Pharmacy Education (2026) 26(1) 137 - 151
https://doi.org/10.46542/pe.2026.261.137151

RESEARCH ARTICLE

Factors affecting hospital pharmacy internship programmes being offered in Metro Manila

Veronica D. Solis[1], Mac Ardy J. Gloria[2], Yolanda R. Robles[2], Margarita M. Gutierrez[2], Charles Mandy G. Ayran[2], Rubina Reyes-Abaya[3]

[1] Administrative Pharmacy, College of Pharmacy, University of the Philippines, Manila, The Philippines
[2] Department of Clinical, Social, and Administrative Pharmacy, College of Pharmacy, University of the Philippines, Manila, The Philippines
[3] Department of Pharmacy, University of the Philippines-Philippine General Hospital, The Philippines

Keywords
Experiential learning
Hospital pharmacy
Internship
Pharmacy education

Correspondence
Veronica D. Solis
Administrative Pharmacy
College of Pharmacy
University of the Philippines
Manila
The Philippines
vdsolis@up.edu.ph

Abstract

Background: Hospital pharmacy internship programmes (HPIPs) in the Philippines are both a legal requirement to qualify for the licensure examination and a source of experiential learning for students. However, local data on the prevalence and factors influencing HPIP offering are lacking. Objectives: To determine the factors affecting HPIP offering in Metro Manila. **Methods:** A descriptive cross-sectional study involving hospital pharmacy administrators was conducted. Descriptive statistics described factors affecting HPIP offering, while multiple logistic regression analysed their relationship to HPIP offering. **Results:** 60.42% of the hospitals offered HPIPs. Organisational factors (clinical pharmacy, research, and training services) were more prevalent among HPIP offering hospitals. Both groups showed high scores on perceived benefits, while management factors were higher in the HPIP offering group. Factors with significant positive relationships to HPIP offering were hospital ownership ($p = 0.009$), training services ($p = 0.005$), and academic partnerships ($p = 0.008$). **Conclusion:** HPIP offering was reported at 60.42%. Strategies to improve availability with respect to the factors with a significant relationship to HPIP offering were recommended and focused on pharmacy policy, education, and practice. Further studies are recommended to strengthen evidence and explore other dimensions of HPIPs in the local setting.

Introduction

In the Philippines, a hospital pharmacy internship is both a curricular and legal requirement for graduation and eligibility for licensure examination, respectively. Beyond these, hospital pharmacy internship programmes (HPIPs) provide students with experiential education needed to further enrich their capabilities as future pharmacy professionals and members of the healthcare workforce in the country.

HPIPs remain underexplored in research, limiting the understanding of their adequacy in terms of capacity and effectiveness in achieving intended learning outcomes for students. Currently, there is no locally available data or consolidated list of hospitals offering HPIPs to undergraduate pharmacy students. Similarly, factors influencing HPIP offering in the country have not been explored.

To address this gap, this study determined the factors affecting HPIP offering in Metro Manila, the country's centre of politics, economics, and education. The said region is a relevant starting point for research involving pharmacy education and internship programmes as it holds approximately one-third pharmacy schools in the country. Specifically, the study aimed to: estimate the prevalence of HPIP offering; describe the antecedents

to, perceived benefits from, and management factors affecting HPIP offering; and determine relationships of these factors to HPIP offering.

Notably, the study focused on HPIPs offered by level 2 and level 3 hospitals in Metro Manila. Level 2 hospitals are equipped with departmentalised clinical services for admitted patients and ideally have a respiratory unit, general intensive care unit, high-risk pregnancy unit, and neonatal intensive care unit, which suggests more extensive pharmacy services within these hospitals. Level 3 hospitals, on the other hand, are equipped with all services of a level 2 hospital and have the capacity for teaching and training clinical students.

Methods

Descriptive cross-sectional research was conducted based on Figure 1. The dependent variable was HPIP offering, or the availability of HPIPs in hospitals during the period of observation. The independent variables were: antecedents (indicators of Host Training Establishment's (THE) preparedness to offer and manage HPIPs—include organizational context and academic partnership), perceived benefits (potential outcomes of HPIPs that HTEs consider as advantageous for the organization—include value, recruitment, ideas, professional development), and management factors (include policy, preceptorship, and perspective on students).

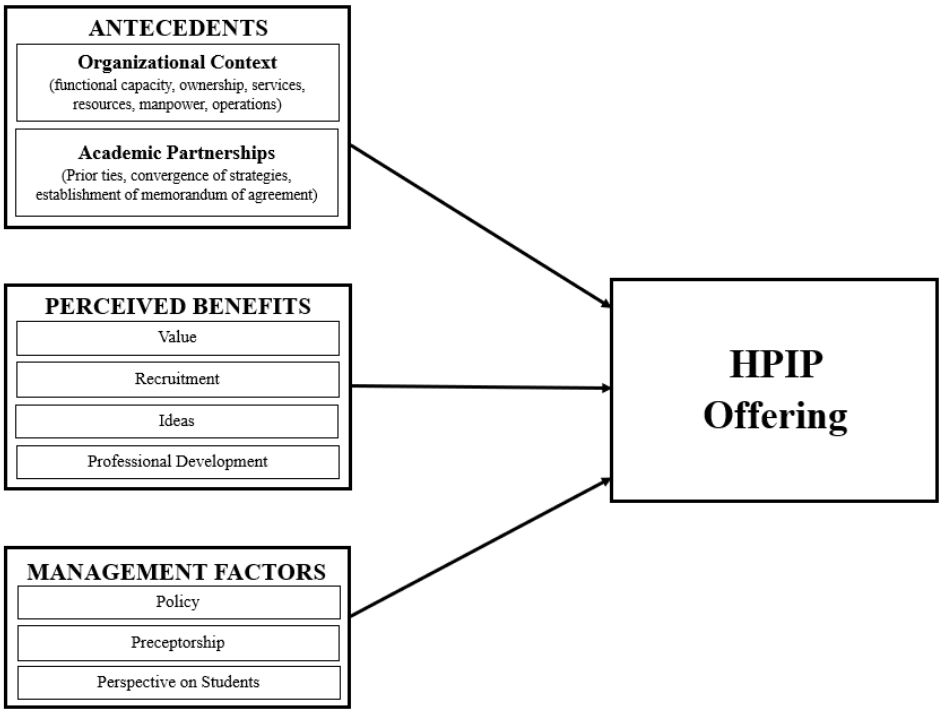

Figure 1: Conceptual framework of the study, which presents HPIP offering as the dependent variable affected by the following independent variables: antecedents, perceived benefits, and management factors. This framework was based on the internship model by Kroon and Franco (2022), which depicted an employer's perspective on higher education internships.

The target population included pharmacy administrators to represent HTEs' perspective on HPIP offering and consisted of hospital chief pharmacists, supervising pharmacists, and internship coordinators. The inclusion criteria were as follows: (1) registered pharmacist practicing in the hospital pharmacy setting and (2) currently employed in a level 2 or level 3 private or government-owned hospital in Metro Manila based on the list published by the Health Facilities And Services Regulatory Bureau (HFSRB) of the Department of Health (DOH) on December 31, 2023; and (3) currently designated as chief pharmacist, supervising pharmacist, or internship coordinator in the same hospital. On the other hand, the exclusion criteria were: (1) non-availability, absence, or on-leave status during data collection, and (2) refusal to participate in the study.

Using the 2023 DOH HFSRB data, which reported a total of 99 level 2 and level 3 hospitals in Metro Manila, the population size was estimated at 297. This estimation was based on the premise that each hospital employed at least three pharmacists who belonged to the target population, namely, the chief pharmacist, supervising pharmacist, and internship coordinator. The approximation was made due to limited data on the actual number of hospital pharmacists within these roles.

The sample size was computed as follows:

$$Sample\ size = \frac{\frac{1.96^2\ x\ 0.5\ (1-0.5)}{0.05^2}}{1+\frac{1.96^2\ x\ 0.5(1-0.5)}{0.05^2 x\ 297}}$$

$$= 167.5\ \approx 168$$

Adjustment of the sample size for possible non-response, estimated at 20%, was calculated as:

$$n_{(final)} = \frac{168}{(1-0.2)} = 210$$

Proportionate stratified random sampling technique was employed to determine the sample. This approach was used to enhance representativeness, reduce sampling error, and improve the precision of population estimates. Moreover, such a method allowed the random selection of a sample that reflected the actual distribution of the population across the region.

Instrumentation and data collection

The survey questionnaire covered five domains: demographic characteristics, HPIP offering, antecedents to HPIP offering, perceived benefits, and management factors. It was constructed based on a review of the literature and the currently available local guidelines on pharmacy internship programmes. Items included open-ended, multiple-choice, and Likert scale questions. Content and face validation were conducted by one of the authors, VS. Items with I-CVI or I-FVI < 0.78 were excluded, while scales with S-CVI or S-FVI ≥ 0.8 were deemed acceptable. A pilot test was also conducted among ten pharmacists. Cronbach's alpha was determined for academic partnership, perceived benefits, and management factors. Cronbach's alpha > 0.70 indicated acceptable reliability. Items below this threshold were revised or removed. Refinement of the items yielded a final survey questionnaire which consisted of 47 items (Supplementary). Actual data collection was conducted from September 2024 to March 2025. Questionnaires were manually disseminated, and included a QR code that directed to an online version of questionnaire, the informed consent form, and the supporting documents of the study. This was done to provide invited respondents with an option to accomplish the forms online, should this be more convenient for them.

Data analysis

Descriptive statistics were used to summarise items under demographics, HPIP offering, and organisational factors under antecedents to HPIP offering. Likert scale responses on items under academic partnerships, perceived benefits, and management factors were summarised and analysed by getting the frequency and percentage of Likert scale scores obtained from the items under each variable, and by calculating the overall means of the responses with respect to each variable. In these items, scores > 3 were interpreted as agreement and scores < 3 were interpreted as disagreement to the corresponding item by the respondent. Relationships between independent variables and HPIP offering were analysed through multiple logistic regressions using Stata 18, where p values ≤ 0.05 were considered statistically significant. Additionally, a subgroup analysis was conducted for both government and private hospitals to identify patterns or factors that may help explain the observed differences in HPIP offerings between these two groups.

Ethical considerations

The study was certified as exempt from ethical review by the UP Manila Research Ethics Board (UPMREB). Informed consent was sought from each participant, which provided the following: introduction about the study and its design, procedure, risks and benefits, right to refuse or withdraw participation, absence of compensation or payment for participation, confidentiality of information, and contact details of the researcher.

Results

Demographic characteristics

Eighty respondents met the inclusion criteria and completed the survey (Table I), yielding a response rate of 38.10% (n = 210). The respondents came from 48

level 2 and level 3 hospitals in Metro Manila. While no missing data was noted, verification of any discrepancy in the collected data was made by the researcher within five days upon collection of the questionnaire or receipt of the online survey response.

Table I: Demographic characteristics of survey questionnaire respondents (n=80)

Characteristic	Category	Frequency (%)	Mean (SD)
Age (years)			39.86 (10.98)
Sex	Male	15 (18.75)	
	Female	65 (81.25)	
Designation	Chief pharmacist	25 (31.25)	
	Supervising pharmacist	45 (56.25)	
	Internship coordinator	10 (12.50)	
Highest educational attainment	Bachelor's degree	69 (86.25)	
	Clinical pharmacy major	1 (1.25)	
	Master's degree	8 (10.00)	
	Doctor of Pharmacy	2 (2.50)	
Affiliation			
Functional capacity	Level 3	59 (73.75)	
	Level 2	21 (26.25)	
Ownership	Government	35 (43.75)	
	Private	45 (56.25)	
Number of years working as a hospital pharmacist			14.08 (10.12)
Number of years in the current designation			5.34 (5.36)

Most respondents were females (n = 65, 81.25%), with a mean age of 39.86 years. Slightly more than half were supervising pharmacists (n = 45, 56.25%). The respondents had an average of 14.08 years in hospital pharmacy practice and 5.34 years in their current administrative designations (Table II).

Table II: Demographic data of hospitals of affiliation of the survey respondents (n=48)

Characteristic	Category	Frequency (%)	Mean (SD)
Location	District I	12 (25.00)	
	District II	20 (41.67)	
	District III	3 (6.25)	
	District IV	13 (27.08)	
Functional capacity	Level 2	18 (37.50)	
	Level 3	30 (62.50)	
Ownership	Government	16 (33.33)	
	Private	32 (66.67)	
Bed capacity	< 100	11 (22.92)	250.52 (256.24)
	100 – 199	10 (20.83)	
	200 – 499	22 (45.83)	
	≥ 500	5 (10.42)	
Total number of pharmacists	< 10	21	17.67 (19.49)
	10 - 19	14	
	20 - 49	9	
	≥ 50	4	
Manpower (Pharmacist to Bed Ratio)			1:13 (0.05)

Prevalence of HPIP offering

HPIP offering was present in 29 hospitals (60.42%), among which the majority offered full onsite delivery (n = 27, 93.10%). Five hospitals with HPIP offerings were affiliated with pharmacy schools. Overall, the hospitals had an average of six pharmacy preceptors and accommodated around two schools per year, with a maximum of around 18 students accommodated annually. The average internship fee was Php 855.22.

Factors affecting hospital pharmacy internship offering

Antecedents to HPIP offering

Organisational context

Most of the hospitals (Table II) were privately owned (n = 32, 66.67%) and were level three hospitals (n = 30, 62.50%). These hospitals had an average bed capacity of 250 and around 18 pharmacists. Manpower across the hospitals (pharmacist-to-hospital bed ratio) was estimated at 1:13.

Hospitals currently offering HPIPs were mostly level three hospitals, while there was nearly an equal proportion of hospitals with HPIPs offered by both government and private hospitals (Table III). However, among hospitals with no HPIP offering, a significant number were from those that were privately owned.

Clinical pharmacy, sterile compounding, research, and training services were more prevalent in hospitals with HPIPs. With regard to available resources, both groups of hospitals had access to pertinent reference books, journals, and drug information systems; however, library facilities were the least available in both groups.

Table III: Comparison of functional capacity, ownership, manpower, operations, and available services and resources between hospitals currently with and without HPIP Offering

Antecedents	Frequency (%)	
	HPIP offering (n = 29)	HPIP non-offering (n=19)
Functional capacity		
Level 2	7 (24.14)	11 (57.89)
Level 3	22 (75.86)	8 (42.11)
Ownership		
Government	14 (48.28)	2 (10.53)
Private	15 (51.72)	17 (89.47)
Manpower (Pharmacist to bed)	1:11	1:17
Mean (SD)	(0.06)	(0.03)
Operations		
All areas operate for 24 hours	13 (44.83)	8 (42.11)
The main pharmacy & other selected areas operate for 24 hours	6 (20.69)	3 (15.79)
Only the main pharmacy operates for 24 hours	10 (34.48)	8 (42.11)
Pharmacy services		
Clinical pharmacy	17 (58.62)	4 (21.05)
Drug information service	25 (86.21)	15 (78.95)
Patient counselling	25 (86.21)	16 (84.21)
Non-sterile compounding	24 (82.76)	17 (89.47)
Sterile compounding	15 (51.72)	7 (36.84)
Research	14 (48.28)	3 (15.79)
Training	26 (89.66)	9 (47.37)
Inventory management	29 (100.00)	17 (89.47)
Available resources		
Library facilities	11 (37.93)	5 (26.32)
Drug information system	24 (82.76)	14 (73.68)
Access to pharmaceutical journals	20 (68.97)	11 (57.89)
Pertinent Reference Books	28 (96.55)	16 (84.21)
Dedicated Area for each Pharmacy Service	22 (75.86)	10 (52.63)

Academic partnership

Academic partnership seemed evident among hospitals based on individual responses (Figure 2). Further analysis of data between hospitals with HPIP offering and those without HPIP offering showed that academic partnership was more evident in hospitals currently offering such programmes (Table IV).

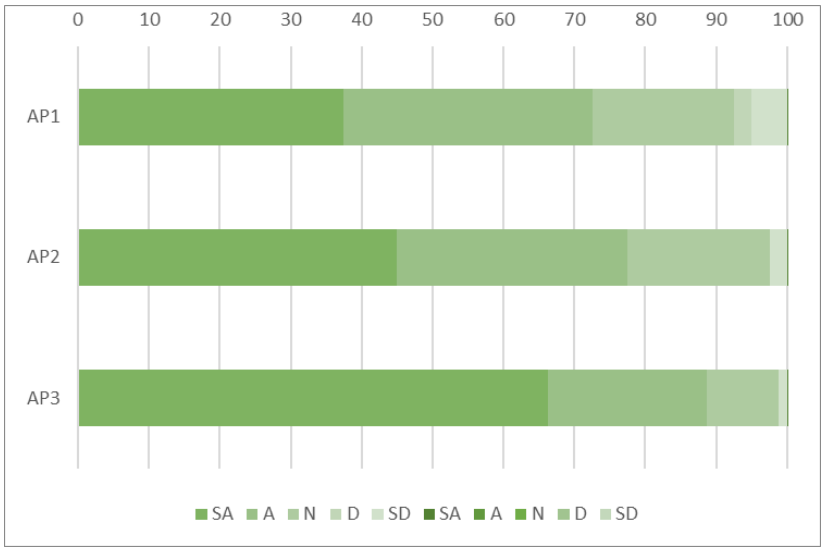

Figure 2: Graphic representation of respondents' level of agreement to academic partnership (AP) items in the questionnaire (n=80), SD = Strongly Disagree, D = Disagree, N = Neither agree or disagree, A = Agree, SA = Strongly Agree

Table IV: Comparison of overall means between HPIP offering and non-offering hospitals for academic partnership, perceived benefits, and management factors (n = 80)

Questionnaire Domain	Mean (SD)	
	With HPIP (n = 56)	No HPIP (n=24)
Academic partnership	4.48 (0.59)	3.64 (0.85)
Perceived benefits		
Value	3.87 (0.76)	3.71 (0.76)
Recruitment	4.20 (0.66)	3.93 (0.74)
Ideas	4.19 (0.72)	4.21 (0.59)
Professional development	4.51 (0.55)	4.31 (0.56)
Management factors		
Policy	4.24 (0.58)	3.75 (0.53)
Preceptorship	4.31 (0.63)	3.79 (0.72)
Perspective on students	4.38 (0.53)	3.92 (0.67)

Perceived benefits from HPIP offering

Most respondents agreed that HPIP offering can potentially contribute added value to the organisation, help in the recruitment of pharmacists, provide ideas, and enhance professional development among their pharmacists (Figure 3). Notably, the analysis of responses between the groups also showed that respondents from hospitals currently offering HPIPs had apparently similar scores with their counterparts in hospitals without HPIPs (Table IV).

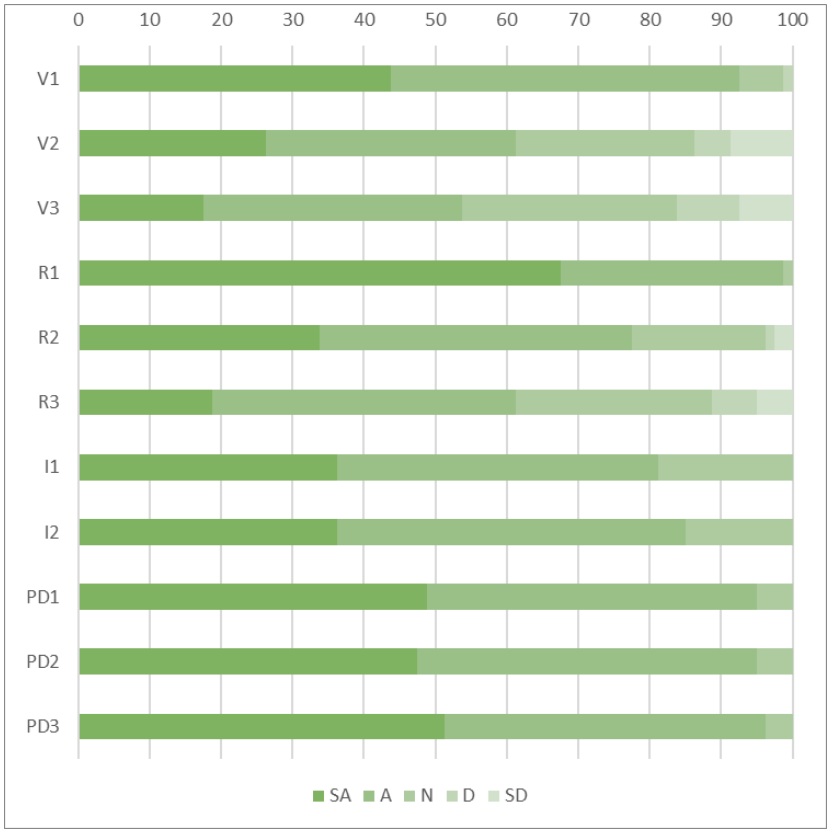

Figure 3: Graphic representation of respondents' level of agreement to perceived benefits items (V = Value, R = Recruitment, I = Ideas, PD = Professional Development) in the questionnaire (n=80), SD = Strongly Disagree, D = Disagree, N = Neither agree or disagree, A = Agree, SA = Strongly Agree

Table IV: Comparison of overall means between HPIP offering and non-offering hospitals for academic partnership, perceived benefits, and management factors (n = 80)

Questionnaire domain	Mean (SD)	
	With HPIP (n = 56)	No HPIP (n=24)
Academic partnership	4.48 (0.59)	3.64 (0.85)
Perceived benefits		
Value	3.87 (0.76)	3.71 (0.76)
Recruitment	4.20 (0.66)	3.93 (0.74)
Ideas	4.19 (0.72)	4.21 (0.59)
Professional development	4.51 (0.55)	4.31 (0.56)
Management factors		
Policy	4.24 (0.58)	3.75 (0.53)
Preceptorship	4.31 (0.63)	3.79 (0.72)
Perspective on students	4.38 (0.53)	3.92 (0.67)

Management factors affecting HPIP offering

Most respondents confirmed their utilisation of local and organisational policies governing the implementation of HPIPs, the adequacy of preceptors in terms of number and competency, and their perception, as pharmacy administrators, of pharmacy students as interns (Figure 4). Results further show that scores were generally higher in the HPIP offering group (Table IV).

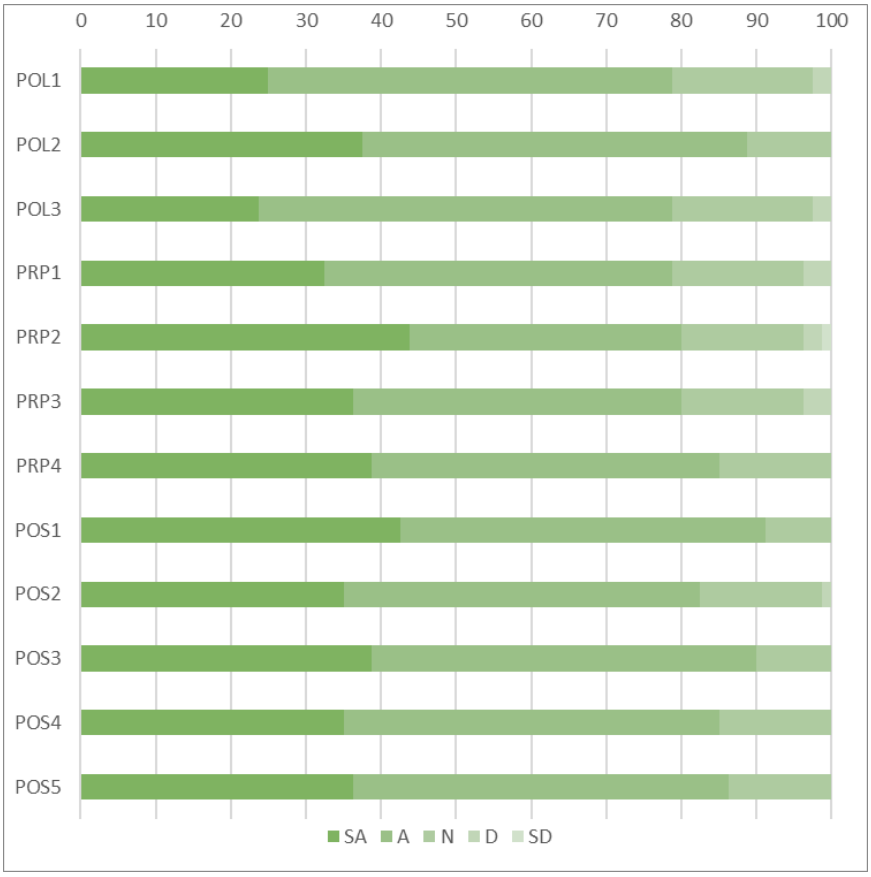

Figure 4: Graphic representation of respondents' level of agreement to management factors items (POL = Policy, PRP = Preceptorship, POS = Perspective on Students) in the questionnaire (n=80), SD = Strongly Disagree, D = Disagree, N = Neither agree or disagree, A = Agree, SA = Strongly Agree

Factors with significant association to HPIP offering

Multiple logistic regression was conducted to analyse the relationship between HPIP offering and variables under antecedents, perceived benefits and management factors. The first model (Table V), refined via backward elimination to retain four variables, was statistically significant and explained 39% of the variance in HPIP offering (R2 = 0.3900, p = 0.0000). Ownership (OR = 49.43, 95% CI [2.65, 920.98], p = 0.009) and training services (OR = 18.53, 95% CI [2.43, 141.12], p = 0.005) showed positive associations; however, the wide confidence intervals suggest that estimates may be uncertain and may be attributed to the small sample size.

Table V: Multiple logistic regression analysis of the relationship of antecedents under organisational context to HPIP offering (n = 48)

	OR	SE	95% CI		P
			LL	UL	
Ownership	49.43	73.77	2.65	920.98	0.009
Services					
Training	18.53	19.20	2.43	141.12	0.005
Resources					
Drug information system	12.00	17.21	0.72	199.39	0.083
Designated area for each pharmacy service	4.80	4.23	0.85	26.96	0.075

Note. n = 48; OR = odds ratio; SE = standard error; CI = confidence interval; LL = lower limit; UL = upper limit.

The second model (Table VI) was also statistically significant and explained 30.77% of the variance observed in HPIP offering (R2 = 0.3077, p = 0.0002). Academic partnership showed a significant positive association with HPIP offering (OR = 6.41, 95% CI [1.90, 21.65], p = 0.003), but had a wide confidence interval, as well.

Table VI: Multiple logistic regression analysis of the relationship of academic partnership, perceived benefits, and management factors to HPIP offering (n = 80) (Approximate position for insertion: p.12, below second paragraph under Factors with Significant Association to HPIP Offering)

	OR	SE	95% CI		P
			LL	UL	
Academic partnership	6.41	3.98	1.90	21.65	0.003
Perceived benefits					
Value	1.19	0.64	0.42	3.40	0.745
Recruitment	0.88	0.49	0.30	2.60	0.816
Idea	0.41	0.25	0.12	1.34	0.139
Professional development	0.63	0.54	0.11	3.42	0.590
Management factors					
Policy	3.93	3.43	0.71	21.76	0.117
Preceptorship	0.46	0.37	0.09	2.27	0.339
Perspective on students	3.13	2.62	0.61	16.11	0.172

Note. n = 80; OR = odds ratio; SE = standard error; CI = confidence interval; LL = lower limit; UL = upper limit.

To account for the potential relatedness of responses among participants from the same hospital (Table VIII), a separate regression model (Table VII) was conducted using the mean scores of respondents per hospital for each predictor variable. This third model, also refined through backward elimination to retain four predictors, was statistically significant and explained 41.07% of the variance in HPIP offering (R2 = 0.4107, p = 0.0000). Academic partnership remained a significant predictor of HPIP offering (OR = 37.28, 95% CI [2.55, 544.76], p = 0.008), but also had a wide confidence interval, potentially due to a small sample size.

Table VII: Multiple logistic regression analysis of the relationship of academic partnership, perceived benefits, and management factors to HPIP offering using the mean responses of participants from each included hospital (n = 48)

	OR	SE	95% CI		P
			LL	UL	
Academic partnership	37.28	51.01	2.55	544.76	0.008
Management factors					
Policy	3.27	4.17	0.27	39.68	0.352
Preceptorship	0.18	0.23	0.01	2.24	0.183
Perspective on students	6.25	8.86	0.39	100.73	0.197

Note. n = 48; OR = odds ratio; SE = standard error; CI = confidence interval; LL = lower limit; UL = upper limit

Table VIII: Distribution of respondents across included level 2 and level 3 hospitals in Metro Manila (n=80)

Hospital	No. of respondents	Hospital	No. of respondents
01	1	**21**	1
02	1	**22**	1
03	1	**23**	1
04	4	**24**	2
05	1	**25**	2
06	1	**26**	2
07	2	**27**	1
08	1	**28**	1
09	3	**29**	1
10	5	**30**	1
11	1	**31**	2
12	1	**32**	10
13	1	**33**	2
14	2	**34**	1
15	1	**35**	2
16	2	**36**	2
17	1	**37**	1
18	2	**38**	1
19	2	**39**	1
20	1	**40**	1

The conceptual framework of the study was revised in accordance with the variables identified as having a significant association with the offering of HPIP, as illustrated in Figure 5.

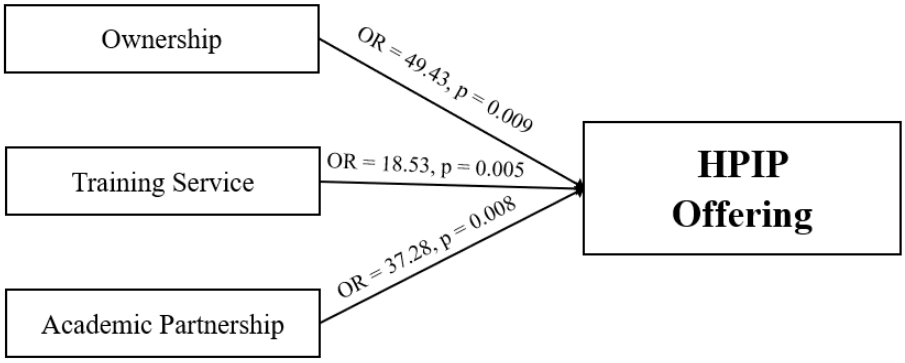

Figure 5: Recreated conceptual framework upon retaining factors with a significant association to HPIP offering

Discussion

HPIP offering in Metro Manila

HPIPs for BS Pharmacy students were found to be offered in 29 (60.42%) level 2 and level 3 hospitals in Metro Manila. In relation to the demand for HPIP placements, approximately 1,270 BS Pharmacy graduates from Higher Education Institutions (HEIs) in Metro Manila were first-time takers of the pharmacy board examinations conducted in November 2022 and April 2023 (April 2023 Pharmacist Licensure Examination, 2023; November 2023 Pharmacist

Licensure Examination, 2023). This number provides a rough estimate of the number of pharmacy students under the new BS Pharmacy curriculum who were required to complete a 300-hour hospital pharmacy internship in the preceding academic year.

Given the estimated prevalence of HPIP offering and the number of level 2 and level 3 hospitals in Metro Manila (n = 99) as of 2023 (List of Hospitals as of December 31, 2023 - Website - Google Drive, n.d.), it is projected that these hospitals had a combined capacity to accommodate around 1,077 pharmacy interns annually (max of 18 interns/year), which falls short of the estimated number of pharmacy students requiring HPIP placements during that period. This suggests a potential gap between HPIP supply and demand, causing the difficulty expressed by pharmacy educators in securing HPIP placements for their students. Further intensifying the demand for placements are HEIs from other regions that also seek HPIP placement from Metro Manila hospitals.

The challenge in logistical placement of students in hospital pharmacy experiential sites has also been experienced in other countries and has been attributed to competition among schools, increasing class size, limited number of quality clinical programmes, lack of consistency between sites and preceptors, and training capacity of hospitals (Danielson *et al*., 2015; Chaar *et al*., 2011).

In Malaysia, pharmacy graduates had to undergo at least a year of internship as "provisionally registered pharmacists" (PRPs) in any listed government hospital, prior to becoming eligible to apply for registration as "fully registered pharmacists" (FRPs) as prescribed by the country's Ministry of Health from 2004 to 2012 (Phua *et al*., 2017). Eventually, oversaturation emerged among the government hospitals, causing graduates to wait for at least one to obtain placement. To address this concern, the Ministry of Health allowed the liberalisation of PRP training in 2012, allowing interns to seek placements from private hospitals duly accredited to provide such training (Ooi *et al*., 2021). However, the Malaysian Pharmacists Society-Young Pharmacists Chapter shared that placements offered by private hospitals are usually limited to 1 to 2 PRPs per year only; hence, competition is still present (MPS Young Pharmacist Chapter, 2022). Key organisational factors with a significant positive association with HPIP availability were ownership, training services, and academic partnerships. HPIP offering was also found to be more prevalent among government hospitals. In Malaysia, the majority of hospitals which serve as internship sites for PRPs are also government hospitals (n = 113, 72.90%) (Ministry of Health, 2012). In a much earlier study conducted in the United States, it was found that pharmacy directors of for-profit community hospitals were also less engaged in providing advanced pharmacy practice experience (APPE) programmes compared to other hospitals; however, the reason for such was not further investigated in the study (Anonymous, 2008).

Training services as a key factor to HPIP offering is consistent with the findings of a previous study where the lack of capacity to train by hospitals was associated with the lack of available hospital placements, causing experiential pharmacy learning opportunities to be limited within the community setting in Australia (Chaar *et al*., 2011).

The importance of academic partnerships is also consistent with the study of Kroon and Franco (2022), which emphasised that having prior ties with higher education institutions facilitates more regular acceptance of interns. In the United States, hospitals providing APPE programmes to pharmacy students were found to have an average of 2.56, or approximately three partner colleges and schools (Anonymous, 2008). This figure is close to the findings of this study, in which hospitals offering HPIPs had an average of two partner schools annually. Interestingly, the same study found that some hospital pharmacy directors expressed that among the main reasons for not holding APPE programmes for students was not being approached by a college or school for a partnership.

Moreover, HPIPs were perceived to potentially add value to the organisation, facilitate an optimised recruitment strategy, allow the inflow of ideas from students, and enhance professional development among pharmacists. This is consistent with findings from previous studies, which focused solely on either preceptors or employers (Chaar *et al*., 2011; Maertz *et al*., 2014; Seo *et al*., 2018; Kroon & Franco, 2022).

In terms of management factors—availability and utilisation of local and organisational policies, adequacy of preceptors in terms of number and competency, and positive perspective on students—appeared more evident among respondents affiliated to hospitals with HPIP offering. In this regard, policies can be considered fundamental to the implementation of any internship programme as these provide standards and clear

guidelines on specific factors such as the requirements for and the roles and responsibilities of each party involved (Commission on Higher Education Republic of the Philippines, 2017; Commission on Higher Education Republic of the Philippines, 2021a). In China, Lu *et al*., (2024) found that lack of policy guidance led to challenges in having a standardised management model for hospital pharmacy internships and contributed to the lack of teaching plans and unclear training goals, as well.

Organisational policies are also important in facilitating the availability of an internship programme, as well as the extent of involvement that will be allowed for interns (Maertz *et al*., 2014). A local study identified activities which were not performed and were only observed by interns. Based on the findings, interns were not able to participate in performing clinical pharmacy functions as these were restricted to pharmacists and students undergoing major internships (Carrido *et al*., 2015).

Availability of trained preceptors in every internship site is among the requirements prescribed by current guidelines on pharmacy internship in the Philippines (Commission on Higher Education Republic of the Philippines, 2021a). On this note, adequacy of preceptors should be emphasised as pharmacists tend to invest a significant amount of their time and effort to fulfil activities associated with their role as preceptors, on top of their normal workload (Chaar *et al*., 2011).

Aside from this, inadequacy of hospital pharmacists to supervise interns during their clinical rotation in South Africa caused the interns to feel a lack of professional identity (McCartney and Boschmans, 2018). Being left under the supervision of other healthcare professionals made the interns feel inferior and found themselves lacking of knowledge.

In addition to adequacy based on numbers, preceptors are expected to possess expertise in order to provide practical experience and training to students (Commission on Higher Education Republic of the Philippines, 2021b). However, in the Philippines, preceptors are only required to have at least one year of work experience as pharmacist, which appears insufficient for hospital pharmacy, considering the nature of practice, which may demand advanced level of professional competency as it involves direct patient care and safety (Commission on Higher Education Republic of the Philippines, 2021a).

Lastly, HTE's perspective on students is also a crucial factor that may affect an organisation's intent to offer an internship programme. Previous studies reported that students' level of preparedness and motivation, skills and competencies upon deployment, and dependability may affect pharmacists' willingness or reluctance to be involved as preceptors to interns (Chaar *et al*, 2011; Seo *et al*., 2018; Lu *et al*, 2024).

Recommendations for pharmacy policy, education, and practice

Local policies on pharmacy internship programmes should be revisited and strengthened to ensure preceptor expertise. Benchmarking against models from other countries like the United States, South Korea, Singapore, and Hong Kong, which all require hospital pharmacy preceptors to have more extensive experience in their relevant area of practice, residency training, and academic credentials may be explored (Hamper *et al*., 2022; Pharmacy & Poisons Board of Hong Kong, 2022; Seo *et al*., 2018; Government of Singapore, n.d.). Appropriate remuneration to qualified preceptors should also be supported by policy, as well as possible incentivization by granting CPD credits to hospital pharmacy preceptors, which is being implemented in other countries like the United States and Malaysia (Hanniford, 2023; MPS Continuing Professional Development (CPD), 2023).

Clear operational guidelines on internship site accreditation can also be established. Streamlining accreditation process, potentially through recognition of local or international accreditations or granting authority to pharmacy schools to assess the quality of potential practice sites, just like in the United States, may be explored (ACPE, 2025).

To maximise opportunities for partnerships, HEIs should explore innovative approaches to co-develop internship programmes with hospitals. For instance, the School of Pharmacy of the University of Colorado at Denver and Health Sciences Centre identified institutions who are interested in accommodating interns as added workforce and sustained existing or created new clinical pharmacy programmes in these hospitals (Turner *et al*., 2017).

In addition, adjusting internship schedules could also help improve the distribution of students across HPIP sites. Skrabal *et al*. (2008) proposed that it may be more logistically efficient for HEIs to place more students in each site and schedule their placement throughout the year. HEIs should also implement measures to ensure the preparedness of student before deployment for internship, such as requiring completion of pre-

deployment courses or passing assessments, like the Pharmaceutical Common Achievement Test in Japan (Utsumi *et al*., 2015).

Lastly, HEIs may consider exploring a more enhanced and structured mechanism for placement of students, such as the selective tiered optimisation (STO) process of the University of Mississippi College of Pharmacy. The said model allows students to apply for preferred placements and are then awarded based on a scoring system (Hearn *et al*., 2021).

In terms of practice, HTEs must also take a proactive role in developing and implementing HPIPs to help ensure that these programmes are designed according to the current practice landscape. HTEs should also consider allocating protected time for preceptor-related tasks and maintaining a manageable preceptor-to-student ratio, ideally 1:2 (Loewen *et al*., 2016).

Alternative preceptorship models can also be explored, such as allowing a small percentage of non-pharmacist preceptors to facilitate segments of HPIPs (Cuellar, 2019). These strategies brought positive outcomes and allowed students to have a broadened perspective on the practice and to experience interprofessional collaboration.

Strengths and limitations

This is the first local study to investigate HPIPs from the HTE perspective, and to estimate the prevalence of HPIP offering. However, while the study aimed to reflect the perspective of HTEs, its findings may not fully represent all HTE-affiliated decision-makers involved in HPIP offering, as the target population only included pharmacy administrators. Despite being limited to Metro Manila, findings have national relevance due to the high concentration of pharmacy schools and students in the region.

Proportionate stratified random sampling was conducted to mitigate sampling bias. Non-response bias was also minimised through various strategies, including the dissemination of information sheets about the study, providing prompt responses to respondents' inquiries, frequent follow-ups, and extended data collection. However, the study had a low response rate, limiting generalizability and reducing the statistical power of regression analyses. Therefore, increasing the sample size, improving response rates, conducting power analysis, and mitigating pre-identified confounders can be considered in future conduct of a similar study.

While several factors were investigated for their potential relationship to HPIP offering, other factors which can help depict the current status of HPIP offering specific to the local context, such as cultural influence and geographical proximity, were not explored.

Lastly, as a cross-sectional study, causality between the factors investigated and HPIP offering as the outcome may not be established. Findings may be further enriched by conducting longitudinal or mixed-methods research.

Conclusion

The prevalence of HPIP offering among Level 2 and Level 3 hospitals in Metro Manila was reported at 60.42%. Upon further evaluation, this translated to a projected capacity that falls below the estimated number of pharmacy students requiring such programmes, confirming a gap between supply and demand. Factors significantly associated with HPIP offering include hospital ownership ($p = 0.009$), training capacity ($p = 0.005$), and academic partnerships ($p = 0.008$), suggesting key areas to intervene at the institutional level.

Recognising the roles of stakeholders in HPIP implementation, the study recommends reviewing internship policies, adjusting internship schedules, and incentivising hospitals and pharmacy preceptors. Strengthening partnerships between HEIs and HTEs may also facilitate expansion of clinical services, thereby also increasing internship opportunities.

Conducting further qualitative research can enrich the findings of this study, particularly on current internship activities, hospital administrators and preceptor perspectives, challenges in HTE-HEI partnerships, and HPIP outcomes. Despite the identified limitations, the study provides a foundational understanding of the adequacy of HPIP offering in the local setting and offers practical strategies to improve availability, equity, and the overall quality of experiential learning in hospital pharmacy.

Conflict of interest

The authors declare no conflict of interest.

Source of funding

The authors did not receive any funding.

Acknowledgment

The authors would like to thank the Health Facility Development Bureau of the Department of Health (DOH HFDB) and the Philippine Society of Hospital Pharmacists (PSHP) for their assistance in the data collection phase of the study.

References

ACPE. (2025). *Accreditation standards and key elements for the professional program in pharmacy leading to the Doctor of Pharmacy degree*. Accreditation Council for Pharmacy Education. https://www.acpe-accredit.org/pdf/ACPEStandards2016FINAL.pdf

Anonymous. (2008). Capacity of hospitals to partner with academia to meet experiential education requirements for pharmacy students. *American Journal of Health-System Pharmacy*, **65**(21), 2045–2046. https://doi.org/10.2146/ajhp080150

Carrido, D., Lorenzo, C. A., Macaldo, A. C., & Loquias, M. (2015). Assessment of knowledge, skills and attitude among pharmacy students toward hospital pharmacy internship in the Philippines. *International Journal of Pharmacy Teaching & Practices*, **6**.

Chaar, B. B., Brien, J.A., Hanrahan, J., McLachlan, A., Penm, J., & Pont, L. (2011). Experimental education in Australian pharmacy: Preceptors' perspectives. *Pharmacy Education*, **11**(1), 166–171. https://pharmacyeducation.fip.org/pharmacyeducation/article/view/320

Commission on Higher Education Republic of the Philippines. (2017). Revised guideline for student internship program in the Philippines (SIPP) for all programs, CMO No. 104 s 2017. https://ched.gov.ph/wp-content/uploads/2018/03/CMO-NO.-104-S.-2017.pdf

Commission on Higher Education Republic of the Philippines. (2021a). Policies, standards and guidelines for the Bachelor of Science in pharmacy program, CMO No. 25 s 2021. https://ched.gov.ph/wp-content/uploads/CMO-No-25-series-2021-PSG-for-BS-Pharmacy.pdf

Commission on Higher Education Republic of the Philippines. (2021b). Guidelines on the conduct of experiential pharmacy practice of pharmacy students during pandemic period, CMO No. 5 s. 2021. https://ched.gov.ph/wp-content/uploads/CMO-No.-5-S-2021-Guidelines-on-the-Conduct-of-Experiential-Pharmacy-Practice-of-Pharmacy-Students-during-Pandemic-Period.pdf

Cuellar, L. M., & Ginsburg, D. B. (2019). *Preceptor's handbook for pharmacists, 4th edition*. American Society of Health-System Pharmacists.

Danielson, J., Craddick, K., Eccles, D., Kwasnik, A., & O'Sullivan, T. A. (2015). A qualitative analysis of common concerns about challenges facing pharmacy experiential education programs. *American Journal of Pharmaceutical Educatio*n, **79**(1), 06. https://doi.org/10.5688/ajpe79106

Government of Singapore. (n.d.). *SPC Accredited Pharmacy Preceptor Training Programme*. Singapore Pharmacy Council. Retrieved February 16, 2025, from https://www.healthprofessionals.gov.sg/spc/registered-pharmacists/spc-accredited-pharmacy-preceptor-training-programme

Hamper, J., Hong, L., Phan, H., Strain, O., & Yett, E. (2022). Precepting 101: A guide for preceptors. American Pharmacists Association. https://s3.amazonaws.com/cdn.pharmacist.com/CDN/PDFS/20625-APhA-APPM%20Preceptor%20SIG%20-%20Preceptor%20101%20Toolkit-v2.pdf?AWSAccessKeyId=AKIAQNYDT252YKJO7IYX&Expires=1739684922&Signature=38nwL25OSFCxKvnWy7siPkGK1Jc%3D

Hanniford, K. (2023, September 29). *Introduction to CPD*. Board of Pharmacy Specialties. https://bpsweb.org/2023/09/29/introduction-to-cpd/

Hearn, E. B., Fleming, L. W., Pate, A. N., Malinowski, S. S., Harrell, T. K., Brown, M. A., Gilbert, K. M., & Metzger, R. (2021). Evaluation of a novel process for selecting advanced pharmacy practice experiences. *Currents in Pharmacy Teaching and Learning*, **13**(10), 1300–1305. https://doi.org/10.1016/j.cptl.2021.07.020

Kroon, N., & Franco, M. (2022). Antecedents, processes and outcomes of an internship program: An employer's perspective. *Journal of Applied Research in Higher Education*, **14**(2), 556–574. https://doi.org/10.1108/JARHE-09-2020-0315

Loewen, P., Legal, M., Gamble, A., Shah, K., Tkachuk, S., & Zed, P. (2017). Learner: Preceptor ratios for practice-based learning across health disciplines: A systematic review. *Medical Education*, **51**(2), 146–157. https://doi.org/10.1111/medu.13144

Lu, X., Zhang, W., Jia, X., Bao, X., Zhang, X., Kang, J., Du, S., & Yin, Z. (2024). Exploring the problems and coping strategies of pharmacy internship in large general hospitals in China: From the perspective of preceptors. *BMC Medical Education*, **24**(1), 69. https://doi.org/10.1186/s12909-024-05032-x

Maertz, C. P. J., Stoeberl, P. A., & Marks, J. (2014). Building successful internships: Lessons from the research for interns, schools, and employers. *Career Development International*, **19**(1), 123–142. https://doi.org/10.1108/CDI-03-2013-0025

McCartney, J., & Boschmans, S.-A. (2018). South African pharmacy student perspectives of a hospital-based experiential learning programme. *Pharmacy Education*, **18**, 29–40. https://pharmacyeducation.fip.org/pharmacyeducation/article/view/539

Ministry of Health. (2012, November 25). List of training premises for provisionally registered pharmacist (PRP). Pharmaceutical Services Programme. https://pharmacy.moh.gov.my/en/content/list-training-premises-provisionally-registered-pharmacist-prp.html

MPS continuing professional development (CPD). (2023). MPS continuing professional development (CPD) system. Retrieved May 1, 2025, from http://www.mps.org.my/cpdonline/

MPS Young Pharmacist Chapter. (2022, June 10). PRP FAQ series: Private hospital. https://mpsypc.com.my/publications/prp-faq-series-private-hospital/

Ooi, G. S., Ong, S. C., & Kwan, S. M. (2021). Determinants of the choice of provisionally registered pharmacist (Prp) training in Malaysia: A qualitative insight. *International Journal of Pharmacy Practice*, **29**(5), 515–520. https://doi.org/10.1093/ijpp/riab045

Pharmacy & Poisons Board of Hong Kong. (n.d.). *Pharmacy Internship Training Programme (for locally trained pharmacy graduates)*. Retrieved May 2, 2025, from https://www.ppbhk.org.hk/eng/registration_pharmacists/programme.html

Phua, G. S. Y., Teoh, C. J., Khong, L. B., Baba, B., Lim, C. W., Koh, W. L., Rhazi, N. A. M., & Ayob, N. C. (2017). The satisfaction and perception of intern pharmacists towards their training in government hospitals in the northern region of Malaysia. *Pharmacy Education*, **17**(1), 15–23. https://pharmacyeducation.fip.org/pharmacyeducation/article/view/459

Seo, H., Ryu, K., Lee, S., Noh, J., La, H., & Kim, E. (2018). Stress, satisfaction, and competency of hospital pharmacy preceptors under the new pharmacy program in South Korea. *American Journal of Pharmaceutical Education*, **82**(8), 6351. https://doi.org/10.5688/ajpe6351

Skrabal, M. Z., Jones, R. M., Nemire, R. E., Boyle, C. J., Assemi, M., Kahaleh, A. A., Soltis, D. A., Allen, R. E., Hritcko, P. M., O'Sullivan, T. A., & Destache, C. J. (2008). National survey of volunteer pharmacy preceptors. *American Journal of Pharmaceutical Education*, **72**(5), 112. https://doi.org/10.5688/aj7205112

Turner, C. J., Ellis, S., Giles, J., Maffeo, C., Hansen, L., Saseen, J. J., Ulrich, H., Valdez, C., Altiere, R., Bainbridge, J., Page, R., Sintek, C., Vondracek, S., Zadvorny, E., & Fish, D. (2007). A strategy to develop advanced pharmacy practice experiences. *American Journal of Pharmaceutical Education*, **71**(3), 46. https://doi.org/10.5688/aj710346

Utsumi, M., Hirano, S., Fujii, Y., & Yamamoto, H. (2015). Evaluation of pharmacy practice program in the 6-year pharmaceutical education curriculum in Japan: Hospital pharmacy practice program. *Journal of Pharmaceutical Health Care and Sciences*, **1**(1), 18. https://doi.org/10.1186/s40780-015-0019-2