

# Inter-professional Team Collaboration among Health Care Team Members in Critical Care Units: Targeting Cooperating, Coordinating, and Partnership in Najaf Governorate, Iraq

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## ABSTRACT

**Background:** Inter-professional collaboration (IPC) among the health care team in critical care units is essential for delivering high-quality and safe care for patients and getting the desired health care outcome for patients. In Critical Care Units (ICU and CCU), an IPC approach comprises cooperation, coordination, and partnership among healthcare specialists from different disciplines to deliver thorough and patient-centred care to critically ill patients. **Objective:** Determining the level of IPC among health care team members in ICUs and CCUs. **Methods:** A descriptive cross-sectional design that targeted (n = 364) nurses, physicians, and clinical pharmacists in ICUs and CCUs, The Assessment of Interprofessional Team Collaboration Scale II (AITCS-II), was employed in this study. **Results:** The IPC level among health care team members in ICUs and CCUs was substandard. The partnership domain was weak with a mean score (MS) of 2.31, cooperation was moderate with a MS of 2.51, and coordination was weak with a MS of 2.17. The overall ICP was poor with a MS of 2.33. **Conclusion:** As hypothesised, the overall IPC covering all three main domains (partnership, cooperation, and coordination) among health care team members in critical care units is substandard. It is imperative for Iraqi nursing colleges to prioritise educating their students on inter-professional collaboration and its significance in delivering quality patient care. Instilling a clear understanding of their roles in healthcare among students is vital to cultivating a culture of teamwork and its advantageous outcomes for both patients and healthcare teams. Nurses should engage in specialised workshops that focus on professional collaboration within healthcare settings to reinforce and build upon their academic knowledge of their crucial role(s). This may help in improving their inter-professional teamwork, leading to better patient care. Consequently, inter-professional Team Collaboration among Health Care Team Members in Critical Care Units fosters a supportive work environment marked by harmony and devoid of conflicts that could harm patient well-being.

**Keywords:** *Interprofessional Collaboration; Medical Coordination; Multidisciplinary Team; Partnership Practice*

## INTRODUCTION

Nursing's core aspect, according to the International Council of Nurses (ICN, 2018), is delivering autonomous and collaborative care to persons of all ages, families, groups, and societies, both the ill and the healthy, and in different circumstances. Nursing encompasses the promotion of health, the protection from disease, and the care of the healthy, patient, helpless, and dying (Jissir & Hassan, 2017; Hattab, Kadhim & Abdulwahhab, 2021; Gutenbrunner *et al.*, 2022; Majeed *et al.*, 2023).

One of the most advanced roles of nurses in today's health care system is practicing critical care nursing. Critical Care nurses in ICU and CCU deliver care to acutely and life-threatening patients in a highly technical and continuing monitoring setting (Kasaoka, 2017; AL-Fayyadh, 2018). Aiming basically at providing the maximum level of nursing care to patients who suffer from critical health problems with varying demands that

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need comprehensive management protocols and therapies (Morton & Thurman, 2023). Critical care nurses are challenged by global encounters, including but not limited to the unprecedented global health crisis (COVID-19) (Ulrich, Rushton & Grady, 2020). Executing all the aforementioned challenging and complex roles of critical care nurses cannot be completed unless practiced under the umbrella of collaboration with other members of the health care team (Nyhagen *et al.*, 2023). When many health professions work together to provide health care to the patient, this is called inter-professional team collaboration and includes partnership, cooperation, and coordination, through which good and safe health care is provided (Reeves *et al.*, 2017). Health care coordination is one of the priorities of health care plans for critically ill patients, as it leads to correct decision-making and, thus, high-quality care for the patient (Dawood & Hassan, 2019). An increase in studies suggests that gaps in collaboration and communication between healthcare professionals have a negative effect on both the quality of care delivered and the expected care outcome for patients (Schot, Tummer & Noordegraaf, 2020; O'Keefe *et al.*, 2020; Guraya & Barr, 2018). To provide the optimum level of nursing care, nurses should execute their role(s) in collaborative circumstances that need consistent collaboration with other health care providers (Hargreaves & O'Connor, 2018). Collaboration is one of the several shapes these interactions may take (Dwivedi *et al.*, 2022). Especially in the field of health professions. The meaning of "collaboration" refers to a group action that is directed toward specific objectives in an environment of cooperation and trust (Castañer & Oliveira, 2020). Understanding inter-professional collaboration is crucial as the increasing complexity of health problems forces professionals to rely on one another (Bookey-Bassett *et al.*, 2017).

High-quality care is closely related to patient trust and satisfaction, as the majority of patients reported that the good care provided to them was at the required level and that the patients were satisfied with it (Taha & Jabbar, 2017; Jassim & Khalifa, 2018). Collaboration within different professions in the healthcare industry is essential for ensuring that patient care teams are effective and able to deliver the greatest possible standard of care to their patients (Morley & Cashell, 2017). Regardless of the setting or type of healthcare, teamwork and cooperative practice are defined as the processes of coordination, cooperation, and shared decision-making between the patient and the healthcare provider in all parts of treatment, planning, and implementation in order to accomplish specific objective (s) (Maghsoudi *et al.*, 2020; Hussein, 2022). The WHO (2018) framework for action on interprofessional cooperation suggests that specialists should make a genuine effort to favourably improve patient care while maintaining a healthy balance of autonomy and independence and preserving the practitioners' interests in their particular field of expertise. Recent studies on interdisciplinary cooperation show that not all of those criteria are present, which results in an insufficient amount of teamwork, a lack of inter-professional education, collaboration practice, are reasons of task confusion, and a lack of awareness of the responsibilities of particular professions in health care institutions (Liu, Xu & Li, 2022; Sillero Sillero & Buil, 2021; Degu *et al.*, 2023). In developed and developing health care systems around the globe, providing healthcare is a collaborative endeavour that involves a wide variety of professionals, such as registered nurses (RN), professional therapists, physicians, speech language pathologists, physical therapists, and more (Carter, 2019). Thus, all health care team members must be aware of one another's responsibilities in order to achieve optimal efficiency and teamwork in a team-based health care strategy (Lacerenza *et al.*, 2018). Despite the necessity of inter-professional collaboration in providing critical health care, there is a lack of research on interprofessional collaboration, especially in ICUs and CCUs together at the global level. In addition, the complete absence of this type of research at the national level constitutes a research gap that must be filled. The purpose of the study is to determine the status of inter-professional team collaboration among health care team members, including nurses, physicians, and clinical pharmacists, in critical care.

Al Khalfan *et al.* (2021) stated that working together as teamwork in the ICU is effective in decreasing the time of Invasive Mechanical Ventilation (IMV) and is also effective in successfully removing the endotracheal tube in 95.3% of patients. The application of teamwork in the ICU shows significant results in reducing the mortality rate within 1 year from 37.8% to 14.3% (Na *et al.*, 2018). The inter-professional health care team collaboration highlighted an important result in reducing mortality rate and increasing survival rate in patients with lung cancer that were treated by teamwork in the ICU of 33.6%, compared to those who were treated by traditional care in the ICU, who had a survival rate of 23.0% (Bilfinger *et al.*, 2018). There is a lack of evidence about interprofessional collaboration in the specific setting of medical emergencies in intensive care units, despite the fact that there is still a significant focus on interprofessional collaboration in nursing research. This

is of the utmost importance as the failure of interprofessional collaboration during times of medical emergency can have severe repercussions for the safety of patients (Lin, Chan & Chan, 2020). In addition, much of the research has specifically touched on collaboration between the physician and the nurse, collaboration between the physician and the pharmacist, but it is surprising that there is a scarcity of research on collaboration among the physician, pharmacist and nurse in intensive care units in particular.

## METHODOLOGY

To investigate the inter-professional team collaboration that includes cooperating, coordinating, and partnering among health care team members in ICUs and CCUs. A descriptive cross-sectional design was chosen in the current study; this research design is consistent with the aforementioned study's main goals. Because in cross-sectional research, the researcher observes variables without influencing them (Maier *et al.*, 2023).

The study was conducted for eight hospitals in Najaf Governorate in the Republic of Iraq. The study targeted nurses, pharmacists, and physicians who work in ICUs and CCUs. A nonprobability, purposive sampling technique was used in the study. The data collection phase started from 2<sup>nd</sup> to 30<sup>th</sup> January, 2024. The eligibility criteria for the study included health care team members, targeting nurses, physicians, and pharmacists who accepted to engage in the study and were working in ICUs and CCUs in the aforementioned eight hospitals. The exclusion criteria of the study included nurses, physicians, and pharmacists'; subjects who worked in places other than intensive care units were also excluded. Additionally, nurses who hold a secondary school degree in nursing were also excluded. The target population consisted of 500 subjects who were working ICUs and CCUs during the data collection phase. The 218 subjects selected represented the minimum sample size when using the Raosoft© (2004) calculator. 100 subjects were excluded, and 36 failed to complete the entire questionnaire filling. Thus, 364 subjects were the accessible population: nurses (n = 237), pharmacists (n = 71), and physicians (n=51). The calculated response rate was 91%. It was computed by dividing the number of valid responses by the total number of responses requested. The number of valid responses was 364, and the total number of responses requested was 400.  $364/400 = 0.91$ .

AITCS-II is an instrument that is prepared to measure the IPC among team members. It contains 23 statements that consider features of IPC (how a team works and acts) (Orchard *et al.*, 2018). It is the instrument used in the study to authenticate the study hypothesis by measuring the IPC among health care providers in critical care units. Data collection: the study participants were accessed by directly distributing the study questionnaire to the participants who were included in the study, using a self-report approach. Data analysis: Data were entered into the IBM-SPSS, version (19), software program and analysed using descriptive statistics.

The back-to-back translation process started after obtaining permission from the corresponding author to test the psychometric properties of the Interprofessional Team Collaboration Scale when translated into Arabic. The instrument was translated into an Arabic version. The Arabic version was sent to two bilingual experts in both fields of professional nursing and English/Arabic languages, whose original language was Arabic. Subsequently, the instrument was translated back from the Arabic version to the English version, which was sent to two bilingual experts in both fields of professional nursing and English/Arabic languages, whose original language was English. Finally, the agreed-upon version was approved by all experts.

The reliability and validity of the research instrument were then assessed. The Relevance Ratings on the AITCS-II Arabic version by eight Experts CVI for this study were 0.94, indicating excellent content validity level of the Arabic version of AITCS-II. The research instrument's reliability had been robustly evaluated through the IBM Statistical Package for the Social Sciences (SPSS) software by applying Cronbach's alpha ( $\alpha$ ) to the AITCS-II, which included three domains containing 23 items and showed an excellent reliability  $\alpha$ , =0.975, of the AITCS-II-Arabic version.

## Ethical Consideration

The study received Ethical Approval from Ministry of Planning (Central Statistical Organization) with reference number 10241 on 12<sup>th</sup> December, 2023.

**RESULTS**

**Table 1: Descriptive Statistical Presentation of the Subjects' Sociodemographic Characteristics**

Demographic Data	Rating and Interval	f	%
Sex	Male	192	52.7
	Female	172	47.3
Age (Years)	≤ 24	59	16.2
	25 - 30	230	63.2
	31+	75	20.6
Work shift	Morning shift 8hrs	110	30.2
	Night shift 12hrs	205	56.3
	Night shift 18hrs or more	49	13.5
Educational Level	Diploma	101	27.7
	Bachelor's degree	234	64.3
	Master's Degree	8	2.2
	Board Certified Degree	21	5.8
Certificate Source	Inside Iraq	359	98.6
	Outside Iraq	5	1.4
Specialization	Nurse	237	65.1
	Pharmacist	71	19.5
	Physician	56	15.4

Table 1 shows that the dominant percentage of study sample (52.7 %) are males, (63.2%) are within 25-30 years old, and (56.3%) work in the night shift (12 hours). Also, the study reveals that (64.3%) of study participants had a bachelor's degree, (98.6%) of them obtained it from inside Iraq, and (65.1%) samples of nurses' participants in the study.

**Table 2: The Overall Assessment of the Inter-Professional Team Partnership Domain among Health Care Team Members**

Levels	f	%	MS	Assessment
Poor	228	62.6	2.31	Poor
Moderate	93	25.5		
Good	43	11.8		
Total	364	100.0		

f: frequency; MS: Mean Score; Poor: MS = 1 – 2.33; Moderate: MS = 2.34 – 3.66; Good: MS = 3.67- 5.

Table 2 reveals that the overall inter-professional team partnership assessment level among health care team members is poor at a mean score equal to 2.31.

**Table 3: The Overall Assessment of the Inter-Professional Team Cooperation among Health Care Team Members**

Levels	f	%	MS	Assessment
Poor	207	56.9	2.51	Moderate
Moderate	95	26.1		
Good	62	17.0		
Total	364	100.0		

f: frequency; MS: Mean Scores; Poor: MS = 1 – 2.33; Moderate: MS = 2.34 – 3.66; Good: Ms = 3.67- 5.

Table 3 shows that the overall inter-professional team cooperation among health care team members is moderate at a mean score equal to 2.51.

**Table 4: The Overall Assessment of the Inter-Professional Team Coordination among Health Care Team Members**

Levels	f	%	MS	Assessment
Poor	240	65.9	2.17	Poor
Moderate	91	25.0		
Good	33	9.1		
Total	364	100.0		

f: frequency; MS: Mean of Scores; Poor: MS = 1 – 2.33; Moderate: MS = 2.34 – 3.66; Good: Ms = 3.67- 5.

Table 4 reveals that the overall inter-professional team coordination among health care team members is poor at a mean score equal to 2.17.

**Table 5: The Overall Assessment of the Inter-Professional Team Collaboration among Health Care Team Members**

Levels	f	%	Ms	Assessment
Poor	223	61.3	2.33	Poor
Moderate	97	26.6		
Good	44	12.1		
Total	364	100.0		

f: frequency; MS = 1-2.33; Moderate: MS = 2.34 – 3.66; Good: MS = 3.67- 5

Table 5 shows that the overall interprofessional team collaboration covering all three main domains (partnership, cooperation, and coordination) among health care team members is poor, with a mean score equal to 2.33.

## DISCUSSION

The current study has shown that the mean of scores of interprofessional team partnership is 2.31, illustrated in table (2), indicating weak level. Conversely, a higher score was recorded by Mäki-Asiala, Kaakinen and Polkki (2022), who conducted a study to investigate the opinions of health care providers about three domains of IPC to pain management in newborn critical care. The authors discovered that partnerships among health care providers were at MS = 3.82 and standard deviation = 0.68, indicating a moderate level of partnership among health care team members. It seems that most participants in the current study did not have a positive direction toward working as a team, so most of them do not perform continuous communication with each other to discuss patient care. This may be underrated when compared to another study conducted by Pun *et al.* (2022) to outline opinions about good work atmosphere and teamwork in ICUs and evaluate whether opinions differ depending on the profession. The authors discover that the domains that have highest rated "partnership/shared decision-making" MS ± SD: 4.00 ± 0.63.

The current study has also shown that the mean of scores of interprofessional team cooperation is 2.51, as illustrated in table (3), indicating a moderate level; higher scores were recorded by Mäki-Asiala, Kaakinen and Polkki (2022), who found that the mean scores for the collaboration were MS = 3.95, SD = 0.54. It seems that most participants in the current study did not share power with each other, so most of them do not perform continuous communication with each other to discuss patient care; Additionally, when the health care team decides the course of care, the team members disregard the preferences of their patients. In a recent study, it was discovered that there was a difference in healthcare providers' perceptions about family involvement in ICP, despite their respect and estimation for each other as professionals and also their preparedness to cooperate (Mäki-Asiala, Kaakinen & Polkki, 2022). Kitto *et al.* (2015) determined many health professionals' causes for not stimulating the inter-professional team cooperation, including: The challenges that hinder communication between health care professions are the unique decision-making process by physicians, and the obstacles that nursing faces due to the hierarchy of the nursing profession all hinder decision-making. Moreover, when health professionals have difficulties with interprofessional communication, the health professions turn to a rapid response system called the as a temporary solution.

The current study has shown that the mean of scores of interprofessional team coordination is 2.17, as illustrated in table (4), AITCS-II coordination domain, indicating a poor level. Similar results were obtained by Jepkosgei *et al.* (2022), who found weak coordination and suboptimal interprofessional collaboration. The proactive problems that influence team standards, relationships, and team leadership could be the reason for this finding. However, this finding may disagree with the results obtained by Mäki-Asiala, Kaakinen and Polkki (2022), who found that the dominant percentage of the interprofessional team has moderate to good coordination. Kruser *et al.* (2023) reported that when team members confess each other as credible sources of valued knowledge, the coordination becomes successful. The complicated nursing-medical division of labour in the workplace and the interpersonal connections that can only be advanced by experience are essential requirements for achieving inter-professional coordination, according to Wise *et al.* (2022). Improving

patient safety and quality of care, decreasing replicating of work, and improving care coordination all depend on interprofessional collaboration. Additionally, it could lead to good job satisfaction and well-being for staff members, whereas poor interprofessional collaboration is associated with increased rates of patient dangerous events, medical errors, and delayed care (Jepkosgei *et al.*, 2022). Nancarrow *et al.* (2013) recorded 10 features below that are what make good interprofessional coordination: clear vision, quality outcome-driven care, respect and clarity of roles, learning and evolution, proper procedures and sources, combining the appropriate skill and good work environment of the team, correct leadership and management qualities, effective methods of communication, and individual advantages.

The current study has also shown that the overall mean of scores of interprofessional team collaboration is 2.33 AITCS-II-all domains, as illustrated in table (5), indicating an overall poor assessment; this may be a lower rate when compared with other studies; Mäki-Asiala, Kaakinen and Polkki (2022) observed that the degree of interprofessional collaboration pertaining to pain treatment in neonatal intensive care in the participating Finnish hospitals can be categorised as "moving towards collaboration" based on the participants' answers to the AITCS-II. Interprofessional collaboration is the process by which two or more professions collaborate to accomplish shared objectives. It is frequently employed to address a wide range of complicated topics and difficulties. Chua *et al.* (2022) performed a qualitative study involving 12 enrolled nurses and 11 registered nurses in Singapore using semi-structured interviews, and the authors found that there is a poor collaborative relationship between enrolled nurses and registered nurses, which occasionally resulted in impeded identification and attending to ward patients who were deteriorating. In order to promote successful interprofessional collaborative practice, it has been suggested that prelicensure nursing programs and the workplace require intra-professional learning opportunities.

In order to improve interprofessional collaboration and provide continuing education on nursing and other teamwork skills and competencies, nurse managers and educators play a key role. (Mink *et al.*, 2021). Chua *et al.* (2020) found that the process of increasing care for patients who are deteriorating and providing safe care for them is related to collaboration physician-nurse and collaboration at different levels of physicians, and this collaboration depends basically on educational and organisational changes. Woolforde *et al.* (2022) suggested the promote attitude toward collaboration can be enhanced by nurse-led interprofessional precepting.

Recent literature notes one of the obstacles that limit the formation of collaborative teams between physicians and nurses is the organisational structure (Tan, Zhou & Kelly, 2017; Elsous, Radwan & Mohsen, 2017; Wang *et al.*, 2018; Rawlinson *et al.*, 2021; Vatn & Dahl, 2022; Shi *et al.*, 2023; Kobrai-Abkenar, Salimi & Pourghane, 2024). To determine the issues and improve solutions, the nurse leaders must be full partners in the healthcare environment in cooperation with other healthcare professionals (Clark & Greenawald, 2013). Also, medical dominance and workload are among the reasons that hinder inter-professional collaboration among health care team members (Tang *et al.*, 2018).

The findings of the current study agree with the null hypothesis, as it was assumed that there is no inter-professional team collaboration among members of the health care team in intensive care units. Therefore, the researcher accepted the null hypothesis and rejected the alternative hypothesis. The current study has showed that the mean scores of the interprofessional team partnership domain are poor with a MS = 2.31, the interprofessional team cooperation domain is moderate with a MS = 2.51, and interprofessional team coordination is 2.17. As well as the overall mean of scores of interprofessional team collaboration is poor with a MS=2.33 AITCS-II-all domains. Moreover, the current study agreed with many studies and disagreed with other studies. The difference in these studies from the current study may be attributed to the differences in sample size and health professions included in these studies, in addition to the cultural differences between the Iraqi hospital environment and that in other studies. It is imperative for Iraqi nursing colleges to prioritise educating their students on inter-professional collaboration and its significance in delivering quality patient care. Instilling a clear understanding of their roles in healthcare among students is vital in cultivating a culture of teamwork and its advantageous outcomes for both patients and healthcare teams. In addition, nurses should engage in specialised workshops that focus on professional collaboration within healthcare settings to

reinforce and build upon their academic knowledge of their crucial role(s). This may help in improving their inter-professional teamwork, leading to better patient care. Consequently, it fosters a supportive work environment marked by harmony and devoid of conflicts that could harm patient well-being.

### **Limitation**

There were just some barriers that existed during the course of the study, including, but not limited to, the critical care units, which are places that deal with critically ill patients. As a result, the health care staff may leave the questionnaire unfinished, responding to life-threatening patients' situations such as cardiopulmonary resuscitation, ventricular Tachycardia and other situations. When the critical care staff return after dealing with these cases, all were tired; therefore, the critical care staff may not complete filling out the questionnaire. This had increased the discarded forms. Additionally, this research was conducted in one Iraqi governorate, which could limit the generalisability of the findings to a larger population. The study may have had a small sample size, which could limit the generalisability of the findings to a larger population. Moreover this study limited its targeted scope to three professions of the health care team. Other professions were excluded due to feasibility issues, which could limit the generalisability of the findings to a larger population.

### **CONCLUSION**

The study discovers the overall interprofessional team partnership domain was poor, cooperation domain was moderate, and coordination domain was poor. Moreover, the overall level of interprofessional collaboration (partnership, cooperation, and coordination) among healthcare providers in critical care units is substandard. However, to learn more about interprofessional collaboration, future research must be conducted, and the attitude of health care team members about IPC must be studied.

The present study found that interprofessional collaboration among the critical care team was weak. Thus, it diagnosed the research gap, and basic policies for solutions were developed. This in turn reflects positively on the quality of care provided to critical care patients. The authors suggest that more future research with a mixed approach about IPC should be conducted to examine health care providers' attitudes toward IPC, factors influencing the level of IPC, and that future studies should include all health professions.

### **Recommendation**

The Ministry of Health must develop strategies for revitalising the application of the teamwork concept by allowing each profession to exercise their roles in a comfortable, collaborative environment that is characterised by the exchange of roles and opinions regarding health care in the health institution and avoiding giving the absolute right to one profession to exercise decision-making authority regarding health care without other profession's input, as this may be negatively reflected on the level of health care provided to the patient.

Healthcare facilities should arrange regular workshops on interprofessional collaboration for all healthcare team members, with mandatory attendance across all specialities. Health institutions must hold continuous, regular meetings for the health care team to discuss the patient's health care plans. This team must consist primarily of a physician, a pharmacist, and a nurse. The nurse must be considered the essential element in the health care process, as she/he represents the link between the patient and the rest of the health care team members.

### **Conflict of Interest**

The authors declare that they have no competing interest.

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