Research Article

International Pharmaceutical Federation (FIP) Basel Statements: An Analysis of Hospital Pharmacy Practice in the Philippines

*1John Louise D. Raval

About Article

About Author

1 University of the Visayas - Main Campus, Philippines

ABSTRACT

This study analyzed the current state of hospital pharmacy practice in the Philippines, using the International Pharmaceutical Federation's (FIP) Revised 2014 Basel Statements as a standard. It aimed to identify current practice gaps and priority areas for improvement in order to improve public health outcomes and optimize drug therapy. A descriptive-correlational research approach was used to investigate how hospital demographic variables influence pharmacy practice performance across Basel-defined tiers and thematic themes. Data were collected from 302 hospital pharmacists in diverse regions using an adapted FIP Basel Self-Assessment Tool. The findings suggest that hospital pharmacy services in the country are mostly focused on distributive and dispensing tasks, with minimal adoption of clinical pharmacy and patient-centered services. Significant correlations were found between institutional characteristics—such as hospital service level, hospital type, presence of pharmacy and medical residency programs, number of full-time pharmacists, pharmacy student rotations, and practice setting—and performance in both practice tiers and themes. Medication safety practices, adequate storage and dispensing, contingency planning for pharmaceutical shortages, and the acquisition of high-quality medicines are among the core capabilities. However, significant gaps remain in areas such as clinical informatics integration, engagement in research and human resource development, rational medicine usage monitoring, and interdisciplinary collaboration. Furthermore, several hospitals reported limited engagement from pharmacists in areas such as herbal and dietary supplements, off-label drug use, hazardous pharmaceutical handling, compounding, and quality assurance systems. The study provides relevant information to help drive national initiatives to strengthen pharmacy practices. Its findings highlight the importance of focused, region-specific strategies and regulatory reforms to improve hospital pharmacy services and align with these to global best practices.

Contact @ John Louise D. Raval
johnlouise_raval@uv.edu.ph

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1. INTRODUCTION

The Philippines, a growing economy in Southeast Asia with a population of 104.9 million in 2017, faces significant public health challenges, with ischemic heart disease, neoplasms, and cerebrovascular disease being the top causes of mortality (Dayrit *et al.*, 2018; Philippine Statistics Authority, 2020). The COVID-19 pandemic affected healthcare systems, highlighting the need for changes in hospital management, regulatory supervision, and technological enhancement. The COVID-19 pandemic pushes healthcare leaders to implement standardized care, quality systems, and best practices to enhance service delivery and optimize resource efficiency.

The Department of Health (DOH) leads national health planning, regulation, and technical assistance (Department of Health, n.d.). Under Republic Act 4226, or the Hospital Licensure Act, hospitals are mandated to meet service, staffing, equipment, and facility standards (Department of Health, 2012). Republic Act 10918, the Philippine Pharmacy Act, further regulates pharmacy practice, requiring registered pharmacists to manage pharmaceutical operations and provide services ranging from compounding and dispensing to clinical and regulatory responsibilities (Republic Act No. 10918, 2016).

Professional organizations, including the Philippine Pharmacists Association (PPhA), founded in 1920, and its affiliate, the Philippine Society of Hospital Pharmacists (PSHP), have played an important role in fostering professional growth and safe medicine use. (Philippine Pharmacists' Association, 2017; Docuyanan, 2018). Globally, the International Pharmaceutical Federation (FIP), to which the PPhA is a member organization, promotes the pharmacy profession through education, innovation, and policy. Its Basel Statements, amended in 2014, present a worldwide vision for hospital pharmacy spanning seven categories, organized into three tiers—from essential services to advanced clinical practice (Moles *et al.*, 2016; International Pharmaceutical Federation, 2021).

Despite the global framework, pharmacy practice in the Philippines continues to face systemic constraints. Faller *et al.* (2020) highlight pharmacists' underutilization in providing patient-centered care under the Universal Health Care (UHC) law. Inadequate staffing, restricted competencies, and insufficient budget are all examples of barriers. Ongpoy (2016) discovered that Filipino pharmacists were only somewhat equipped to deliver adult vaccines, citing training expenses and adverse event management as barriers. Similarly, Agaceta *et al.* (2013, 2014) cited physician support, IT systems, space constraints, and a lack of economic incentives as major barriers to implementing pharmaceutical care.

Faller *et al.* (2020) highlighted the importance of ASEAN pharmacists in tackling global health issues through joint research and practice reform. Despite numerous studies on pharmacists' responsibilities, no study has thoroughly evaluated Philippine hospital pharmacy practices using the FIP Basel paradigm. To close this gap, the current study aims to evaluate existing hospital pharmacy practice, establish its compliance with FIP guidelines, and investigate the association between pharmacist demographics and practice tier.

According to DOH reports, there are inefficiencies in pharmaceutical governance as a result of unclear FDA operational mandates and a lack of coordination between regulatory agencies like the FDA, DOH, and PhilHealth (Ursu & Ioana, 2019). Therefore, by identifying practice gaps, improving clinical roles, and advancing policy, this research seeks to influence workforce development and strategic planning. In the long run, strengthening the healthcare system, supporting UHC objectives, and improving health outcomes all depend on better hospital pharmacy practices.

Professional competency, practice innovation, and evidence-based policy are the primary motivations for this academic study. It is anticipated that the results will help practitioners, educators, and legislators move for changes that will establish hospital pharmacists as important contributors to national health priorities.

1.1. Framework

This study adapted two key frameworks: the Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975) and Systems Theory by Ludwig von Bertalanffy (1973). These theories explain the individual behaviors shaped by attitudes and their social norms, suggesting that a person's intention to act is influenced by their perception of approval from others and their attitude toward the behavior. This information is essential to further understand pharmacist behavior in hospital settings, where personal intent and professional norms influence practice.

Systems theory emphasizes the interdependence of organizational systems and their subsystems. It emphasizes the importance of aligning internal processes with external requirements. The concept highlights the dynamic relationships between pharmacy services and overall hospital operations in the context of hospital pharmacy practice. The study assesses the effect of organizational structure and pharmacist attitudes on practice quality. The seven areas it examined comprised overarching and governance statements, procurement, prescribing influence, preparation, administration, monitoring, and human resource development.

The FIP Basel Statements are a globally recognized framework that sets standards in hospital pharmacy. Hospitals were classified from Tier 0 (below standard), Tier 2 start of clinical pharmacy activities and Tier 3 (advanced clinical services with complete IT integration) in the tiered approach developed by Lyons *et al.* (2016). To assess hospital pharmacy practices and determine development priorities, the study adapted this model for use in the Philippine context.

With patient safety as the primary objective, the study adapted a practice framework that guides improvements in hospital pharmacy services in the Philippines by incorporating pharmacy leadership and assessing demographic and operational data.

1.2. Objectives of the study

This study aims to determine the relationship between hospital demographic characteristics and pharmacy practice, as observed by head, chief, or director pharmacists in the Philippines, using the FIP Basel Statements framework on hospital pharmacy practice.

Specifically, it seeks to answer the following queries:

1. What is the demographic information of the respondent and/or hospital in terms of-

1.1. respondent profile
    1.1.1. Job Position
    1.1.2. Years of Employment
1.2. region;
1.3. institutional characteristics in terms of:
    1.3.1. ownership (government/private);
    1.3.2. classification (general, specialty, others); and
    1.3.3. level (1, 2, 3)
2. What are the institutional characteristics of the respondent in terms of;
    2.1. population of surrounding or assigned hospital community;
    2.2. number of hospital beds;
    2.3. total number of full-time pharmacy staff;
    2.4. number of physicians caring for patients ;
    2.5. primary service of the hospital;
    2.6. inclusion of the clinic does in the assessment;
    2.7. presence of a pharmacy resident program in the hospital;
    2.8. presence of a medical residency program in the hospital;
    2.9. number of pharmacy student does the hospital take on rotations each year; and
    2.10. best description of practice setting?
3. What are the pharmacy practices among hospitals based on the FIP Basel Statements in terms of themes, specifically on the Key Areas of Strength?
4. What are the pharmacy practices among hospitals based on the FIP Basel Statements in terms of themes, specifically on opportunities for improvement?
5. What are the pharmacy practices among hospitals based on the FIP Basel Statements in terms of tiers?
6. Is there a significant relationship between the demographic information and the hospital's pharmacy practice in terms of themes?
7. Is there a significant relationship between the demographic characteristics and the hospital's pharmacy practice in terms of tiers?

2. LITERATURE REVIEW
2.1. Establishment of the FIP Basel Statements
The FIP Basel Statements emerged from the 2008 Global Conference on the Future of Hospital Pharmacy in Basel, Switzerland, resulting in 75 consensus statements that present an unified vision for hospital pharmacy practice globally. In response to the changing landscape of healthcare delivery, the statements were significantly revised in 2014 via a multistage, global participatory process to maintain their relevance (Moles et al., 2016).

The revision process encompassed a global online survey, an online forum, and a "World Café" workshop. During the initial survey phase from late 2013 to early 2014, 334 responses were collected from stakeholders across 62 countries. Participants were requested to either endorse, discard, or rephrase statements, and were also encouraged to suggest new ones. More than 10% of respondents suggested revisions to 14 of the original statements, leading to additional review by the Hospital Pharmacy Section Executive Committee. Input from an online forum with participants from 28 countries across all WHO regions introduced new themes, including

technology assessment, sterile product oversight, and the expansion of specialist practice. The final workshop at the 2014 FIP Congress in Bangkok included 80 participants from 20 countries, culminating in a revised set of 65 Basel Statements. These statements preserved the six original thematic areas: procurement, influence on prescribing, preparation and delivery, administration, medication monitoring, and human resources and training, in addition to overarching statements (Moles et al., 2016).

Following their revision, the dissemination and implementation of the Basel Statements have accelerated. The FIP Hospital Pharmacy Section has translated the statements into more than 20 languages, encompassing the six official languages of the United Nations (Vermeulen, 2014). Regional implementation projects, especially in the Western Pacific, have enhanced the practical application of the Basel Statements, with several reports documenting these initiatives.

Lyons et al. (2016) created and validated a global hospital pharmacy self-assessment tool and prioritization tier system to support implementation at the institutional level, based on the Basel Statements. The tool was designed to aid hospitals in assessing their adherence to and advancement in best practices. The development process entailed the selection of quantifiable indicators via a review of the Basel Statement and cognitive interviews. The final survey achieved a 29% response rate from 36 hospitals across four countries, indicating an average construct agreement of 83%, while institutional compliance varied from 30% to 90%. The benchmarking feedback given to respondents identified prevalent implementation barriers, especially concerning pharmacy safety. The research validated the instrument's reliability and effectiveness for hospitals aiming to assess and improve their compliance with the Basel Statements (Lyons et al., 2016).

2.2. Global Implementation and Evaluation of FIP Basel Statements in Hospital Pharmacy Practice
Numerous studies have investigated the worldwide implementation of the International Pharmaceutical Federation (FIP) Basel Statements for the assessment and enhancement of hospital pharmacy practice. The statements function as a benchmark for aligning national practices with international standards, focusing on key areas including procurement, clinical pharmacy services, workforce development, and medication safety.

Bare et al. (2021) employed the FIP's self-assessment tool in 24 hospitals in Namibia to assess pharmacy services. The research indicated that practices primarily concentrated on procurement and medication distribution, exhibiting minimal clinical involvement. Significant obstacles comprised inadequate human resources, absence of interdisciplinary collaboration, and policy limitations. Namibia's robust pharmacy education system and the existence of therapeutic committees were identified as critical factors for future progress.

Law et al. (2019) expanded this methodology to six Sub-Saharan African nations, revising the self-assessment tool to align with the updated Basel Statements. An average of 82% of hospitals met Tier 1 (minimum standard) practices. Uganda and Ghana excelled in tiers two and three, whereas Malawi underperformed.

The research highlighted the inconsistency in implementation and ongoing deficiencies in fundamental standards.

Penm *et al.* (2015) reported that in the Pacific Island countries (PICs), 97% of hospitals maintained formularies and 81% had Pharmacy & Therapeutics (P&T) Committees; however, pharmacist-led clinical services were still limited. Clinical pharmacists encountered shortages; however, effective collaboration and communication with healthcare teams significantly facilitated the expansion of their roles in medication safety and rational use.

Penm *et al.* (2015) investigated the Western Pacific Region, revealing that 90.6% of hospitals provided clinical pharmacy services, yet pharmacist involvement in medical rounds was restricted. Facilitators, including institutional support, teamwork, and patient-centered values, improved implementation, indicating that internal and environmental enablers are essential for sustaining clinical pharmacy integration.

Al Sabbah *et al.* (2018) conducted a review of hospital pharmacy practices in Saudi Arabia, highlighting the necessity of aligning national policies with the revised Basel Statements and global trends. The research highlighted the significance of the Basel Statements in pinpointing deficiencies and aligning practices with international standards.

Nepal, classified as a low-income country susceptible to disasters, employed the Basel framework to evaluate its procurement practices. Shrestha *et al.* (2018) identified that several hospitals depended on costly direct procurement methods devoid of formularies, with some obtaining medications from unlicensed supply chains. The research highlighted the need for enhanced regulatory frameworks and compliance with Basel procurement standards to guarantee drug quality and availability in emergency situations.

Wright *et al.* (2015) conducted an analysis in Canada relating to the alignment of the FIP Basel Statements with national standards, including the CSHP 2015 objectives and Accreditation Canada's medication management criteria. Sixty-seven percent of Basel statements were consistent with Accreditation Canada standards, whereas only thirty-three percent corresponded with CSHP objectives. The divergence shows varying scopes—CSHP emphasizes the roles of pharmacists, while FIP and Accreditation Canada employ a more comprehensive systems approach. A clear agreement on patient-centered and safe pharmacy services was evident.

Wright *et al.* (2015) found that 88% of Basel statements were consistent with the standards set by the American Society of Health-System Pharmacists (ASHP), indicating a significant agreement with U.S. pharmacy practice frameworks.

Chamoun *et al.* (2019) applied a national survey in Lebanon to evaluate different types of hospitals. University teaching hospitals showed greater compliance with Basel Statements and a higher likelihood of employing designated medication safety officers and clinical pharmacists. The research indicated that wider implementation of accreditation standards may facilitate the standardization of safe and effective pharmacy practices in hospitals.

Santos *et al.* (2018) assessed the hospital pharmacy workforce in Brazil, identifying notable challenges in human resources.

50 percent of hospitals were without pharmacists, and merely 40% complied with the national standard of one pharmacist for every 50 beds. The study emphasized the Basel Statement recommendations for improved workforce planning, improved data systems, and expanded roles for pharmacists in medication management to optimize results.

3. METHODOLOGY

3.1. Research Design

This is a quantitative study and made use of a descriptive and correlational research design. The study assessed the demographic characteristics of the hospital and further determined the current state of hospital pharmacy practice in relation to the FIP Basel Statements. The study utilized eta squared, also known as effect size, to analyze the data. The study specifically analyzed whether the demographic data and institutional features have a significant impact on the tiers and themes of hospital pharmacy practice.

3.2. Research Site

The study was conducted in hospitals across the Philippines with operational hospital pharmacy services. As reported by the Department of Health (DOH) in its 2018 National Health Facility Registry, the country has 1,389 licensed hospitals—460 government and 929 private. Pursuant to Administrative Order No. 2012-0012 of the Department of Health, hospitals are mandated to provide basic hospital functions, including support services such as pharmacy.

Hospitals in the public and private sectors that offer pharmacy services oversee medication management and use. The study then examines pharmacy practice and the vital role hospital pharmacists play in the health and quality of life of their patients. According to Republic Act No. 10918, or the Philippine Pharmacy Act, pharmacists play a crucial role in the delivery of quality health care services by providing safe, effective, and high-quality pharmaceutical products, pharmaceutical care, drug information, patient medication counseling, and health promotion. Prepare, compound, manufacture, maintain, store, distribute, purchase, sell, or dispense any pharmaceutical product or raw materials; or provide services such as clinical pharmacy services, drug information services, regulatory services, pharmaceutical marketing, and medication management, among others, whenever the pharmacist's expertise or technical knowledge is required. It is emphasized that the traditional pharmacist's responsibilities have grown to encompass patient care in addition to drug preparation and dispensing. Pharmacists, as members of the health care team, play a critical role in reducing adverse drug events, e.g., medication errors, and ensuring patient safety (Department of Health, 2019).

3.3. Participants

The study respondents were Chief, Director, or Head Pharmacists—or their official designees—from hospital facilities. Based on the 2021 National Health Facility Registry by the Department of Health, there are approximately 1,389 hospitals nationwide. Using Krejcie and Morgan's sampling table with a 5% margin of error, a sample size of 302 was determined.

Respondents were proportionally selected across regions, with one respondent per hospital.

3.4. Instrumentation

The study employed the use of the FIP Basel Statements Self-Assessment Tool, a standardized questionnaire developed and distributed by the International Pharmaceutical Federation's (FIP) Hospital Pharmacy Section. This instrument is designed to assess hospital pharmacy services in line with the FIP Basel Statements—globally recognized standards for hospital pharmacy practice (Law *et al.*, 2019).

The instrument is divided into three sections: (1) respondent and hospital demographic information, (2) pharmacist involvement, and (3) preparation and delivery. A total of 31 survey items were used to assess practices in important theme areas, such as overarching and governance statements, procurement, prescribing influence, preparation and delivery, administration, monitoring of use, and human resource development. To make it more relevant to the Philippine context, minor revisions were made to the demographic section for information about institutions and professions, but the key Basel practice questions remained the same to ensure the tool's validity.

The tool is considered appropriate because it is directly based on the FIP Basel Statements, which assure that the test's content and structure are adequate, according to Law *et al.* (2019). Lyons *et al.* (2016) reinforced its answer validity via cognitive interviews during the tool's initial revision, which required just minor language changes without affecting item content.

Data from the instrument were analyzed by determining the practice percentages for each theme and the Basel statement tier levels (Tier 0 to Tier 3), with higher tiers reflecting advanced pharmacy practice. The grading system is based on the percentage of met criteria to total criteria for each domain or tier.

This clinically verified and internationally benchmarked instrument offers a structured assessment of hospital pharmacy performance, allowing for both local and global comparison.

3.5. Data Collection

Respondents were selected randomly based on regional distribution. Contact information was obtained from the relevant hospital sites, and the survey was disseminated electronically through email, Facebook Messenger®, and JotForm (2021) from September to November 2021. The selection process for respondents adhered rigorously to established inclusion and exclusion criteria. Participants were allotted a maximum of 30 minutes to complete the questionnaire. The survey form was structured to ensure that all questions were mandatory, thereby prohibiting participants from advancing to the subsequent item without completing the current question. Consequently, submissions were accepted solely when all required fields were filled, thereby reducing the incidence of missing data. The digitally generated form automatically identified incomplete responses to prevent partial submissions. During the statistical analysis phase, complete-case analysis was utilized, and imputation methods were unnecessary due to the lack of missing values. In cases where a respondent declined participation, a replacement from the same region and sector was solicited to ensure the target sample size was preserved. The collected data were stored electronically, analyzed through descriptive and inferential statistics, and permanently deleted after the study's completion in compliance with ethical guidelines.

3.6. Data Analysis

Descriptive statistics (frequency and percentage) were used to analyse respondent demographics (region, job position, years of employment) and institutional characteristics (ownership, classification, level, patient population, number of beds, pharmacy staff, and physicians). Responses to Basel Statements questions were aggregated based on the assigned tier and theme. Eta squared was employed to analyse the relationship between hospital demographic data and pharmacy practice tiers and themes, and subsequently, to inform the development of a proposed framework for a hospital pharmacy practice development plan.

3.7. Research Ethics Protocol

The study was first approved by the Dean of the College of Allied Health Sciences and the Chief Academic Officer as an initial step. The next step, once approved, was to submit the study to a panel of experts at a design hearing for approval. This paper was submitted for approval by the University of the Visayas-Institutional Review Board (UV-IRB) to continue with the report. The researcher waited for the notice to be released before a first respondent was recruited.

Respondents were assured their autonomy in participating and provided detailed information about the study's goal. Participation was voluntary and without force, and informed consent was obtained. Transparency was maintained by sharing findings with healthcare leaders and hospital pharmacy practitioners. Risks were reduced by using brief, anonymous surveys; strict data protection safeguards; and adherence to the Data Privacy Act. Participants were provided contact information for the researcher and the IRB for any potential concerns or inquiries. There were no conflicts of interest noted, and necessary measures were taken to assure ethical compliance throughout the study. Upon study completion, all questionnaire responses and data gathered were discarded, and a tabulated dataset maintained in a spreadsheet file was temporarily preserved for reference before being permanently deleted for the purpose of the study.

4. RESULTS AND DISCUSSION
4.1. Demographic Characteristics of the Respondents and Institutional Characteristics

This section presents the demographic characteristics of the respondents and the institutional characteristics of the participating hospitals.

Table 1: Demographic Characteristics of the Respondents and Hospital

Profile	Public (n=138)		Private (n=164)		Overall (n=302)	
	f	%	f	%	f	%
Job Position						
Chief/Director/Head Pharmacist	57	18. 87	105	34.77	162	53.64
Assistant Chief/Director/Head Pharmacist	9	2.98	7	2.32	16	5.30
Supervisory Level Pharmacist	72	23.84	52	17.22	124	41.06
Years of Employment						
Less than 1 year	0	0.00	6	1.99	6	1.99
1 year to 5 years	39	12.91	78	25.83	117	38.74
More than 5 years to 10 years	29	9.60	29	9.60	58	19.21
More than 10 years	70	23.18	51	16.89	121	40.07
Hospitals Demographic data by Region						
Autonomous Region in Muslim Mindanao (ARMM)	7	2.32	0	0.00	7	2.32
Cordillera Administrative Region (CAR)	4	1.32	3	0.99	7	2.32
National Capital Region (NCR)	20	6.62	21	6.95	41	13.58
Region I (Ilocos Region)	9	2.98	8	2.65	17	5.63
Region II (Cagayan Valley)	11	3.64	5	1.66	16	5.30
Region III (Central Luzon)	20	6.62	22	7.28	42	13.91
Region IV-A (CALABARZON)	18	5.96	32	10.60	50	16.56
Region IV-B (MIMAROPA)	5	1.66	2	0.66	7	2.32
Region V (Bicol Region)	8	2.65	4	1.32	12	3.97
Region VI (Western Visayas)	5	1.66	9	2.98	14	4.64
Region VII (Central Visayas)	3	0.99	11	3.64	14	4.64
Region VIII (Eastern Visayas)	5	1.66	6	1.99	11	3.64
Region IX (Zamboanga Peninsula)	4	1.32	6	1.99	10	3.31
Region X (Northern Mindanao)	7	2.32	10	3.31	17	5.63
Region XI (Davao Region)	3	0.99	12	3.97	15	4.97
Region XII (SOCCSKARGEN)	7	2.32	10	3.31	17	5.63
Region XII (CARAGA)	2	0.66	3	0.99	5	1.66
Hospital Ownership						
Public/Private Hospital	138	45.70	164	54.30	302	100.00
Hospital Classification						
General Hospital	128	42.38	147	48.68	275	91.06
Specialty Hospital	10	3.31	17	5.63	27	8.94
Service level						
Level 1	74	24.50	52	17.22	126	41.72
Level 2	29	9.60	75	24.83	104	34.44
Level 3	35	11.59	37	12.25	72	23.84

More than half of the respondents (53.64%) were chief or head pharmacists, highlighting the importance of senior leadership in pharmacy operations (Lyons *et al.*, 2015). A majority of respondents had over 10 years (40.07%) or 1–5 years (38.74%) of experience. Long-serving staff were more common in public hospitals (23.18%), while early-career pharmacists were more prevalent in private hospitals (25.83%), indicating sectoral differences (Molata, 2015). The majority of respondents were from Luzon (63.58%), with a significant portion from Region IV-A (16.56%), which corresponds with the distribution of healthcare resources in the area (Dayrit *et al.*, 2018). Private hospitals represented 54% of responses, aligning with national trends (Department of Health, 2011), and the majority of facilities were classified as general hospitals (91%) according to official classifications (Health Facility Development Bureau, 2020). The distribution of hospital levels was as follows: Level 1 constituted 42%, Level 2 comprised 34%, and Level 3 accounted for 24%, consistent with data from the Department of Health (DOH, 2020).

Table 2. Institutional Characteristics

Profile	Public (n=138)		Private (n=164)		Overall (n=302)	
	f	%	f	%	f	%
Population surrounding the hospital community						
Over 500,000 people	28	9.27	32	10.60	60	19.87
100,000-499,000 people	44	14.57	47	15.56	91	30.13
50,000-99,000 people	26	8.61	36	11.92	62	20.53
Less than 50,000 people	40	13.25	49	16.23	89	29.47
Number of Hospital Beds						
More than 1000	4	1.32	1	0.33	5	1.66
501-1000	13	4.30	2	0.66	15	4.97
251-500	16	5.30	14	4.64	30	9.93
100-250	44	14.57	65	21.52	109	36.09
<100	61	20.20	82	27.15	143	47.35
Total Number of FTE Pharmacy staff						
Clinical pharmacist (s)	163	3.76	189	4.36	352	8.12
Distributive/Dispensing pharmacist (s)	1182	27.26	1076	24.82	2258	52.08
Integrated Clinical/distributive pharmacist (s)	211	4.87	30	0.69	241	5.56
Informatics pharmacist (s)	8	0.18	10	0.23	18	0.42
Medication use safety pharmacist (s)	7	0.16	15	0.35	22	0.51
Pharmacy resident (s)	5	0.12	32	0.74	37	0.85
Pharmacy technician (s) or pharmacist assistant (s)	414	9.55	432	9.96	846	19.51
Administrative/support/clerical staff	398	9.18	164	3.78	562	12.96
Number of Physicians caring for patients						
Total Physicians caring for patients	10068	42.83	13438	57.17	23506	100.00
Primary Services of the Hospital						
Surgery	117	84.78	159	96.95	276	91.39
Medicine	133	96.38	163	99.39	296	98.01
Pediatric	118	85.51	158	96.34	276	91.39
Oncology	38	27.54	76	46.34	114	37.75
Emergency Room	133	96.38	161	98.17	294	97.35
Primary Care	110	79.71	148	90.24	258	85.43
Clinic Inclusion in the Assessment						
Primary Care Clinics Only	35	25.36	24	14.63	59	19.54

Profile	Public (n=138)		Private (n=164)		Overall (n=302)	
	f	%	f	%	f	%
Specialty Clinic Only	4	2.90	3	1.83	7	2.32
Both Primary and Specialty Clinic	71	51.45	130	79.27	201	66.56
No Clinics Included	27	19.57	7	4.27	34	11.26
Presence of a Pharmacy Residency Program in the Hospital						
Yes	1	0.72	6	4.35	7	2.32
No	137	99.28	158	97.68	295	97.68
Presence of a Medical Residency Program in the Hospital						
Yes	64	46.38	82	50.00	146	48.34
No	74	53.62	82	50.00	156	51.66
Number of Pharmacy Student does the hospital rotation each year	21	15.33	116	84.67	137	100.00
Best Description of Practice Setting						
Mostly distributive-pharmacist are primarily engaged in drug distribution and reactive order-processing roles	102	33.77	103	34.11	205	67.88
Clinical generalist (integrated) model-pharmacists accept responsibilities for both clinical and distributive activities of the pharmacy department	13	4.30	17	5.63	30	9.93
Separate clinical and distributive roles- clinical pharmacists are engaged exclusively in clinical activities and accept little or no responsibility for issues related to the medication-use or delivery systems. Dispensing pharmacists are engaged exclusively to the distribution of medicines.	16	5.30	32	10.60	48	15.89
Comprehensive model- includes pharmacists in distribution, generalist/integrated and specialist roles. A mixture of the above 3 models.	7	2.32	12	3.97	19	6.29

A majority of hospitals in the Philippines cater to populations ranging from 100,000 to 499,000, accounting for 30.13%, which is consistent with the Department of Health's interlocal health zone strategy (Dayrit et al., 2018). Rural areas continue to experience access gaps attributed to economic and infrastructural constraints (World Bank, 2011). Approximately 47.35% of facilities have fewer than 100 beds, while merely 1.66% exceed 1,000 beds, underscoring regional disparities, particularly between Metro Manila and other regions (Dayrit et al., 2018).

The pharmacy workforce is primarily distributive, comprising 52.08%, with increased staffing levels observed in public hospitals. The presence of clinical pharmacists is limited to 8.12%, with integrative integrative (4.87%) roles predominantly located in public hospitals (Department of Health, 2019; Pawłowska et al., 2016). Roles in informatics and medication safety are developing yet remain uncommon (Eschenbacher, 2013; ASHP, 2016). Residency training is limited, with only

2.32% availability for pharmacy, primarily provided by private hospitals, and pharmacy student rotations are also restricted (Catedral et al., 2020; University of the Philippines Manila, 2017; Adamson University College of Pharmacy, 2021).

Although over 97% of hospitals offer essential services such as emergency care and general medicine in accordance with Department of Health standards (DOH, 2012), oncology care is accessible in only 37.75% of facilities, necessitating multidisciplinary support (Catedral et al., 2020). Approximately 67.88% of pharmacists are engaged in distributive roles, while only 6% operate within comprehensive practice settings, indicating gradual advancement in the integration of clinical pharmacy (Penm et al., 2015; Al Sabban et al., 2017; Abousheishaa et al., 2020).

4.2. Hospital Pharmacy Practices among hospitals based on the FIP Basel Statements in terms of themes : Key Areas of Strength

Table 3: Hospital Pharmacy Practices among hospitals based on the FIP Basel Statements

Key Areas of Strength	Tier	Public (n=138)		Private (n=164)		Overall (n=302)	
		f	%	f	%	f	%
Overarching Statements and Governance							
1. Safe Medication Use	1	130	43.05	158	52.32	288	95.36
2. Ensuring proper storage to maintain the quality, safety, and security of medicines across the supply chain	1	128	42.38	154	50.99	282	93.38
3. A contingency plan for medicine shortage or emergency purchases	2	126	41.72	147	48.68	273	90.40
4. Review, interpretation, and validation of all prescriptions prior to dispensing or administration	1	124	41.06	144	47.68	268	88.74
5. Cost Effective Medication Use	2	120	39.74	147	48.68	267	88.41
6. Accessible to all health care providers at all times - as a point of contact (examples: on call, phone, in person) for health care providers	3	104	34.44	133	44.04	237	78.48
7. Management and disposal of waste related to the medicine use process	2	111	36.75	125	41.39	236	78.15
Theme 1: Procurement of Medicines							
1. Procurement of strong quality assurance medicines	1	119	39.40	143	47.35	262	86.75
2. Ensuring a transparent process of procurement of medicines and health products in line with best practices and national legislation	1	113	37.42	127	42.05	240	79.47
Theme 2: Influences on Prescribing							
1. Serving on the hospital Pharmacy and Therapeutics Committee	2	120	39.74	140	46.36	260	86.09
2. A formulary system (local, regional and/or national	1	109	36.09	122	40.40	231	76.49
Theme 3: Preparation and Delivery							
1. Ensuring proper dispensing of all medicines	1	132	43.71	156	51.66	288	95.36
2. Storage, preparation, dispensing, and distribution of all medicines, including investigational medicines	1	123	40.73	156	51.66	279	92.38
3. Labeling of medicines	1	120	39.74	150	49.67	270	89.40
4. Determining which medicine are included in ward stock	1	121	40.07	130	43.05	251	83.11
5. Packaging of medicines	1	115	38.08	135	44.70	250	82.78
Theme 5: Monitoring of Use							
1. Hospital utilizes a reporting system (local, regional, or national) for appropriate Medication Use	1	131	43.38	151	50.00	282	93.38
2. Hospital utilizes a reporting system (local, regional, or national) for adverse drug reaction	2	125	41.39	142	47.02	267	88.41
3. Pharmacist ensure all health care professionals responsible for administering injectable medicines and/or chemotherapy receive education/training on the use of the medicine	2	119	39.40	147	48.68	266	88.08
4. Pharmacist ensure all health care professionals responsible for administering injectable medicines and/or chemotherapy receive education/training on the necessary precaution with the medicine	1	111	36.75	132	43.71	243	80.46
5. Hospital utilizes a reporting system (local, regional, or national) for defective medicines	1	107	35.43	127	42.05	234	77.48

• *Overarching Statement and Governance:* Hospitals demonstrated significant compliance in contingency planning (90.40%), safe medication use (95.36%), and storage standards (93.38%). These objectives correspond with the WHO's global aim to decrease preventable medication harm by 50% (WHO, 2017) and the FIP Basel Statements advocating for evidence-based, collaborative practices (FIP, 2021). Optimal storage conditions are crucial for maintaining drug efficacy (Iqbal *et al.*, 2017), and coordination by pharmacists during shortages is vital (Pauwels *et al.*, 2015).

• *Procurement of Medicines:* Procurement practices are evidenced by transparency at 79.47% and quality assurance at 86.75%. Pharmacists maintain adherence to policies and uphold the integrity of the supply chain (Moss *et al.*, 2019). Mackey (2018) highlights that transparency mitigates corruption risks and fosters compliance with procurement regulations.

• *Influences on Prescribing:* Pharmacy and Therapeutics Committees (86.09%) and formulary systems (76.49%) facilitate rational prescribing (DOH, 2021). Regular updates to formularies are necessary for their effectiveness (Park *et al.*, 2017), and the Philippine National Drug Formulary (PNDF) along with the Generics Act ensures access to affordable medications (Abrigo *et al.*, 2021).

• *Preparation and Delivery:* Hospitals adhered to preparation (92.38%) and dispensing (95.36%) protocols. Ward stock and unit-dose systems minimize waste and improve safety (Adham *et al.*, 2011; Spivey, 2012). Oncology trials underscore the importance of secure management of investigational drugs (Moon *et al.*, 2020; Kay *et al.*, 2018), in accordance with national policies such as the PNDF (DOH, 2010).

• *Monitoring of Use:* Adverse drug reaction tracking (88.41%) and medication safety reporting (93.38%) contribute to pharmacovigilance (Fornasier *et al.*, 2018). Underreporting, particularly concerning herbal products, continues to pose a challenge (Dutta *et al.*, 2021).

• *Overall Observations:* Findings indicate global trends that support the roles of pharmacists in safety, policy, and formulary oversight (FIP, 2017; Law *et al.*, 2019; Penm *et al.*, 2015).

4.3. Hospital Pharmacy Practices among hospitals based on the FIP Basel Statements in terms of Themes: Opportunities for Improvement

Table 4. Hospital Pharmacy Practices among hospitals based on the FIP Basel Statements

Opportunities for Improvement	Tier	Public (n=138)		Private (n=164)		Overall (n=302)	
		f	%	f	%	f	%
Overarching Statements and Governance							
Hospital pharmacist responsible for implementation of technologies that support the medicine use process	2	97	32.12	124	41.06	221	73.18
Currently, not engaged in researching new methods and systems to improve human resource needs	1	94	31.13	104	34.44	198	65.56
Hospital pharmacist responsible for selection of technologies that support the medicine use process	2	89	29.47	96	31.79	185	61.26
Hospital pharmacists continually monitor some patients medications for safety, appropriate use, and optimal outcome - based on patient selection criteria	2	71	23.51	77	25.50	148	49.01
Educating prescribers on the access to and evidence for optimal and appropriate use of medicines	2	65	21.52	69	22.85	134	44.37
Hospital pharmacist responsible for maintenance of technologies that support the medicine use process	2	56	18.54	71	23.51	127	42.05
No patients are monitored by pharmacists	1	52	17.22	66	21.85	118	39.07
A minority of hospital pharmacist engage in research or auditing involving new methods and systems to improve human resources needs	2	44	14.57	58	19.21	102	33.77
Providing advice on the disposal of human waste from patients receiving medicines	3	47	15.56	48	15.89	95	31.46
Accessible only at certain times of the day and/or to only certain -as a point of contact (examples: on call, phone, in person) for health care providers	2	26	8.61	22	7.28	48	15.89
Hospital pharmacist responsible for assessment of clinical decision support systems and informatics used for guiding the medicine use process	3	22	7.28	22	7.28	44	14.57

Hospital pharmacist responsible implementation of clinical decision support systems and informatics used for guiding the medicine use process	3	18	5.96	18	5.96	36	11.92
Hospital pharmacists continually monitor all patients medications for safety, appropriate use, and optimal outcomes - on a daily basis	3	11	3.64	20	6.62	31	10.26
Hospital pharmacist responsible for maintenance of clinical decision support systems and informatics used for guiding the medicine use process	3	14	4.64	15	4.97	29	9.60
Hospital pharmacist responsible development of clinical decision support systems and informatics used for guiding the medicine use process	3	13	4.30	9	2.98	22	7.28
Currently do not serve as a point of contact for health care providers	1	8	2.65	9	2.98	17	5.63
Hospital pharmacists continually monitor all patients medications for safety, appropriate use, and optimal outcomes-when changes are made to a patient's therapy	2	4	1.32	1	0.33	5	1.66
The majority of hospital pharmacist engage in research or auditing involving new methods and systems to improve human resources needs	3	0	0.00	2	0.66	2	0.66
Theme 1: Procurement of Medicines							
A reliable information system for procurement that provides accurate, timely and accessible information	2	96	31.79	127	42.05	223	73.84
Procurement of standard concentrations of high-risk medicines, including electrolytes	1	59	19.54	71	23.51	130	43.05
Procurement of medicines reviewed and adapted to fit different setting and emerging needs on a weekly basis	3	26	8.61	78	25.83	104	34.44
Procurement of medicines reviewed and adapted to fit different setting and emerging needs on a monthly basis	2	52	17.22	45	14.90	97	32.12
Procurement of medicines reviewed and adapted to fit different setting and emerging needs on a yearly basis	2	39	12.91	10	3.31	49	16.23
Procurement of medicines reviewed and adapted to fit different setting and emerging needs on a daily basis	3	17	5.63	30	9.93	47	15.56
Procurement of medicines are Never reviewed and adapted to fit different setting and emerging needs	1	4	1.32	1	0.33	5	1.66
Theme 2: Influences on Prescribing							
None of the Pharmacists trained to participate in collaborative prescribing	1	115	38.08	138	45.70	253	83.77
Providing orientation, drug information and education to nurses, physicians, and other hospital staff regarding best practices for medicines use	2	82	27.15	97	32.12	179	59.27
Ensuring quality compounding of injectable admixtures and non-commercially available formulations	1	50	16.56	63	20.86	113	37.42
Policies addressing off-label use	3	43	14.24	68	22.52	111	36.75
Pharmacist managed preparation of hazardous medicines, including cytotoxic	3	48	15.89	52	17.22	100	33.11
Review of hospital medication practices by an external quality assessment accreditation program	3	40	13.25	60	19.87	100	33.11

Data collected and trended against internal benchmarks and/or best practices in other institution	3	34	11.26	35	11.59	69	22.85
Policies addressing the use of herbal and dietary supplements	2	22	7.28	39	12.91	61	20.20
A few Pharmacists trained to participate in collaborative prescribing	1	15	4.97	15	4.97	30	9.93
Some Pharmacists trained to participate in collaborative prescribing	2	7	2.32	11	3.64	18	5.96
All Pharmacists trained to participate in collaborative prescribing	3	1	0.33	0	0.00	1	0.33
Most Pharmacists trained to participate in collaborative prescribing	3	0	0.00	0	0.00	0	0.00
Theme 3: Preparation and Delivery							
System for tracing medicines dispensed by the pharmacy	1	75	24.83	104	34.44	179	59.27
Policies addressing the use of medicine brought into the hospitals by patients	2	60	19.87	108	35.76	168	55.63
Unit dose distribution	3	66	21.85	70	23.18	136	45.03
Storage of concentrated electrolyte products outside of patient wards	3	24	7.95	49	16.23	73	24.17
Automated prescription filling	1	0	0.00	0	0.00	0	0.00
A bar coding system or other machine scannable codes at administration	3	0	0.00	0	0.00	0	0.00
Theme 4: Administration							
Ensuring patients medication allergies, drug interactions, contraindications and past adverse events are accurately recorded and evaluated prior to medicine administration	1	78	25.83	85	28.15	163	53.97
Labeling individual patient medicines with at least two patient identifiers (example: patient name and date of birth), name of medicine, route, and dose	3	66	21.85	92	30.46	158	52.32
Appropriate and current information resources to ensure safe preparation and administration	3	52	17.22	70	23.18	122	40.40
Policies and strategies to prevent wrong route errors (e.g. Enteral feeding catheters, labeling of intravenous tubing near the insertion site)	2	48	15.89	66	21.85	114	37.75
Transferring patient medicines information as patients move between and within sectors of care	1	39	12.91	41	13.58	80	26.49
Utilization of the observation method at drug administration to detect errors and identify potential areas for improvement	1	35	11.59	45	14.90	80	26.49
Independent checking of chemotherapy doses against the original prescription by a pharmacist and one additional health care professional at the point of care prior to administration	1	21	6.95	25	8.28	46	15.23
Theme 5: Monitoring of Medicines Use							
Pharmacists are not actively involved in multidisciplinary teams within patient care areas or wards	3	95	31.46	108	35.76	203	67.22
Hospital utilizes a reporting system (local, regional, or national) for medication errors.	2	96	31.79	105	34.77	201	66.56

Pharmacist ensure all health care professionals responsible for administering injectable medicines and/or chemotherapy receive education/training on the hazard involve with the medicine	1	81	26.82	112	37.09	193	63.91
Currently, not engaged in researching new methods and systems to improve the use of medicines	1	86	28.48	96	31.79	182	60.26
Hospital Pharmacist doesn't have access to the full, official patient record	0	77	25.50	101	33.44	178	58.94
Pharmacist don't have access to documentation in patient record	0	76	25.17	102	33.77	178	58.94
Only high risk patients or high-risk medications are being educated by pharmacists on the appropriate use of their medicines (e.g., side effects, importance of adherence, medicines directions)	2	59	19.54	66	21.85	125	41.39
Yes the Hospital Pharmacist have access to the full, official patient record	1	61	20.20	63	20.86	124	41.06
Every patient (or patient caregivers) with new medication are being educated by pharmacists on the appropriate use of their medicines (e.g., side effects, importance of adherence, medicines directions)	3	55	18.21	52	17.22	107	35.43
Procured medicine has met strong quality standards including during stock outs (monthly)	1	59	19.54	44	14.57	103	34.11
A minority of hospital pharmacists engage in research or auditing involving new methods and systems to improve the use of medicines	2	40	13.25	58	19.21	98	32.45
MOST prescriptions require transcription steps between the original prescription and medicines administration record	1	36	11.92	55	18.21	91	30.13
Procured medicine has met strong quality standards including during stock outs (weekly)	2	25	8.28	57	18.87	82	27.15
Procured medicine has met strong quality standards including during stock outs (daily)	3	26	8.61	55	18.21	81	26.82
Some prescriptions require transcription steps between the original prescription and medicines administration record	2	44	14.57	34	11.26	78	25.83
Pharmacists sometimes documents interventions in the hospitals official patient record	2	31	10.26	40	13.25	71	23.51
No patient counseling by pharmacists are provided on the appropriate use of their medicines (e.g., side effects, importance of adherence, medicines directions)	1	24	7.95	46	15.23	70	23.18
Trigger tools for adverse drug events and optimal medicines use	2	27	8.94	35	11.59	62	20.53
A few prescriptions require transcription steps between the original prescription and medicines administration record	3	26	8.61	26	8.61	52	17.22
No prescriptions require transcription steps between the original prescription and medicines administration record	3	23	7.62	21	6.95	44	14.57
Pharmacists actively involved on multidisciplinary teams within a few care areas	3	15	4.97	27	8.94	42	13.91
Pharmacists rarely documents interventions in the hospitals official patient record	1	24	7.95	17	5.63	41	13.58

All prescriptions require transcription steps between the original prescription and medicines administration record	1	9	2.98	29	9.60	38	12.58
Pharmacists actively involved on multidisciplinary teams in some care areas	2	20	6.62	17	5.63	37	12.25
Procured medicine has met strong quality standards including during stock outs (yearly)	0	21	6.95	7	2.32	28	9.27
The majority of hospital pharmacists engage in research or auditing involving new methods and systems to improve the use of medicines	3	12	3.97	10	3.31	22	7.28
Pharmacists never documents interventions in the hospitals official patient record	1	7	2.32	5	1.66	12	3.97
Pharmacists actively involved on multidisciplinary teams within ALL care areas	1	4	1.32	6	1.99	10	3.31
Pharmacists actively involved on multidisciplinary teams within most care areas	1	4	1.32	6	1.99	10	3.31
Procured medicine has met strong quality standards including during stock outs (never)	0	6	1.99	2	0.66	8	2.65
Pharmacists always documents interventions in the hospitals official patient record	3	0	0.00	0	0.00	0	0.00
Pharmacists most of the time documents interventions in the hospitals official patient record	3	0	0.00	0	0.00	0	0.00
Theme 6: Human Resources Training and Development							
A human resource information that contains basic data for planning, training, appraising, and supporting the workforce.	3	40	13.25	57	18.87	97	32.12

• *Overarching statement and governance:* The participation of pharmacists in workforce audits (0.66%) and ongoing patient monitoring (1.66%) is notably restricted (Bare *et al.*, 2021). Human factors engineering and structured HR evaluations can improve system safety and performance (Holden *et al.*, 2021; Negi *et al.*, 2015). Therapeutic drug monitoring, despite its significance, is underutilized (Alhameed *et al.*, 2019), highlighting the necessity for enhanced regulation and training (Marella *et al.*, 2021).

• *Procurement of medicines:* Daily reviews of procurement processes are conducted in only 15.56% of hospitals, whereas 1.66% do not engage in any reviews. Robust policies and transparency are essential (Rao *et al.*, 2006; WHO, 2019). A unified national procurement system is proposed to address inconsistencies impacting drug access (Abrigo *et al.*, 2021).

• *Influences on prescribing:* Collaborative prescribing by pharmacists in the Philippines is infrequent, occurring in less than 10% of cases (Bare *et al.*, 2021), due to limitations in training and legal frameworks. Countries such as the UK have adopted pharmacist prescribing, yielding outcomes similar to those achieved by physicians (Jebara *et al.*, 2020; Zhou *et al.*, 2019).

• *Preparation and delivery:* No hospitals indicated the use of automation or barcoding in medication preparation, despite established evidence of its effectiveness in reducing errors (Thompson *et al.*, 2018). Barriers consist of cost and ambiguous ROI (Shah *et al.*, 2016), underscoring the necessity for evidence-based implementation (Boyd *et al.*, 2019).

• *Administration:* Only 15.23% of hospitals independently verify chemotherapy doses, even though post-administration is a frequent stage for errors (Shane, 2009). Training and verification led by pharmacists enhance safety (Reinhardt *et al.*, 2019; Coutsouvelis *et al.*, 2020), consistent with R.A. 11215 (2019).

• *Monitoring of medicine use:* Pharmacist interventions are inadequately documented at a rate of 3.97% (Adam *et al.*, 2019), highlighting the significance of documentation for accountability. Although AMS programs are available (DOH, 2018), there is a deficiency in institutional and technological support (Al-Jedai *et al.*, 2012).

• *Human resource training and development:* A mere 32.12% of hospitals provide comprehensive HR data. Adaptive HR strategies observed during COVID-19 in Canada highlight the importance of internal communication and leadership development (Adam *et al.*, 2021).

• *Opportunities for improvement:* Key Findings: Documentation, automation, collaborative prescribing, and research exhibit persistent shortcomings. Consistent with findings from Namibia and other contexts, motivation and institutional support are essential for the advancement of clinical pharmacy (Bare *et al.*, 2021; Penm *et al.*, 2015).

4.4. Hospital Pharmacy Practices in terms of Tier

Table 5. Hospital pharmacy practices based on the FIP basel statements in terms of tier

Domains	Tier 0		Tier 1		Tier 2		Tier 3	
	f	%	f	%	f	%	f	%
All Statements	143	47.20	158	52.30	127	44.35	80	26.44
Overarching and Governance Statements	135	44.66	195	64.62	141	46.67	68	22.39
Theme 1: Procurement	88	29.22	108	35.71	148	49.01	76	25.00
Theme 2: Influences on Prescribing	166	54.97	157	51.90	93	30.58	48	15.90
Theme 3: Preparation and Delivery	138	45.56	211	69.92	168	55.63	70	23.07
Theme 4: Administration	175	58.07	124	40.99	114	37.75	140	46.36
Theme 5: Monitoring of Use	91	30.05	153	50.68	101	46.50	61	20.27
Theme 6: Human Resources Training and Development	205	67.88					97	32.12

According to the scoring system established by Bare *et al.* (2021), each theme of the FIP Basel Statement was assigned a rating of up to 100%. Survey items were classified into Tiers 0–3, reflecting varying levels of service level of complexity (FIP, 2021). Tier 0 encompasses procedures that do not meet basic standards, Tier 1 pertains to safe and secured procurement, preparation, distribution, and administration, Tier 2 incorporates clinical services, and Tier 3 signifies advanced clinical integration supported by IT.

Tier 1 achieved the highest overall score of 52.30%, with notable performance in Governance at 64.62% and Preparation and Delivery at 69.92%. In contrast, Procurement scored 35.71%, indicating a deficiency. The average for Tier 2 was 44.35%, with the lowest score recorded in Prescribing at 30.58% and the highest in Preparation and Delivery at 55.63%. Tier 3 received the lowest score at 26.44%, reflecting insufficient integration of advanced clinical services. Tier 0, indicating below standards practices, recorded an average of 47.20%, with notable performance in Human Resources at 67.88% and a significantly lower score in Procurement at 29.22%. The findings underscore the prevalence of traditional, distribution-oriented pharmacy services and the insufficient development of clinical roles within Philippine hospitals, paralleling trends noted in sub-Saharan Africa (Law *et al.*, 2019).

4.5. Relationship between the Demographic Information and the Hospital Pharmacy Practice in terms of Themes

Table 6. Relationship between the demographic information and the hospital pharmacy practice in terms of themes

Demographic information	eta value	eta² (η^2) value	p value	Decision	Interpretation	Strength
Region	.260	.068	.201	Failed to reject the null hypothesis	Not significant	--
Institutional characteristics in terms of:						
ownership (government/ private)	.048	.002	.409	Failed to reject the null hypothesis	Not significant	--
classification (general, specialty, others)	.002	.000	.966	Failed to reject the null hypothesis	Not significant	--
level (1, 2, 3)	.231	.053	.000	Reject the null hypothesis	Significant	Small effect
Population of surrounding or assigned hospital community	.126	.016	.189	Failed to reject the null hypothesis	Not significant	--
Number of hospital beds	.116	.014	.397	Failed to reject the null hypothesis	Not significant	--
Total number of full-time pharmacy staff	.242	.058	.003	Reject the null hypothesis	Significant	Small effect
Number of physicians caring for patients	.157	.025	.189	Failed to reject the null hypothesis	Not significant	--
Primary service of the hospital	.216	.047	.015	Reject the null hypothesis	Significant	Small effect

Inclusion of the clinic does in the assessment	.163	.026	.046	Reject the null hypothesis	Significant	Small effect
Presence of a pharmacy resident program in the hospital	.194	.038	.001	Reject the null hypothesis	Significant	Small effect
Presence of a medical residency program in the hospital	.131	.017	.023	Reject the null hypothesis	Significant	Small effect
Number of pharmacy student does the hospital take on rotations each year	.194	.038	.001	Reject the null hypothesis	Significant	Small effect
Best description of practice setting	.285	.081	.000	Reject the null hypothesis	Significant	Moderate effect

Legend: eta squared interpretation: η^2 =.01 - .05 is small effect; η^2 =.06 - .13 is moderate effect; and η^2 =.14 and above is large effect.

Institutional factors, such as service level, staffing, residency programs, and student rotations, demonstrated significant associations with pharmacy practice themes ($p \leq .05$), even with small effect sizes (η^2 = .01–.05). The practice setting exhibited a moderate effect (η^2 = .081), indicating a significant influence and reinforcing the rejection of the null hypothesis. The findings indicate that hospital characteristics influence the implementation of pharmacy services across key themes (FIP, 2021).

This is consistent with national data indicating that higher-level hospitals provide a wider range of services, thereby enhancing the roles of pharmacists (House of Representatives–CPBR, 2015). In Pakistan, pharmacists are frequently perceived as dispensers instead of clinical collaborators, a view that is also reflected in certain regions of the Philippines (Khan *et al.*,

2020). Hospital services influence roles, with internal medicine, obstetrics-gynecology, and surgery prevalent at various levels (Lavado *et al.*, 2011), while public hospitals tend to manage a higher number of chronic conditions (Lavado *et al.*, 2010).

Pharmacists function as clinical consultants and educators within healthcare teams worldwide, as evidenced in Canada, the UK, and the U.S. (Jorgenson, 2012). Adoption remains limited in the Philippines; however, residency programs indicate initial progress. In the United States, pharmacists participate in collaborative practice, managing therapies in conjunction with physicians (Blouin *et al.*, 2017), thereby providing a framework for enhancing care and safety at the local level.

4.6. Relationship between the Demographic Information and the Hospital Pharmacy Practice in terms of Tiers

Table 7. Relationship between the demographic information and the hospital pharmacy practice in terms of tiers

Demographic information	eta value	eta² (η^2) value	p value	Decision	Interpretation	Strength
Region	.180	.032	.886	Failed to reject the null hypothesis	Not significant	--
Institutional characteristics in terms of:						
ownership (government/ private)	.007	.000	.897	Failed to reject the null hypothesis	Not significant	--
classification (general, specialty, others)	.024	.001	.679	Failed to reject the null hypothesis	Not significant	--
level (1, 2, 3)	.168	.028	.014	Reject the null hypothesis	Significant	Small effect
Population of surrounding or assigned hospital community	.119	.014	.236	Failed to reject the null hypothesis	Not significant	--
Number of hospital beds	.116	.014	.397	Failed to reject the null hypothesis	Not significant	--
Total number of full-time pharmacy staff	.175	.031	.100	Failed to reject the null hypothesis	Not significant	--
Number of physicians caring for patients	.119	.014	.515	Failed to reject the null hypothesis	Not significant	--

Primary service of the hospital	.191	.037	.050	Reject the null hypothesis	Significant	Small effect
Inclusion of the clinic does in the assessment	.082	.007	.567	Failed to reject the null hypothesis	Not significant	--
Presence of a pharmacy resident program in the hospital	.256	.066	.000	Reject the null hypothesis	Significant	Moderate effect
Presence of a medical residency program in the hospital	.123	.015	.032	Reject the null hypothesis	Significant	Small effect
Number of pharmacy student does the hospital take on rotations each year	.256	.066	.000	Reject the null hypothesis	Significant	Moderate effect
Best description of practice setting	.277	.077	.000	Reject the null hypothesis	Significant	Moderate effect

Legend: eta squared interpretation: $\eta^2 = .01 - .05$ is small effect; $\eta^2 = .06 - .13$ is moderate effect; and $\eta^2 = .14$ and above is large effect.

Institutional factors, including hospital service level, medical residency, pharmacy student rotations, and practice setting, had a significant association with higher pharmacy practice tiers ($p \leq .05$), demonstrating their positive impact on clinical service integration (FIP, 2021). Service level, residency, and practice setting exhibited moderate effect sizes.

According to the Department of Health (2013), higher-level hospitals necessitate more sophisticated pharmacy support. Residency programs and student rotations create clinical learning environments that facilitate Tier 2 and Tier 3 development. Pharmacy residencies, despite their limitations, are essential for enhancing pharmacist competencies and minimizing medication errors (Bright et al., 2015; Smith et al., 2010).

The configuration of practice significantly influences service models. Comprehensive pharmacy models that integrate clinical and distributive roles enhance outcomes and efficiency (Weant et al., 2011; Liao et al., 2022; Vest et al., 2018); however, their implementation in the Philippines encounters staffing and regulatory challenges.

Additional factors, including region, ownership, population size, and bed capacity, did not show significant correlation with tier performance ($p > .05$), indicating that the quality of resources is more critical than the structural components. This is consistent with findings from Africa, indicating that workforce and service volume, rather than hospital type, constrained clinical pharmacy expansion (Law et al., 2019; Bare et al., 2021).

5. CONCLUSION

The study identifies the current state of hospital pharmacy practice in the Philippines, highlighting both challenges and strengths. Despite difficulties, good hospital pharmacy practices are evident, particularly in ensuring safe, effective, and high-quality standards in procurement, preparation, distribution, and administration. Various institutional characteristics, such as hospital service levels, pharmacy staff size, residency programs, and student rotations, positively influence these practices. Most institutional factors impact the practice themes and tiers, except for the total number of full-time pharmacy personnel and the inclusion of clinics in evaluations. These demographic profiles shape compliance with the FIP Basel Statements and influence overall hospital pharmacy practice. The study applies the theory of reasoned action and the theory of systems management, demonstrating that pharmacists' behavior, attitude, and rationale for actions significantly impact service delivery and adherence to the FIP Basel Statements. Systems management theory suggests that supporting individual units within an organization leads to a collective impact on overall performance, reinforcing the importance of medication safety in improving patient care.

The study recommends developing a Hospital Pharmacy Practice Framework and implementing a Hospital Pharmacy Development Plan to address organizational needs and enhance practice themes and tiers. Identifying areas of strength and improvement based on the FIP Basel Statements allows institutions to reassess capabilities and foster local and regional collaborations to advance practice. The findings can also serve as benchmarks for hospital pharmacists' continuous development.

REFERENCES

Abousheishaa, A. A., Sulaiman, A. H., Huri, H. Z., Zaini, S., Othman, N. A., Bin Aladdin, Z., & Guan, N. C. (2020). Global scope of hospital pharmacy practice: A scoping review. *Healthcare, 8*(2), 143. https://doi.org/10.3390/healthcare8020143

Abrigo, M. R. M., Opiniano, G. A., Tam, Z. C., Yee, S. A., & Estopace, K. M. I. M. (2021). *Public sector procurement of medicines in the Philippines* (Discussion Paper No. 2021-44). Philippine Institute for Development Studies. https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps2144.pdf

Adam, J. P., Khazaka, M., Charikhi, F., Clervil, M., Huot, D. D., Jebailey, J., O, P., Morin, J., & Langevin, M. C. (2021). Management of human resources of a pharmacy department during the COVID-19 pandemic: Take-aways from the first

wave. *Research in Social and Administrative Pharmacy, 17*(1), 1990–1996. https://doi.org/10.1016/j.sapharm.2020.10.014

Adamson University College of Pharmacy. (2021). Student handbook. Adamson University.

Adham, M., & Hamad, B. A. (2011). Drug dispensing systems in Gaza hospitals: A comparative study. *Eastern Mediterranean Health Journal, 17*, 722–729.

Agaceta, C. C., Diano, G., Lintag, P. M., & Loquias, M. (2013). Current practices and perceptions on pharmaceutical care of hospital pharmacists in Metro Manila. *International Journal of Pharmacy Teaching & Practices, 4*(4), 821–825.

Al-jedai, A., & Nurgat, Z. A. (2012). Electronic documentation of clinical pharmacy interventions in hospitals. In *Data mining applications in engineering and medicine.* IntechOpen. https://doi.org/10.5772/50425

Al Sabban, H., Al-Jedai, A., Bajis, D., & Penm, J. (2018). The revised Basel Statements on the future of hospital pharmacy: What do they mean for Saudi Arabia? *International Journal of Pharmacy Practice, 26*, 281–283. https://doi.org/10.1111/ijpp.12394

American Society of Health-System Pharmacists. (2016). ASHP statement on the pharmacist's role in clinical informatics. *American Journal of Health-System Pharmacy, 73*(6), 410–413. https://doi.org/10.2146/ajhp150356

Bare, A., Ivey, M., Kibuule, D., & Stevenson, J. G. (2021). An analysis of hospital pharmacy practice in Namibia, based on FIP's Basel Statements. *International Journal of Pharmacy Practice, 29*(4), 350-355. https://doi.org/10.1093/ijpp/riab019

Blouin, R. A., & Adams, M. L. (2017). The role of the pharmacist in health care: Expanding and evolving. *North Carolina Medical Journal, 78*(3), 165–167.

Boyd, A. M., & Chaffee, B. W. (2019). Critical evaluation of pharmacy automation and robotic systems: A call to action. *Hospital Pharmacy, 54*(1), 4–11.

Bright, D. R., Adams, A. J., Ulbrich, T. R., & Soric, M. M. (2015). Coaching for success: A residency search primer and update for preceptors and faculty. *Hospital Pharmacy, 50*(6), 467–476. https://doi.org/10.1310/hpj5006-467

Catedral, L. I., Tan, H. N., Chua, A., Jr., Sacdalan, D. B., & Sacdalan, D. L. (2020). Patterns of biomarker use in cancer treatment among medical oncologists in the Philippines. *JCO Global Oncology, 6*, 1593–1608. https://doi.org/10.1200/GO.20.00265

Chamoun, N., Usta, U., Karaoui, L. R., Salameh, P., Hallit, S., Shuhaiber, P., Henaine, A.-M., Akiki, Y., Zeenny, R. M., & Iskandar, K. (2020). Current trends in hospital pharmacy practice in Lebanon. *Hospital Pharmacy, 55*(2), 112–118. https://doi.org/10.1177/0018578718823733

Coutsouvelis, J., Siderov, J., Tey, A. Y., Bortz, H. D., O'Connor, S. R., Rowan, G. D., Vasileff, H. M., Page, A. T., & Percival, M. A. (2020). The impact of pharmacist-led strategies implemented to reduce errors related to cancer therapies: A systematic review. *Journal of Pharmacy Practice and Research, 50*(5), 466–480. https://doi.org/10.1002/jppr.1699

Dayrit, M. M., Lagrada, L. P., Picazo, O. F., Pons, M. C., & Villaverde, M. C. (2018). *The Philippines health system review.* World Health Organization, Regional Office for South-East Asia. https://apps.who.int/iris/handle/10665/274579

Department of Health. (n.d.). *About us.* https://doh.gov.ph/profile

Department of Health. (2010). *The Philippine Medicines Policy 2011–2016.* Department of Health.

Department of Health. (2011). *Hospital licensing data.* Republic of the Philippines. https://doh.gov.ph

Department of Health. (2011). *National objectives for health Philippines.* Department of Health.

Department of Health. (2012). *Rules and regulations governing the new classification of hospitals and other health facilities in the Philippines (AO No. 2012-0012).* Department of Health.

Department of Health. (2013). *Revised organizational structure and staffing standards for government hospitals.* Department of Health.

Department of Health. (2019). *Hospital pharmacy management manual* (4th ed.). Department of Health.

Department of Health. (2020). *List of licensed government and private hospitals.* Republic of the Philippines. https://doh.gov.ph

Department of Health. (2021, June 25). *Administrative Order-2021-0040: Implementing guidelines on the establishment of Pharmacy and Therapeutics Committee (PTC) in provincial and city health offices.* Department of Health.

Docuyanan, H. R. (2018). *PSHP President's report* [PowerPoint slides]. Philippine Society of Hospital Pharmacists National Conference.

Dutta, A., Banerjee, A., Pramanik, P., Pradhan, N., & Chaudhry, S. (2021). Pharmacovigilance in India and five ASEAN countries (Malaysia, Singapore, Thailand, Indonesia, Philippines): A comparison study. *IP International Journal of Comprehensive and Advanced Pharmacology, 6*(1), 1–4.

Eschenbacher, L. (2013). ASHP statement on the role of the medication safety leader. *American Journal of Health-System Pharmacy, 70*(5), 448–453.

Faller, E. M., Madelo, J., & Tolentino, E. A. (2020). Challenging role of pharmacists in achieving universal health

coverage: A qualitative study in the Philippines. Journal of Pharmaceutical Policy and Practice, 13, Article 17. https://doi.org/10.1186/s40545-019-0201-2

Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention and behavior: An introduction to theory and research. Addison-Wesley. https://people.umass.edu/aizen/f&a1975.html

Fornasier, G., Francescon, S., Leone, R., & Baldo, P. (2018). An historical overview over pharmacovigilance. International Journal of Clinical Pharmacy, 40(4), 744–747.

Health Facility Development Bureau. (2020). DOH hospital profile. Department of Health.

House of Representatives–Congressional Policy and Budget Research Department. (2015, March 15). Government hospitals in the Philippines. https://cpbrd.congress.gov.ph/2012-06-30-13-06-51/2012-06-30-13-36-50/530-ff2015-18-government-hospitals-in-the-philippines

International Pharmaceutical Federation. (2015). Advanced practice and specialisation in pharmacy: Global report 2015. International Pharmaceutical Federation.

International Pharmaceutical Federation. (2021). About FIP. https://www.fip.org/about

International Pharmaceutical Federation. (2021). Basel statements: The future of hospital pharmacy practice. https://www.fip.org/basel-statements

Iqbal, M. J., Geer, M. I., & Dar, P. A. (2017). Medicines management in hospitals: A supply chain perspective. Systematic Reviews in Pharmacy, 8(1), 80.

Jebara, T., Cunningham, S., MacLure, K., Pallivalapila, A., Awaisu, A., Al Hail, M., & Stewart, D. (2020). A modified-Delphi study of a framework to support the potential implementation of pharmacist prescribing. Research in Social and Administrative Pharmacy, 16(6), 812–818.

JotForm. (2021). Hospital pharmacy practice survey form [Online survey]. https://form.jotform.com/211891957153059

Jorgenson, D., Muller, A., & Whelan, A. M. (2012). Pharmacist educators in family medicine residency programs: A qualitative analysis. BMC Medical Education, 12(1), 1–8. https://doi.org/10.1186/1472-6920-12-1

Kay, S. C., Luke, D. G., & Tamer, H. R. (2018). ASHP guidelines for the management of investigational drug products. American Journal of Health-System Pharmacy, 75(8), 561–573.

Khan, N., McGarry, K., Naqvi, A. A., & Holden, K. (2020). Doctors' perceptions, expectations and experience regarding the role of pharmacist in hospital settings of Pakistan. International Journal of Clinical Pharmacy, 42(2), 549–566.

Lavado, R. F., Pantig, I. M. T., Ulep, V. G. T., Datu, M. B. G., Ortiz, D. A. P., Jimenez, J. F., & Banzon, E. P. (2011). Profile of private hospitals in the Philippines (Discussion Paper No. 2011-05). Philippine Institute for Development Studies.

Lavado, R. F., Sanglay-Dunleavy, A. B., Matsuda, Y., & Jimenez, J. F. (2010). How are government hospitals performing? A study of resource management in DOH-retained hospitals (Discussion Paper No. 2010-02). Philippine Institute for Development Studies.

Law, M. G., Marriott, J., Usifoh, C., Acheampong, F., Muungo, L., Adome, R. O., Monera-Penduka, T. G., Ndzabala, N., & Eckel, S. F. (2019). An analysis of hospital pharmacy practice in six countries of sub-Saharan Africa based on the International Pharmaceutical Federation Basel Statements on the future of hospital pharmacy. International Journal of Pharmacy Practice, 27(6), 528–535. https://doi.org/10.1111/ijpp.12560

Liao, J., Hua, X., Cai, X., Su, Y., & Yu, L. (2022). Practice and discussion on the management mode of comprehensive pharmacy under the strategy of Healthy China. Journal of Healthcare Engineering, 2022, Article 1883782. https://doi.org/10.1155/2022/1883782

Lyons, K., Blalock, S. J., Brock, T. P., Manasse, H. R., Jr., & Eckel, S. F. (2016). Development of a global hospital self-assessment tool and prioritization tier system based on FIP's Basel Statements. International Journal of Pharmacy Practice, 24(2), 123–133. https://doi.org/10.1111/ijpp.12223

Mackey, T. K., Vian, T., & Kohler, J. (2018). The sustainable development goals as a framework to combat health-sector corruption. Bulletin of the World Health Organization, 96(9), 634–643. https://doi.org/10.2471/BLT.18.209502

Molato, R. (2015). Public-private wage differentials and the quality of government workers in the Philippines. SSRN. https://dx.doi.org/10.2139/ssrn.2616204

Moles, R., Vermeulen, L., Penm, J., & Ivey, M. (2016). The Basel Statements: Updated and relevant to all. Canadian Journal of Hospital Pharmacy, 69(2), 153–155. https://doi.org/10.4212/cjhp.v69i2.1533

Moon, J. Y., Lee, Y., Han, J. M., Lee, M. H., Yee, J., Song, M. K., Kim, Y. J., & Gwak, H. S. (2020). Effects of pharmacist interventions on reducing prescribing errors of investigational drugs in oncology clinical trials. Journal of Oncology Pharmacy Practice, 26(1), 29–35. https://doi.org/10.1177/1078155219834723

Moss, R. J., Batista, A., Makridaki, D., Süle, A., & Kohl, S. (2019). Procurement. European Journal of Hospital Pharmacy: Science and Practice, 26(3), 173–174. https://doi.org/10.1136/ejhpharm-2018-001822

Negi, A., & Chaubey, D. S. (2015). Human resource audit system for evaluating employees' performance. International Journal of Research in Economics and Social Sciences, 5(8), 1–9.

Ongpoy, R. C. (2016). Level of preparedness of the Filipino pharmacists as providers of immunizations for adult patients. *ASIO Journal of Pharmaceutical and Herbal Medicines, 2*(1), 4–8.

Park, Y., Raza, S., George, A., Agrawal, R., & Ko, J. (2017). The effect of formulary restrictions on patient and payer outcomes: A systematic literature review. *Journal of Managed Care & Specialty Pharmacy, 23*(8), 893–901.

Pauwels, K., Simoens, S., Casteels, M., & Huys, I. (2015). Insights into European drug shortages: A survey of hospital pharmacists. *PLOS ONE, 10*(3), e0119322. https://doi.org/10.1371/journal.pone.0119322

Pawłowska, I., Pawłowski, L., Kocić, I., & Krzyżaniak, N. (2016). Clinical and conventional pharmacy services in Polish hospitals: A national survey. *International Journal of Clinical Pharmacy, 38*(2), 271–279. https://doi.org/10.1007/s11096-015-0234-9

Penm, J., Chaar, B., & Moles, R. (2015). Clinical pharmacy services that influence prescribing in the Western Pacific Region based on the FIP Basel Statements. *International Journal of Clinical Pharmacy, 37*(3), 485–496. https://doi.org/10.1007/s11096-015-0084-5

Penm, J., Chaar, B., & Moles, R. (2015). Hospital pharmacy services in the PICs. *Journal of Evaluative Clinical Practice, 21*(S1), 51–56. https://doi.org/10.1111/jep.12227

Republic Act No. 10918, Philippine Pharmacy Act of 2016. (2016). https://lawphil.net/statutes/repacts/ra2016/ra_10918_2016.html

Reinhardt, H., Otte, P., Eggleton, A. G., Ruch, M., Wöhrl, S., Ajayi, S., Duyster, J., Jung, M., Hug, M. J., & Engelhardt, M. (2019). Avoiding chemotherapy prescribing errors: Analysis and innovative strategies. *Cancer, 125*(9), 1547–1557. https://doi.org/10.1002/cncr.31950

Santos, T. R., Penm, J., Baldoni, A. O., et al. (2018). Hospital pharmacy workforce in Brazil. *Human Resources for Health, 16*(1), 1. https://doi.org/10.1186/s12960-017-0265-5

Shah, K., Lo, C., Babich, M., Tsao, N. W., & Bansback, N. J. (2016). Bar code medication administration technology: A systematic review of impact on patient safety when used with computerized prescriber order entry and automated dispensing devices. *The Canadian Journal of Hospital Pharmacy, 69*(5), 394–402. https://doi.org/10.4212/cjhp.v69i5.1594

Shrestha, M., Moles, R., Ranjit, E., & Chaar, B. (2018). Medicine procurement in hospital pharmacies of Nepal: A qualitative study based on the Basel Statements. *PLOS ONE, 13*(2), e0191778. https://doi.org/10.1371/journal.pone.0191778

Smith, K. M., Sorensen, T., Connor, K. A., Dobesh, P. P., Hoehns, J. D., Marcus, K. B., & Shapiro, N. L. (2010). Value of conducting pharmacy residency training—the organizational perspective. *Pharmacotherapy, 30*(12), 1313.

Spivey, P. (2012). Ensuring good dispensing practices. In *MDS-3: Managing access to medicines and health technologies* (3rd ed., p. 17). Management Sciences for Health.

Thompson, K. M., Swanson, K. M., Cox, D. L., Kirchner, R. B., Russell, J. J., Wermers, R. A., ... & Naessens, J. M. (2018). Implementation of bar-code medication administration to reduce patient harm. *Mayo Clinic Proceedings: Innovations, Quality & Outcomes, 2*(4), 342–351.

University of the Philippines Manila. (2019). *Philippine General Hospital* [Brochure]. University of the Philippines.

Ursu, I. (2019). *What is the current situation of regulation of health commodities in the Philippines?* Department of Health. https://doh.gov.ph/sites/default/files/publications/02%20What%20is%20the%20Current%20Situation%20of%20Regulation%20of%20Health%20Commodities%20in%20the%20Philippines.pdf

Vest, T. A., Carrasquillo, M. A., Morbitzer, K. A., Cruz, J. L., & Eckel, S. F. (2018). Evaluation of a comprehensive, integrated, medical service-based pharmacy practice model. *Journal of the American College of Clinical Pharmacy, 1*(1), 7–13.

Vermeulen, L. (2014). From Basel to Brussels: The FIP Basel Statements as the foundation of the EAHP Statements of Hospital Pharmacy. *European Journal of Hospital Pharmacy, 21*, 262–263.

von Bertalanffy, L. (1973). *General system theory: Foundations, development, applications* (Rev. ed.). George Braziller.

Weant, K. A., Winstead, P. S., & Armitstead, J. A. (2011). Alternative pharmacy practice model. *American Journal of Health-System Pharmacy, 68*(15), 1395–1397. https://doi.org/10.2146/ajhp110091

World Bank. (2011). *Philippine health sector review: Transforming the Philippine health sector: Challenges and future directions.* The World Bank.

World Health Organization. (2017). *Medication without harm (No. WHO/HIS/SDS/2017.6).* World Health Organization.

Wright, A., Vaillancourt, R., Bussières, J. F., Lebel, D., Wong, E., Mancini, D., & Sarakbi, D. (2015). Best of both worlds: A comparison of Canadian and international best practices for hospital pharmacy services. *The Canadian Journal of Hospital Pharmacy, 68*(1), 48–53. https://doi.org/10.4212/cjhp.v68i1.1424

Zhou, M., Desborough, J., Parkinson, A., Douglas, K., McDonald, D., & Boom, K. (2019). Barriers to pharmacist prescribing: A scoping review comparing the UK, New Zealand, Canadian and Australian experiences. *International Journal of Pharmacy Practice, 27*(6), 479–489.