Interprofessional collaboration in the renal care settings: Experiences in the COVID-19 era

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Abstract

Background. The role of interprofessional collaboration (IPC) in healthcare is increasingly emphasized. Due to significant comorbidity in renal patients who require highly specialized procedures, proper IPC is an essential component in renal care. During the coronavirus disease 2019 (COVID-19) pandemic, the existing and proven collaboration mechanisms were put to the test.

Objectives. To assess IPC in the renal care settings in the era of COVID-19 pandemic.

Materials and methods. The survey consisted of the Assessment of Interprofessional Team Collaboration Scale II (AITCS-II) (3 subscales – partnership, cooperation and coordination, maximum of 5 points), questions about work conditions and factors influencing work during the pandemic, as well as demographic data. The survey was distributed in 8 renal care settings (4 hospital wards with dialysis units and 4 individual dialysis units); 127 participants filled out the survey; 26.8% of participants were physicians, 68.5% nurses and 4.7% other staff members, i.e., administrative assistants. Mean work experience in their current team was 16.8 ±11.7 years among nurses and 11.6 ±9.7 years among physicians.

Results. Interprofessional collaboration was assessed by physicians and nurses, respectively, as follows: partnership 4.03 ±0.79 compared to 3.58 ±0.73 ($p = 0.003$), cooperation 4.28 ±0.59 compared to 3.71 ±0.72 ($p = 0.0002$), and coordination 3.83 ±0.87 compared to 3.48 ±0.82 ($p = 0.04$). The specific workplace did not influence the IPC rates; 49.9% of physicians and 40.1% of nurses agreed or strongly agreed that the collaboration worsened during the pandemic; 47% of physicians and 42.4% of nurses admitted that the communication has significantly deteriorated. An increased level of stress, new procedures and fear of getting infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) were, according to the participants, the most significant factors for the worsening of IPC.

Conclusions. The exceptional circumstances faced during the pandemic have a significant impact on IPC, which may influence patients' satisfaction and safety. An active support for healthcare teams in the field of IPC is especially important in this challenging reality.

Key words: COVID-19, interprofessional collaboration, nephrology, renal care

Background

In recent years, many studies have shown the key role of interprofessional collaboration (IPC) in healthcare and its impact on work processes and patients' safety.[1] The IPC has become an important factor in well-functioning medical teams.[2] The collaboration among healthcare professionals, regardless of medical domain, is essential in creating a synergy to provide efficient, safe and high-quality patient care.[3] Multifunctional teams tend to be more productive and innovative in coping with risk assessment and management. It has been proven that IPC may lead to improved healthcare systems and outcomes.[4] Good practice of IPC has been associated with improved health outcomes, including decreased mortality rate.[5] Consequently, more and more emphasis is placed on interprofessional education (IPE), which leads to medical students valuing the need of proper IPC.[6]

In the study by Tonelli et al., the complexity of patients seen by different medical specialists was assessed and compared using 9 factors of complexity including the number of comorbidities, presence of mental illness, number of types of physicians involved in each patient's care, number of physicians involved in each patient's care, number of prescribed medications, number of emergency department visits, rate of death, rate of hospitalization, and rate of placement in a long-term care facility.[7] It was concluded that nephrologists deal with the most complex patients, as compared to 12 other specialties. Obviously, the complexity of renal patients affects all healthcare professionals taking care of this group of patients.

The significant complexity of patients with kidney diseases and the need to provide care to patients who need highly specialized medical procedures require an appropriate collaboration between medical and nursing staff as well as other healthcare professionals.

Taking into account the abovementioned factors, the collaboration in nephrology is addressed more and more often in the scientific reports. For instance, a feasible strategy of the use of electronic collaboration tool such as Slack (Slack Technologies, San Francisco, USA), which facilitates real-time conversational communication in a private or semiprivate virtual workspace, was described recently.[8] Fulton et al. developed and evaluated an interprofessional palliative care and geriatrics curriculum for nephrology teams, concluding that IPC may result in improved management of patients with chronic kidney disease (CKD) or end-stage kidney disease.[9] A qualitative analysis of IPC between nephrologists and intensive care unit (ICU) practitioners revealed significant difficulties stemming from discordant preferences about the aggressiveness of renal replacement therapy, based on different understanding of physiology, goals of care and acuity.[10]

While the coronavirus disease 2019 (COVID-19) pandemic has overrun the world with numerous cases and deaths, it has also challenged the healthcare systems, putting the existing guidelines and solutions to test.[11] It is suggested that many of these challenges can be addressed by placing a greater emphasis on the use of IPE to underpin and support effective collaborative working.[12] As it was indicated by Goldman and Xyrichis, studying IPC during the COVID-19 pandemic is an important goal for health services research in the months and years to come, both to reinforce the current response and prepare for future challenges.[13]

Objectives

Bearing in mind the complexity of nephrology patients, the new challenges posed by the pandemic and the need to study work-related challenges in the COVID-19 era, we decided to conduct research in order to assess IPC in nephrology facilities in the era of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic.

Participants and methods

Study survey and design

A 41-item study survey comprised the Assessment of Interprofessional Team Collaboration Scale II (AITCS-II)[14,15] and a section of self-created questions about working during the COVID-19 pandemic.

The AITCS-II is a validated tool that consists of 3 subscales: (1) partnership – 8 items; (2) cooperation – 8 items; and (3) coordination – 7 items. Each item is rated on a 5-point Likert scale where: 1 – never; 2 – rarely; 3 – occasionally; 4 – most of the time; and 5 – always. Subscale scores were calculated by averaging the mean values of all 3 subscale items, whereas the total score was determined by taking an average of all 3 subscales. The survey was translated into by the researchers with the consent of the authors of the survey.

The questionnaire was preceded by demographic data collection, which included additional specifications associated with our research:

– job specification (for physicians) – a registrar; a resident; a specialist; other;
– unit of employment – clinical nephrology ward; dialysis center; both;
– prevalent unit of employment (for employees working in both type of units);
– weekly work time;
– holiday leave – complete; partial; neither;
– work experience in years;
– team experience in current place of employment.

The 2nd part of the questionnaire consisted of 3 parts. In the 1st one, the participants were asked to assess the change in the collaboration and working conditions

during the SARS-CoV-2 pandemic on a 1–5 Likert-type scale. In the 2nd part, they were provided with 9 possible explanations for the change in the working conditions and were asked to choose the factors they found most crucial in creating the differences. In the last, non-obligatory section, the participants were invited to provide their own opinions and concerns regarding the pandemic and IPC in the COVID-19 era.

Surveys were collected from January 14 to May 6, 2021, across 4 hospital nephrology wards integrated with dialysis units and 4 individual dialysis units located in 1 province (voivodeship) in Central Poland.

The study protocol was approved by the local ethics committee of Medical University of Lodz (approval No. RNN/30/12/KE of January 12, 2021).

Study group

The study group comprised 127 participants, including 87 nurses, 34 physicians and 6 participants who also completed the survey and were the representatives of other professions – e.g., administrative personnel. The characteristics of the study group are provided in Table 1. The participants were approached directly and provided with printed copies of the questionnaire, which were collected upon completion.

Statistical analyses

Due to a greatly limited number of other types of professionals represented in the study group, only the answers of nurses and physicians (n = 121) were analyzed statistically. Statistical analysis was performed using Statistica v. 13.1 PL software (StatSoft Inc., Tulsa, USA). Graphs were plotted with the use of Microsoft Excel Office 365 (Microsoft Corp., Redmond, USA). The normality of the distribution of the continuous variables was assessed with Shapiro–Wilk test. Mann–Whitney U test was used for comparisons between 2 independent groups. Nonparametric comparisons of more than 2 groups were performed with Kruskal–Wallis test. Nonparametric correlations were assessed with Spearman's method. Pearson's χ^2 test was used for comparisons of categorical data. There was 1.2% of missing data in AITCS-II items. More missing data occurred in the demographic part of the survey, where pairwise deletion was performed. To determine internal consistency reliability, Cronbach's alpha was calculated for each subscale of the AITCS-II. It amounted to 0.91, 0.94 and 0.93 for partnership, cooperation and coordination, respectively.

Results

The results of the AITCS-II for nurses and physicians are provided in Table 2. No statistically significant differences ($p > 0.05$) in AITCS-II and its subscale scores were found between nurses working mostly in dialysis and hospital settings; also, no statistically significant differences were found between physicians, as presented in Table 3. No statistically significant correlations between partnership, collaboration and coordination rates and age as well as the length of professional experience (overall and in the current team) in nurses and doctors were found; these correlations are provided in Table 4. Also, no statistically significant differences in AITCS-II overall score were found with regard

Table 1. The study group characteristics

Characteristic	Nurses (n = 87)	Physicians (n = 34)	Other professions (n = 6)
Females, n (%)	87 (100)	22 (64.7)	6 (100)
Males, n (%)	0 (0)	12 (35.3)	0 (0)
Age [years], mean ±SD	49.7 ±9.7	44.5 ±13.2	49.7 ±5.1
Length of experience in the current team [years], mean ±SD	16.8 ±11.7	11.6 ±9.7	11.3 ±8.8
Place of work			
In-patient hospital settings, n (%)	9 (10.5)	6 (17.6)	1 (16.7)
Dialysis units, n (%)	60 (69.8)	11 (32.4)	5 (83.3
Both units, n (%)	17 (19.7)	17 (50)	0 (0)

SD – standard deviation.

Table 2. Mean score of Assessment of Interprofessional Team Collaboration Scale II (AITCS-II) and its subscales in nurses and physicians

AITCS-II and subscales scores	Nurses	Physicians	p-value*
AITCS-II overall (mean ±SD)	3.59 ±0.66	4.06 ±0.7	0.0018[a]
Partnership (mean ±SD)	3.58 ±0.73	4.03 ±0.79	0.0034[b]
Cooperation (mean ±SD)	3.71 ±0.72	4.28 ±0.59	0.0002[c]
Coordination (mean ±SD)	3.48 ±0.82	3.83 ±0.87	0.0406[d]

*Mann–Whitney U test; U values: [a] – 939.5; [b] – 971.0; [c] – 823.5; [d] – 1124.0. SD – standard deviation.

Table 3. Mean score of Assessment of Interprofessional Team Collaboration Scale II (AITCS-II) and its subscales in nurses and physicians working mostly in hospital settings and dialysis units

AITCS-II and subscales scores	Hospital settings	Dialysis units	p-value*
Nurses			
AITCS-II overall (mean ±SD)	3.51 ±0.54	3.61 ±0.69	0.5791
Partnership (mean ±SD)	3.55 ±0.48	3.59 ±0.77	0.6267
Cooperation (mean ±SD)	3.63 ±0.81	3.73 ±0.72	0.7788
Coordination (mean ±SD)	3.32 ±0.55	3.51 ±0.86	0.3302
Physicians			
AITCS-II overall (mean ±SD)	4.05 ±0.73	4.07 ±0.68	0.9293
Partnership (mean ±SD)	4.08 ±0.78	3.97 ±0.83	0.6696
Cooperation (mean ±SD)	4.24 ±0.67	4.35 ±0.47	0.9286
Coordination (mean ±SD)	3.8 ±0.83	3.89 ±0.96	0.7223

*Mann–Whitney U test. SD – standard deviation.

Table 4. Correlation coefficients (r) and p-values of Spearman's correlations between Assessment of Interprofessional Team Collaboration Scale II (AITCS-II) subscale scores and age and length of professional experience in nurses and physicians

Score	Age	Overall length of professional experience	Length of professional experience in the current team
Nurses			
Partnership score	r = –0.004, p = 0.9732	r = –0.031, p = 0.7861	r = –0.204, p = 0.074
Cooperation score	r = 0.161, p = 0.146	r = 0.142, p = 0.2057	r = 0.155, p = 0.1763
Coordination score	r = 0.065, p = 0.56	r = 0.037, p = 0.7437	r = –0.029, p = 07972
Physicians			
Partnership score	r = –0.156, p = 0.3869	r = –0.174, p = 0.3249	r = –0.248, p = 0.1643
Cooperation score	r = 0.132, p = 0.465	r = 0.093, p = 0.5998	r = –0.032, p = 0.8595
Coordination score	r = 0.147, p = 0.4142	r = 0.122, p = 0.4929	r = –0.036, p = 0.8441

to weekly worktime (p = 0.7752, Kruskal–Wallis test) and the use of the holiday leave (p = 0.1917, Kruskal–Wallis test).

Briefly, 49.9% of physicians and 40.1% of nurses agreed or strongly agreed that IPC worsened during the pandemic; 47% of physicians and 42.4% of nurses stated that the communication between these 2 groups has significantly deteriorated in the COVID-19 era; 44.8% of nurses agreed or strongly agreed that since the outbreak of the pandemic, they could have relied only on themselves, while only 17.7% of physicians stated so (χ^2 = 7.25, df = 1, p = 0.0071).

The factors regarded by nurses and physicians as crucial in creating the differences in the IPC during the pandemic are provided in Fig. 1. An increased level of stress, the rapid change of procedures at the time of pandemic and fear of SARS-CoV-2 infection were considered to be most important.

Nine participants (7%) expressed their additional opinions and concerns regarding the interprofessional collaboration in the COVID-19 era. The quotes are provided in Table 5. Participants pointed out the lesser amount of time spent with patients due to the new procedures, physical and psychological exhaustion of the staff members, and insufficient reimbursement at the time of pandemic.

Discussion

Our results indicate that IPC in the COVID-19 era is an important challenge, as the self-assessed perceptions of both collaboration and communication reported by nurses and physicians significantly worsened. The exceptional circumstances faced in the time of pandemic have an impact on IPC in healthcare, which may influence patients' satisfaction and safety, and thus, IPC should be addressed and improved.

What is important, physicians rated IPC in all ATICS-II subscales significantly higher than nurses in our study population. Previous literature regarding IPC also showed the varied approaches of physicians and nurses to doctor–nurse cooperation.[16] Our findings are consistent with the research conducted by Carney et al. proving that physicians rate IPC higher than the nursing staff.[17] Possible reasons of this phenomenon may comprise the differences in education, role expectations, gender distribution, and approach to practice.[18] It was proven that nurses are trained to communicate more holistically, using the "story" of the patient, while physicians tend to communicate using the "headlines".[19] According to Tang et al.,[20] the factors affecting physician–nurse collaboration include

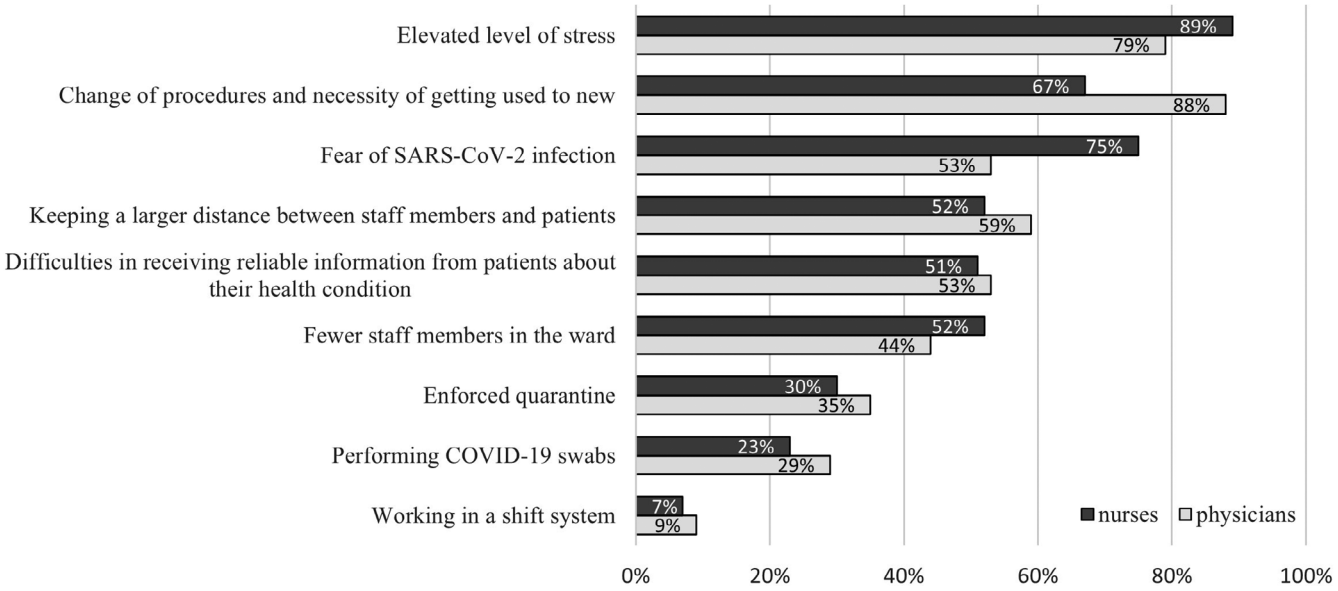

Fig. 1. Factors influencing the quality of interprofessional collaboration during the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic

COVID-19 – coronavirus disease 2019.

Table 5. Participants reflections on factors influencing interprofessional collaboration in renal care settings during the pandemic

Participant	Quotation – factors influencing interprofessional collaboration in renal care settings during the pandemic
Female, physician, 33 years old	Extending the time needed to prepare for the patient visit and the use of PPE, while necessary, extends also the time from the call for help from the patient to the moment when the patient receives it. It has a negative impact on our work; it's both stressful for the doctors/nurses and dangerous for the patients. Extending the duration of the procedures due to the use of PPE comes at the price of time allocated to COVID-negative patients and has a negative influence on the teamwork.
Female, physician, 37 years old	My assessment is that the cooperation in the doctors' teams is better than the cooperation between doctors and nurses. I would say that there are some individuals who damage the general reputation.
Female, physician, 32 years old	The negative influence – patient and personnel isolation, lack of possibility to exchange opinions easily. The PPE greatly limits the nonverbal communication (the face masks require "screaming" instead of a conversation, inability to observe lip movement makes it more difficult for patients with advanced age or sickness to understand). The positive influence – the increase in adherence to sanitary procedures, more frequent hand sanitization, PPE usage.
Female, nurse, 24 years old	Increase of physical and psychological exhaustion due to the sanitary procedures, protective clothing, the number of obligations, limited time. Working with COVID-positive patients is more labor-consuming and requires more time, which is already in shortage, as well as physical strength. It is often that you work with COVID patients alone in order to limit the contact and it is obvious that you cannot do everything single-handedly, and if you do, it comes at the price of health deterioration.
Female, physician, 26 years old	Problematic access to the patient increases the unease in their families and distrust of the doctors and healing process, the diagnosis and quality of care for the patient. The patients themselves feel alienated, detached from their close ones, scared, all of which exacerbate the prognosis. Because of the necessity to wear the protective coverall, the doctor–patient contact is superficial – the physicians limit themselves to necessary procedures, and the patients focus more on the coverall than the person wearing it, which makes them scared.
Female, nurse, 50 years old	No increase in salary to make up for the difficult conditions results in a negative impact on eagerness and work commitment.
Female, nurse, 60 years old	Lack of appropriate payment for working in such difficult pandemic conditions, with COVID-positive patients. Also, lack of any kind word in tough times, no interest or support.
Female, nurse, 50 years old	No cooperation with the ward management staff.
Female, physician, 58 years old	Lack of possibility to transfer COVID-positive patients to dialysis stations; employees on sick leave.

PPE – personal protective equipment; COVID – coronavirus disease.

communication, respect and trust, unequal power, understanding professional roles, and task prioritizing.

On the other hand, some reports showed that nurses have a more positive attitude towards IPC than physicians. Physicians viewed physician–nurse collaboration as less important than nurses, but rated the quality of collaboration higher than nurses.[20] As reported by Mahboube et al., nurses, compared to physicians, showed a more positive attitude toward shared education and teamwork, caring as opposed to curing and physicians'

dominance.[21] The experiences gathered during the COVID-19 pandemic and their impact on IPC are a new and, to the knowledge of researchers, unexplored aspect of renal patient care.

The reflections on the work-related experiences and perceptions of renal healthcare team members on the front lines of the COVID-19 pandemic were presented by Zerbi et al.[22] This editorial, in which free statements on work during the pandemic were shared by 3 nurses, 2 nurse's aides and 1 psychologist, gave only a narrative insight into the situation and provided no quantitative data on working environment in these extraordinary circumstances. The importance of cooperation between nurses during the crisis and the significance of shared experiences for strengthening mutual understanding were emphasized by the participants.

When it comes to dealing with the pandemic crisis, an interesting initiative was the creation of the mobilizer team in one of academic medical center in the USA.[23] The mobilizer team consisted of clinical and operational administrative leaders and its task was to provide a 24-hour support to the front line teams. It gave various specialists a chance to work together, sometimes for the first time. Subsequently, it created partnerships between these specialists and provided an opportunity for the development of IPC in the healthcare system. The situations such as pandemic show that mechanisms and procedures aiming to manage a team in a crisis are greatly needed and should be constantly improved and developed. It also indicates a huge need to introduce and evolve IPE programs, taking into account current global challenges.

Limitations

Limitations of our study include the assessment of perceptions rather than staff behavior or patient outcomes; the latter would give another perspective on actual IPC practice. Results were gathered only from voluntary respondents. The data were gathered in 1 province in 1 country, so the generalizability of our results across other countries and regions all around the globe is limited, and the cultural aspects as well as healthcare organization may bias the potential comparisons. Also, no comparison with the pre-pandemic situation was possible due to lack of assessment of IPC using similar study design. However, to the best of our knowledge, our research is the first report on work-related perceptions focused on IPC of renal care practitioners during the COVID-19 pandemic and corresponds with the need for further research in this area.

Conclusions

We found that partnership, cooperation and coordination are perceived as significantly worse by nurses than physicians. The IPC worsened significantly during the pandemic both according to physicians and nurses. The communication between nurses and physicians also deteriorated. The factors which may influence IPC practice in face of the pandemic challenge included an increased level of stress, rapid changes of the procedures and fear of SARS-CoV-2 infection. Our data suggest that an active support for renal care teams in the field of collaboration, partnership, cooperation, and coordination is especially important in this challenging reality.

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