Facilitators and barriers to interprofessional collaboration among health professionals in primary healthcare centers in Qatar: a qualitative exploration using the "Gears" model

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Abstract

Background The number of patients seeking medical care is increasing, necessitating more access to primary healthcare services. As several of these patients usually present with complex medical conditions, the need for interprofessional collaboration (IPC) among health professionals in primary care is necessary. IPC is essential for facing the increasing and challenging healthcare demands. Therefore, the facilitators of and the barriers to IPC should be studied in the hope that the results will be used to promote such endeavors.

Objectives This study aimed to explore the perspectives of different health professionals regarding the facilitators of and the barriers to IPC in the primary healthcare settings in Qatar.

Methods A qualitative study using focus groups was conducted within the Primary Health Care Corporation (PHCC) in Qatar. Several health professionals were invited to participate in the focus groups. The focus groups were uniprofessional for general practitioners (GPs), nurses, and dentists, while they were interprofessional for the other health professionals. Focus groups were audio-recorded and transcribed verbatim and validated by the research team. The data were analyzed by deductive thematic analysis using the "Gears" Conceptual Model as a coding framework.

Results Fourteen focus groups were conducted involving 58 participants (including 17 GPs, 12 nurses, 15 pharmacists, 3 dentists, and 11 allied health professionals) working in PHCC in Qatar. The findings revealed a spectrum of factors influencing IPC, categorized into four main domains: Macro, Meso, Micro, and individual levels, with each accompanied by relevant barriers and facilitators. Key challenges identified included a lack of communication skills, insufficient professional competencies, and power imbalances, among others. To address these challenges, recommendations were made to implement dedicated training sessions on IPC, reduce hierarchical barriers among different health professionals, and enhance the effectiveness of existing systems. Conversely, it was emphasized that

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projects and campaigns focused on IPC, alongside the development of enhanced communication skills and the presence of supportive leadership, as essential for facilitating effective IPC in PHCCs.

Conclusion The interplay between the meso, macro, micro, and individual levels highlight the significance of a multifaceted approach to interventions, aiming to enhance the successes of IPC. While initiatives like interprofessional education training are underway, numerous challenges persist before achieving improved collaboration and more efficient integration of IPC in the PHCC setting.

Keywords Interprofesisonal collaboration, Interprofessional education , Collaborative practice, Primary care, "Gears" Conceptual Model, Perpsectives, Qualitative, Qatar, Middle East

Introduction

The World Health Organization (WHO) projects a global deficit of health professionals in comparison to the needs, expected to exceed 18 million by 2030, which will impede the provision of optimal healthcare services. In their "Global strategy on human resources for health: Workforce 2030", they highlighted the need to equip health professionals with the skills needed to practice collaboratively in interprofessional teams [1]. One of the best solutions to face this strain on the healthcare system and to provide better management of the complex health challenges is to implement and promote the concept of interprofessional collaboration (IPC) as these demands often are beyond the expertise of any single profession [2–4]. According to the WHO, IPC occurs when "multiple healthcare workers from different professional backgrounds provide comprehensive services by working with patients, their families, caregivers, and communities to deliver the highest quality of care across settings" [2]. IPC recently has become one of the core demands of accreditors, funding institutions, policymakers, and practicing health professionals, recognizing its potential to improve the quality of care and address the increasing demand for healthcare services [5–8].

Research has consistently highlighted the positive impact of IPC on healthcare work processes, patient safety, and patient outcomes across various disease states such as diabetes, heart failure and asthma, which were treated in hospital, primary care, and community settings [9–11]. Research has concluded that a high degree of IPC has led to better subjective outcomes, including overall satisfaction, treatment success, and willingness to recommend the healthcare institution to others. Additionally, objective outcomes such as reduced mortality rate, readmissions, and hospital length of stay have been noted. Furthermore, collaboration has been associated with improved decision-making and increased innovation [12, 13]. It has also been demonstrated that as the relationship and level of connectedness between physicians and other health professionals increase; hospitalization costs and readmission rates decrease [14].

Primary healthcare is the foundation of any country's healthcare system. It is not only considered the primary point of contact with the healthcare system, but it also serves as the vehicle for ensuring continuity of care across settings. The increase in the number of people with multiple chronic diseases that are associated with considerable social, functional, and emotional impairment and an increase in the healthcare demand, leading to an increase in the needed services [15–18]. Consequently, policymakers on an international scale have persistently advocated for the greater integration of interprofessional team-based care in primary healthcare settings and the development of influencing factors that explicitly acknowledge the value of this collaborative approach [19, 20]. Several studies in the literature have highlighted the positive outcomes associated with effective collaboration within primary healthcare settings [21–23]. This has led to an internationally movement towards team-based primary healthcare, to enhance the integration of services and to emphasize health promotion and chronic disease management [19]. Ineffective collaboration leads to an increased risk of preventable errors, lack of efficiency, and loss of motivation, resulting in suboptimal patient care based on nurses' opinions [24].

While IPC efforts are usually initiated by policymakers, research have demonstrated that health professionals' play a vital role in providing high-quality IPC. Therefore, it is of crucial importance to consider the perspectives of health professionals working in primary healthcare settings regarding IPC when designing and implementing IPC projects [25]. Numerous studies have examined IPC across various countries. For example, a systematic review was conducted to explore facilitators and barriers to IPC implementation in primary healthcare settings. This review included studies conducted in Great Britain, the United States, the Netherlands, Australia, Spain, Brazil, Canada, and New Zealand. The findings of this review indicated that allied health professionals generally hold positive perceptions of IPC within primary healthcare contexts [26, 27]. However, limited research has been conducted to investigate healthcare IPC practice in Qatar, particularly in primary healthcare settings. Given the recent expansion of scope of practice in primary care in Qatar [28], it is essential to explore the current practices in primary healthcare in Qatar in terms of IPC

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facilitators and barriers, and determining the necessary steps to achieve optimal collaboration within the Qatari healthcare system.

This study is a continuation of a previous study that explored the perspective of 1415 health professionals in primary healthcare settings through a self-administered questionnaire [28]. Results of the study showed that health professionals generally have a positive attitude and readiness toward IPC. Interprofessional differences were noted regarding their readiness to be involved in IPC, where physicians had slightly more positive readiness towards understanding their professional identity compared to other health professionals. Health professionals with previous IPC or interprofessional education (IPE) experiences revealed greater, but non-significant positive attitudes toward IPC compared to those without previous experiences. Participants suggested that facilitators and barriers for IPC in primary healthcare settings are conceptual rather than physical. Facilitators included personal belief in IPC benefit, higher professional satisfaction, interprofessional respect, appreciation of other health professionals' role, institutional support, and leadership. Barriers identified included lack of time, leadership, support, and limited resources.

In an effort to understand the health professionals' perception of the facilitators and barriers for IPC in primary healthcare in Qatar, the current study will explore the factors affecting the IPC in primary healthcare in Qatar using the "Gears" conceptual model [7]. The Gears model offers a taxonomy of factors influencing IPC within Interprofessional Primary Care Teams (IPCTs). These factors are categorized into levels: policymakers (macro gear), organizational managers (meso gear), healthcare teams (micro gear), and health professionals (individual gear). Most of the factors identified by the "Gears model" are within the micro gear, or those affecting the individual. These involve formal processes such as quality audits and group problem-solving; social processes pertained to open communication and supportive colleagues; team attitudes such as feeling part of the team; and team structure such as team size and having a collaboration champion or facilitator. Macro gears/policy factors are those that change less frequently and are pertained to regulations regarding the general scope of practice, funding, etc. Meso gears/ organizational factors are those that change more often and affect more than one team in the organization, those are concerned with the information systems, organizational culture, etc. Individual factors include the individual health professional characteristics such as belief in IPC care and personal flexibility.

The aim of this study is to identify factors facilitating or impeding IPC in primary healthcare in Qatar by exploring the perspectives of health professionals working in primary healthcare qualitatively. These include GPs,

nurses, pharmacists, dentists, and allied health professionals (lab technicians, physiotherapists, dieticians, and radiographers). Findings from this study will be used to find ways to enhance and promote collaborative practice in primary healthcare in Qatar.

Method

Study design

In this qualitative study design, data were collected through semi-structured focus groups. A qualitative approach was used to explore comprehensively the lived experiences of health professional's perspective as it allows for investigating a phenomenon from the people who have experienced it. It gives a deeper insight and answers to what, how, and why questions [12].

Study setting

The study was conducted among health professionals working in the Primary Health Care Corporation (PHCC) in Qatar. PHCC was established in 1978 to provide comprehensive primary healthcare services and became an independent body in 2012 with full administrative and financial autonomy. At the present time, the PHCC provides PHC through 27 PHC centers distributed across the country. Each center is staffed with health professionals who provide a broad range of services, focusing on health promotion and disease prevention. PHCC has adopted and implemented family medicine model of care and offers a wide range of services, including general medicine, dentistry, ophthalmology, optometry, ENT, dermatology, mental health, preventive and lifestyle services such as wellness, premarital care, cancer screening, gym and geriatric, physiotherapy and radiology services [29]. In February 2018, a local continuous professional development (CPD) program was initiated by PHCC Workforce Training Department (WFTD) for implementing learning activities across the 27 PHCC health centers using interprofessional and collaborative approaches.

Study participants and sampling

The study comprised 58 participants, including 17 general practitioners, 12 nurses, 3 dentists, 15 pharmacists, and 11 allied health professionals (e.g., laboratory technologists, radiologists, optometrists, and audiologists) working in PHCC in Qatar. A purposive sampling strategy was employed to select health professionals with experience or understanding of IPC, aiming to maximize participant recruitment and ensure representation of the study population's views [16]. Sampling continued until thematic saturation was reached, indicating no further emergent ideas from discussions [17].

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Participants' recruitment

Emails were sent to the health professionals working at PHCC in Qatar inviting them to participate in the study focus groups that were planned to be conducted at Qatar University or PHCC headquarters. Recruitment of participants was facilitated through WFTD which took the responsibility of recruiting and arranging appropriate focus group schedule that can suit study participants. An invitation email was sent with consent form and participant information sheet to participants prior to the focus groups.

Data collection

The topic guide was developed through discussions with the research team, a review of previous literature, and based on phase 1 quantitative results [28] (please see supplementary file). A pilot interview was conducted with minor adjustments and included a few health professionals working in PHCC. Because no significant changes were made it was included in the final analysis. The focus group were uniprofessional (i.e. homogenous groups) for GPs, nurses and dentist and interprofessional (i.e. heterogeneous groups) for the remaining health professionals and varied in duration between 90 and 120 min. The discussions were audio-recorded and transcribed verbatim.

Data analysis

A deductive thematic analysis was conducted of data, which is an analytical method in which authors use existing themes, categories, or domains to categorize new data under such categories [30]. Participants' ideas were categorized under four main domains adapted from the "Gears model" [7]. The gears model outlines the factors affecting IPC within IPCTs under four main factor domains: macro, meso, micro, and individual factors. AME, AA, KJ, RS reviewed and validated the transcripts. They then independently reviewed couple of transcripts to generate codes in discussion with the lead author (AE). Coding for the rest of the transcripts was validated by one faculty member from the research team. A final discussion took place with all authors to agree on themes and subthemes.

Reflexivity

During the data collection and analysis process, the research team engaged in reflexive practices to mitigate potential biases. The team consisted of various individuals with diverse backgrounds, including faculty members with pharmacy, nursing and medical backgrounds, three of whom were practicing health professionals, along with four pharmacy students and one alumna. The team offered a broad spectrum of perspectives and insights for data generation and analysis. These faculty members had an understanding of IPE and had previously conducted workshops on interprofessional collaboration for health professionals at PHCC. With a background in IPC, participants' ideas were more easily understood, facilitating deeper engagement, and enabling the comprehension of their perspectives more readily, thus ensuring a comprehensive interpretation of the data. Throughout the research process, attention was paid to the potential influence of professional backgrounds, with reflexive practices employed to mitigate biases and ensure the integrity of the findings.

Data collection were mostly led by the principal investigator, with support from students adhering to a predefined topic guide to minimize personal biases. To further enhance trustworthiness of the study, students independently coded the data, which was validated by a faculty member of the research team. The team met several times to review and compare codes and themes, refining the analysis iteratively until consensus was reached. Each stage of the research process was overseen by the principal investigator, ensuring the rigor and robustness of the study.

Results

Fourteen focus groups were conducted between September 2019 and February 2020, involving 58 health professionals working in primary healthcare centers in Qatar (17 general practitioners, 12 nurses 15 pharmacists, 3 dentists, and 11 allied health professionals). The baseline characteristics of the participants are summarized in Table 1. Four domains, 10 themes, and 14 sub-themes were identified from the focus groups. The domains, themes, and sub-themes are summarized in Table 2.

Gears domain 1: macro factors
Facilitators
Theme 1: the influence of organizational policies on IPC
Several factors were identified by health professionals pertaining to the policies that can affect IPC. These factors were mainly related to the rules and regulations set by the organization's managers or government bodies, which typically influence the general scopes of practice, funding mechanisms, and remuneration of providers. Consensus was reached that these regulations play a significant role in fostering IPC among health professionals.

> *"Actually, we have very well prepared and organized policies. Policies related to teamwork, which align with best-practices and international guidelines. The policies at our PHCC facilitate collaboration… but how to use it? Is everybody aware of its use?" [Laboratory technologist 1].*

Table 1 Baseline characteristics of the participants

Characteristics	No. 58
Age - no. (%)	
20–30	5 (8.62)
31–40	31 (53.45)
> 40	22 (37.93)
Gender - no. (%)	
Female	28 (48.28)
Male	30 (51.72)
Profession - no. (%)	
Physician	12 (29.31)
Nurse	17 (20.69)
Pharmacist	15 (25.86)
Dentist	3 (5.17)
Allied health professionals:	11 (18.97)
Lab technologist	3 (5.17)
Optometrist	1 (1.72)
Radiologist	6 (10.34)
Audiologist	1 (1.72)
Experience in the profession (years)- no. (%)	
0–10	13 (22.41)
11–20	34 (58.62)
>20	11 (18.97)
Years working in PHCC Qatar- no. (%)	
0–10	42 (72.41)
10–20	14 (24.14)
>20	2 (3.45)
Previous IPE training- no. (%)	
Yes	32 (55.17)
No	23 (39.66)
No response	3 (5.17)
IPE training experience- no. (%) (*N*=32)	
IPE training in PHCC	16 (27.59)
Qatar university IPE training program	2 (3.45)
During IPE related research in PHCC	3 (5.17)
Conference	2 (3.45)
During undergraduate/ postgraduate program	8 (13.79)
Seminars	1 (1.72)

Barriers

No major barriers were identified under the macro factors.

Gear's domain 2: meso factors

Facilitators

Theme 2.1: leveraging technology for enhanced communication

Participants unanimously agreed that the current health information system, specifically CERNER, serve as a strong facilitator for enhancing communication among health professionals. It enables seamless sharing of patients' details documented by other health professionals.

"I find the CERNER system software amazing, because you can get to see the history of the patients and previous appointments records. Everything is well documented" [Dentist 3].

Barriers

Theme 2.2: communication hindered by limitations in healthcare information system utilization

Several participants noted that current system (CERNER) is not fully utilized for documenting and reporting of medical or medication errors which can serve as a barrier. As an example, one participant expressed reluctance to utilize the system and filing an OVA (incidental report) for fear of retaliation in case the reporter is identified.

"If I were to write OVA (incidental report) for him/her, he/she will get angry at me. So, there's no use. Actually, the purpose is to report in order for others to learn from them, but there is no clear pathway that there will be no consequences for us reporters" [Nurse 2].

Furthermore, another HCP mentioned that the current information system might be a barrier, as not all health professionals have equal access to the system.

"The pharmacist is not allowed to enter a recommendation into the system; they have their own system" [GP 5].

Theme 2.3: barriers in organizational dynamics hindering IPC

Sub-theme 2.3.1: Hierarchy hinders collaborative spirit One of the primary obstacles to collaboration within the institution is perceived to be the presence of a hierarchical structure. This perception is based not only in the observable existence of a grading system that categorizes health professionals according to their profession and seniority, but also in the benefits associated with higher hierarchical positions.

"The hierarchy is influenced by salary differences" [GP 4].

Participants in the study observed that this hierarchical system leads to disparities, which undermine their willingness to collaborate. As an example, pharmacists expressed feeling of being treated differently compared to GPs, who are routinely offered opportunities to attend international conferences. The lack of such opportunities for pharmacists and other health professionals further reinforces the perception of hierarchy within the institution.

Table 2 Gears domains, themes, and sub-themes

Domain	Theme	Sub-theme	Facilitator	Barrier
Macro Factors	Theme 1: The influence of organizational policies on IPC		✓	
Meso Factors	Theme 2.1: Leveraging technology for enhanced communication		✓	
	Theme 2.2: Communication hindered by limitations in healthcare information system utilization			✓
	Theme 2.3: Barriers in organizational dynamics hindering IPC	Sub-theme 2.3.1: Hierarchy hinders collaborative spirit		✓
		Sub-theme 2.3.2: Blame culture instils apprehension among health professionals		✓
		Sub-theme 2.3.3: Lack of feedback contributes to the perception that health professionals' efforts are undervalued		✓
Micro Factors	Theme 3.1: Expanding the scope of practice of team members enhances collaboration		✓	
	Theme 3.2: Effective communication channels foster collaboration		✓	
	Theme 3.3: Formal team processes have a significant role in facilitating collaboration	Sub-theme 3.3.1: Supportive leaders empower team members to collaborate	✓	
		Sub-theme 3.3.2: Engagement in interprofessional initiatives enhances collaboration among team members	✓	
		Sub-theme 3.3.3: Optimizing accessible healthcare environments	✓	
	Theme 3.4: Time constraints impede collaboration and affect patient outcomes			✓
	Theme: 3.5: Lack of clarity in scope of practice leads to misunderstandings and hinders collaboration			✓
Individual Factors	Theme 4.1: Prior exposure to IPE enhances appreciation for IPC		✓	
	Theme 4.2: Health professionals' factors	Subtheme 4.2.1: Effective communication skills drive enhanced collaboration among health professionals	✓	
		Subtheme 4.2.2: Positive Interpersonal qualities among health professionals enhance collaboration	✓	
	Theme 4.3: Patient Perceptions impact IPC			✓
	Theme 4.4: Impact of perceived approachability and Ego on IPC			✓
	Theme 5: Enhancing IPC through equity, training, and support		✓	

"I have tried to attend a conference; I have a right to enhance my education. Why does this apply to the GP and not to the pharmacist?" [Pharmacist 8].

"He -the GP- thinks that the pharmacist as being of lower status, and he is the only one to have the authority to write and make decisions" [Pharmacist 9].

Sub-theme 2.3.2: blame culture instils apprehension among health professionals Another significant factor that had a considerable impact on collaborative efforts was the existence of a culture of blame within the PHCC organization. This culture of blame surfaced frequently during discussions among health professionals and was found

to hinder effective collaboration among team members. Some perceived the level of blame not to be equitable.

"What if I did a mistake? And what if the mistake was done by the GP? The blame wouldn't be equal. We would receive more blame" [Nurse 3].

"I still believe that some of us should refrain from perpetuating a blame culture or name-calling. After all, all of us are human beings. We are prone to making errors" [GP 10].

"We need to promote a culture of no blame. When things go wrong or mistakes occur, we should view them as collective challenges rather than assigning fault to individuals and subjecting them to humili-

ation. This approach will significantly transform the overall attitude within the environment" [GP 2].

Sub-theme 2.3.3: Lack of feedback contributes to the perception that health professionals' efforts are undervalued Some health professionals have expressed concerns regarding the lack of feedback on their performance, interventions, and error reports, particularly within Datix, a patient safety software utilized for healthcare risk reporting. This absence of feedback is perceived as a significant impediment to IPC, as it fosters the perception that the efforts of health professionals are not adequately acknowledged or valued.

"The risk management team should gather data and determine the significance of incidents reported through Datix, which is serious or recurring. If a mistake is repeated, they will ask or make an investigation about this issue. However, aside from these instances, no action is taken. No feedback is provided" [Pharmacist 1].

Gears domain 3: micro factor
Facilitators
Theme 3.1: expanding the scope of practice of team members enhances collaboration
Given that IPC heavily relies on teamwork, the topic of collaborative efforts and teamwork surfaced frequently during focus groups.

"The most important thing in primary healthcare practice is the teamwork. We underscore its importance, as it permeates our daily operations" [GP 6].

Expanding the scope of practice of healthcare team members has the potential to foster enhanced collaboration between team members. For example, pharmacists who participated in the discussions expressed that the inclusion of a clinical pharmacist within PHCC would enhance collaboration. This is attributed to the direct involvement of the clinical pharmacist with the interprofessional team, which obviates the need for external prompting to initiate collaborative efforts.

Theme 3.2: effective communication channels foster collaboration
Effective collaboration among participants was found to significantly hinge on the establishment of robust communication channels. This encompasses both formal features and tools, ranging from cordial and conversational telephonic exchanges to more structured modes of communication, such as the sharing of electronic patient records. Several participants cited instances of proficient communication that had led to successful collaboration outcomes.

"Every colleague should be encouraged to express their concerns, whether in written form or verbally, as it facilitates communication" [Dentist 3].

"Many doctors respect our opinion and express gratitude, acknowledging that we draw their attention to certain points" [Pharmacist 9].

The majority of participants highlighted the importance of communication tools provided by the institution, including telephones, the CERNER system, and email platforms. Participants expressed their appreciation for these communication channels, noting that they effectively save time and enable seamless collaboration, even when they are attending to patients in different locations.

"It's not difficult because we have our colleagues, whom we can contact directly by phone" [Dentist 1].

Theme 3.3: formal team processes have a significant role in facilitating collaboration
Sub-theme 3.3.1: supportive leaders empower team members to collaborate Leaders who demonstrate appreciation and dedication play a crucial role in fostering positive experiences of IPC. Regular interprofessional meetings organized by these leaders ensure that the environment is conducive to collaboration, and support empowering health professionals to initiate and engage in collaborative endeavor.

"So, if we have any issues, we talk to our supervisor, who then reports it to the health center manager. She is really supportive" [Pharmacist 3].

Sub-theme 3.3.2: engagement in interprofessional initiatives enhances collaboration among team members Participants emphasized that their involvement in workplace initiatives, such as projects, campaigns, seminars, and workshops, played a crucial role in promoting IPC. According to health professionals, these initiatives were beneficial as they provided them with diverse professional perspectives, opinions, and ideas, which in turn enhanced their chances of success in their collaborative efforts.

"In our health center, we initiated a project to improve the practice of antibiotic prescribing. We were collaborating with GPs to know from them how to write and put a protocol to lessen the misuse of antibiotic" [Pharmacist 2].

Participants also recognized that engaging in collaborative research activities involving multiple team members was an effective facilitator for enhancing patient safety.

"I conducted research on medication use reviews, actively engaging with general practitioners' clinics. I would regularly visit these clinics to share information about the study. During these interactions, I explained my criteria, encouraging them to refer eligible patients to the pharmacy" [Pharmacist 6].

Furthermore, vaccination campaigns were considered essential by several pharmacists as they provided opportunities for collaboration with other disciplines including educational outreach events. Several pharmacists reported on their involvement in these campaigns and the subsequent positive impact on collaboration dynamics. Specifically, one pharmacist highlighted a reduction in the uptake of pneumococcal vaccine among eligible patients and assumed a proactive role by gathering information from various GPs regarding the decreased prescription of such vaccines.

"We did a project in collaboration with GPs, regarding vaccinating high risk patients with pneumococcal vaccine" [Pharmacist 4].

"During the immunization week, I held a seminar about immunization. I taught them -nurses- individually how to use each vaccine properly and why we are using it" [Pharmacist 2].

Moreover, participants found case-based discussions and interprofessional training sessions with other health professionals valuable for collaboration. These sessions allowed discussion of each profession's role and facilitated idea exchange.

"As part of our interprofessional education efforts, we conduct weekly lectures and brief discussions for an hour... sometimes, new nurses and physiotherapists attend these lectures...... We discuss how we can help promote the collaboration between all of us for better care for the patients" [GP 9].

Sub-theme 3.3.3: optimizing accessible healthcare environments Experiences related to the impact of the environment on collaboration were generally positively perceived. For instance, the close proximity of a nurse diabetic educator to the pharmacy facilitated direct communication between pharmacists and educators, enabling them to address any concerns more efficiently. Moreover, having practitioners co-located in a single setting, rather than dispersed in various locations within the center, was deemed more advantageous.

"We have it, diabetic educator, clinical pharmacist, and GP all in one place, so they all work together for assessment of patient and education, particularly high-risk patient" [Pharmacist 4].

Barriers
Theme 3.4: time constraints impede collaboration and affect patient outcomes

Participants identified time constraints as a significant challenge to collaboration, with health professionals struggling to allocate sufficient time for documentation, communication, and knowledge-sharing, potentially impacting patient outcomes.

"We can't afford the luxury of opening CERNER each time since we are already occupied with other tasks" [Pharmacist 5].

"Even when there is an issue .... we should learn from it. We are not learning. We just want to finish this issue and just move on because there is no time. There is too much work" [Laboratory technologist 1].

Theme: 3.5: lack of clarity in scope of practice leads to misunderstandings and hinders collaboration

A number of health professionals expressed concerns regarding the potential misunderstanding of their scope of practice, leading to requests to perform tasks beyond their designated role which impact the collaborative culture leading to frustration.

"Nurses are responsible for taking vital signs, following the patient's care plan, and managing medications, but cleaning is not part of their role although some doctors mistakenly believe it to be so" [Nurse 3].

"At times, we notice that some GPs are unaware of the difference between a technician and a radiologist" [Laboratory technologist 1].

Gears domain 4: individual factors
Facilitators
Theme 4.1: prior exposure to IPE enhances appreciation for IPC

The study observed that health professionals who had prior experience with IPE exhibited a greater appreciation towards collaborative work.

"We learned and practiced IPE during our education. However, in practical settings, there is still a need for a comprehensive understanding of IPE and its implementation. While there are individual efforts to apply it, full implementation has not been achieved yet" [Pharmacist 3].

Theme 4.2: health professionals' factors

Subtheme 4.2.1: effective communication skills drive enhanced collaboration among health professionals Effective communication was deemed crucial by participants in healthcare settings. Nurses felt valued and integral to the team when equipped with proper communication skills, while GPs found direct communication with other health professionals to be advantageous, enhancing their practice.

"Quite a few times, I've reached out to the on-site ophthalmologist by phone. When there's a concern about a patient, whether its suspected cornea issues or the need to rule out certain conditions, a simple phone call often results in them accommodating the patient. The ophthalmologist has consistently been responsive and helpful in these interactions" [GP 6].

Subtheme 4.2.2: positive interpersonal qualities among health professionals enhance collaboration The collaboration within the team is influenced by health professionals' interpersonal qualities which was identified as a significant factor, with approachability and friendliness being crucial in facilitating collaboration.

"The difference here is that I find everybody to be approachable and friendly [GP 6].

Very friendly environment. You can approach the nurses, the doctors—everyone is accessible" [GP 10].

Furthermore, respect and trust were highly valued facilitators of IPC and were discussed in conjunction with other facilitators.

"Mutual respect among all health professionals will facilitate smoother and more effective collaboration" [Nurse 3].
"We must respect each other. Just because I am a GP, it doesn't mean my opinion is the only opinion or the correct one" [GP 3].

Barriers
Theme 4.3: patient perceptions impact IPC
Patient perceptions were found to exert a considerable impact on the dynamics of collaboration between nurses, GPs, and other health professionals. Participants reported that patients tended to perceive nurses as occupying a subordinate position relative to GPs, and consequently, were less forthcoming in discussing healthcare concerns with them.

"You are the nurse; you know less than the doctor" [Nurse 4].

"Patients typically highly value recommendations from physicians. However, when they seek advice or education from nurses or pharmacists, they sometimes may not value it as much as they would if it came from a physician" [Pharmacist 7].

Additionally, participants believe patients regard GPs as the key health professionals, and preferred to communicate exclusively with them. This perception placed an additional workload on GPs, leading to potential consequences on their capacity to collaborate effectively with other health professionals.

"We need to educate patients more about the roles each team member plays and how we all work together as a team. When a patient comes in, they often see the doctor as the leader but it's important for them to understand the contributions of all team members" [GP 5].

Theme 4.4: impact of of perceived approachability and ego on IPC
On the other hand, encountered challenges in communicating with GPs, including when they perceived a sense of ego, or if they were less approachable. Nurses expressed reluctancy to approach pharmacists or GPs whom they felt would not respect them.

"Being approachable is one of the most important things especially when it comes to the team. For example, some of the nurses would know a lot of information about the patient but if you're not an approachable GP, they will not come and voluntarily divulge the information" [GP 6].

"Ego. When you are dealing with people these things are barriers and the best solution is always communication" [Nurse 6].

Similarly, GPs encountered similar challenges in communicating with other health professionals if they perceived them as unfriendly or unapproachable. However, they differed from the nurses in that they seemed to encounter these challenges within their own field of practice rather than in interactions with other health professionals.

Theme 5: enhancing IPC through equity, training, and support

The study participants put forth several proposals to enhance IPC in their workplace. A key recommendation was to ensure equity among health professionals, such that all members had full and equal access to patient files. This would enable effective IPC by keeping all team members abreast of the patient's evolving health status and treatment plan. Participants recognized that institutional and leadership support would be necessary to achieve this equity. Additionally, due to the acknowledged limitations posed by workload and time constraints, many participants suggested that the recruitment of additional staff could facilitate IPC processes. Further, the participants proposed the need for more frequent training sessions to improve communication skills, enhance system and documentation writing, and provide IPC disease management, role clarification, and professional competencies education.

> *"When they send you for training you will be empowered"* [Nurse 2].

Finally, health professionals emphasized the importance of a supportive system that offers constructive feedback to identify weaknesses and facilitate continuous improvement of practice. In addition, health professionals remarked on the impact of managerial support on collaboration and performance.

> *"When we receive support from the health center manager during our practice, we find that collaboration improves, leading to better outcomes"* [Pharmacist 2].

Discussion

This qualitative focus group study explored facilitators of and barriers to IPC as perceived by health professionals (including GPs, nurses, pharmacists, dentists, and allied health professionals) from various backgrounds in primary healthcare in Qatar using the "Gears" conceptual model. Overall, the majority of health professionals who participated in this study have acknowledged and appreciated the importance of IPC work within their institutions, which is consistent with other published studies [27, 31, 32].

Facilitators

Facilitators under the micro-gear domain focused on healthcare teams. Participants agreed that the diversity of health professionals within the same PHCC is a major facilitator for better collaboration. They also agreed that the presence of different communication channels (e.g. telephones, CERNER, etc.) is another facilitator. Supportive leaders in the team were acknowledged to have a positive influence on attitudes toward IPC. IPE activities were identified as positively influencing attitudes towards toward IPE and IPC. These findings are consistent with those of other studies. There was an agreement among several studies regarding the importance of open communication and various communication strategies and tools in facilitating IPC [33, 34]. For example, Müller et al. [33], in their study where authors interviewed several clinical executive managers, found that participants agreed that multilateral communication is one of the enablers for effective IPC. Facilitators within the individual-gear, includes Individual contextual factors contributing to IPC such as previous exposure to IPC, patient related factors, and characteristics of health professionals. Previous exposure to IPC emerged as a significant facilitator for both health professionals and patients. Communication skills were identified as crucial in supporting exposure to IPC. Participants highlighted the importance of accessible communication methods, such as availability by phone or in person conversations, eliminating roadblocks to IPC. Furthermore, the approachability of health professionals, characterized by their openness to information sharing and their trust and respect for the competency, knowledge, and skills of other health professionals was a key facilitator to IPC.

Regarding the meso-gear facilitators, participants valued the importance of receiving ongoing, and timely feedback based on practice experiences to consolidate learning and minimize recurrence of errors. They advocated for utilizing data from platforms such as Datix; an Incident Reporting System (IRS), which is a valuable resource among all team members involved in patient care. Participants recommend a wider use of such data for learning, in interprofessional team meetings. This aligns with evidence from the literature which suggests that critical to the success of any IRS is the quality of the feedback given to reporters to enable learning, encourage reporting, and give reporters evidence that the information they are providing is being used appropriately [35, 36]. Space and proximity are reported as excellent opportunity for teams to work together and share perspectives in the care for the patient [37]. As new PHCC centers are created to serve the growing needs of Qatar's population, leaders can benefit from including members of the care teams, in the final design discussions, so that space and

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proximity can continue to remain optimal and facilitate interprofessional practice and team centered patient care.

The least number of factors were identified under the macro-gears. These relate to governance and regulations, which were considered as a major facilitator for better IPC in the primary healthcare setting in Qatar. The participants in this study had reflected on the existing policy and regulatory facilitators that foster collaborative practice in PHC setting in Qatar, but did not discuss barriers to policies and regulations. The study findings reaffirm the potential role and influence of government policies and regulations in facilitating IPC in primary care settings from the perspective of the health professionals. Additionally, organizational-level policies were also perceived as key facilitators. This aligns with the macro-level factors of the Gears conceptual model, which allows the conceptualization of the intricate relationships between this and the other domains of the model from the perspective of the health professionals. Previous studies have documented the influence of policy and regulation in promoting collaborative practice and IPE. One international review has summarized the global policies and legal factors influencing the behaviors of health professionals towards successful implementation of collaborative practice [38]. These factors largely influence the scope of practice of various health professions and how the different professions work collaboratively, funding mechanisms, and reimbursement systems for health services.

In Qatar, health professions and practices are regulated by the Department of Healthcare Professions under the Ministry of Public Health (MoPH) [39], which is considered a key aspect of professional practice [38]. Although there are no umbrella laws to regulate multiple health professions under a single statute, which is a major drawback to an effective and conducive implementation of collaborative practice in various settings, having a unified regulatory and legal structure has been shown to foster a culture of equity among different health professionals [40]. An important aspect of policy and professional regulation is the scope of practice, which should typically clarify roles and represent specific areas of competence for each particular health profession. Participants indicated the presence of scope of practice for various professions in the State of Qatar. Previous studies and reports have highlighted the importance of restructuring the scope of practice of health professions towards effective IPC and to remove barriers to healthcare provision. This will allow health professionals to practice within the scope of their practices and to the full extent of their professional competence without encroaching other professions' scope of practice, which will ultimately lead to effective collaborative practice [41, 42]. In addition, funding and reimbursement are macro-level aspects that can

significantly impact IPC [40, 43]. In the present study, there was a consensus that these regulatory factors play a key role in facilitating the IPC among the health professionals in primary care settings in Qatar.

Barriers
Barriers pertaining to the healthcare teams, or the micro-gear, are the lack of understanding of other professionals' scope of practice, and the lack of time. This is not different from what is reported in the literature, where lack of time and poor understanding of other health professionals ' roles were considered, besides other barriers, major hinderers for IPC in one review paper that collected multiple articles that studied the enablers and hinderers of IPC [34]. For the individual-gear barriers, health professionals identified that the hierarchy entrenched within the healthcare system contributed a major barrier to collaboration. Within the studied context, GPs are seen as the pinnacle health professional by patients. Therefore, patients are reluctant to provide information to health professionals other than the GP. This ultimately reduces the effectiveness of the healthcare system as the scope of practice of the remainder of the interprofessional team are constrained to meet patient needs. This might limit other health professionals' roles, and hence they might be less able to exchange care. This idea might go with the concept of the "patient-doctor dyad" that has been reported in the literature, where authors described that one of the hinderers of IPC is the patient's desire to be mainly seen and examined by GPs, which is often prioritized over collaborative care [44–46]. Pharmacists, in this study, described that patients also might ignore pharmacists' recommendations if it was not aligned with the GPs' recommendations. While IPC may beget IPC, participants remarked that there was difficulty bringing IPC to life in their PHCC context. Knowledge of IPC must be accompanied by a shift in organizational culture, supported by policies and performance review, led by champions, and guided by exemplars of IPC.

Two subthemes were considered under the meso-factors, which are mainly regarding the information system and the organizational culture. Our results indicate that although a health information system (HIS) is operating within the primary healthcare center (PHCC) system, however, not all members of the team use nor rely on it, to complete their duties in patient care. This fragmentation of data systems poses a threat to team unity and excludes some team members (in this context the pharmacists) from being on the same page as the rest. Efforts to merge all data subunits and enable all team members to access the HIS, can enhance work time efficiency (a micro challenge) that participants reported for pharmacists to require in order to be on the same page as the other care providers in the team and is supported

by research which stresses the benefits of a health information system which enables the participation of all staff who are directly concerned with patient care in that setting [47, 48].

In the interest of optimizing patient safety, whilst participants in this study valued the opportunity for a shared HIS to serve as a platform where errors could be recorded, our data indicates that health care team members did not feel safe enough to do so. According to Smiley and colleagues [49] the fear of being fired and subjected to judicial inquiry and prosecution make many nurses conceal errors. This aligns with our participants' reported concerns about the prevalence of "blame culture" and how this results in individuals feeling personally and professionally vulnerable. Blame culture in health care organizations is mainly associated with the approach used by management when dealing with medical errors and accidents [50, 51]. Efforts to embrace a culture that promotes transparency and accountability, and management approach which as described by Catino [52] relates the causal factors of a given event to the whole organization rather than the individual, are priorities for the PHCC organizational leadership to consider.

Furthermore, hierarchy in privileges, such as varied levels of access to professional development opportunities, threatens team unity, and in turn generates a sense where some professions feel less valued for working in their roles. Educators postulate that if individuals from different professions learn together, they will be able to more effectively work together in teams to achieve desired outcomes [53]. Integrating CPD in interprofessional decision support with quality improvement and patient safety initiatives will likely enhance the uptake and ability to sustain these educational initiatives [54]. For instance, the "Schwartz Center Rounds" in the US and UK provide a forum in which professional and nonprofessional staff across healthcare disciplines can discuss challenging psychosocial and emotional aspects of a patient's care and the impact of these challenges on the care team. These rounds do not focus solely on decision-making, but attendees report significantly enhanced appreciation of colleagues' roles and contributions, communication, and teamwork [55]. In this way, the professional learning needs can meet not only the individual profession, but also translate into opportunities for teams to problem solve together and in turn improve safer patient care.

In general, the current study results on facilitators and barriers to IPC align well with those identified by a review study by [34] that summarized the facilitators and barriers for interprofessional care in primary healthcare. Common facilitators in both studies are the lack of time and training for the health professionals, lack of understanding of others' roles, and poor communication. It is interesting to note that fears relating to professional identity were identified as a hinderer in the review; however, it was not mentioned by any HCP in the current study. This could be due to the proper understanding of the self-role of the HCP in this study. IPC enablers identified by the review were all reported in this study (i.e. communication tools, co-location of HCP, and recognition of other professionals' roles and contributions).

Strengths and limitations

One strength of this study is the use of the "Gears model" to understand facilitators and barriers at each level within the IPCTs. Identifying the facilitators and barriers at each level of the work environment makes it easier for decision-makers to identify the gaps and the points that need improvement specific for each level, and hence will help implement appropriate, and probably more efficient, interventions suitable for each level to improve IPC within the PHCC settings. The current study included a high diversity of health professionals and did not focus on certain professions, which aligns with what interprofessional work is all about. This study, as mentioned before, is a continuation of a previous quantitative study done on more than 1400 health professionals to assess their attitude toward IPC. Although the previous study showed that health professionals have a positive attitude toward IPC, which was evident by the survey, the current study examined these quantitative findings from a qualitative lens. This provided a clearer insight to ensure a comprehensive understanding of what shapes these perspectives.

Limitations of the study might include the lack of anonymity in focus groups, which might increase the social desirability. Second, although the study included multiple professions, most participants were GPs, pharmacists, or nurses. Moreover, some HCP were not present (e.g. pharmacy technicians, and physiotherapists), which could limit the generalizability of the current study to these professions.

Conclusion

The interplay between the meso, macro, micro, and individual gears showcases the importance of a multifaceted approach to interventions to amplify the successes of IPC. Policies such as data sharing and collaborative key performance indicators support the interaction between the meso and individual gears. The individual assists the macro and meso gears through communication and trust in the scope of practice of the other team members. Simultaneously, health professionals must advocate for their colleagues to patients. Patients have a direct connection to the micro and individual gears which ultimately affect the care being provided to them.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12875-024-02537-8.

Supplementary Material 1

Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

Ethics approval was obtained from the PHCC Research Committee (PHCC/RC/18/12/001) and the Qatar University Institutional Review Board (QU-IRB 1084-EA/19). All participants received information leaflet about the study and that their participation in the qualitative study would be voluntarily and will be treated confidentially. All participants signed and dated the written informed consent form. The study was carried out in accordance to the relevant guidelines and regulations.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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