



## Pharmaceutical Care Services in Community Pharmacy in Asia: A Review

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### ABSTRACT

Pharmaceutical care has been described by the ASHP as “the direct, responsible provision of medication-related care for the purpose of achieving definite outcomes that improve a patient’s quality of life.” This signals the shift of pharmacy from a drug-oriented practice to a more patient-oriented one.

### Introduction

The goal of Pharmaceutical care services are defined as patient-centered services to empower patients and caregivers alike to take charge of their medication and achieve the best possible clinical outcome. Pharmaceutical care services consist of four services, mainly medication reconciliation, adherence, knowledge assessment, medication optimization, and patient counseling [1, 2, 3, 4].

Medication reconciliation aims to create the most accurate patient medication list. While in adherence and knowledge assessment, its objectives are to assess the patient’s adherence and knowledge about the medication. Medication optimization reviews and optimizes the medication regimen based on the patient’s current condition to resolve drug-related problems. Lastly, the objectives of patient counseling are to counsel on medication management issues such as storage, administration, handling, disposal, change in dosage regimen, drug side effects, and interaction. This can also help the patient’s improvement in adherence and aids in reminders, cost issues, and lifestyle management [5, 6, 7, 8].

Within the compass of the traditional community-based pharmacy, community-based pharmacy observation is evolving from a degree in product preparation and dispensing to becoming a destination for health care. Additionally, community-based pharmacy practice is growing outside the confines of the standard community-based pharmacy to supply patients with the care they have where they are. Community-based pharmacy practitioners who are primarily active in the directive and rising team-based patient care services in communities to push patients' health are pharmacists participating during this change [1, 5, 10].

Community-based pharmacists are the third-largest cluster of health care professionals worldwide, behind only doctors and nurses. Community-based pharmacists are an untapped supply of healthcare that may increase patients' access to worry when and if they would like it. Fortunately, a trend toward community-based pharmacists serving as care extenders is beginning to emerge to combat the scarcity of medical aid suppliers and address the numerous problems and connected prices ensuing from improper prescription usage. While the patient care services offered by community-based pharmacists vary greatly from country to country and even by provincial or state jurisdiction, an increasing variety of pharmacists are filling crucial emergency prescriptions, extending or reviving existing prescriptions, using dynamical dosages or formulations, providing work therapies, and prescribing for minor ailments [2, 4, 6, 10].

### Methodology

This review article aims to analyze, discuss, study, and provide a summary of each pharmaceutical care service provided by a number of Asian countries, specifically ASEAN countries such as the Philippines, Thailand, and Indonesia. Northern Asian countries embrace Taiwan, China, South Korea, and Japan. Southern and Middle Eastern Asian countries such as India, the United Arab Emirates, and Israel. The study could be a qualitative review article focusing on the pharmaceutical care of community pharmacies throughout Asia. Our team conducted this research to analyze and study the positive sides of conducting correct and continuous pharmaceutical care in community pharmacies. As aspiring future community pharmacists, our team was required to administer this research with the sole purpose of maintaining proper conduct in the performing arts while providing continuous pharmaceutical care to the patients and their edges in the long run. This review article used data from reputable medical and pharmaceutical health

literature publishers like PubMed, Google Scholar, and Cochrane. The author or authors carefully selected, analyzed, and discussed the journals and articles in this study. The search term and keywords are pharmacies, healthcare services, pharmaceutical care, Asian Pharmaceutical Care Services, telepharmacy, community pharmacy, and many others. The publication year of the studies we selected had no limitations, and therefore the timeframe for this review article ranged from September 20 to October 31, 2022.

### ***Community Pharmacy***

Community Pharmacies are characterized as "an activity or set of activities embraced in coordination with the physician, conveyed by a drug specialist, who applies their specific healthcare information with pharmaceutical care or through a delegate, with a patient/client, populace or another health care professional, to upgrade the course of care, with the expectation to further develop well being results and the worth of medical care. The rise of commercialization in community pharmacies is viewed as one of the essential advancements molding well-being administration conveyance by community pharmacists. Wellbeing strategy drives throughout recent years seem to embrace a perspective on helping clients who are turning out to be more 'enabled' in their associations with health experts. This is reflected by the expansion of research activities around the ideas of patient-focused care and shared clinical navigation [11, 12].

### ***Pharmaceutical Care Services***

Pharmaceutical Care Services differ from one patient to the next; it is an ongoing process that aims to provide a variety of healthcare services. In the United States, the private market for medical care conveyance, including drug store administrations, prevents public and statewide techniques to change the fundamental plan of action. Until recently, most drug stores were solely concerned with dispensing medications. With lower administering expenses and higher working expenses, local area drug stores are centered around expanding efficiency and proficiency through innovation and experts. Drug specialists are still being tested to demonstrate the value of their non-dispensing-related drug care administrations. As the expense of sub-par drug treatment turns out to be more apparent, medicine treatment for executives might turn into an expected drugstore benefit in confidential medication protection plans. Pharmaceutical care has a positive impact on the healthcare of patients. Throughout the concentrated gatherings, education/counseling and drug treatment were the most evaluated types of drug care administrations. This has elaborated participation among drug specialists and other clinical experts, reflecting an expanded propensity for interprofessional coordinated effort in the ongoing medical services framework [13-15].

### ***Steps for Effective Patient Healthcare and Positive Drug Compliance***

- Promoting Telepharmacy Healthcare Services

Pharmaceutical companies have long recognized that merely following industry-standard prescriptions will not result in development or even support seriousness. This critical shift, known as moving "past the pill," emerges from two realizations: medications alone are frequently insufficient to achieve ideal clinical outcomes for patients, and as drug pipelines dry up, "past the pill" organizations will be required new sources of income. This has created a developing interest in methods for mistreatment, new advances, and business processes for improvement and patient consideration, prompting the IoT initiative at drug companies.

The company's IoT plan includes the medical care of clinical things and connected care processes utilizing sensible associated clinical gadgets and IT administrations via the web, versatile applications, and so forth throughout drug advancement, clinical preliminaries, and patient consideration. The outcomes of company IoT development and clinical preliminary studies will combine modern innovations and administrations to create new types of pharmaceutical healthcare prospects [16, 17].

- Utilization of Digital Medical Devices

Sensors will provide data to help pharmaceutical companies improve care; however, finding the right patients for the right clinical trials is critical. Body sensors, which were previously only used by competitors, are now rapidly entering the market, and buyers and pharma will soon have access to a wealth of information that includes not only heartbeat, pulse, ECG, and metabolic process rate, but also additional developed data such as irritation, rest patterns, and so on. Varied portable applications that support gadget management have arisen, including my Dario and SleepBot, among others. As previously reported, the Hacking Medication Organization has Positioned Wellbeing, a program to essentially assess and rank wellbeing-centered applications and associated gadgets.

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## **Results and Discussion**

**Table 1. Pharmaceutical Care Services Offered by Various Asian Countries**

Country	Overview of Pharmaceutical Care
Philippines	<p>A global paradigm shift by both the International Pharmaceutical Federation and the World Health Organization increased the responsibilities of pharmacists in the Philippines to encompass accountabilities such as administrative work and duties to public health for patient-centered services. The research by Agaceta et al. (2014), although it uses hospital pharmacies with both government and private ownership, is still insightful in discerning the quality of pharmaceutical care services in the country.</p> <p>Pharmaceutical care services are defined as providing drug education to the patient to increase drug awareness associated with nursing drug compliance and optimize the patient's quality of life by providing adequate pharmacotherapy care to attain positive clinical outcomes. Pharmaceutical Care Services aim to build rapport with the patient; it is a continuous service that provides patients with an adequate pharmaceutical service that ensures optimal outcomes from the employment of medications. review to explain the current status of pharmaceutical care services in community pharmacies in Asia. methodology This review intends to examine, evaluate, investigate, and provide insight into every pharmaceutical care service supplied by numerous Asian nations, specifically the Association of Southeast Asian Nations nations. As a result, this article serves as a review and provides a top-level view of pharmaceutical care that is centered on community pharmacies and is being implemented by a variety of Asian countries. The majority of community pharmacies provide prescription and over-the-counter products, as well as prescription dispensing and patient counseling. In the absence of compensation mechanisms, pharmacists are less inclined to deliver high-quality dispensing and counseling services. Insufficient competent pharmacists exist to fulfill the expanding desires of patients. As a result of this and a lack of pharmacist training, pharmaceutical care has become an occasional priority in the practice of everyday pharmacy. Despite the fact that the pharmaceutical care services of community pharmacies in Asia are implemented adequately and there has been a transition from drug-oriented to patient-oriented practice, we tend to be still behind the implementation due to various country-specific variables. Nevertheless, with the curriculum reforms for pharmacy education, we must always see results in the near future.</p> <p>10 public health roles that are ascertained for a service that caters to the general populace. These are as follows:</p> <ol style="list-style-type: none"> <li>1. Patient and medication counseling</li> <li>2. Active participation in the health care team</li> <li>3. Public health education</li> <li>4. Participation in health programs and community projects</li> <li>5. Health promotions</li> <li>6. Participation in outreach and medical and surgical mission</li> <li>7. Conduct populace-based studies and surveys</li> <li>8. Involvement of regulatory programs</li> <li>9. Conduct scientific research for drug discovery from natural sources</li> <li>10. Health policymaking</li> </ol> <p>Even though the role of the pharmacist has been established, there are problems in implementing it on a national scale. It is stated that underdeveloped interprofessional collaboration among pharmacists and other healthcare professionals is perceived as a barrier to the realization of quality pharmaceutical care services. The absence of national guidelines has also been identified as a barrier to the implementation of pharmaceutical service delivery [20].</p>

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<b>Thailand</b>	<p>Thailand has a healthcare system that originally relied upon traditional medicine, which has now been transformed into allopathic medicine that is accompanied by the philosophy of pharmaceutical care. There have been great undertakings to support the implementation of pharmaceutical care, such as reforms on pharmaceutical education, standards of pharmacy practice, and postgraduate education.</p> <p>The education system for pharmacists in colleges in Thailand provides a 6-year doctorate program in pharmacy with 4 tracks that include pharmaceutical care, industrial pharmacy, a specialized track, and international programs. But the absence of instructors at a professional level is scant, leading to a scarcity of professionals in Thailand, where if every pharmacy were required to have a pharmacist present, there would never be enough. Aside from this, training pharmacists from generalists to specialists has not seen extensive success. Thus, there are inadequacies in integrating pharmaceutical care services as a custom in the practice of pharmacy.</p> <p>Since it is not legislated for pharmacists to be present in pharmacies, there is a low need for pharmacists in the community setting, and together with increasing career opportunities in hospitals and hospital pharmacists, many of the graduates are reluctant to work as dispensing pharmacists. As the research showed, pharmacists in Thailand are aware of their roles, but the lack of momentum to bring about the practice of pharmaceutical care is perceived as a barrier to its success [21-23].</p>
<b>Indonesia</b>	<p>The Indonesian Ministry of Health has directed the expansion of the roles of pharmacists as there is a movement to make efficient use of the competencies of pharmacists. This resulted in an improvement to their curriculum in pharmacy education to encompass clinical pharmacy and pharmacy practice. Their undergraduate programs are required to attain a four-year course in addition to two semesters for a pharmacist's professional program, where they will be trained as community and hospital pharmacists as interns.</p> <p>Aside from this, the Indonesian Pharmacists Association and universities are developing training based on competency for formerly trained pharmacists for new certifications that will allow them to practice pharmacy. As of now, pharmacists in Indonesia are relatively new and are still discovering systemic issues in the delivery of pharmaceutical care to identify roles they can fulfill. While pharmacists are eager to expand their role in overall healthcare delivery, barriers such as geographical disparity and aversion to interprofessional collaboration must be distinguished from promoters of pharmaceutical care services [24].</p>

<p><b>Malaysia</b></p>	<p>A total of 420 local retail pharmacists answered the internet-based survey. Aside from basic administrations such as minor disease treatment, medication administration, and guidance, the vast majority of respondents were observed to:</p> <ul style="list-style-type: none"> <li>• Well-being screening and observation by 99.5%,</li> <li>• determination and suggestion of well-being supplements (90.5%),</li> <li>• Patient prescription audit (68.8%), weight of the executives (52.4%) and advising on smoking termination (51.0%).</li> <li>• The bigger half (53.3%) of the respondents disclosed that they were furnishing drug care administrations to patients with current illnesses.</li> <li>• In light of the training standards of drug care, the respondents were engaged with patients' information assortment (23.3%),</li> <li>• clinical data assessment (18.6%),</li> <li>• figuring out a medication treatment plan (9.3%),</li> <li>• carrying out a medication treatment plan (4.5%), and checking and changing the arrangement (18.3%) [25-28].</li> </ul> <p>From the perspective of pharmaceutical care by pharmacist students in Malaysia, students are more likely to practice clinical pharmacy upon graduation since there is a lack of trust between pharmacists and physicians within hospital grounds [26, 29, 30, 31].</p> <p>Clinical pharmacies at public emergency clinics have extended the standard job description of the drug specialist to an occupation that offers drug care to patients and medication knowledge to both the public and professionals. Regardless, the act of allocating personal general specialists has limited the expert jobs of local space drug specialists to improve clinical data and convey drug care. Modification of the medical services framework is prime for further developing drugstore practice in Malaysia [25, 27, 28, 32-34].</p>
<p><b>India</b></p>	<p>The reform of the practice of community pharmacy in the Republic of India transformed pharmacy practices from medicine-focused practices to patient-centered practices to achieve the proper results that improve patients' lives. To attain medical care, pharmacists must assume the roles of supervisor, communicator, decision-maker, teacher, researcher, long-term learner, leader, and manager, which will facilitate providing personalized care. As patients visit local pharmacists more often, they can play a vital role in providing personalized patient care, particularly in the management of chronic diseases (NCDs). Indian community pharmacists had to hone their expertise in drug product orientation, exert clinical pharmacy skills in every aspect, and ensure continuous pharmaceutical care [35-39].</p> <p>The average cost per person with diabetes was found to be US\$314.15 (USD) and US\$29.91, respectively. The costs for individuals with diabetes were \$125.01 for macrovascular complications, \$90.43 for microvascular complications, and \$142.01 for other diseases. Of the \$314.15, the average total direct medical costs were \$290.04, the average non-drug costs were \$3.75, and therefore the average total indirect costs were \$20.34 [40-44].</p>

<p><b>United Arab Emirates</b></p>	<p>Individual endeavors to observe pharmaceutical care administrations are created by a couple of US-prepared drug specialists, furthermore as a handful of drug specialists who had the option to appear for certificates like those presented by the American College of Clinical Drug store (ACCP) to Illustrate Board Affirmed medicine Drug specialists [45-49].</p> <p>The effects of both the subjective and quantitative periods of the review uncovered that pharmaceutical care's effect on training in the UAE is restricted because of many variables, chiefly the absence of time and patients' obliviousness to the drug specialist's job in the clinical field. The mean reactions with reference to drug specialists' ways to influence patient advice and patients' information on drug specialists' roles in overseeing unfavorable medication responses were 77.1% and 59.7%, respectively. Dynamic cooperation in well-being mindfulness programs achieved 64.8%. The average positive reaction of members in terms of decreasing endorsing errors and perceiving drug-related issues was 9.2%. Drug specialists' age and therefore the variety of years by and by were the main elements affecting the drug care administration's execution [50-54].</p>
<p><b>Israel</b></p>	<p>In Israel, all pharmacists are required to obtain a bachelor's degree in pharmacy, which is earned through a four-year program identical to other undergraduate degrees. In Israel, the minimal prerequisite to practice as a pharmacist is a BSc, which is also required to enroll in postgraduate pharmacy programs [55, 56].</p> <p>Israeli pharmacists' knowledge of pharmacological treatment. Over 62% of respondents correctly grasped the core concept of pharmaceutical care. More over 70% of pharmacists recognized the fundamental purpose of pharmaceutical care and the roles of the pharmacist and patient, despite the fact that only 45% were able to provide an accurate description of pharmaceutical care [57-59].</p> <p>The majority of pharmaceutical services consist of the production and compounding of pharmaceuticals, the preparation of cytotoxic products, inventory management, and the provision of clinical services in patient wards. Furthermore, pharmacists serve on hospital committees. Inpatient care units normally maintain a stock of pharmaceuticals, although some hospitals also offer unit dose dispensing. There are initiatives now underway to enhance the utilization of clinical pharmacists within healthcare teams, both in hospital and community settings. However, these programs have encountered strong pushback from administrators who view pharmacist compensation as an unnecessary expense [56, 57, 60, 61].</p>

<p><b>Taiwan</b></p>	<p>To comprehend the efficacy of pharmacist interventions, the problem of polypharmacy in high-frequency outpatients with polypharmacy in Taiwanese pharmaceutical care, based on the increasing number of drugs, drug interactions, and severity of interactions. In 2017, instances with excessive polypharmacy were selected from the Pharmaceutical Care practice System database of the Taiwan pharmacist Association and 93.82 % of drug interactions occurred [62-65].</p> <p>The drug most ordinarily causing interactions are the following:</p> <ul style="list-style-type: none"> <li>• Acetylsalicylic acid</li> <li>• Diclofenac</li> </ul> <p>Prior to applying for the pharmaceutical home care plan, Taiwan's polypharmacy rate had decreased by 61.6%. Patients with severe polypharmacy and significant healthcare expenditure can benefit greatly from the home pharmaceutical care offered by pharmacists [62-65].</p> <p>In Taiwan, type two diabetes medications are inadequately regulated. Over the course of six months, 100 patients with type 2 polygenic disease and poor glycemic control (HbA1c levels of C9.0 percent) were enrolled in a randomized, controlled clinical research. Using the Mann–Whitney test, nonparametric quantitative data were evaluated. The Mann–Whitney test revealed that the intervention group's mean HbA1c level reduced significantly after six months, whereas the control group's level increased by 0.43 %. Thus, it was determined that the pharmacist intervention program provided pharmaceutical services that enhanced the long-term, safe regulation of blood sugar levels in ambulatory older patients with polygenic conditions without increasing medical costs [66, 67].</p> <p>The issue arises when parents of pediatric patients request extemporaneous powder dosage forms because they believe it will harm their children, despite the fact that "children are not miniature adults; their anatomy and physiology are quite different from that of adults" and the administration of drugs is of particular concern. Thus, pharmacists can influence parental knowledge, attitudes, and practices regarding pediatric dosage forms. Pediatricians altered their prescribing methods in addition to recognizing the proper premise. Thus, the objective of modifying pediatric medicine administration in an acceptable and safe manner was achieved [65, 68].</p>
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<p><b>China</b></p>	<p>Independent and chain pharmacies in China discuss whether or not they offer comfortable pharmacologic therapy to the general public. Regarding pharmacological treatment, Chinese pharmacists at all types of pharmacies are optimistic. In contrast, pharmacists differed between pharmacies. Regarding the observation of pharmaceutical care, Chinese pharmacists in both types of pharmacies provided basic shopper consultations and prescription counseling, whereas freelance pharmacists provided more extensive pharmaceutical care. Perhaps the Chinese neighborhood pharmacy is too profit-driven. To increase the availability of high-quality pharmaceutical treatment, pharmacists should be freed from drug sales in order to better serve patients [69-72].</p> <p>A further concern is the widespread denial of duty for health promotion and education by those in charge of pharmaceutical care services. This may be attributed to pharmacists' lack of ambition, dedication, and self-confidence to assume responsibility for their patients' health [69, 72].</p> <p>Other community pharmacists in Harbin, China, have an optimistic view and provide pharmaceutical care for over-the-counter western medications. The inability of community pharmacists to deliver pharmaceutical care was hampered by a lack of professional role definition, inadequate pharmacological expertise, and insufficient human and financial resources [73, 74].</p> <p>The Chinese pharmacist Law, a regular for patient pharmaceutical care services, the pharmacy workforce, public knowledge of pharmacists' worth, and professional organization engagement in pharmacy development must be supported for community pharmacy pharmaceutical care to advance [69-74].</p>
<p><b>Japan</b></p>	<p>Japan may be an aging society; the proportion of people aged 65 and up was 19.9% in 2005 and is expected to rise to 26.0% by 2015. Healthcare costs will skyrocket as a result of this growth. In Japan, various structural reforms are being implemented to reduce the astronomical and ever-increasing cost of medical care. Community pharmacy healthcare services will be reformed to meet both social desires and patient and customer expectations. In 2006, universities' undergraduate pharmacy programs were expanded to six years, including six months of clinical training in hospitals and community pharmacies. This change should improve communication between community pharmacists and academics, and we anticipate that it will encourage community pharmacy research. Furthermore, certification programs will improve the quality of health care. Despite the fact that Japanese pharmacists are not fully capable of providing pharmaceutical care, they will play a significant role in ensuring a healthy aging society in the future, particularly in community settings [7, 75, 76].</p> <p>The goal of home healthcare is to help people recover and restore their functional capacity, live with more freedom and dignity, and avoid hospitalization or placement in other long-term care facilities. In Japan, Home Pharmaceutical Care (HPC), a government-approved pharmacist home visit service, was introduced in 2000 as part of the long-term care insurance system, which refers to universal health coverage for the elderly. This service delivers and manages medications to homebound elderly people who are at risk for DRPs and have difficulty visiting a community pharmacy [57-80].</p>

<p><b>South Korea</b></p>	<p>The standard of pharmacologic care in South Korea varies depending on location or institution. Pharmaceutical care is often limited to specific aspects of medication content due to a lack of definition. Doctors desired complete medication information as well as the ability to share clinical responsibilities with other health professionals via pharmaceutical care services. Nurses desired a reduction in the burdens associated with pharmaceutical counseling services in their daily practices. Doctors and nurses have asked pharmacists to provide their patients with essential and carefully selected pharmaceutical information in a patient-centered manner. As barriers to pharmaceutical treatment, inadequate reward systems, limited access to patient records by pharmacists, inaccurate pharmacist position descriptions, and a lack of economic communication among consultants were cited [81-84].</p> <p>The new system prohibits physicians from giving medications to outpatients and pharmacists from writing medication prescriptions. Previously, pharmacists were allowed to write prescriptions, whereas physicians could directly dispense medications to their patients. Furthermore, hospital insurance claims show a significant decrease in the use of drugs and steroids. Three, after the dispensing restriction, the number of different antibiotics and medications provided per episode appeared to have decreased, though there were no discernible differences between microorganisms and microorganism illness in these decreases [85-88].</p>
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## Conclusion

To conclude the team's research, pharmaceutical health care services are essential to providing optimal pharmaceutical care to promote proper medication adherence and effective clinical care for all patients. Pharmaceutical Care Services can also be provided in the community pharmacy sector, where community pharmacists are the primary source of drug information for all residents. Retail pharmacies played an important role in the development of a country's healthcare policies. With the extent of the COVID-19 pandemic, from the year 2020 up until this point in time during our team's research, community pharmacies became one of the driving force for the dissemination of valuable COVID-19 vaccine information, eventually encouraging the populace to be engaged in a community vaccination drive set by their government. When COVID-19 was still a novel virus and no vaccine had yet been developed, community pharmacies became the primary source of protective gear and surgical masks to protect the populace against the novel virus. This study shed light on the unique practice of pharmaceutical care portrayed by various Asian nations, particularly here in the Philippines, where pharmaceutical care services are essential to all types of community pharmacies, whether privately or state-owned. The practice of pharmaceutical care services is essential to the provision of information and the containment of the top 10 leading causes of death in the Philippines, such as hypertension, stroke, and hyperglycemia. As the number of community pharmacies in various Asian countries increases, so does the innovation of pharmaceutical care services.

## CONFLICT OF INTEREST

The authors have no conflict of interest.

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