

A Review on Role of Pharmacist on Reducing Communication Gap Between Physician and Patients

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Abstract: Physician-patient communication, their knowledge and personal skill are very important in health care service. It facilitates the physician to gather patient information for diagnosis, for better treatment outcome and for good medication adherence. Communication gap between physician-patient is one of the most common troubles in public health care service and leads to a range of health problems from a simple misunderstanding to death. Poor communication leads to many health problems such as medication errors, increase medical expenses, delay of hospitalization and readmission, increase drug related problem (DRP), decrease medication adherence, increase adverse drug events, increase morbidity and mortality. Pharmacists are health professional found in ideal place, first point of contact with patients in community and they serve as reducing the communication gap between physician and patient. They are the most important care experts provide extensive professional services from traditional dispensing of medicine to clinical services. They play a significant role in clinical, psychological and economical aspects in different health care sectors. Since pharmacists are the main experts of drug information services, they provide efficient and qualified drug related information to patient and also for other care providers. They play crucial role chronic disease management, in reduction of drug related problem, in control of adverse drug events, treatment cost, promote lifestyle modification, enhance medication adherence and for reducing of over-the counter drug use through patient counseling and education.

Keywords: gaps, Physician, patient, role of pharmacist

1. Introduction

Effective clinician and patient communication is an important health care service and to enhance patient outcomes thus, the resultant communication is the heart and art of medicine and a central component in the delivery of health care service.

The main goals of current doctor-patient communication are; creating a better interpersonal relationship, facilitating exchange of information, and including patients in decision making. Good doctor-patient communication has potential to regulate patient's emotions, facilitate comprehension of medical information, and allow for better identification of patients' needs, perceptions, and expectations (Arora; 2003).

A clinician skill, knowledge and interpersonal communication are very important to gather information, to facilitate accurate diagnosis, counsel appropriately, give better therapeutic instructions and to form close relationship with patients (van, et al; 2007). Effective Doctor-patient communication is crucial for establishing trust and patient satisfaction between them. It is important to avoid a range of problems from misdiagnoses to incorrectly followed treatment plans; such as medical errors (ME), clinical expenditure, adverse drug events, drug toxicity etc. (Belasen; 2018). Miscommunication between physician and patients can causes a range of health problems from a simple misunderstanding to death of patients and leads to medication non-adherence, increase patient stress, widespread of Over-the Counter (OTC drugs), increase adverse drug events (ADE) and medical errors (Meluch and Oglesby; 2015).

Medication non adherence is an important public health consideration caused due to poor communication between clinician and patients, that affecting clinical outcome and overall health care costs (Aurel and McGuire; 2014). About 20% to 50% of patients are none-adherent to their properly prescribed medications and which leads to bad therapeutic outcome, increase hospitalization rate and health care expenses (Kripalani, et al; 2007). It is estimated that poor adherence costs \$100 to \$289 billion annually in the U.S.A (Vermeire; 2005).

According to the report of (American Pharmacists Association; 2012), poor communication is responsible for about one-half of all hospital-related ME and one-fifth of all ADE. In American hospitals poor communication is one of the most common problems in health care service, causing 44000 to 98000 patient deaths per year. Adverse drug reaction (ADR) is another health problem due to improper prescription, incorrect medication use and medication misunderstanding, thus it was ranked fourth to sixth on the factors that caused death in the United States; every year hundreds of thousands of deaths directly resulted from ADR (Qing-ping, et al; 2014). According to (Hughes; 2005) report, clinical expense analysis of ADR indicated patients affected by an ADE have prolonged hospitalization and readmission by an average of 2 days, at an

additional expense of ~US\$2,000–\$2,500.

Pharmacists are found ideal place and multi professional health experts thus there is a huge opportunity to resolve many health problems (Delton; 2017). Many patients' drug related problems can be easily solved by pharmacists, including OTC drug selection and appropriate product use (Sansgiry & Patel; 2013).

Pharmacists have become a crucial element of multidisciplinary healthcare team and play a vital role in communication gap between clinician and patient mentioned above because they have more time, accessible, rational health professionals and appropriate expertise to provide extensive, high-quality patient-centered health care services. The intervention of pharmacist in different health care department contribute significant role in clinical and economical aspects (Delton; 2017, Yarnall; 2009).

(Hughes, et al; 2010), reported that now-a-days, pharmacists are the first point-of-contact for patients play a significant role in cost-effective health service through promoting patient life style modification and increase clinical outcomes by actively participating in patient care and collaborating with many healthcare disciplines. With this increasing scope of practice, pharmacists are being recognized as key components in providing spatial patient care as part of inter professional healthcare teams. Therefore, the aim of this review is to describe the role of pharmacist in reducing gap between physician and patients and to describe the significance of pharmacist in public health care service.

A. Definition and Concept of pharmacist

Pharmacy is the science and technique of preparing and dispensing medicine by health professional pharmacists. Pharmacists are special health care experts who prepared drugs to formulate, dispense, and provide clinical information on medications to health care providers as well as patients thus facilitate patient and clinician relationship. Are one of the member of multidisciplinary care team, and they play a significant role in providing quality healthcare and pharmaceutical care to the community on the useful and the harmful effects of the drug products. They are drug experts and use their clinical knowledge, together with formulation, quality control, practical knowledge and they ensure the safe supply of medicines. They are responsible to ensure the quality of drug product supplied to the patients as per the government policies (Pharmacy; 2013).

The pharmacists' roles have been changed from compounding and dispensing drug to the therapy manager. They play role in clinical aspects which includes manufacturing, quality control, drug discovery, regulatory pharmaceuticals, drug dispensing, patient education, patient counseling, hospital/pharmacy administration and community services (Aliabid, *et al.*; 2013).

B. Community Pharmacists

They are deep-rooted health profession in community, primarily focused on the preparation, dispensing, and supply of

medicines. They play role in providing health care services and health promotion and disease prevention. Most of the time physicians do not have enough time to provide all of the preventive and chronic disease management services. This is where other members of the multidisciplinary team can make a valuable contribution in picking up any shortfalls (Yarnall, *et al.*; 2009). Pharmacists can play a crucial role in health care services as they have more time and the proper expertise to provide high-quality patient-centered health service (Chisholm; *et al.*, 2010).

Community pharmacies may represent the ideal site for reducing gap between clinician and patients by providing and implementing extensive professional community-based health services such as disease management, health care promotion, improve quality of life, patient counseling, patient education, disease screening and control (Fleming, *et al.*, 2015). They are the first contact health care professionals for patients seeking treatment for minor ailments and valuable contribution in health promotion and in optimizing medication use and improving patient outcomes, whilst preventing medication misuse and reducing treatment expenditure. Evidence suggests that pharmacists-led counseling improves patient clinical outcomes, quality of life, increase knowledge about medication, about disease prevention and reduces factors associated to disease (Alaqueel and Abanmy; 2015).

C. Clinical Pharmacists

They are professionals who are more prone for patients with health inquiries and have a significant role in assessing medication management in patients. They play bridging role between patient-physicians to reduce health problem. Pharmaceutical care is one of the most important roles of clinical pharmacists at current time by providing their professional medical related information for patients. It is taking direct responsibility for patient's care. It has many benefits that may include decreased medication errors, increased drug adherence, chronic disease management; including hypertension and other cardiovascular diseases (Santichi, *et al.*; 2011).

A research assessed by (Luisetto, *et al.*; 2016) on the significance of clinical pharmacists are involved in cognitive and pharmaceutical care service in many medical team shows general improvement of in clinical outcome. Clinical pharmacist plays a great role in therapeutic care by providing advice and information in proper utilization of medicine. It is stated that the drugs and drug therapy will enhance the physical as well as psychological state of individuals, improve quality of life and are intended to cure, prevent or to diagnose diseases, sign or symptom but this is only when properly used through the advice of pharmacists. The improper use of drugs could evoke new adverse symptoms, can cause patient morbidity and mortality (Blix; 2014).

D. Hospital pharmacist

Hospital pharmacists represent a key component of the

multidisciplinary care team play major role in reducing communication gap between patient and clinician by providing significant health care service. They play role in preparing, storing and dispensing medicines and medical devices. They provide counseling service to healthcare professionals and patients on the safe and effective use of medicine. They are involved on the entire way in which medicines are selected, provided prescribed, administered and reviewed to optimize the desired outcomes and to ensure the safety as well as quality of medicines in the hospitals (Auta, *et al*; 2015).

Now a day hospital pharmacists have expanded their roles beyond the dispensary and diversified into expanded areas of care in hospital practice not only checking prescriptions but also discussing cases with physicians, nurses, and other healthcare professionals involved in the care of the patient, reviewing patients' medications and advising with regard to pharmacotherapy as well as proposing optimal therapy. These contributions are integral components of the role of the pharmacist in the clinical setting (Auta, *et al*; 2015). Hospital pharmacists in most developed countries are working at advanced levels clinically in a wide range of specialized roles with an increased number of independent pharmacist prescribers (Emmerton, *et al*; 2005).

They provide patient-centered care services and medicines information to the patient and other healthcare professionals. They provide health related information such as; medication management reviews for inpatients, selection of drug therapy, identifying and reporting adverse drug resistances (ADRs) arising from prescription errors, preventing medication-related problems (MRPs), ensure safe and effective use of medication (Alderman, *et al*; 2001).

2. Methodology

The literature survey related to the role of pharmacist in reducing gap between clinician and patients was done by search data from different webs. The studies of 2000-2018 were searched from electronic data using different website such as PubMed, databases, IJPSR, Innovare Academic, Biomed Central Sciences, Dove press, Textbooks etc. The review materials included 30 published papers of review articles and original research papers were taken from different journals and text books but only 12 research articles are chosen based on the relevancy of these review topic.

3. Results and discussions

From 35 total studies used 12 original articles were reviewed based on relevance to this review topic of role pharmacist in different health care service. Different researchers indicated the positive impact of pharmacist in health care sectors. The result of researchers showed in table below indicates intervention of pharmacists also ensure the rational and cost-effective use of medicines, enhance the knowledge, attitude of patients in medication use and improve clinical outcomes by actively engaging in direct patient care and collaborating with many

healthcare disciplines. With this expanding scope of practice, Pharmacist play crucial role in management of chronic disease and valuable effect in different health care services.

A. Role of pharmacist in chronic disease management via patient counseling

Chronic disease management is the practice of collaborative health care team rather than one health expert physician. Community pharmacist play a significant role in management of different chronic disease, provide more direct interventions care service as a support to the physician's action, in order to improve medication adherence, to achieve the goals of desired therapeutic outcomes and to improve safe medication use and humanistic control. (Swieczkowski, *et al*; 2016). The direct pharmacist's intervention in care service has proved to favourably valuable therapeutic and safety outcomes in different chronic diseases; including diabetes, dyslipidaemia, hypertension, obesity, asthma or chronic obstructive pulmonary disease, psychiatric conditions and osteoporosis prevention (Chisholm, *et al*; 2010, George, *et al*; 2010, Tan, *et al*; 2014).

The management chronic disease requires non-pharmacological as well as pharmacological methods. This can be achieved through the patients' education and advice to understanding of disease, medications & lifestyle modification, when the pharmacist provides them practical and medical information through counseling (Manuel, *et al*; 2011).

According to the observational study of Ramalingam, *et al*; (2015), at tertiary care hospital of Kerala, to assess the impact of pharmacist counseling of 100 diabetic patients. Thus Knowledge, attitude, practice, quality of life and medication adherence of the patient before and after counseling were assessed and the result showed that a significant improvement after pharmacist intervention ($p = 0.0001$) after pharmacist counseling and the mean difference Knowledge attitude and practice before and after counseling is 3.88, for medication adherence is 7.04 and for quality of life 19.23. It shows a significant improvement in KAP due to pharmacist led patient counseling when compared with non-intervened.

Similarly, another report qualitative meta-analysis of 21 studies conducted by (Wubben and Vivian; 2008), including 3981 diabetic patients and all interventions involved additional visits by pharmacists shows an overall improvement in hemoglobin A1c was observed in different settings in intervened group and the differences in change for hemoglobin A1c ranged from an increase of 0.2% to a decrease of 2.1%. This study also demonstrated that glycaemia controlled diabetic disease in case of prescribing pharmacist. In fact, the improvement in hemoglobin A1C respect to the control group was 1% when the pharmacist had the authority to prescribe anti diabetic drugs under the supervision of the physician (Machado, *et al*; 2007).

Another prospective study report conducted by (Pawar, *et al*; 2014) to assess the impact of pharmacist-led patient counseling of 118-hypertensive patient indicates pre counseling the systolic blood pressure (SBP) and diastolic blood pressure

(DBP) found to be 143.6mmHg and 93.2 mmHg respectively. At the end of the study the BP was controlled, where SBP was reduced by 2.8 mmHg and DBP was reduced by 3.6 mmHg and also there is significant reduction of habitual actions such as smoking, drinking etc.

This shows pharmacist led patient counseling was more widespread beyond time of dispensing medication and enhancing of patient knowledge toward the medical problems, lifestyle modification, initiate patients to ask medical related information, encourage appropriate medicine use, prevent drug related problems and generally they play significant role in disease management through patient counseling (Nicolas, *et al*; 2013).

B. Health promotion role of community pharmacist

Health promotion service enables individual to gain better health control and to advance their overall well-being. Health promotion is community action and participation through health education which encourages socioeconomic and cultural activities and improves environmental determinant of health. (Ekpenyong, *et al*; 2012, Ogah, *et al*; 2013).

Health promotion is for preventive, curative and rehabilitative activities and care services enables people to gain better control and improve their health and overall wellbeing is the role of all health care team and patient itself. (Ogah, *et al*; 2013). Sometimes ineffective health promotion is due to lack communication between health professional and patient thus, community pharmacist greatly involved in health promotion service through health education which encourages socioeconomic and cultural activities, and improves environmental determinants of health and lifestyle modifications by reducing gap between health care supplier and consumers (WHO; 2015).

Community pharmacists are collaborative with other health care team provides beneficent services that would help in implementing health promotion strategies in communities through health education, behavioral change and lifestyle modification. These activities empower individuals and communities to take responsibility for the control of modifiable determinants of health. Supporting, promoting, and diversification of these activities in a continuum as a process is the role of community pharmacist. The pharmacist play great role to promote and encourage people to move to a state of optimal health, which is a balance between physical, emotional, social, spiritual, and intellectual condition of patients (Alenoghena, *et al*; 2014)

According to the report of qualitative study surveyed by (Brian, *et al*; 2017) on health promotion activity by pharmacist in Nigeria through health education, behavioral change and lifestyle modification among patients; whereas, the measurable improvement in individual or community health are attributable to intervention carried out for health gain. A survey of pharmacists' intervention in health promotion activities showed a 90% participation among respondents and overall, the respondents showed willingness and a positive attitude in all

domains of health promotion activities seen and health promotion activities encouraged by pharmacists over the years have continued to evolve from traditional provision of medicine information treatment of self-limiting conditions and management of chronic diseases.

Similarly, cross-sectional study reported by (Laliberte, *et al*; 2012), to assess level of role of community pharmacist and from all 571 out of 1,234 (46.3%) eligible community pharmacists completed and returned the questionnaire. Most believed they are very involved in health promotion and life style modification indicated in figure below.

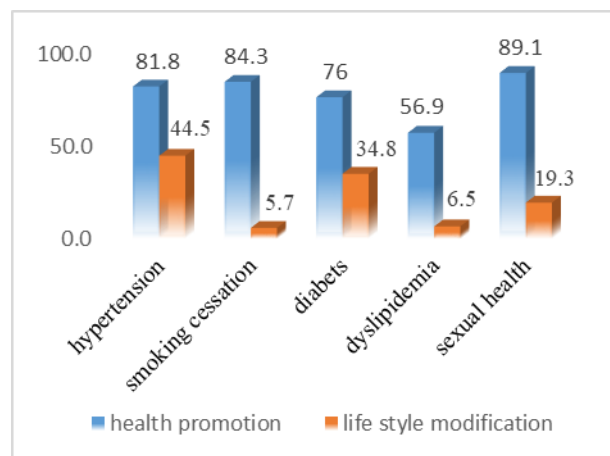


Fig. 1. Intervention level of pharmacist in health promotion and life style modification

From these figure it showed that pharmacist greatly involved and play a significant role and better improvement in public health promotion and lifestyle modification.

Pharmacists are also drug expert and the first point of contact person during the purchase of OTC medications. They play a significant role to monitor OTC medication use among a specific population (Cooper; 2013). Community pharmacists are considered to be among the most accessible and trustworthy health care professionals and play a major role in ensuring appropriate OTC medication use in older adults. 80% of Americans report they would buy a particular OTC medicine based on their pharmacist's recommendation, or not purchase a specific OTC medication if their pharmacist advised against it (82%) (NCPIE; 2003).

C. Role of clinical pharmacist on reduction of drug related problems through patient education

DRP is defined as an event or circumstance that actually or potentially interferes with desired health outcomes and it is caused due to multiple therapies, drug use without indication, improper drug selection, lack of education, poor communication during history taking and diagnosis, lack of standard treatment protocol, etc. (Parthasarathi, *et al*; 2003).

Patients' knowledge of their disease problems and its complications, its treatment (pharmacological and non-pharmacological), and self-monitoring has also been shown to

be increased through patient education. Education programs to support patient participation in disease management have been proposed as an important strategy in reducing DRP and limiting the growing burden of chronic diseases. Enhanced patient education strategies are critical ways for solving DRP of patients reduce hospital readmission rates and improve quality of life. (Hume, *et al*; 2014)

As report research conducted by (Shah, *et al*; 2016) on the assessment of patient knowledge and reducing of drug related problem includes 50 DRP patients. The patient's knowledge regarding disease, therapy and life-style were assessed after and before pharmacist intervention. It shows Post pharmacist intervention there was a significant improvement in patients' knowledge about DRP by 156.73%. From these result we can concluded that DRP is the wide range of health problem and clinical pharmacist greatly resolve these health problems through patient education to enhance patient knowledge.

Similarly, according to report of (Parthasarathi, *et al*; 2003), clinical pharmacist play a greater role in reducing DRPs, hospitalizations, probability of readmission, enhance patient knowledge. Educated patient knows about their problem and give proper information about their disease to clinician during diagnosis, which brings clinician a satisfaction of having positive impact on the health of their patient. Education may help create an environment of trust, improved doctor-patient relationship and encourage patient's to involve in health care, all of which increase in patient satisfaction (Patni, *et al*; 2015).

In general Pharmaceutical care provided by the clinical pharmacist can positively influence the patient outcome. Review of patient drug therapy by the clinical pharmacist will enhance the drug therapy.

D. Role of clinical pharmacist in reducing medication cost and prevention of medical error

Clinical pharmacist provides extensive professional health care services to alleviate health problem and to reduce gap between patient and clinician, thus play a significant role in reducing health care costs. The clinical and economic benefits of clinical pharmacist involvement in chronic disease management and promotion of public health care have been well defined. When compared role of pharmacist with usual medical care professionals, it is found that, pharmacist-led health care services made savings of \$647,024 by preventing hospital admissions and hospitalization (Hall, *et al*; 2011).

According to the prospective randomized study by (Murray, *et al*; 2009), on 800 heart failure patient in large public hospital to assess the benefit of clinical pharmacist education, monitoring and intervention was demonstrated. The patients with clinical pharmacist interventions had a 34% lower risk of any ADE or ME when compared with control patients treated at the same clinics. Pharmacists-led patient education and regular communication with the rest of the team improved medication adherence, patient satisfaction, and reduced healthcare utilization and reduce health care costs.

The retrospective study conducted by (Chen, *et al*; 2017) in

Taiwan to evaluate ADR prevention and cost-saving effect of pharmacist by comparing the number of pharmacist's intervention in 1 year pre and post pharmacist intervention, the total number of pharmacist intervention in medication order were 824 in 2012 (pre) and 1977 in 2013 (post) the number of active recommendation were 40 in 2012 and 253 in 2013. The estimated cost saving in 2012 and 2013 were NT\$52,072 and NT\$144,138 respectively and also the estimated cost avoidance of preventable ADR 2012 and 2013 were NT\$3,383,700 and NT\$7,342,200 respectively and cost saving ratio increased from 4.29 to 9.36 and reduce average admission day by 2 after the intervention of a pharmacist. This finding reveal valuable that there is a significant difference between before pharmacist intervention and post intervention.

According to (Wang, *et al*; 2016) report shows that pharmacist-managed services had a positive return in terms of economic viability Ten of the 25 studies were completed in pharmacist. Benefits demonstrated included that the average cost of a 1% reduction in HbA1c was US\$174 per person and compared to usual care. Pharmacist-led services produced cost savings in the range of US\$8 to \$85,000 per year, whilst costing between US\$62,803 and US\$114,576 to prevent one diabetic patient.

Interventions of clinical pharmacists in health care service contribute a great role to prevent medication errors, in reducing preventable ADEs, and to save treatment expenditure (Klopotoska, *et al*; 2010). The pharmacists participating in medical rounds in hospital were found to reduce preventable ADEs by 66% to 78% and the cost avoidance generated pharmacist interventions resulted in a benefit/cost ratio of 3.1 to 13.33 (Jones, *et al*; 2013, Gharekhani, *et al*; 2014).

In general, the interventions of clinical pharmacist in health care service have revealed positive economic profit and effective health improvements and they play significant role in clinically as well as economically.

E. Role clinical pharmacist in improving medication adherence

Medication adherence is the voluntary cooperation of the patient in taking drugs or medicine as prescribed, including timing, dosage, and frequency and that the patient and the health care provider (HCP) play equal roles in medication decision-making (Salter; 2010). Good adherence is especially important in the management of chronic diseases, for decreasing of medication expenses, for enhancement of treatment outcome and none-adherence to medication leads to worse therapeutic outcomes (Kripalani, *et al*; 2007).

Pharmacists play a significant role to help the patient achieve a better therapeutic outcome. Often, many strategies must be employed to improve patient medication adherence, including counseling, patient satisfaction, coping skills, reduce stress level, and simplifying regimen complexity patient education, and memory enhancement (Morisky, *et al*; 2008)

Pharmacist play role in improving the patient-physician relationship which commonly proposed means of enhancing

compliance and patient attitude may also affect his or her adherence (Ahmad, *et al.*, 2010).

According to systematic review of 15 studies reported by (Kaplan; 2005), on hypertensive patients to evaluate improvement patient medication adherence and BP control as a result of pharmacist interventions shows Significant clinical outcomes (systolic, diastolic, or controlled BP) occurred in 88% of studies; however, only 44% had significant increases in medication adherence.

Similar result was reported by (Baltatu, *et al.*; 2015) including 1844 bed hospital of France to assess the impact of clinical pharmacist on the rate of patients who were adherent increased from 51.0% of the observational to 66.7% of the interventional period ($P < 0.01$) and also hospital readmission reduced when compared to non-intervened group ($P < 0.01$) medication adherence through patient counseling by intervention and observation method (Chisholm, *et al.*; 2010) reported many studies have been done to determine whether pharmacist interventions can lead to improved adherence and treatment outcomes. In a large meta-analysis conducted to determine medication adherence (along with several other outcomes), pharmacist interventions were found to improve medication adherence ($P = 0.001$).

In general, the result of researcher shows that the clinical pharmacist contributes significant role in health care system through providing modern professional services and enhance medication adherence and in improving of patient health outcome; clinically, psychologically as well as economically.

F. Role of hospital pharmacist in Medication Therapy Management (MTM)

MTM is a group of services provided by health care providers, including pharmacists, to ensure the best therapeutic outcomes of patients and implemented in patient centered medical homes, managed care health systems. Hospital pharmacists are a key member of care team responsible to provide MTM service with collaboration with other health care providers. Pharmacist led MTM service has been shown to be effective for lowering of chronic diseases; increasing patient knowledge; improving patient quality of life and medication adherence; and improving the safe and proper use of medications, including reducing therapeutic duplication, decreasing total medications prescribed, and increasing adherence for therapeutic care (Ryan; 2014).

The prospective randomized controlled method research study reported by (Erku, *et al.*; 2017) of total 127 T2DM patient were divide to two group to assess the impact of pharmacist on MTM in Ethiopia. Patients in the control (non-MTM) group ($n=65$) received the usual care while patients in the intervention (MTM) group ($n=62$) received a personalized pharmacotherapeutic care plan and diabetes education and the two compared. A marked and statistically significant increase in medication adherence were noted in the intervention group (increased from 9.2% at baseline to 61% at 6 month) compared with the control group patients. Furthermore, at the 6-month

follow-up, only 23 patients in MTM intervened group with poorly controlled blood glucose levels and hospital admissions is less in intervened group when compared with control group as showed on figure below.

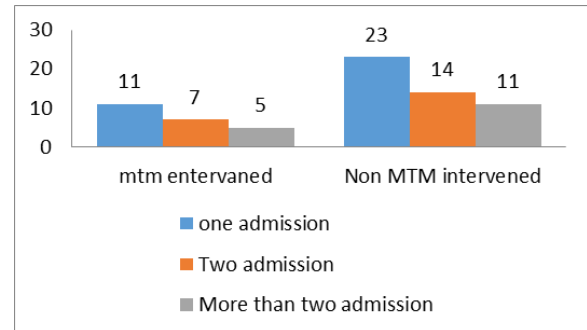


Fig. 2. Impact of Pharmacist intervention in MTM and number of hospital admission

The findings of this study revealed that there is marked increase in medication adherence and reduction in hospital admission in the intervention group than the control group. This may be due to the fact that the pharmacist adopted and utilized a pharmaceutical care plan, which involved preventing and resolving a number of medication therapy problems.

Other study revealed that there are clinical and cost effective role of pharmacist for 6-month period when hospital pharmacist provided different medication therapy management service to the patient with heart disease as no- cost- to- patient' part of an employer's health plan. The researcher compares the clinical and economic outcome for patient those who received MTM ($n=63$) with those who did not receive MTM ($n=62$). Economically, the MTM received group total direct healthcare expenditure were significantly lower (\$359/patient) and revealed a return on investment of 1.67. Clinically, those who received MTM service by pharmacist had higher rate of meeting their blood pressure and body mass index goals. This shows role pharmacist in MTM service have positive effect on financial as well as clinical (Wittayanukorn, *et al.*; 2013).

G. Role of hospital pharmacist in providing drug information service DIC/DIS

Drug information service (DIS) is the service that includes the actions of mostly literate individuals to deliver exact, balanced, real information, mainly the problems related to patient's arisen from the professionals and it is the provision of written and/or verbal information about drugs and drug therapy in response to a request from other healthcare expert organizations, committees, patients, and public community (Wongpoowarak; 2010)

DIC and DIS has become one of the functions in the hospital pharmacists are responsible for issuing of drug information bulletin periodically for the hospital staffs. One of the functions of the Pharmacy therapeutic committee is to maintain library and documentation service. With regard to the drug and their administration the hospital pharmacist is best suited to perform

this onerous task. They process the available information takes out the essence of them and present in a nut-shel to other (Sampath; 2011).

H. Origin of Drug Information Center

Started in 1992 in university of Kentucky in US and then Australia and The UK in 1968 at the Royal Melbourne and London hospital, in India early in 1970s at Christian medical college for providing real, and compiled information about the drug to the public serves in the health center (Rohit, et. al; 2012).

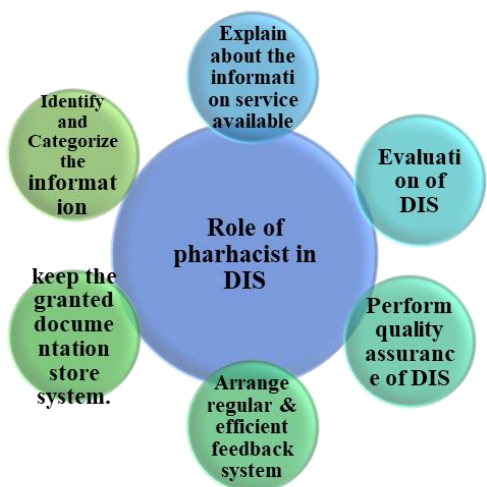


Fig. 3. Role of pharmacist in DIS (Himanshu, et al., 2015)

Pharmacists are medicines experts and well trained for DIC. Provision of drugs and therapeutic information (DTI) to health care team and patients is one of the fundamental responsibilities of pharmacists. However, in the current situation of health care system, DTI services are sounds to be necessary due to increased patient load with co-morbid conditions and availability of more number of drug molecules in the market and polypharmacy. Thus, provision of DTI helps practitioners to rationalize the therapy for their patient’s care (Mudigubba, et. al; 2013).

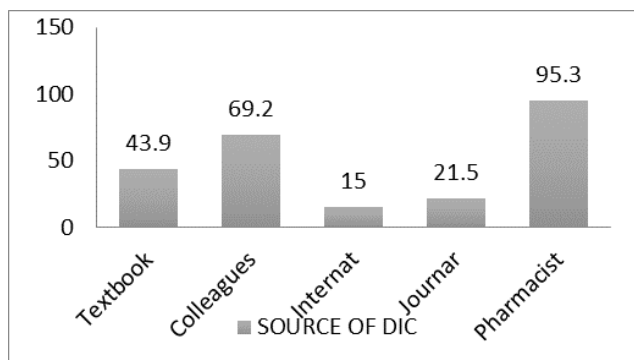


Fig. 4. Significance of Pharmacist in providing DIS

According to prospective study report by (Omelet, et al; 2012), to determine the relevance of pharmacist in providing DIS from 120 questioners, claimed that the patient obtained drug information 16 (15.0%) from internet and largest number 102 (95.3%) from the Pharmacists in indicated in figure below. Generally, above 95% this shows that pharmacists are the great role and responsibilities on deliverance of drug information.

From this result graph the pharmacist highly involved in DIS and source DIC and provide well organized, qualified information to patient and other health professional and play a significant role in DIS.

According to prospective study reported by (Sridevi, et al.; 2017), a total of 108 queries were replied and identified that almost 31 medication errors from them, almost 65% have rectify and 25% is not rectify and the rest is not accepted as errors the finding reveal that qualified drug information service is well accepted in the involvement of professionals or pharmacists is the only way to improvement of the quality and service of drug information center.

In general, based on this review we can conclude that pharmacist play a significant role clinically, socioeconomically in health care service to enhance patient outcome.

From these result, we can say that Pharmacist are general health practitioner and play a significant role in all involved in health care sectors. All of the researchers mentioned above show a positive impact of pharmacist through their involvements and it indicated pharmacist play a significant role in cost saving effect and in pharmaceutical care service.

4. Conclusions and recommendation

Poor communication between physician and patients results a range of health problems from a simple misunderstanding to death. Pharmacists are ideal place and an element of multidisciplinary healthcare team and play a significant role in reducing communication gap between patient and physician by providing extensive professional services. They play an effective role in reducing and prevention of drug related problems, medication errors, adverse drug reactions, in reducing health costs, management of chronic disease, health promotion by patient counseling, patient education and by interacting with physician and patients. They are found in ideal place as channel between patient and physician and play significant service clinically and economically through intervention in health service because they have multi-professional skill, they are available, and have more time and the appropriate expertise to provide high-quality patient-centered health care service.

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