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Original Research Paper

Interprofessional collaboration competency: perspectives of doctors and other healthcare professionals

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Abstract
Healthcare professionals are responsible for providing quality services, but their role is still not optimal, which can lead to medical errors. Therefore, collaborative practice is important for being able to provide effective and efficient services. This study aims to assess and compare interprofessional collaboration competencies among different healthcare professionals at PKU Muhammadiyah Gamping Hospital. This is quantitative research used an analytical observational design with a cross-sectional approach. The Instrument Interprofessional Collaborative Competency Attainment Survey (ICCAS) was distributed to 113 respondents consisting of 26 doctors, 79 nurses, and 8 pharmacists who were selected randomly using cluster sampling. Data were analyzed using multiple linear regression tests and chi-square tests. The results of the research show that the average percentage of interprofessional collaboration competency for healthcare professionals at PKU Muhammadiyah Gamping Hospital is 81.5%, with details of doctors at 77.5%, nurses at 83.0%, and pharmacists at 81.0%. The interprofessional collaboration competency domain with the highest percentage is collaboration, with 83.0%, and the lowest is roles and responsibilities, with 80.0%. Then the results of the Chi-Square statistical test obtained a significance value of 0.002 ($p < 0.05$). This shows that there are factors that challenge the realization of interprofessional collaboration, namely the perception of an imbalance in hierarchy and power between professions, as well as a lack of understanding of each other's skills and knowledge. Hospitals should implement in-house training and standard operating procedures for interprofessional collaboration, while educational institutions must evaluate and strengthen interprofessional education programs to improve patient safety and care quality.

Keywords: competency; healthcare professionals; health workers; interprofessional collaboration

1. Introduction

Hospitals serve as health services where healthcare professionals are responsible for providing quality medical services (Georgiou et al., 2021; Sunarto, 2020). However, inadequate interprofessional communication and teamwork understanding account for 70-80% of service errors (Rahayu et al., 2024). In the United States, medical errors contribute to approximately 48% of all deaths (Anderson et al., 2019), with 66% of sentinel incidents resulting from poor interprofessional communication and collaboration (Burgener, 2017). Pramesona et al. (2025) found that the rate of medical errors in Indonesia reached 64.7%. Most healthcare professionals in Indonesian hospitals do not fulfill their roles optimally, including functioning as accurate clinical decision-makers, communicating effectively, collaborating as team members, and managing conflict. Limited

interaction among health workers in several hospitals indicates that effective interprofessional collaboration has not been established in health services (Agustina et al., 2019). Doctors still dominate treatment decisions at approximately 96% (Siokal & Wahyuningsih, 2019).

Existing studies are largerly normative, focusing on educational programs or policy implementation, with limited empirical evidence examining how interprofessional collaboration competencies are perceived and practiced by different health professional groups in real clinical settings (Wei et al., 2018). Previous research has rarely provided comparative analysis between doctors and other health professional, resulting in incomplete understanding of interprofessional dynamics and their implications for patient safety and service quality (Rosen et al., 2018). This study addresses these gaps by assessing and comparing interprofessional collaboration competencies among doctors, nurses, and pharmacists at PKU Muhammadiyah Gamping Hospital. The novelty lies in its comparative and integrative approach, examining and contrasting perspectives of doctors and various healthcare professionals within a single clinical setting. This study aims to assess and compares interprofessional collaboration competencies among different healthcare professionals at PKU Muhammadiyah Gamping Hospital.

2. Research Methods

This is a quantitative research used an analytical observational design with a cross sectional approach. This research was conducted at the PKU Muhammadiyah Gamping Hospital from January - March 2024. The population comprised 695 healthcare professionals at PKU Muhammadiyah Gamping Hospital. The study sample included doctors, nurses, and pharmacists who met the inclusion and exclusion criteria. A cluster sampling technique with proportional allocation based on professional groups was used to determine the sample size. The total sample consisted of 113 healthcare professionals (26 doctors, 79 nurses, and 8 pharmacists).

The perspective of healthcare professionals towards interprofessional collaboration was measured using the Interprofessional Collaborative Competency Attainment Survey (ICCAS) questionnaire. The original version of the ICCAS demonstrated high reliability with a Cronbach's alpha of 0.96 (Schmitz et al., 2017). The Indonesian version of the ICCAS also demonstrated that the instrument is valid and reliable, with validity coefficients ranging from 0.640 to 0.868 and a Cronbach's alpha of 0.958 (Maharani et al., 2022).

Data collection was conducted after obtaining ethical approval from the Ethics Committee of PKU Muhammadiyah Gamping Hospital (Approval No. 079/KEP-PKU/IV/2023). The questionnaire was distributed to doctors and other health professional at PKU Muhammadiyah Gamping Hospital using a self-administered format. Participants were informed about the study and provided informed consent prior to participation. Results of questionnaire data collection ICCAS processed using the SPSS program. The data obtained was converted into scores with 4 scales because it used a Likert scale of 1–4. The percentage of interprofessional collaboration competence was obtained using a rating scale equation. Then the division of interprofessional collaboration competency categories was obtained from the percentage range of research results, namely 100% divided into 4 categories according to a Likert scale of 1–4.

Descriptive statistics were used to summarize the data. Normality was assessed using the Kolmogorov-Smirnov test, and data were found to be normally distributed. A multiple linear regression test was carried out to examine the influence of gender, age, and work unit factors on interprofessional collaboration competency. Apart from the multiple linear regression test, an R^2 test (coefficient of determination) was carried out to measure how far the factors of gender, age, and work unit influence interprofessional collaboration competency. An F-test (ANOVA) was also carried out to determine whether there was an influence of the factors gender, age, and work unit on

interprofessional collaboration competence. A chi-square test was applied to determine whether there are significant or insignificant differences between the independent and dependent variables.

3. Results and Discussion

3.1.Results

On this research obtained 113 respondents. Most respondents were female (76.1%) and aged 24 – 35 years (62.8%). The largest distribution of work units is IGD (15%) in the emergency work unit, while in the non-emergency work unit it is inpatient (54.9%). The majority of respondents' work period was more than 5 years (77%). The distribution of respondent characteristics is described in Table 1.

Table 1. Respondent Characteristics

Characteristics	Frequency	Percentage (%)
Profession		
Doctor	26	23
Pharmacist	8	7.1
Nurse	79	69.9
Gender		
Man	27	23.9
Woman	86	76.1
Age		
24 – 35 Years	71	62.8
36 – 48 Years	30	26.6
49 – 61 Years	12	10.6
Work Unit		
Emergency		
IGD	17	15
Operating room	5	4.5
ICU	4	3.5
Non-Emergency		
Inpatient	62	54.9
Specialist Polyclinic	17	15
Outpatient Pharmacy	2	1.8
Inpatient Pharmacy	4	3.5
Years of service		
< 2 Years	3	2.7
2 Years - ≤ 5 Years	23	20.3
> 5 Years	87	77

Based on Table 2, it is known that the domain with the highest percentage value is the collaboration domain (83.5%) while the lowest percentage value is the roles and responsibilities domain (80%). Then from the 20 items it is known that the item "Can understand that the skills and knowledge of other professions can complement and can also overlap with one's profession" is the item with the lowest percentage, namely 78.5%, while the highest percentage value of 84.5% was obtained for 2 items namely the items “Practices effective communication between interprofessional team members” and “Can work effectively with interprofessional team members to improve care”

Table 2. Interprofessional Collaboration Competencies in each Domain

No.	Domain	Percentage (%)
1.	**Communication**	**82.0**
	Practice effective communication between interprofessional team members	84.5
	Actively listens to the ideas and concerns of interprofessional team members	81.3
	Express ideas and concerns without judgment	81.8
	Provides constructive feedback to interprofessional team members	81.8
	Express ideas and concerns clearly and concisely	81.5
2.	**Collaboration**	**83.5**
	Choose help from other professions in this team to solve problems related to patients	83.5
	Can work effectively with interprofessional team members to improve care	84.5
	Can learn from other professions in this team to improve health services	82.8
3.	**Roles and Responsibilities**	**80.0**
	Can identify, explain the roles, responsibilities and expertise as well as the contribution of each profession to the interprofessional team	81.3
	Can be held accountable for their contributions to the interprofessional team	80.5
	Can find out the abilities and contributions of other professions in interprofessional teams	79.8
	Can understand that the skills and knowledge of other professions can complement and can also overlap with their profession	78.5
4.	**Patient and Family Centered Collaborative**	**81.8**
	May use a patient-centered, interprofessional healthcare approach to assess health problems	80.5
	Can use an interprofessional approach with patients in providing complete care	81.0
	Can include patient/family in decision making.	83.5
5.	**Conflict Management and Resolution**	**80.8**
	Can actively listen to the perspectives of other professions	80.8
	Can consider the idea of other professions	81.0
	Can resolve conflicts in interprofessional teams with full respect and appreciation	81.8
	May develop effective treatment plans with interprofessional team members	80.3
	Can discuss responsibilities with other professions when dealing with overlapping healthcare practices	79.8
Interprofessional Collaboration Competencies		**81.5**

Table 3 show the results of the multiple linear regression equation: $\hat{Y}=3.223+0.000X1-0.080X2+0.094X3+e$. The constant value a = 3.223. A positive sign means that it shows a unidirectional influence between the independent variable and the dependent variable. This shows that if the variables of gender, age and work unit are not included in the research, the competency of interprofessional collaboration at PKU Muhammadiyah Gampung Hospital still increases by 3.223%. The coefficient value b1 = 0.000 means that whatever happens to the gender variable does not affect interprofessional collaboration competence. The coefficient value b2 = -0.080, meaning that if the age variable increases by 1%, conversely, interprofessional collaboration competence will decrease by 0.080%.The coefficient value b3 = 0.094 means that if the work unit variable increases by 1%, interprofessional collaboration competence will increase by 0.094%.

Table 3. Multiple Linear Regression Test Results

Model	Standardized Coefficients	t	p value
(Constant)	3.223	22.095	0.000
Gender	0.000	0.000	1.000

Model	Standardized Coefficients	t	p value
Age	-0.080	-0.827	0.410
Work unit	0.094	0.943	0.348

Based on Table 4, it is known that the significance value of R^2 is 0.0204, indicating that the proportion of influence of gender, age and work unit on interprofessional collaboration competence is 2.04%. Interprofessional collaboration competency at PKU Muhammadiyah Gamping Hospital is influenced by gender, age and work unit by 2.04%, while the remaining 97.96% is influenced by other variables.

Table 4. R^2 Test Results

Model	R	R2
1	0.143	0.0204

Table 5 shows a significance value of 0.612 > 0.05, it can be concluded that gender, age and work unit together do not have a significant effect on interprofessional collaboration competence

Table 5. F Test Results (ANOVA)

Model	F	p value
Regression	.607	.612

The percentage value of interprofessional collaboration competence from doctors (77.25%) is the lowest and the highest value is the percentage value of interprofessional collaboration competence from nurses (83%) (See Figure 1).

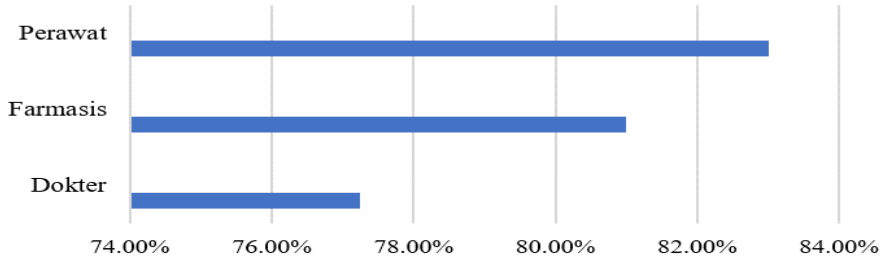

Figure 1. Graph of Interprofessional Collaboration Competency Perception Compared to each Profession

Table 6 show a significance value of 0.002 < 0.05, it can be interpreted that "There are different perspectives on the competency of interprofessional collaboration between each health worker in patient care at PKU Muhammadiyah Gamping Hospital

Table 6. Chi Square Test Results

	Value	p value
Pearson Chi-Square	80.835	.002
N	113	

3.2.Discussion

The interprofessional collaboration competency score in this study was 81.5%, categorized as very good. This finding aligns with El-Awaisi et al. (2021), who reported that healthcare professionals demonstrate positive attitudes and readiness toward interprofessional collaborative practices, particularly in primary care settings. We believe this consistency reflects the growing awareness

among healthcare professionals globally about the importance of collaborative practice for patient outcomes. Similarly, Dahlke et al. (2020) highlighted healthcare professionals' perspectives on the importance of inter-professional collaboration. However, this study enhaces previous research in several ways. Previous research primarily examined attitudes, perceptions, or readiness (Dahlke et al., 2020; El-Awaisi et al., 2021), this study assessed actual interprofessional collaboration competencies using the validated ICCAS instrument. Measuring actual competency rather than just attitudes provides more actionable insights for healthcare managers. Moreover, while earlier research was performed in wider or varied healthcare environments, this research focused on collaboration competency within a single hospital setting in Indonesia, offering more context-specific insights that may differ from Western healthcare systems. The research also highlights variations across professional groups, which were not extensively explored in previous studies, thereby providing a more nuanced understanding of interprofessional collaboration in clinical practice.

The domain of Interprofessional Collaboration Competencies with the lowest mean score was roles and responsibilities (80.0%). We consider these findings quite concerning because an understanding of roles and responsibilities is the foundation of effective collaboration. This competency is crucial for helping health workers understand their own tasks and those of others, enabling them to effectively utilize each other's knowledge and skills (Vaseghi et al., 2022). Several barriers exist in this area including obstacles can occur due to cultural differences, status differences, gender differences, others' personalities, and considering doctors as superior and nurses as subordinate, thereby creating a paradigm of unequal nurse-doctor relationships (Bueter & Jukola, 2025; Dib & Belrhiti, 2025; Etherington et al., 2021). Our study suggests that these hierarchical dynamics persist in Indonesian healthcare settings. Wei et al. (2018) similarly found that doctors remain dominant, with limited equality between doctors and nurses, where nurses primarily follow doctors' orders. Educational differences also obstruct effective interprofessional collaborative practice. Therefore, efforts to understand team members' assumptions, values, and discipline-specific cultures are essential for strengthening collaborative relationships through shared understanding of of of the value brought by the competencies of each team member (Slim & Reuter-Yuill, 2021). Addressing these hierarchical barriers requires intentional leadership intervention and organizational culture change.

Among the 20 ICCAS items, the lowest mean score was 78.5% for "Can understand that the skills and knowledge of other professions can complement and can also overlap with one's profession," which belongs to the roles and responsibilities domain. This item requires particular attention, as health workers have historically focused primarily on their own roles, leading to overlapping actions. This indicates deeply rooted professional barriers that require systematic intervention. Ensuring one's competence while recognizing limitations in skills, knowledge, and abilities, along with increase understanding of other team members' roles and responsibilities, is critical for better future interprofessional collaboration (LaFrance et al., 2019).

Interprofessional collaboration competency consist of five domains: communication, collaboration, roles and responsibilities, patient/family-centered collaborative services, and conflict management and resolution. Maharani et al., (2022) noted that obstacles may arise when applying these domains in practice. Conflict among health workers can hinder interprofessional collaborative practice (Adigwe et al., 2023; Broukhim et al., 2019). Addressing such obstacles requires conflict resolution strategies that outline approaches to problem-solving. Problem-solving is not solely one party's responsibility but a shared commitment to providing better health services. We emphasize that conflict, when managed constructively, can actually strengthen collaborative relationships rather than weaken them.

Gender, age, and work unit did not significantly influence interprofessional collaboration competency, either individually or collectively. These three factors accounted for only 2.04% of the variance in interprofessional collaboration competency, while 97.96% was influenced by other variables. This finding surprised us, as we initially expected demographic factors to play a more substantial role. Kanno et al. (2023) identified several factors influencing interprofessional collaboration, including time allocated for formal communication, social interaction and feedback between professionals, leadership characteristics, and participation in decision-making. Suratman et al. (2023) categorized influencing factors into personal factors (belief in collaboration, flexibility, mutual trust, teamwork, and communication skills) and situational factors (leadership, empowerment, work systems, organizational structures, resource conditions, and political dynamics). Based on our findings, we suggest that organizational and interpersonal factors are far more influential than demographic characteristics, which has important implications for intervention design.

There are different perspectives on the competency of interprofessional collaboration between doctors and other healthcare professionals in patient care at PKU Muhammadiyah Gamping Hospital. These differences can be explained by professional role variations. From doctors' perspectives, interprofessional collaboration is often associated with leadership in clinical decision-making, coordination of patient management, and responsibility for final treatment decisions. Meanwhile, other healthcare professionals (such as nurses and allied healthcare professionals) tend to emphasize teamwork, communication, information sharing, and active participation in patient care processes. These differences reflect variations in roles and responsibilities within healthcare teams, influencing how interprofessional collaboration competency is perceived and practiced in clinical setting. We interpret this as reflecting different professional socialization experiences rather than lack of willingness to collaborate. Bollen et al. (2019) found that collaboration between general practitioners and pharmacists is positively influenced by adequate resources, close proximity, clear and regular communication, and prior collaborative experience with mutual understanding. Challenges include perceived hierarchical and power imbalances between professions and limited understanding of each other's skills and knowledge.

Doctors had the lowest interprofessional collaboration competency percentage (77.25%), while nurses and pharmacists scored 83% and 81%, respectively. Although doctors' competency is the lowest, it still falls within the very good category. This finding particularly noteworthy, as it challenges the common assumption that doctors would naturally excel in collaboration due to their leadership roles. Several factors may explain this finding. Previous studies indicate that hierarchical structures in healthcare settings, where physicians hold dominant decision-making authority, can affect collaborative dynamics and reduce perceived equality among professionals (Dib & Belrhiti, 2025; Etherington et al., 2021; Wei et al., 2018). Doctors' dominant position may paradoxically reduce their perceived need to develop collaborative competency. Unclear role delineation and overlapping responsibilities may also hinder effective teamwork and reduce collaboration efficiency (Muusse et al., 2023). Communication quality, including information sharing and interaction frequency, is a critical determinant of interprofessional collaboration competency (L. Gleeson et al., 2023). Furthermore, differences in professional education and training backgrounds shape varying perceptions and approaches to patient care, influencing collaborative behavior (Rosen et al., 2018). Medical education should place greater emphasis on collaborative skills alongside clinical expertise.

Despite these obstacles, interprofessional collaborative practice is essential for improving patient safety rates (Hastami et al., 2025). Consistent with previous studies, continuous efforts are needed to build perceptions of interprofessional education (IPE) to improve IPE competence and foster effective collaboration (He et al., 2024; Zaher et al., 2022). IPE should begin early in professional education rather than being introduced later in clinical practice. Schulz & Wirtz (2023) noted that initial

experiences with interprofessional collaboration can increase collaboration frequency, facilitate early socialization processes, and prevent potential long-term conflicts arising from attitude differences. By interacting between patients and healthcare professional, they can gather information related to the patient's health accurately, then the choice of therapy and education given to patients can be carried out effectively. Kurniasih et al. (2023) found that outpatient breast cancer patients perceived interprofessional collaboration positively, though several obstacles must be overcome for effective implementation in care settings. We believe patient perspectives provide important validation for the importance of interprofessional collaboration.

To improve collaboration across primary health care settings, a combination of strategies and interventions is needed (Sirimsi et al., 2022). Long-term development can be achieved by creating a future competency framework involving various stakeholders, including other health professions (Lepre et al., 2021). Efforts to improve interprofessional collaboration practices include integrating interprofessional competencies into educational curricula, which is crucial for forming effective interprofessional collaboration (Vaseghi et al., 2022). Based on our findings, targeted interventions focusing on roles and responsibilities, addressing hierarchical barriers, and strengthening communication processes within healthcare teams are recommended.

4. Conclusion

This study found that interprofessional collaboration competency among doctors, nurses, and pharmacists at PKU Muhammadiyah Gamping Hospital is 81.5%, categorized as very good. By profession, nurses scored highest (83%), followed by pharmacists (81%), while doctors scored lowest (77.25%). Work unit, age, and gender showed no significant influence on interprofessional collaboration competency, either individually or collectively ($p>0.05$). However, significant differences in perspectives on interprofessional collaboration competency exist among health professional groups in patient care at PKU Muhammadiyah Gamping Hospital ($p < 0.05$).

These findings have important implications for healthcare practice and policy. Hospital management should prioritize In-House Training (IHT) programs and develop Standard Operating Procedures (SOPs) for interprofessional collaboration to address hierarchical barriers and strengthen role clarity, thereby creating optimal, effective collaboration that supports improved patient safety culture. Educational institutions should evaluate and integrate Interprofessional Education (IPE) throughout preclinical and professional curricula. For future research, we recommend investigating correlations between educational history, workload, work motivation, welfare factors, and interprofessional collaboration competency among healthcare professionals, alongside qualitative studies exploring healthcare professionals' perspectives on interprofessional collaboration competencies.

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