Original Article

"Interprofessional Collaboration" among Pharmacists, Physicians, and Nurses: A Hybrid Concept Analysis

Abstract

Background: "Interprofessional Collaboration" is associated with improving the quality of care. The objective of this study was the analysis of the concept of "Interprofessional Collaboration" using a hybrid model. **Materials and Methods:** A hybrid model was used in order to analyze the concept of "Interprofessional Collaboration." The first phase was the scientific search of texts in all valid electronic databases. The second phase includes fieldwork in which medical, pharmaceutical, and nursing staff were interviewed. Data were collected, reviewed, and analyzed in the third phase. **Results:** The four main themes extracted in the theoretical phase included: "attributes of individual, team, organizational, and system." In the fieldwork phase, three themes and seven sub-themes were identified: "Dynamism/effectiveness of collaboration, uncertain boundaries of collaboration, advanced organizational culture." In the final phase, with the combination of the results of two previous phases, the final definition of the concept was presented: "A process that brings together systems, organizations and individuals from various professions to achieve common interests and goals. Achieving common goals and interests is influenced by individual, team, organizational, and system attributes." **Conclusions:** Defining the concept of interprofessional collaboration and identifying its various aspects can be a practical guide for creating and evaluating it in educational and clinical settings.

Keywords: *Collaboration, concept analysis, nurses, pharmacists, physicians*

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Introduction

In hospital settings, the key participants involved in medication management are nurses, physicians, pharmacists, and patients. They play an important role in the prescription, distribution, administration, monitoring, evaluation, and counseling of medication.[1] Accordingly, the interprofessional care model has been adopted to support the provision of comprehensive patient-centered services. This model is obtained by combining the knowledge and skills of important health professions such as medicine, nursing, and pharmacy.[2]

The World Health Organization defines Interprofessional Collaboration (IPC) practice as: "a situation when multiple healthcare professionals from different professional backgrounds provide services by working with patients, their families, caregivers, and communities to deliver the highest quality of care across settings."[3] International literature shows that IPC can improve health outcomes for people with chronic diseases, improve patient care and safety, reduce morbidity and mortality, provide an opportunity for patients to participate in treatment decisions, and improve coordination between staff and patients, and it will help reduce staff shortages, reduce stress, reduce burnout and reduce workload, and lead to better use of resources.[4,5]

Recently, improving the level of collaboration between physicians, pharmacists, and nurses has drawn much attention.[6,7] New models of collaboration between these three groups in the field of primary care in several European countries, some US states, the United Kingdom, and Canada are available at the educational and organizational levels.[7,8] Various studies have shown the consequences and factors affecting the interprofessional collaboration model in the healthcare sector. Alsuhebany *et al*.[9] identified three main themes in collaboration among physicians, nurses, and pharmacists:

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mutual perception of roles, interprofessional communication, and competence. Håkansson Lindqvist *et al*.[10] showed that pharmacists, physicians, and nurses develop interprofessional collaboration by defining roles, communication, and joint knowledge exchange in the team-based intervention over time with a focus on patient care and safety.

In general, "Interprofessional Collaboration" is a broad concept, and different individuals in various fields have their own interpretation of it, so it is necessary to pay attention to this concept, especially from the viewpoint of nurses, physicians, and pharmacists. Considering the impact of background transformations on the change and development of some phenomena in each context, researchers should examine the concept of interprofessional collaboration and its aspects in the context of Iranian hospitals. In recent decades, many research studies have been conducted to clarify the concept of interprofessional collaboration and its measurement. However, no qualitative study has been conducted to investigate this concept from the viewpoint of nurses, physicians, and pharmacists or to analyze and explain it in Iran. There is also no agreement on the analysis of this concept in the literature review. In such a situation, the hybrid concept analysis method was chosen because the lived experiences of nurses, physicians, and pharmacists enrich the findings of the literature review regarding 'Interprofessional Collaboration'. By providing care and medical interventions based on "Interprofessional Collaboration" can improve patient outcomes. In this regard, the present study was done with the aim of clarifying the concept of "Interprofessional Collaboration" by using a hybrid model.

Materials and Methods

A hybrid model has been used in this study in order to identify and analyze the concept of "Interprofessional Collaboration." The study lasted from September 2020 to May 2021. The use of this method in nursing leads to the elimination of abstraction and ambiguity of concepts, the creation of new and more comprehensive definitions, and in some cases, the emergence of completely different definitions from previous definitions. The hybrid model is a combination of inductive and deductive approaches and aims at identifying the basic aspects and providing a clear concept based on the interview and observing the real experiences of the participants. This method has three theoretical, fieldwork study, and analytical phases.[11]

In the first phase, the scientific search of texts was performed in all electronic databases: Online Library Wiley, OVID, SAGE, CINHAL Springer, PubMed, ProQuest, Science-Direct, Google Scholar search English and Persian databases such as SID, Medlib, Magiran, Iranmedex. Persian, and English equivalent keywords according to Mesh were searched by searching Persian and English equivalent related keywords such as interdisciplinary relations, multidisciplinary collaboration, multiprofessional collaboration, interprofessional collaboration, interdisciplinary communication, interdisciplinary collaboration, teamwork, pharmacist relation, nurse relation, physician relations (focusing on collaboration between physicians, pharmacists, and nurses) in the title and abstract without considering the scale and time limit until February 2023. The articles used in the theoretical phase were examined in terms of inclusion criteria including: the presence of keywords in the article, relevance to the concept, access to the full text of the article, and non-duplication. Therefore, after applying the search strategy, 2,163 studies were found in electronic databases. In the next step, duplicate studies (1,530 studies) were eliminated and 633 studies remained. A total of 385 studies remained after the title and abstract review phase. Afterward, the full text of the remaining studies was reviewed, and 214 studies were excluded due to a lack of eligibility. Finally, 34 studies were analyzed for the theoretical phase of concept analysis.

The next phase was the fieldwork phase. This phase lasted from September 2020 to February 2021. Due to the nature of the concept of interprofessional collaboration in the present study, the study setting, hospitals, and pharmacies in the east of Guilan province and the study population were all medical, pharmaceutical, and nursing staff who participated in the study by purposive sampling. In this study, semi-structured individual and face-to-face interviews were used to collect information at the Fieldwork phase. The questions used in the interview were conducted by reviewing the theoretical phase, for example: "What is your definition of interprofessional collaboration?", "What dimensions does it include?", "What are the consequences?". Participants were encouraged to elaborate with follow-up questions, such as: "Tell me more about that." or "Please share an example." Interviews were conducted at the time and place preferred by the participants after obtaining informed consent. The average duration of interviews was 45 minutes. Interviews were continued until data saturation. The characteristics of participants are presented in Table 1. After recording and implementing all the interviewed items, coding and concepts were extracted according to the contractual content analysis method. Finally, in the fourth step, data were collected, reviewed, and analyzed. To perform the data analysis process, the steps proposed by Granheim and Landman (2004) were used, which include: implementing the interviews and reviewing them several times to gain an understanding of all the implemented cases; extracting the semantic units and classifying them as compact units; summarizing and categorizing compact units and selecting the appropriate label for them; sorting the subcategories based on comparing the similarities and differences in the subcategories; and finally selecting a suitable title that could cover the resulting categories.[12] Data collection and analysis were not separated at the fieldwork phase, and analysis was performed at the start of data collection.[13]

Table 1: Demographic characteristics of participants in the fieldwork phase

Number	Age	Marital status	Occupation	Work experience (Year)
1	28	Married	Nurse	4
2	32	Single	Physician	5
3	32	Married	Pharmacist	3
4	35	Married	Nurse	10
5	34	Single	Physician	5
6	40	Married	Pharmacist	12
7	34	Single	Pharmacist	6
8	56	Married	Physician	26
9	36	Married	Pharmacist	8
10	34	Single	Nurse	9
11	43	Single	Physician	11
12	58	Married	Pharmacist	13
13	33	Single	Nurse	5
14	29	Married	Nurse	4
15	42	Single	Physician	10

The rigor of the findings was checked using Guba and Lincoln's four criteria including dependability, transferability, credibility, and confirmability. In the current study, long interaction with the research setting, maximum diversity sampling, and member checks were used to gain credibility. In order to increase the confirmability, by accurately recording all research steps, others can review and evaluate it. By recording and transcribing the interviews verbatim, data analysis was performed immediately after collection and quotations were used to increase the dependability of the data. A rich description of the participants' characteristics and their experiences were provided to obtain comprehensive information on the transferability of the study.[14]

In the final analysis phase, the themes and sub-themes obtained from the fieldwork phase are compared with the characteristics and the consequences of the theoretical phase, similarities and differences are identified, and a new definition for the concept of "Interprofessional Collaboration" was presented.

Ethical conciderations

The purpose of the research, the process of doing the work, and the nature of the voluntary participation in the study were clearly stated for all participants before conducting the interview. Conscious oral and written consent was obtained from them to participate in the research and audio recording. All participants were assured that the information obtained from them would be kept confidential. At the same time, the preservation and analysis of data and audio files in a safe place is observed by the researcher. Lack of willingness at each stage of the study was also considered as an exclusion criterion. The research proposal received ethics approval from Guilan University of Medical Sciences on August 5, 2020 (approval ID: IR.GUMS. REC.1399.244).

Results

Theoretical phase

Concept definition

The first phase of the research began with a review of the literature. Although a great deal of research has been done on interprofessional collaboration, the results showed that interprofessional collaboration is a complex and multidimensional concept and its exact meaning is still unclear.[15] A review of studies showed that interprofessional collaboration with definitions such as teamwork,[2] cooperation and partnerships,[16] group coordination,[17] and similar definitions have been mentioned.

The term "Interdisciplinary Collaboration" refers to the collaboration of a group of specialists from two or more disciplines working together.[18] "Interprofessional Collaboration" (IPC) is defined as a process in which professionals from several disciplines have common roles and responsibilities in order to be able to respond in a coherent and integrated way to the needs of patients, their loved ones, and the community.[19] Interdisciplinarity is a response to the fragmented knowledge of numerous disciplines. Interdisciplinarity wishes to reconcile and foster cohesion in this fragmented knowledge. As a result, entirely new disciplines may emerge. The concept of interprofessionality is useful to direct our attention to the emergence of a more cohesive and less fragmented interprofessional practice. This does not imply the development of new professions, but rather a means by which professionals can practice in a more collaborative or integrated method.[20] This distinction separates the interprofessional from the interdisciplinary. The word collaboration is a combination of "Col" and "laborate," meaning to be together and to work together, respectively.[21] In Webster's dictionary, collaboration is defined as a shared practice with others[22] and in Oxford, collaboration is working with another person to achieve a common goal,[23] and collaborative practice of multiple disciplines together in a shared workspace to provide exceptional care.[24] The concept of "collaboration" in healthcare is a problem-solving process,[6,25] shared decision-making,[1,25] responsibility and the ability to carry out a care plan while working to achieve a common goal.[18,26]

Antecedents

Individual attributes

Belief in interprofessional collaboration care and personal flexibility,[25,27] work experience, age, and gender.[10,19,28]

Team attributes

In interactive dimensions, sharing common goals and a common vision is of great importance. Patient-centered shared goals emerge when the team is focused on the patient/client.[2,4] At the same time, the diverse interests and power asymmetry of different partners in care and

the resulting negotiations should be recognized. Another interactive dimension refers to the bonds that develop among team members and their willingness to work together,[16] elements that contribute to a sense of mutual trust among health professionals working in a team. In order to build trusting relationships,[8,10,29,30] professionals must know each other personally and professionally. Knowing each other professionally. Knowing each other professionally means getting to know each other's conceptual models, roles, and responsibilities.[30] If this basic condition is not met, collaboration is not possible. This allows team participants to transcend their tendency toward exclusive professional "boundaries" and share common professional realms.[20] Some of the most common interactive features mentioned in the articles include: communication,[1,10,30] interprofessional conflict resolution,[4,29] shared decision-making,[1,8,25] reflection,[31,32] role clarification,[8,10,27,29] interprofessional ethics, and values.[1,33]

Organizational attributes

Collaboration exists not only within a team but also in the context of a larger organizational setting and between organizations such as a healthcare network, which exerts a significant influence on the team.[2] Seven main organizational influencing factors on collaboration were identified: (1) clear authority, vision, and goals; (2) strategic coordination and communication mechanisms between partners; (3) formal organizational leaders as collaborative champions; (4) collaborative organizational culture; (5) optimal use of resources; (6) optimal use of human resources; and (7) collaborative approaches to programs and service delivery.[4,25,34]

Systemic attributes

Systemic factors include creating a shared vision among systems such as political, socio-economic, and cultural systems that are consistent with interprofessionalism. The framework highlights the need to strengthen collaboration involving patients/clients and healthcare professionals, learners and educators, and organizational leaders and policy makers.[4,20] The development of legal and regulatory reforms at the macro level,[27] setting of priorities, demonstration of flexibility in supporting and funding interprofessional education,[2,4] structural reforms (development of scheduled processes and programs, physical spaces and communication tools),[4,16] are among the issues discussed in this dimension. This framework provides the rationale that patient/client, provider, organizational, and system outcomes will not improve if micro- and macro-level support is not aligned across practice settings.[25,35]

Consequences

The consequences of providing care based on interprofessional collaboration for the beneficiaries are improving clinical outcomes,[8,10,26] quality of care, and satisfaction,[4,9,25,28] for patients, satisfaction[6] and well-being[25] (job satisfaction, better work engagement, lower burnout, lower turnover, and reciprocal learning among healthcare professionals)[4,5,8,28] for health professionals, efficiency and innovation[16,26,28] for healthcare organizations, and cost effectiveness[25,35] and responsiveness[20] for health care systems.

Fieldwork phase

The purpose of this phase was to investigate the experiences of nurses, physicians, and pharmacists from interprofessional collaboration. Finally, seven sub-categories and three main categories emerged from the interviews [Table 2]. Excerpts from the participants' speeches were as follows: "collaboration dynamics/effectiveness" (with three subthemes of trying to achieve a common goal, rapid recovery of the patient, and unity of work), "the invisible boundaries of cooperation" (with two subthemes of poor management of interactions and ambiguous work area), and finally, "advanced organizational culture" (with two subthemes of sharing knowledge and information and team decision-making).

Collaboration dynamics/effectiveness

The first main theme was "collaboration dynamics/effectiveness" (with three subthemes of trying to achieve a common goal, rapid recovery of the patient, and unity of work).

In this regard, Physician No. 2 stated: *"Interdisciplinary collaboration is a very important issue to achieve the common goal of the patient's recovery as soon as possible and, medical affairs cannot be imagined without inter-team collaboration. Because it is collaboration between me and my colleagues that will provide the best care for the patient." Also, Nurse No. 1 stated: "My many years of experience have shown me that things get very difficult without teamwork. And in many cases, the treatment and care process faces many problems, and we consider interdisciplinary collaboration to be a principle in our work."*

Uncertain boundaries of collaboration

The second main theme was "the invisible boundaries of

Table 2: Categories and sub-categories extracted from interviews with participants

Main Categories	Sub-categories
Collaboration dynamics/ effectiveness	Trying to achieve a common goal
	Rapid recovery of the patient
	Unity of work
Uncertain boundaries of collaboration	Poor management of interactions
	Ambiguous work area
Advanced organizational culture	Sharing knowledge and information
	Team decision-making

cooperation" (with two subthemes of poor management of interactions and ambiguous work area).

In this regard, Nurse No. 4 stated: *"Interdisciplinary collaboration has become a principled rule for us and we have no idea otherwise. But, sometimes it is observed that they do not know our roles yet and sometimes there is a conflict of roles, which of course is sometimes accompanied by annoyance. It is our duty to manage this issue so that the patient, the organization and the community benefit. An important process of close collaboration and communication between the care and treatment team is always associated with positive results, and we are very satisfied with this process." Also, In this regard, Physician No. 5 stated: "The nature of medicine is based on interdisciplinary collaboration. However, sometimes it is seen that we are in neglect and some of my colleagues, most of them see only their performance, and unfortunately, in most cases, their work process or that of their patients is disrupted."*

Pharmacist No. 3 stated: "*The main benefit of inter-team collaboration goes to the patient and therefore we must be able to overcome the existing challenges. Usually, one of the challenges is the unspecified tasks, which, of course, seems to be well solved with proper reflection and management. It often happened that the patient went to my pharmacy and I did not have the medicine recommended by the physician. I called the physician immediately and after consulting with each other, another suitable medicine was recommended for the patient so that his treatment would be done sooner*."

Advanced organizational culture

The third main theme was "advanced organizational culture" (with two subthemes of sharing knowledge and information and team decision-making). In this regard, Pharmacist No. 8 stated: *"The treatment process has changed in such a way that the medical world cannot be imagined without teamwork. I am a clinical pharmacist and I am in constant contact with my patients' physicians, and we make the best decisions for patients through this close collaboration by sharing our information." Also, Physician No. 10 stated: "In many cases, sharing experiences helps a lot in achieving a faster therapeutic response."*

Final analysis phase

In this hybrid concept analysis, the findings from the theoretical phase are supported by the fieldwork phase findings. Based on the results of the final analytical phase, the definition of interprofessional collaboration among physicians, nurses, and pharmacists is as follows:

"A process that brings together systems, organizations and individuals from various professions (physicians, nurses, and pharmacists) to achieve common interests and goals. Achieving common goals and interests (increasing the quality of care and safety, enhance job satisfaction, increasing efficiency, improving accountability and cost effectiveness, etc.) is influenced by individual attributes (beliefs and personal flexibility, work experiences, etc.), team attributes (communication skills, clarity of roles, conflict management, etc.), organizational attributes (processes and protocols, leadership, mission and vision, etc.) and system attributes (policies and laws, socio-economic context, educational structures, Communication technologies, community culture, financial support, etc.)."

Discussion

The purpose of this study was to analyze the concept of "Interprofessional Collaboration" using a hybrid conceptual model. The results of the present study suggest that interprofessional collaboration is a multidimensional process and various factors play a role in its formation and direction, including the individuals' attributes, team attributes and interactions within it, healthcare organizations' attributes and their interactions with other organizations, and finally, the various structures and systems of society. Themes and sub-themes obtained in the fieldwork phase show the most important factors for establishing interprofessional collaboration among physicians, nurses, and pharmacists. In theoretical studies, having a common goal between members has been introduced as a prerequisite for teamwork and a factor of the closeness of team members to each other.[10,25] What is certain is that in healthcare systems, the common and fundamental goal in interprofessional collaboration is to develop a comprehensive and complete treatment plan to provide patient-centered care.[27] Interprofessional collaboration based on common goals among physicians, pharmacists, and nurses leads to fault prevention, patient safety, reduced mortality, disability, improved access to care, satisfaction, reduced treatment costs, and reduced hospital stay.[3]

In the present study, participants identified poor management of interactions and uncertain boundaries between roles as the inhibitory factors of effective collaboration. In theoretical findings, the failure to communicate among physicians, pharmacists, and nurses is a barrier to teamwork that has unintended consequences, including increased job stress and medication faults in the health care environment.[36] Inappropriate attitudes and lack of knowledge about the process of teamwork considered as threatening factors in the communication process.[1,27,36]

In the present study, according to the participants, the higher probability of the collaboration of pharmacists with physicians in designing patients' treatment plans, less role of nurses, the hierarchical culture in which physicians are at the top of this hierarchy, and the high workload of all three groups are the other barriers to communication among the three professions. These barriers have been mentioned in theoretical studies.[10,27]

The participants of the present study also pointed out the ambiguity of roles in collaborations that the effective factors in reviewing different literature, lack of transparency in the organization's goals and lack of definition of staff duties, discrimination in power sharing, problem in training, lack of understanding and appreciation of the role and professional responsibilities, previous negative experiences, gross and unfair differences in salaries and benefits, incorrect views of society and the type of medical ward were identified.[25,37] A study in a Swedish hospital cited "the lack of trust" as one of the reasons for the ambiguity of the role between physicians, pharmacists, and nurses. Its researchers suggested that individuals can prove their professional competence in any field and gain appropriate trust by providing useful advice over time.[38] Participants in the present study also believed that sharing knowledge and decision-making power could help promote a culture of collaboration within the organization. Some evidence, including the positive effects of knowledge and skills exchanges on gaining respect, trust, and time savings, has been presented to each party.[6,7,27] A number of studies have also shown that collaboration without knowledge sharing in teams is rarely successful.[10,39] However, what is important is that a comprehensive treatment plan can be provided in managing clients' health problems by combining the expertise and knowledge of clinical nurses of patients, pharmacists' knowledge of drugs, and their integration with clinicians' clinical diagnoses.

In general, according to the literature review, low participation in decision-making causes a decrease in personal value, a feeling of inferiority, a decrease in self-confidence, a decrease in job satisfaction, despair, and lack of motivation. Participation in decision-making has many positive effects, such as increasing self-confidence, better decision-making, strengthening human respect and social status, motivation, responsibility, and improving teamwork spirit.[6,19,27]

One limitation of this study, in the theoretical phase, was the poor access to the full text of the articles. Another limitation was the language barrier, so we used Persian and English reviews. In future studies, this concept can be investigated in settings with different organizational cultures to ensure that all aspects of this concept are explored.

Conclusion

The findings of this research clarified the characteristics of the concept of interprofessional collaboration and also showed that this concept is a broad and multidimensional process that is influenced by various factors such as the attributes of individuals, teams, organizations, and systems. Knowing the factors affecting the achievement of interprofessional collaboration can be an important step in developing and improving the quality of care and patient safety. Also, the findings of the study can help to create a practical guide for applying and evaluating the concept of "Interprofessional Collaboration" in clinical and educational settings.

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Conflicts of interest

Nothing to declare.

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