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Impact of physician group practice in the operations, quality of care, and service satisfaction in the non-urgent section of an emergency department in a tertiary hospital in the Philippines: a mixed methods study

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Abstract

Background The Emergency Department (ED) is a primary source of healthcare services for patients with non-urgent conditions in the Philippines. The adaptation of physician group practice (GP) in the ED has gained popularity in the country due to its potential advantage to patient management and physicians compared to independent consultancy (IC). This study aimed to determine the impacts of GP in a non-urgent ED setting in terms of operations, quality of care, and service satisfaction compared to IC.

Methods Historical data collection focusing on operations, service costs, patient outcomes, and satisfaction was performed between 2021 and 2022 at a tertiary for-profit private hospital in Metro Manila, Philippines. In addition, patient surveys on demographics, perception, ED accessibility, and descriptive satisfaction ratings were also administered in 2023 ($n=310$). These aspects were compared between patients managed by GP and IC quantitatively using univariate descriptive statistics, Mann-Whitney U tests, and ANCOVA to compare operational metrics, financial data, and patient outcomes. Qualitative data from patient surveys were analyzed using a sequential-explanatory approach.

Results Our analysis of the historical data showed high rates of positive outcomes for non-urgent ED patients in both GP and IC. Total (PhP587,812 vs. PhP379,699; $p<0.001$) and per patient (PhP1,801 vs. PhP554; $p<0.001$) operational costs were higher for the GPs. However, GPs incurred shorter mean length of stay (165.5 vs. 214.2 min; $p<0.001$). There appears to be no difference in service satisfaction and overall patient outcomes between patients managed by GP or IC, although patients of GP physicians assessed the level of care of the ED to be higher (5 vs. 4; p-value = 0.019). In the quantitative and qualitative ratings, most patients provided positive citations on ED service quality, staff, structure, system, physician competency and compassion.

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Conclusions While GPs were associated with higher operational costs, they improved the ED efficiency and perceived quality of care without compromising patient outcomes. These findings support GP as a viable alternative model for improving ED operations. However, more research is needed to examine its long-term impacts.

Keywords Emergency department, Group practice, Independent consultancy, Non-urgent, Quality of care, Service satisfaction

Background

Since the inception of group practice (GP), defined as the congregation of physicians with a single management, it increasingly become a global healthcare phenomenon that consolidates individual physicians' duties into shared responsibilities, offering minimized individual risks, flexible duty hours, and increased professional growth [1]. Studies support a general trend toward GP, resulting in increased patient satisfaction and efficiency, and improved physicians' quality of service and remuneration [1]. Globally, one-third of US and 91% of family physicians in the UK are already in GP [2]. The formation of GP was developed for various reasons related to patient care, healthcare sustainability, and service timeliness.

The recent Quintuple Aim framework now covers the following fundamental aspects for optimizing healthcare performance: improved patient outcomes, lower cost, physician well-being, and health equity [3]. Healthcare reforms have evolved to achieve these aspects by constantly advancing healthcare through comprehensive frameworks to address healthcare delivery and achieve health equity [4]. The Philippines, a developing Southeast Asian nation, has two types of hospitals: public (47% of total hospital beds) and private (53% of total hospital beds) [5]. In 2019, the Universal Health Care (UHC) Act was implemented in the country, which aims to provide quality healthcare services to all Filipinos, ensuring financial protection and equity [6]. It is expected to introduce healthcare reforms in the practice of medicine, addressing its fragmentation to deliver more comprehensive, equitable, accessible, and affordable services to the patients [7]. However, to achieve the goal of UHC, significant changes in the healthcare practice must be considered such as adopting value-based healthcare based on clinical outcomes at lower cost, and aligning incentives rather than transactional care, resulting in more evidence-based and integrated practice in the population [8].

Under the UHC Act in the country, emergency medicine is an essential service, yet standardization remains a challenge. Policies and guidelines vary widely among EDs. Emergency care in the Philippines typically follows institutional triage system which categorizes cases as emergent, urgent, or non-urgent. Ideally, EDs work closely with primary care providers (PCPs), but PCPs in the Philippines are often undervalued for reasons that are not well-studied. As a result, EDs frequently act as long-term care providers, default facilities for all case severities, and extended PCPs. Voluntary private health insurance, such as Health Maintenance Organizations (HMOs), supports healthcare financing for four million urban Filipinos. Modeled after the U.S. system, HMOs employ cost-containment measures and cover emergency, ambulatory, and in-hospital care. EDs, included in HMO coverage, have become a common entry point for various health concerns, especially in private hospitals. Overuse of EDs for non-urgent cases remains a persistent issue in the Philippines and other countries. Around 15–18% of the ED consultations are eventually admitted to the hospital (though government hospitals may have a higher percentage hospital admission since they get more complicated patients). Around 82 to 85% of patients are eventually discharged at the ED [9].

Locally, medical practice has undergone a series of changes following business continuity models and the evolving generation of the healthcare workforce [10]. From traditional solo practice, to applying a fee for service, to adapting GP, sharing resources and responsibilities has become more popular among general and specialty physicians in the Philippines [11]. A common practice involves the hospital identifying a GP service provider through a selection process and executes a legal contract that specifies obligations between the provider and the hospital [12].

As the ED remains the Philippines' first-line healthcare and long-term social medical care provider, it is becoming a venue where doctors, patients, and the hospital system intersect quickly [9]. Our hospital's ED has recorded one of the highest pre-pandemic census nationwide, predominated by non-urgent cases [13]. However, at the height of COVID-19 pandemic, episodes of elevated risks of infection and burnout limited the physician's engagement and affected the 24/7 ED services. This situation prompted us to adapt more sustainable solutions by addressing both provider's well-being and patient's needs through an engagement with a GP in the non-urgent section. The implementation of GP in response to the changes brought about by the increasing and changing healthcare demands allowed us to compare the impact of GP vs. IC in terms of quality of care, service satisfaction, productivity, cost, and organizational productivity in an ED healthcare setting. This study aimed to compare GPs and ICs in the non-urgent section of an emergency department of a Philippine tertiary hospital in terms of

operations, cost, satisfaction, and service. In doing so, we seek to determine its potential as a scalable solution for other emergency care settings in countries implementing health systems reforms.

Methods

Design and population

The study utilized a sequential, explanatory, mixed-methods design; utilizing a review of GP and IC records, and a survey of patients. The quantitative component described the characteristics of the patient populations and ED operations, compared patient demographics and their assessment of the ED, and determined the financial components relative to GP and IC. Meanwhile, the qualitative component identified the subjective perception of the patients from both GP and IC, complementing the results from the quantitative component. The qualitative data were analyzed using the patient experience framework [14]. The study was conducted in the ED's non-urgent section, which we defined as the Canadian Triage Acuity Scale categories 4 and 5 (patients with stable conditions) based on the patient's chief complaints, modifiers, and physiologic parameters [15]. Both GP and IC concurrently handled non-urgent ED patients. For this study, the IC consists of consultants from varied specialties, including emergency and family medicine, providing patient care on 12-hour shifts two to three times a week and bound by individual annual contracts offering flexibility in terms of schedules. Most of the IC physicians have at least 10 years tenure and with multiple affiliations with other hospitals and ambulatory clinics, which may influence their breadth of experience and availability. In contrast, the GP is comprised specifically of occupational medicine physicians through a signed contract. The ED contracts GP to deliver 24/7 coverage for non-urgent cases, with the physicians working 12-hour shifts approximately two to three times per week. Most of the GP physicians are early in their careers, with fewer than five years of practice, classified as young professionals by age and service tenure.

Study setting

The study was conducted in the non-urgent section of the ED of a private tertiary hospital located in Metro Manila, Philippines with the highest ED patient census in the country. The hospital is for profit, with a capacity of 521 beds and 5,000 staff catering mostly to adult patients in middle- to upper-income classes [13]. Historically, the hospital ED engaged with ICs to render clinical services for the department. However, in 2021, at the height of the pandemic response, the sustainability of providing 24/7 service became a challenge, which prompted the ED to adopt a new business model by engaging with physician GPs. This arrangement ensures 24/7 clinical services in the non-urgent area of the ED. The current study banked on this arrangement as the ED is now being served by both GPs and ICs. The review of records included data from the non-urgent section of the ED from September 1, 2021 to December 31, 2022. Meanwhile, the patient survey was implemented on July 27 to October 29, 2023.

Study measures and procedures

For the historical data analysis, all available and complete data were gathered from the ED's records (patient census, length of stay, ED physician's attendance), electronic medical records (patient's presenting condition, disposition, 72-hour unplanned return visits, mode of payment, medical orders, procedural orders), financial records (operational, medical and procedural costs), and customer service reports (complaints, ED satisfaction ratings, ED citations). Meanwhile, for the survey on non-urgent ED patients, a previously validated 31-item tool with questions on patient demographics, perception, ED accessibility, and descriptive satisfaction was used [9]. The survey was administered to an equal number of patients serviced by GP and IC. Specifically, the survey was offered by a dedicated research assistant to one in every four available non-urgent patients (based on the registration listing) during their consultation waiting period until the target sample size was achieved for each group. The minimum sample size for the survey ($n = 310$, 155 per group) was calculated at a power of 0.95 based on the effect size determined from a previous study [16] using G*Power software (HHU, Germany). All collected data were checked for completeness prior to analysis.

Analysis

A univariate descriptive analysis was utilized to describe the operational and patient characteristics of the two physician groupings (GP vs. IC). Meanwhile, all survey data was coded and interpreted based on a previous analysis workflow [9]. The Mann-Whitney U test was used to compare GP and IC physicians on the non-parametric comparison of the continuous measures of patient perception, ED accessibility, and satisfaction. An ANCOVA test compared the two physician groups on ED metrics, patient information, financial data, and customer service feedback. Month was included as a covariate alongside practice type to adjust for the temporal nature of the data. All levels of significance were set at alpha = 0.05, statistical encoding was done in a spreadsheet software, and analysis was conducted using jamovi (Version 2.5) and SPSS ver.22 (IBM SPSS, USA).

In addition, a qualitative analysis was conducted to the descriptive codes collected from the patient survey, following the patient experience framework [10, 13]. Specifically, individual codes were grouped based on commonality. The authors developed and agreed upon

themes relating to ED service and physicians from the common code groups [17]. Disputes in themes were resolved through repeated discussions until a consensus was reached. A sequential explanatory analysis was used to integrate the data from the quantitative satisfaction survey and the qualitative themes [18].

Results

Study population

For the ED operational data, a total of 17,288 ED patient records were included in the review, with 5,742 (33.2%) from GP, while the remaining 11,546 (66.8%) from IC. Meanwhile, 310 patients were surveyed, half serviced by GP and the other half by IC. Most of the patients in the records review and the survey are female and paid through Health Maintenance Organization (HMO) coverage (Table 1).

In terms of patient perceptions and ED accessibility, most patients assessed their conditions as severe, with high urgency, and causing high levels of anxiety, with mean scores exceeding 3 out of 6. In addition, most patients assessed ED to provide a high level of accessibility. They rated the ED as having highly sufficient services, responding highly to patient concerns, providing adequate operations, and effectively communicating their services, with mean scores exceeding 4 out of 6. These observations were consistent whether the patients were managed by GP or IC. However, GP physicians received a statistically significant higher score on the level of care given by the ED compared to IC physicians (p-value = 0.019; Table 2).

Table 1 Summary of the demographic characteristics of the patients in the Emergency Department from the different data sources used in the study [historical records (*N* = 17,288) and survey (*N* = 310)]

Patient Characteristics	Data Sources					
	Patient Records (17,288)			Survey (310)		
	Group Practice (*N* = 5,742)	Independent Consultancy (*N* = 11,546)	*p*-value	Group Practice (*N* = 155)	Independent Consultancy (*N* = 155)	*p*-value
Age (years)			< 0.001*			0.097
Mean ± standard deviation	36.5 ± 17.9	37.3 ± 12.01		36.7 ± 11.1	34.9 ± 10.9	
Median	30	35		33	32	
Time of consultation, n (%)			0.069			0.006*
Morning (AM)	1,821 (31.7)	4,409 (38.2)		84 (54.2)	56 (36.1)	
Afternoon/ Evening (PM)	3,921 (68.3)	7,137 (61.8)		71 (45.8)	99 (63.9)	
Sex, n (%)			0.245			0.454
Male	2,756 (48.0)	4,440 (38.5)		61 (39.4)	63 (40)	
Female	2,972 (51.8)	7,079 (61.3)		94 (60.6)	92 (60)	
Others/ Unknown	14 (0.2)	27 (0.2)		0	0	
Mode of Payment, n (%)			0.292			0.609
Out-of-pocket	1,462 (25.5)	2,257 (19.5)		12 (7.7)	16 (10.3)	
Health Maintenance Organization	3,910 (68.1)	8,558 (74.1)		137 (88.4)	131 (84.5)	
Credit/ Hospital Benefit	370 (6.4)	731 (6.3)		6 (3.9)	8 (5.2)	
Top Presenting Condition, n (%)			0.072			0.023*
Infectious Diseases	841 (14.6)	2,286 (19.8)		51 (32.9)	66 (42.6)	
Cardiovascular Diseases	177 (3.1)	1,044 (9.0)		27 (17.4)	14 (9.0)	
Digestive Diseases	594 (10.3)	1,137 (9.8)		19 (12.3)	32 (20.6)	
Primary Healthcare Source, n (%)	No data	No data	None			0.001*
None				98 (63.2)	130 (83.9)	
General Practitioner				26 (16.8)	13 (8.4)	
Family Medicine				15 (9.7)	6 (3.9)	
Specialist				16 (10.3)	6 (3.9)	
Referral to Consult to ED, n (%)	No data	No data	None			0.106
Self				100 (64.5)	108 (69.7)	
Family				21 (13.5)	28 (18.1)	
Family Physician				4 (2.6)	1 (0.6)	
Clinic Physician				30 (19.4)	18 (11.6)	

*Significant at p-value < 0.05

Table 2 Comparisons of patient factors including patient perceptions and access to ED services between physician group practice and independent consultants from the surveyed patients ($n=310$)

Patient Assessment	Type	Percentiles (scores out of 6)			p-value
		25th	50th	75th	
Assessed severity of condition	Group	2.00	3.00	4.00	0.276
	Independent	3.00	3.00	4.00	
Assessed urgency of condition	Group	3.00	4.00	5.00	0.744
	Independent	3.00	4.00	5.00	
Assessed level of anxiety	Group	2.00	4.00	5.00	0.381
	Independent	2.00	4.00	5.00	
Assessed level of care given by ED	Group	4.00	5.00	6.00	0.019*
	Independent	4.00	4.00	5.00	
Accessibility of ED	Group	4.00	4.00	5.00	0.244
	Independent	4.00	4.00	4.00	
Sufficiency of ED services	Group	4.00	4.00	5.00	0.095
	Independent	4.00	4.00	5.00	
ED response to patient concerns	Group	4.00	4.00	5.00	0.046
	Independent	4.00	4.00	4.00	
ED affordability	Group	3.00	4.00	4.00	0.677
	Independent	3.00	4.00	4.00	
Adequacy of ED operations	Group	4.00	4.00	5.00	0.134
	Independent	4.00	4.00	5.00	
Effective ED service communication	Group	4.00	4.00	5.00	0.313
	Independent	4.00	4.00	5.00	

*Significant at p-value < 0.05

Table 3 Comparison of Emergency Department (ED) operational variables between physician group practice ($n=5,742$) and independent consultancy ($n=11,546$)

Aspect of ED Operations	Group Practice		Independent Consultancy		*p*-value
	Mean	SD	Mean	SD	
Physician Absences (days)	0.00	0.00	6.4	3.6	< 0.001*
Physician Tardiness (hours)	0.00	0.00	23.4	6.0	< 0.001*
Physician Overtime (hours)	0.00	0.00	27.4	6.4	< 0.001*
Patient Census	359	103	722	193	< 0.001*
Patient Disposition (% of Census)					
• Discharged	98.0	0.92	99.0	1.9	0.040*
• Admitted	0.07	0.22	0.03	0.07	0.462
• Absconded	0.04	0.12	0.02	0.07	< 0.001*
• Referred	0.17	0.27	0.04	0.06	< 0.001*
Mean Patient Length of Stay (mins)	165.5	16.4	214.2	28.3	< 0.001*
72-Hour Unplanned Return Visit Census	3.0	2.5	3.0	1.7	1.000

*Significant at p-value < 0.05

ED Operations

Organizational operations are often evaluated by the patient's length of stay and overall census, which are key measures of ED throughput and crowding [19]. Based on our results from the historical data analysis, the IC accommodated and discharged more non-urgent ED patients; however, their non-urgent consultations were found to have a significantly longer average length of stay than the GP (214.19 vs. 165.46 min; p-value < 0.001).

Moreover, the results also showed that the IC incurred significantly more absences, overtime, and tardiness, potentially resulting in decreased productivity (all p-values < 0.001; Table 3). In contrast, no overtime and absences were incurred by GP as the schedules were already arranged by the group beforehand.

Finally, there was no difference in the 72-hour unplanned return visits (URV) for both GP and IC, with both groups showing minimal and equal return visits (median = 3). While IC physicians were more probable to discharge patients (p-value = 0.04), its difference with GP was not operationally significant (99% vs. 98%).

ED operational and patient costs

Due to the hospital's signed fixed-contract with the GP physicians, the monthly operational expenses were constant at PhP 587,812 (10,000 USD) per month, which was statistically greater than the monthly operational expenses for IC physicians [PhP 379,699 (6,500 USD); p-value < 0.001]. As a result, the overall average operational expenses (i.e., payments for the doctors, overtime pays, etc.) per patient were significantly higher in GP [PhP 1,801 (31 USD) per patient] compared to IC [PhP 554 (10 USD) per patient; p-value < 0.001]. GP physicians also requested significantly more imaging procedures than IC physicians, although the mean cost of each radiologic procedure was lower [PhP 2,409.96 (41 USD) vs. PhP 3,132.85 (53 USD)]. Conversely, the mean cost of medicines and of laboratory tests per patient for GP physicians was significantly higher than for IC physicians (Table 4). Additionally, IC physicians were significantly more likely to see HMO patients compared to GP physicians (73.0% vs. 67.7%).

ED satisfaction ratings

From the historical data, the overall patient satisfaction survey result was 83.5% across all ED areas (unstratified between GP and IC). It assessed ED staff attitude (85.5%), helpfulness (85.0%), communication (87.5%), and management (87.0%). The numbers of positive and negative citations were almost the same for both GP and IC. To support these limited findings, we also collected verbatim descriptions from the patients regarding their experience (Table 5). The patient survey covered two dimensions for both GP and IC: ED service and ED physicians. Under ED service, we categorized the responses into five themes. First is service quality, which refers to the fulfillment of the patient's expectations; representative codes include fast and satisfactory service ("*Upon getting inside ED, I*

Table 4 Comparison of the Emergency Department (ED) operational costs between physician group practice ($n = 5,742$) and independent consultancy ($n = 11,546$)

ED Operational and Patient Costs	Group Practice		Independent Consultancy		*p*-value
	Mean	SD	Mean	SD	
Hospital Operation Expenses, PhP (USD)	587,812.00 (10,000.00)	0.00	379,699.00 (6,500.00)	34,876.00	< 0.001
Cost per Patient	1,801.00 (31.00)	676.00	554.00 (9.50)	151.11	< 0.001
Mode of Payment (% of Census)					
• Health Maintenance Organization	67.7	3.4	73.0	5.2	0.002*
• Out-of-Pocket	25.5	2.4	20.0	4.1	< 0.001*
• Others	6.9	2.0	7.0	4.0	0.916
Number of Medicines per Patient	2.6	0.6	2.6	0.6	0.911
Number of Lab Exams per Patient	1.8	0.6	1.6	0.2	0.412
Number of Radiologic Procedures per Patient	0.6	0.2	0.4	0.1	0.007*
Mean Cost of Medicines, PhP (USD)	1,196.51 (20.00)	234.72	625.37 (10.50)	271.63	< 0.001*
Mean Cost of Lab Exams, PhP (USD)	1,212.94 (20.60)	356.91	911.69 (15.50)	264.50	0.009*
Mean Cost of Radiologic Procedures, PhP (USD)	2,409.96 (41.00)	442.60	3,132.85 (53.00)	287.90	< 0.001*

*Significant at p-value < 0.05

Table 5 Themes and codes derived from the verbatim satisfaction survey of non-urgent Emergency Department (ED) patients from group practice and independent contracting physicians

Dimension	Themes	Group Practice Codes, *n* (%) [*N* = 155]	Independent Contractor Codes, *n* (%) [*N* = 155]
ED Service	Service Quality	Fast service, 48 (30.97%)	Fast service, 24 (15.48%)
		Satisfactory service, 44 (28.39%)	Satisfactory service, 54 (34.84%)
		Long waiting time, 44 (28.39%)	Long waiting time, 54 (34.84%)
		Proactive and responsive service, 8 (5.16%)	Proactive and responsive service, 13 (8.39%)
			Delayed service, 33 (21.29%)
	Staffing	Courteous and accommodating staff, 28 (18.06%)	Courteous and accommodating staff, 35 (22.58%)
		Staff shortage, 8 (5.16%)	
	Structure and Facilities	Small and inadequate facilities, 9 (5.81%)	Small and inadequate facilities, 12 (7.74%)
		Clean facilities, 8 (5.16%)	Clean facilities, 18 (11.63%)
		Comfortable ED, 6 (3.87%)	Comfortable ED, 6 (3.87%)
	System and Processes	Unclear ED procedures, 8 (5.16%)	Unclear ED procedures, 14 (9.03%)
		Delayed Health Maintenance Organization processing, 10 (6.45%)	
		Organized processes, 5 (3.23%)	
	Safety	Feeling neglected and forgotten, 7 (4.52%)	Unknowledgeable staff, 5 (3.23%)
		Unhygienic practices, 5 (3.23%)	
ED Physicians	Competency	Knowledgeable, 63 (40.65%)	Knowledgeable, 45 (29.03%)
		Satisfactory service, 61 (39.35%)	Satisfactory service, 96 (61.94%)
		Detailed and well-explained, 24 (15.48%)	Detailed and well-explained, 25 (16.13%)
		Responsive to questions, 13 (8.39%)	Responsive to questions, 6 (3.87%)
	Compassion	Kind, 28 (18.06%)	Kind, 22 (14.19%)
		Approachable and accommodating, 26 (16.77%)	Approachable and accommodating, 22 (14.19%)
		Caring, 20 (12.90%)	Caring, 9 (5.81%)
		Detached from the patient, 6 (3.87%)	

was assisted in not less than five minutes. Doctors assessment did not took a long time of waiting. I am super satisfied with the services). Second is staffing, which measures the adequacy and professionalism of the ED staff; representative codes include courteous and accommodating staff ("*The staff are very approachable. I appreciate the hospitality of the staff; they make sure the patient is comfortable*"). Meanwhile, structure refers to the adequacy and maintained space; representative codes include clean and comfortable ED ("*The facility is clean and I'm comfortable here*"). Fourth is system and processes, which relate to how well-connected the ED is in delivering care; representative codes include unclear ED procedures ("*I wished they are specific with the instructions. Instructions are lacking*"). Finally, safety refers to the practices that will place the patients at risk; representative codes include feeling neglected and unknowledgeable staff ("*Unknowledgeable staff. I asked question for room triage and told me to ask the other staff*").

For the ED physicians, the themes include competency and compassion. Competency refers to having sufficient knowledge and skills in clinical management; a representative code includes knowledgeable physician ("*Every operation has been outlined and the doctor is knowledgeable*"). Meanwhile, compassion refers to the physician's ability to show kindness and empathy; representative codes include kind, approachable and accommodating physicians ("*I got the feeling the doctor is concerned to meet my needs and ease my worries. The doctor is quiet and kind to discuss all my concerns*").

Additional representative statements from the patient population to support each theme and code can be found in Supplementary Table 1.

ED service

Under the service quality theme, approximately one-third of the surveyed patients from both groupings mentioned that they experienced fast and satisfactory service as also supported by the high satisfactory rating of ED (83.5%), and high median scores for assessed level of care and service sufficiency from ED (median scores of 5 and 4 out of 5, respectively). For the staffing, most patients described the staff as courteous and accommodating, as also supported by the high quantitative ratings of the ED in terms of helpfulness (85.0%) and the high Likert score for the ED's response to patient concerns (median 4 out of 5). As for the structure, respondents mentioned that the non-urgent area was clean and comfortable, as supported by the high Likert score for the adequacy of ED operations (median score of 4 out of 5). Regarding the systems and management, a few respondents noted that they had experienced delays in their insurance processing and had unclear procedures. This is in contrast to the overall high rating of the ED in terms of communication (87.5%) and management (87.0%) and the high Likert score for ED service communication (median score of 4 out of 5). Finally, a few patients under GP felt neglected or observed unhygienic practices during their ED stay, while those under IC reported unknowledgeable ED staff.

ED physicians

Under the theme of competency, most of the respondents acknowledged the ED physicians (in both GP and IC) as knowledgeable and able to explain and answer their questions. These assessments resulted in an overall satisfactory experience for the patients, as supported by the high satisfactory scores of ED in both the historical data and survey. Meanwhile, most respondents also mentioned that the ED physicians were kind, caring, and approachable, while a few respondents noted their doctors as detached.

Discussion

Given the evolving role of ED in providing healthcare services to Filipinos, it is essential to understand how changes in its physician dynamics could affect the department's operations, service performance, and patient satisfaction. Our results showed that adapting GP could potentially increase hospital operation expenditures and per patient costs (due to higher utilization of hospital procedures) but without compromising patient outcomes, safety, and overall satisfaction with services in the non-urgent section of ED. This study identified potential considerations in determining the appropriate ED physician arrangement for better operations and patient care in the Philippines, which may also be applicable to other developing countries.

Our study was influenced by the Quintuple Aim Framework, which aims to deliver high-value care by improving patient experience and patient outcomes, reducing healthcare costs, and improving the work life of healthcare providers. (20–21) Over the years, there has been a growing predominance of GPs due to their perceived superior efficacy and attribution of a single specialty in ED as practical. (22–23) Empirical evidence has shown that the GP model produced superior outcomes in terms of productivity, efficiency, malpractice risk, and provider incomes [16]. Our study supported most of these claims, although no significant differences in patient safety and outcomes were noted between our ED's GP and IC.

As the ED continues to be a leading source of healthcare services for patients in the Philippines, particularly for non-urgent conditions, the quality of its service delivery is of utmost importance. Our historical data analysis showed significantly higher patient census, discharge rate, and insurance utilization in IC than with GP. While these factors are inherently out of the control of the physicians, the apparent differences could be because

the GPs in our ED were initially contracted to handle non-urgent COVID-19 cases, while the IC handled non-COVID-19 cases. This situation may also explain the inverse relationship in ED consultations between COVID-19 and non-COVID-19 patients during the study period, as also reported in another study [24].

Despite the longstanding theory that specialty practitioners deliver more in-depth care than non-specialty practitioners [25], our results showed other potential benefits of GPs without compromising patient outcomes. The GP model has been seen as cost-effective in the primary care setting for outpatients in terms of administrative and financial aspects. As reflected in our study, the total operational cost of maintaining GP is higher than that of IC, which can be explained by the group's investments in administrative costs to provide various levels of care [26]. However, an estimated higher productivity loss was evident in IC due to absenteeism, tardiness, and extended working time, thus supporting GP to be more productive and cost-effective [27]. Meanwhile, our results showed significant cost reductions in prescribing medications, diagnostics, and imaging for patients of IC compared to GP. This can potentially be explained by the appropriateness of prescriptions in adherence to clinical practice guidelines and clinical process measures by the IC specialists. Another potential explanation would be the longer tenure and extensive experience of IC, leading to the lesser need to use outpatient resources to produce clinical decisions. The increased use of diagnostic and therapeutic modalities by the younger GP could lead to higher patient costs (but potentially higher revenues to the hospital). In contrast, a previous study showed marginal cost savings when employing non-specialists when addressing non-urgent ED patients [28]. These findings caution us that the accuracy of the financial comparisons is dependent on the reliability of the patient management and operational data, and the analysis outcomes could be hospital-specific.

As we move towards improving patient care, service quality improvement is the parameter used by the payers, accreditors, and consumers where GPs are more likely to engage [29]. In a recent review, several studies showed that adopting a GP improved overall patient satisfaction from better-perceived healthcare access [30]. This could be supported by the significantly higher assessed level of care in the ED by patients under the GP vs. IC. The result could also be reflective on the higher utilization of laboratory and imaging procedures by GP, which could appear to patients as providing more adequate care compared to those who were assessed with only minimal procedures. Although some verbatim negative citations were noted for GP and IC, it did not affect the overall patient satisfaction assessment of the ED and the physician.

ED capacity and patient satisfaction could be affected by the quantity and availability of ED physicians. Based on the review of records, ICs have significantly higher absences and tardiness, and a significant increase in overtime which may all have been a result of the need for more human resources when already in the area. Our results suggest that IC may lack capacities to attend to all the operations of the ED. The observation that patients managed by IC had longer length of stay yet marginally more probable to be discharged could be due to the delays in services (as gleaned from the qualitative data) or the nature of cases (more complex diseases). It is highly unlikely that the patients were aware of whether they were managed by a doctor under GP or IC, which minimizes bias in their assessment of patient satisfaction [31].

Limitations

This study presented several limitations. First, the cross-sectional and observational nature of the historical data analysis and patient surveys may not reflect the long-term impacts of GP in ED operations compared to the existing IC. We were also unable to control for confounding and other secular externalities in our analyses. Despite these limitations, our study provided the preliminary information on the impacts of GP in ED practice in the Philippines, potentially opening further research on adapting full GP in the local non-urgent ED setting. The number of patients surveyed is also only limited to our minimum sample size. Our larger historical dataset and in-depth qualitative analysis helped supplement this. Finally, the study is limited to the data coming only from a single ED in the locality, specifically the non-urgent section. Hence, the results may only apply to EDs of similar size and characteristics, particularly those in resource-limited settings like the Philippines.

Conclusions

While GPs were associated with higher operational costs for the hospital, its adaptation in the ED resulted in a shorter mean length of stay and higher assessed level of care from patient assessments. GPs and ICs do not differ in terms of the overall patient outcomes and ED service satisfaction, as assessed both quantitatively and qualitatively. Hence, adapting GP may be beneficial for more productive and satisfactory operations of the non-urgent section of the ED, but could be costly to the hospital and the patients. GP's long-term impact on patient care has yet to be known. The perspectives of the actual physicians could also be considered in future assessments to provide a more holistic view of the impact of GP as a new care model for ED among countries implementing health systems reforms.

Supplementary Information

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Supplementary Material 1

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Author contributions
MLC Jimenez- conceptualization, data analysis, critical review and evaluation of results, primary authorship, review and editing of the paper, study supervision, procurement of grant. MB Carascal- conceptualization, data analysis, critical review and evaluation of results, primary authorship, review and editing of the paper. MDL Figueras- conceptualization, data analysis, review, and editing of paper. JQ Wong- critical review and evaluation of results, review, and editing of the paper. RD Tanghal- conceptualization, review, and editing of the paper. VCF Pepito– data analysis, critical review and evaluation of results, review, and editing of the paper. R Manzanera- conceptualization, critical review and evaluation of results, review and editing of the paper, study supervision.

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Data availability
The datasets used and/or analyzed for the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
The protocol for this study was reviewed and approved by The Medical City Institutional Review Board (GCS-ER-2022-154) prior to implementation. Consent was taken prior to the administration of the survey to the recruited ED patients.

Consent for publication
Not applicable.

Competing interests
VCF Pepito received funding from Sanofi Consumer Healthcare to conduct research on self-care and from the International Initiative for Impact Evaluation to propose an impact evaluation study on programs of the Philippine Health Insurance Corporation. The other authors declare no conflict of interest.

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