

Evaluating the effectiveness of tele pharmacy services on patient outcomes

Dr. Priyanka Saharan¹, Varri Srinivasa Rao²

¹Associate Professor, Department of Pharmacy, Kalinga University, Raipur, India.

²Research Scholar, Department of Pharmacy, Kalinga University, Raipur, India.

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ABSTRACT

Pharmaceutical care has caused pharmacy practice to become more patient-oriented rather than medication product-oriented, with the goal of achieving specific results that enhance patients' quality of life. Pharmacists can play a significant role in providing patients with individualized care and specifically in effectively controlling the rising prevalence of chronic non-communicable diseases (NCDs) since patients contact them more frequently. In India, the lack of professional training and ongoing pharmacy education, clinical knowledge, and clinical skills results in low self-esteem and negatively impacts patient care delivery. Community pharmacists must improve their knowledge by learning new things on a regular basis, honing their abilities, and shifting their focus from only distributing medications to more patient-focused services. The community's adoption of efficient pharmaceutical care procedures is hampered by numerous obstacles, which must be found and removed through methodical investigation. The number of elderly people is growing globally. Geriatric health issues demand particular attention because elderly individuals deal with a variety of issues, such as health, social support, and financial instability. An occurrence or circumstance involving drug therapy that fundamentally or hypothetically impedes the patient's expected health outcomes is referred to as a drug-related problem (DRP). The third or fourth most common cause of death for older adults is DRP. The study's objective was to assess how well a pharmacological care program affected the health outcomes of elderly people. The current investigation was a three-year prospective interventional study that was conducted in three stages: preintervention, intervention, and postintervention. Pre-rounds, ward rounds with physicians, and inpatient case records were used to gather information about the patients' medication therapy.

Keywords: Pharmaceutical, NCDs, DRPs, health care.

1. INTRODUCTION

According to the global organization project, every country should set up its economic, community, and health care systems to accommodate the aging of its current and future populations. [1] The number of older people is rising globally, and both developed and emerging nations are seeing a sharp rise in the prevalence of many chronic and degenerative diseases in this age range [7][11]. As senior individuals age, they often have worsening health, social support, and economic instability issues. Because of the growing number of aged persons and associated comorbidities, clinical pharmacy, clinical competence in pharmacology and therapeutics, and information regarding prescriptions for elderly patients are crucial in contemporary clinical practice. A medication that is both effective and unlikely to cause side effects should be used when choosing medication therapy for the elderly. Elderly individuals cannot tolerate large tablets or capsules. For these patients, effervescent tablets, syrups, and suspensions are more convenient than conventional dosing forms. Since irrational drug use is the most common cause of bad effects, resources should be set aside for the dissemination of objective information on the advantages and hazards of medications [2]. In addition to saving money for the healthcare system, preventing adverse drug reactions through prudent use also spares patients from suffering. Pharmacovigilance is the process of identifying, assessing, preventing, and recording adverse medication reactions. ADR monitoring is essential to improving the volume or caliber of ADR reports in order to support surveillance initiatives in medical facilities. To guarantee safe medication, pharmacovigilance initiatives must be implemented in hospitals.

The primary goal of medication therapy for elderly patients is to enhance their quality of life in addition to extending their lifespan. Elderly patients must receive the right kind of care in order to accomplish this. For instance, as NSAIDs are the main cause of serious side effects in older individuals, complete hip replacement is the recommended course of action for treating a geriatric patient with osteoarthritis of the hip instead of taking them [13].

Drug-related issues are prevalent and common in hospitalized patients, where a lack of continuity of care and numerous medication regimen modifications are caused by comorbidities [9]. Inappropriate prescription of medications, misalignment between prescribed and actual regimens, decreased medication adherence, drug interactions, inappropriate drug use, patient monitoring, and insufficient surveillance for adverse drug reactions are just a few of the numerous issues related to drug use [15]. Reduced quality of life, longer hospital stays, higher medical expenses, and an increased risk of morbidity and mortality are all possible outcomes of drug-related issues [16].

The number of medications given and used increases the incidence of adverse drug reactions (ADRs) exponentially, suggesting that the effects of several medications are not always safe and cumulative. Serious patients are frequently more likely to experience specific drug responses, and high prescribing rates are typically linked to the severity of the illness. The symptoms attributed to adverse drug reactions may also be caused by other factors, such as drug interactions. Given the existing circumstances, India needs a steady increase in the number of skilled, qualified human resources for the healthcare industry. To face the modern difficulties brought about by population growth, service expectations, and shortages in the healthcare workforce, community pharmacists must be reoriented. The knowledge, perception, and attitude of pharmacists about the application of the pharmaceutical care concept have become even more pertinent in light of these new conditions [4]. To address the present healthcare demands, these require a thorough examination before any additional steps can be taken. Globally, healthcare systems have developed and improved [3]. However, there is still a lot of room for improvement in healthcare services due to population growth and a significant rise in patient and family expectations of healthcare providers. Compared to the growing population, there are now insufficiently qualified healthcare professionals. The services of pharmacists who can offer direct patient and family care are undoubtedly necessary if we are to fulfill the objective of "Health for All."

2. REVIEW OF LITERATURE

The numerous reviews and research findings on pharmaceutical care, the necessity of providing pharmaceutical care, the need for pharmacists to receive pharmaceutical care training, the importance of this idea, the prerequisites for providing pharmaceutical care, the influence of training on practices, and various obstacles to providing these services are all covered in this chapter. Understanding the current situation, any gaps or lacunae, and the necessary actions with relation to pharmaceutical care practices has been made easier by the critical examination, analysis, and interpretation of the literature. The entire study reaffirms the necessity of conducting more thorough, well-designed research [12].

Peterson, Cecilia, and others (2017). They carried out a pharmaceutical review on the classification of treatment-related issues at a Swedish hospital and the assistance provided by clinical pharmacists to get over DPRs. Their goal was to determine the frequency of DPR occurrence and related patient characteristics. Three clinical pharmacists conducted the review, which included 103 instances from the hospital's general medicine department. During the clinical pharmacist's ward visits, information was taken from the patients' medical records. During the review, the clinical pharmacists gathered all of the medication-related data. During the battle rounds, the team members discussed and decided whether to accept or reject the clinically identifiable DPRs. Any modifications to the pharmacological therapy were also examined. Different categorization approaches were used to classify interactions and DPRs. Out of 103 patients, 68 DPRs were found. The most prevalent DPR in this study was determined to be inappropriate drug use, and 88% of physicians accepted this finding. Pharmacists frequently offer patient counseling and drug treatment cessation as remedies. The study came to the conclusion that elderly people had a higher incidence of DPR due to their reduced kidney function and heavy medication use. Interventions were therefore required to ensure patient safety [6].

Yaida-Sanii and associates (2016). To ascertain the impact of historical patient counseling on patient satisfaction and medication adherence, they carried out an observational and interventional study on the role of pharmacist counseling in pharmacotherapy quality improvement in a hospital's respiratory wards [5]. The block randomization strategy was used in this study to randomly assign patients to the intervention and control groups. There were 200 patients in the research. The patient provided all pertinent information, which was then recorded into the drug history interview form. Separate follow-up plans were maintained for the control and interventional groups. The medication adherence rating scale (MARS) was used to evaluate patient medication adherence during a telephone conversation. A second follow-up was planned one month after the patients were discharged, and 154 patients were enrolled, with 78 going to the intervention group and 76 to the control group. The study found that pharmacists reduced therapeutic costs and improved patient satisfaction by counseling, fully educating, and routinely monitoring patients throughout therapy [13]. Obreli-Neto, Paulo Roque et al. (2015). To evaluate the cost and cost effectiveness incremental ratio in a QALY for pharmaceutical care for the treatment of diabetes mellitus and hypertension in a developed nation with elderly patients in their public sector, they carried out a study. The study comes to the conclusion that while pharmaceutical care greatly enhanced health outcomes, it did not considerably raise overall direct health care costs.

1.1 Aim

To assess how well a pharmacological care program affects elderly people's health outcomes.

2.2 Objectives

The objectives of this comprehensive study are as follows: -

- To evaluate community pharmacists' training requirements.
- Provide the pharmacist with training on pharmaceutical care services and assess the effects on practices, knowledge, and attitude.
- Provide diabetes pharmaceutical care services training to the pharmacist and assess how it affects their practices.
- Assess the obstacles to delivering pharmaceutical care services and offer suggestions for removing them.

3. METHODOLOGY

3.1 Study setting

The study was conducted in an inpatient setting at a private teaching hospital that provides tertiary care and referral services in the Perinthalmanna locality of Kerala. Perinthalmanna, a representative town in Kerala's Malappuram district, is home to the super specialty hospital KIMS AL SHIFA. In 1989, the hospital opened with just 75 inpatient beds. Over the next few years, it expanded to 350 beds and now offers a wide range of specialties, including general medicine, obstetrics and gynecology, pediatrics and neonatal care, neurosciences, anesthesiology, orthopaedics, radiology, nephrology, pulmonology and critical care, cardiology and cardiothoracic surgery, microbiology, pathology and haematology, laparoscopic surgery, ENT, dental and maxillofacial surgery, neurology, ophthalmology, physical medicine and rehabilitation, dialectology, surgical gastroenterology, psychiatry, and oncology. The hospital is well furnished with state-of-the-art diagnostic tools, including a color doppler, treadmill, digital subtraction angiography, ultrasound sonography, CT scans, and MRIs [8-10].

3.2 Study period

The study was planned for duration of three years, among the inpatients admitted in various departments of the hospital.

3.3 Study tools

- Patient demographics & Data collection form.
- Medication history interview form
- SF-36 Questionnaire
- Pharmaceutical care documentation form
- Morisky Medication adherence scale
- Patient counselling book

3.4 Study population

The chosen and qualified pharmacists in diabetes PhC across different contexts identified and enrolled the eligible patients with diabetes 2. After obtaining their agreement, the pharmacists randomly assigned the patients who met the study's requirements to an intervention group and a control group. In the event that the patient was illiterate, the pharmacists or the patient's caretakers who were sufficiently literate translated or read the KAP questionnaire in the local language, explained it, and marked the response as being their half.

4. RESULTS

Health care professionals' knowledge and opinions regarding clinical pharmacists' clinical actions were evaluated before to the study's start. The primary goals of this study were to learn more about the experiences of healthcare professionals with regard to the clinical role of pharmacists and to persuade doctors and other healthcare professionals to use clinical pharmacists' expertise in managing the medication regimens of senior citizens in order to enhance patient care.

Table 1: Distribution of subjects

Demographic Characteristics	Experimental Group N=149	Control Group N=142	p-Value
1. Age (mean $\pm$ SD)	29.77 $\pm$ 5.40	28.98 $\pm$ 5.81	0.229
1.1) Less than 20 years	7 (4.69%)	8 (5.63%)	
1.2) 20-30 years	73 (49%)	76 (53.52%)	
1.3) More than 30 years	69 (46.31%)	58 (40.85%)	
2. Socio Economic Status			
2.1) High	19 (12.75%)	14 (9.86%)	0.443

2.2) Middle	90 (60.40%)	81 (57.04%)	
2.3) Low	40 (26.85%)	47 (33.10%)	
3. Exposure to Smoke			
3.1) Mild	40 (26.85%)	32 (22.54%)	0.242
3.2) Moderate	103 (69.13%)	108 (76.05%)	
3.3) Severe	06 (4.02%)	02 (1.41%)	
4. Nutritional Status			
4.1) Good	30 (20.13%)	40 (28.17%)	0.175
4.2) Average	78 (52.35%)	73 (51.41%)	
4.3) Fair	41 (27.52%)	29 (20.42%)	
5. No. of Living Children			
5.1) None	86 (57.72%)	94 (66.20%)	0.001**
5.2) One	36 (24.16%)	35 (24.64%)	
5.3) Two	25 (16.78%)	04 (2.82%)	
5.4) Three and above	02 (1.34%)	09 (6.34%)	
6. Gravidity			
6.1) Primigravida	66 (44.29%)	79 (55.64%)	0.26
6.2) Secondgravida	35 (23.49%)	34 (23.94%)	
6.3) Multigravida	43 (28.86%)	21 (14.79%)	
6.4) Grand multigravida	05 (3.36%)	08 (5.63%)	

The clinical pharmacist evaluated 153 questionnaires that were filled out by various medical experts. Thirteen additional medical workers, 105 nurses from various wards and nursing stations, and 35 doctors from various departments, including general medicine, nephrology, cardiology, neurology, gastroenterology, and gynecology, among others, returned the questionnaire.

Table 2: Logistic regression

Variables	Odds Ratio(OR)	95% Confidence Interval (CI)	P Value	Reference Group
Experimental Group	0.242	0.135-0.433	0.001**	Control group
Class				Anaemic subjects
Hypertensive Pregnant Women	0.840	0.456-1.569	0.595	
Diabetic Pregnant Women	1.205	0.513-2.827	0.668	
Age				>30 years
< 20 Years	3.696	0.694-19.685	0.126	
20 – 30 Years	0.825	0.450-1.511	0.533	
Socio Economic Status				Low socio
Middle	1.888	0.927-3.843	0.080	economic status
High	2.348	0.784-7.030	0.127	
Nutritional Status				Fair nutritional
Average	0.651	0.292-1.450	0.293	status
Good	0.962	0.364-2.544	0.937	
Gravidity				Multigravida
Second Gravida	1.127	0.504-2.518	0.771	
Primigravida	1.248	0.597-2.607	0.556	

Four groups—Primary Health Care authorities, Government hospital officials, Pharmacist Association officials, and Private Hospital officials—participated in Focused Group Discussions. The higher authorities in question were in charge of overseeing, supervising, making decisions, and creating policies for the pharmacy department of their respective organizations.

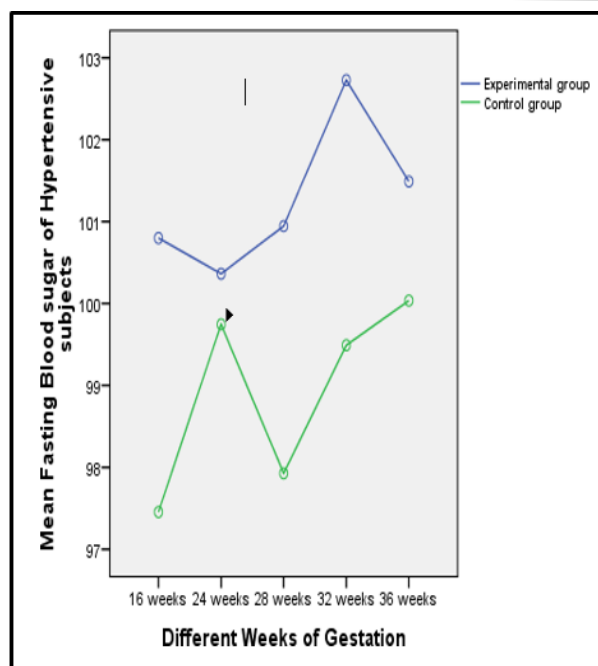


Figure 2: Mean fasting blood sugar among hypertensive

PHC pharmacists had very little training and development programs in place. These included family planning, national initiatives, and inventory management. Other settings' group participants attested to the fact that their organizations lacked any plans or procedures for the training and development of its pharmacists. In the event that a pharmacist obtained any training, there were no requirements or qualifications involved. Having completed, passed, or performed exceptionally well in pharmacy practice or pharmaceutical care training did not grant the pharmacists any preference in promotions. Despite being available, the PHC training plan lacked any elements pertaining to clinical, pharmacological, or medication-related competence.

The specific type of environment and the demographics of the population served should be taken into account when establishing policies and procedures pertaining to the provision of pharmaceutical care in community pharmacy settings. Even if pharmaceutical care is currently scarce in India, obstacles to successful implementation can be addressed with well-considered solutions. Good Pharmacy Practices haven't yet reached the desired levels in India, despite the fact that pharmaceutical care has a significant impact on public health and increasing patients' quality of life. This is because pharmacists encounter numerous obstacles in every setting and industry. All Indian pharmacists' existing practices need to be greatly improved. The findings of this study suggest that consistent encouragement and the application of tailored, carefully thought-out, and ongoing training assisted community pharmacists in practicing effectively as professionals and benefited patients.

5. CONCLUSION

It has been determined that one of the most crucial elements of the healthcare system is patient safety. When medications are not used properly and safely, they can hurt patients instead of helping them get better. Numerous studies have shown that medications can have negative effects on individuals. The term DRPs is frequently used in the pharmaceutical care industry. Potential or real issues are included in drug-related issues. In a prospective DRP, the disease's signs and symptoms may not be present, but if they are ignored, they could cause adverse outcomes that could harm the patient. In a real DRP, however, the patient's symptoms and signs will continue, leading to treatment failure. Due to a variety of pharmacodynamic and pharmacokinetic changes in their bodies, comorbid conditions in this population, polypharmacies, ignorance of their medications and medical conditions, inappropriate medication use, and hoarding of outdated medications, this study demonstrated that older patients were more likely to experience drug-related issues. According to this study, a pharmacist's assistance is crucial in resolving DRP in elderly individuals. When DRP occurs in older people, there may be a higher chance of hospital readmission, death, morbidity, and medical expenses.

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