) were not determinant factors for physicians' knowledge and attitude regarding to current clinical pharmacy service. Moreover, there was no correlation between physicians' attitude and knowledge regarding to clinical pharmacy service [29,30].

Conclusion

Physicians undoubtedly considered that pharmacists are drug information experts. Nevertheless, their anticipation of pharmacists as providers of quality clinically-focused pharmacy services was little. Physicians were willing to collaborate with clinical pharmacists in monitoring drug therapy and improving patient care by identifying medication errors. However, Year of service and level of education were not significant predictors of physicians' knowledge and attitude towards the service.

In order to strengthen pharmaceutical care service the following concerned bodies ought to do the following major tasks:

Ministry of health

- To create new measures to promote and extend clinical pharmacy services in both government and private health care facilities.
- To formulate doctors-pharmacists partnership programs, thereby enhancing health care.
- To prepare some facilities and benefits for clinical pharmacy service.

Ministry of education

- To formulate inter-professional relationships between physicians and pharmacists in medical and pharmaceutical education curricula is also needed to enhance collaboration between physicians and pharmacists in patient care.

Pharmacy schools and associations

- To modify clinical curriculum for pharmacy students.

Physicians and other health care professionals

- To advocate team work in health care delivery

Authors' Contribution

BKG; carried out the research drafting, design, statistical analysis and interpretation as well as coordinating all activities in the research, GTT; participate in the sequence alignment and drafted a manuscript, ADD; participates in the design of the study and performs statistical analysis.

Funding

Ambo University

Conflict of Interest

None declared

Ethics

Ethical approval was obtained from Ethical Review Board of College of Medicine and Health Sciences of Ambo University.

Acknowledgement

We are very grateful to our college staff members for unreserved guidance and constructive suggestions and comments from the stage of proposal development to this end. We would like to thank Ambo University for supporting the budget which required for this research. Finally our deepest gratitude goes to hospital medical directors, which helped and allowed us in collecting and gathering data.

References

1. American College of Clinical Pharmacy (2008) The definition of clinical pharmacy. Pharma Ther 28: 816-817.
2. Barker KN, Valentino JG (1972) On a political and legal foundation for clinical pharmacy practice. J Am Pharm Assoc 12: 202-206.
3. Leape LL, Cullen DJ, Clapp MD, Burdick E, Demonaco HJ, et al. (1999) Pharmacist participation on physician rounds and adverse drug events in the intensive care unit. JAMA 282: 267-270.
4. Abduelkarem A, Sharif S (2008) Current Levels of Interaction between the Physician and Pharmacist: A Comparative Study in Libya and UAE. Jordan J Pharm Sci 1: 146-155.
5. Bond CA, Raehl CL, Franke T (2002) Clinical pharmacist staffing in United States hospitals. Pharmacotherapy 22: 1489-1499.
6. European Society of Clinical Pharmacy (2014) What is clinical pharmacy?.
7. Bero LA, Beney J, Bond C (2000) Expanding the roles of outpatient pharmacists: effects on health services utilisation, costs, and patient outcomes. Cochrane Database Syst Rev 3: CD000336.
8. Sulick JA, Pathak DS (1996) The perceived influence of clinical pharmacy services on physician prescribing behavior: a matched-pair comparison of pharmacists and physicians. Pharmacotherapy 16: 1133-1141.
9. Griffin JF (1956) More physician-pharmacist cooperation needed. N Engl J Med 56: 115-118.
10. Ables AZ, Baughman OL (2002) The clinical pharmacist as a preceptor in a family practice residency training program. Fam Med 34: 658-662.
11. Bradshaw SJ, Doucette WR (1998) Community pharmacists as patient advocates: physician attitudes. J Am Pharm Assoc 38: 598-602.
12. Nesbit F, Chaplain DC, Edwards JA Jr, Fleming GR, Harker MN, et al. (1995) Counselling of patients by pharmacists. Blessing or curse?. NC Med J 56: 115-118.
13. Ranelli PL, June Biss J (2000) Physicians' perceptions of communication with and responsibilities of pharmacists. Am Pharm Assoc 40: 625-630.
14. Tanskanen P, Jakala J, Airaksinen M (1997) Physicians' view on co-operation with community pharmacists in Finland. J Soc Adm Pharm 14: 220-229.
15. Plagakis J (1997) Don't call me, call the doc. Drug Trop 1997; 141: 67.
16. Shakeel S, Iffat W, Fasih F, Yousuf YN (2015) Expanding Role of Pharmacists in Delivering Clinical Services; General Practitioners and Pharmacists Viewpoint. J Pharma Care Health Sys 2: 148.
17. Sing WS (2001) Pharmacy practice in Malaysia. Malaysian J Pharm 44: 3-9.
18. Abu-Gharbieh E, Fahmy S, Rasool BA, Abduelkarem A, Basheti I (2010) Attitudes and Perceptions of Healthcare Providers and Medical Students towards Clinical Pharmacy Services in United Arab Emirates. Trop J Pharm Res 9: 421.
19. Awad A, Matowe L, Capps P (2007) Medical doctors' perceptions and expectations of the role of hospital pharmacists in Sudan. Pharm World Sci 29: 557-564.
20. Kheir N, Zaidan M, Younes H, El Hajj M, Wilbur K, et al. (2008) Pharmacy Education and Practice in 13 Middle Eastern Countries. Am J Pharm Educ 72: 133.
21. Kirking DM, Bickley SK, Wasserman ML (1991) Physician opinion of pharmacist-initiated change from injectable to oral administration of histamine H2-receptor antagonists. Am J Hosp Pharm 48: 1722-1727.
22. Bryant L, Coster G, McCormick R (2010) General practitioner perceptions of clinical medication reviews undertaken by community pharmacists. J Prim Health Care 2: 225-233.
23. Dameh M (2009) Pharmacy in the United Arab Emirates. Southern Med Rev 2: 15-18.
24. Bleiker P, Lewis A (1998) Extending the role of community pharmacists: the views of GPs. International Journal of Pharmacy Practice 6: 140-144.
25. Cowen DL (1992) Changing relationship between pharmacists and physicians. Am J Hosp Pharm 49: 2715-2721.
26. Haxby DG, Weart CW, Goodman BW Jr (1988) Family practice physicians' perceptions of the usefulness of drug therapy recommendations from clinical pharmacists. Am J Hosp Pharm 45: 824-827.
27. Hepler CD (2004) Clinical pharmacy, pharmaceutical care, and the quality of drug therapy. Pharmacotherapy 24: 1491-1498.
28. Morley A, Jepson MH, Edwards C, Stillman P (1983) What do doctors think of pharmacists treating minor ailments?. Pharm J 231: 388.

29. Rahim N, Usmani S (2012) Physicians' opinion about the role of pharmacist in the health care system of Pakistan. Int J Pak 3:257-260.

30. Grussing PG, Goff DA, Kraus DM, Mueller CE (1984) Development and validation of an instrument to measure physicians' attitudes toward the clinical pharmacist's role. Drug Intell Clin Pharm 18: 635-640.