Interprofessional impressions amongst 4th-year medical and pharmacy students at Sefako Makgatho Health Sciences University

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Abstract

Background: The function of a multidisciplinary team is to work together to provide patient care; this is facilitated by healthcare professionals from various disciplines joining forces by understanding and respecting each other's roles. The World Health Organization advises that interprofessional education (IPE) be incorporated into the healthcare curriculum as it results in improved patient care and helps students identify each other's roles and perceptions in a multidisciplinary team. The purpose of this study was to investigate interprofessional impressions among 4th-year pharmacy and medical students at a university in South Africa.

Methods: Using a Likert scale, an online survey was conducted on a cohort of 4th-year pharmacy and medical students at the university. The quantitative descriptive data was captured using MS Excel® spreadsheet, and MS Office 365 (2016) and analysis was done using Analysis of Variance (ANOVA).

Results: A response rate of 75.28% was obtained where n = 201 respondents, 76.61% agreed that working together as a multidisciplinary team would benefit patients and improve communication between healthcare professionals. All of the pharmacy students agreed that shared learning will benefit the patient, compared to 2.54% and 5.73% of medical students who disagreed, and strongly disagreed, respectively that working together will ultimately benefit the patient. This difference in perception highlights a potential gap in understanding the roles of different healthcare professionals, underscoring the need for interprofessional education to foster mutual respect and collaborative practice.

Conclusion: This study highlights a clear need for IPE within the healthcare curriculum, particularly among 4th-year pharmacy and medical students. The findings demonstrate that while a majority of students acknowledge the benefits of working together in a multidisciplinary team, there is a disparity in perceptions between the two groups. Pharmacy students unanimously recognised the value of shared learning for improved patient outcomes, whereas a small but notable proportion of medical students expressed scepticism regarding its benefits.

Keywords: interprofessional education; interprofessional impressions; pharmacy; medicine; collaborative learning; professional roles

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Introduction

Interprofessional impressions may be defined as perceptions or attitudes that exist between two or more professions, such as pharmacists working with medical doctors or nurses.[1,2] Perception and attitudes may contribute greatly to effective communication between healthcare professionals. If communication among healthcare professionals is diminished, patients are subjected to poor outcomes, which may include delayed treatment, misdiagnosis, medication error, patient injury or even death.[3,4] Furthermore, current research shows integrative reviews which suggest that healthcare professionals are trained differently and separately, therefore, they exhibit different communication skills.[4] IPE is a platform that allows students from different professions to learn together and integrate acquired knowledge to better understand their roles and other professions' roles in a multidisciplinary team setting. It helps bring proficiency in a collaborative setting where healthcare professionals share information and skills.[5] Understanding each other's roles helps reduce clinical errors and ensure the best care for patients.[6,7]

University-based health professional training largely occurs in discipline-explicit silos. Sefako Makgatho Health Sciences University (SMU) is not an exception; each profession's teaching needs to occur interdependently, and this will contribute positively towards how healthcare professionals view each other's roles in the healthcare setting.[6] Pharmacists and medical doctors were found to have perceptions about each other's roles and responsibilities in the healthcare system, which contributed to the effectiveness of their communication.[8] In a healthcare setting, patients are not attended to by only one healthcare professional; they are attended to by doctors, pharmacists and other healthcare professionals. There is a need for interprofessional education in the curriculum since they will be working together in the workplace. Therefore, the rationale of this quantitative descriptive study is to evaluate the interprofessional impressions of pharmacy and medical students, how they perceive each other's roles, and to determine if there is a need for IPE amongst pharmacy and medical students at SMU. The objectives of the study were set out as follows: to determine the 4th-year medical and pharmacy students' impressions regarding each other's role as healthcare

professionals and to determine the perceived need for IPE amongst pharmacy and medical students.

Materials and methods

A survey adapted and adopted from McFadyen et al.[9] was conducted on a cohort of 4th-year pharmacy and medical students at SMU using a Likert scale. A pilot study was conducted on 3rd-year pharmacy and 5th-year medical students to assess the feasibility and validity of the study. This took place from 14–17 September 2020. The primary aim of the pilot study was to assess the feasibility and validity of the survey in terms of clarity of instructions, technical functionality, and estimated completion time. The data collection instrument consisted of 19 questions aimed to determine the perceived need for shared learning among the students and their interprofessional impressions of each other. The questions were divided into four categories as follows: shared learning and associated self-improvement, goals of a multidisciplinary team, perceptions and readiness for interprofessional education and student knowledge of their professional roles. The quantitative descriptive data was captured using MS Excel® spreadsheet, and MS Office 365 (2016) and analysis was done using ANOVA.

A method developed by Shona McCombes[10] using the four steps was adopted and adapted: (1) Explanation of the methodological approach; (2) Description of methods of collecting data; (3) Description of data analysis; and (4) Evaluation of methodological choices.

Methodological approach

The main research question was to investigate the interprofessional impressions among 4th-year pharmacy and medical students. This was to provide insight into how pharmacy and medical students perceive each other's roles and the need for IPE. The data was collected through a quantitative descriptive study design. The principle of quantitative descriptive analysis is based on the measurement of specific attributes of a population, often using a scale, in a reproducible manner to yield a comprehensive quantitative description amenable to statistical analysis. The study made use of convenient sampling by including all registered 4th-year pharmacy and medical students at SMU during the year 2020. The targeted number of participants from the study population was 53 pharmacy and 214 medical students (N = 267), with inclusion criteria being 4th-year pharmacy and medical students studying at SMU and registered for the year 2020. The exclusion criteria were other disciplines studying at SMU including Allied Health and Nursing students and invited students who were not interested in participating.

Methods of collecting data

After obtaining ethical clearance, SMUREC Ethics Reference Number, SMUREC/P/71 /2020:UG, a pilot study was conducted on 3rd-year pharmacy and medical students to assess the feasibility of the study. This took place from 14–17 September 2020. An online platform, Google Forms® was used to collect data; this was then followed by data collection from 21–25 September 2020. The survey was conducted virtually, where a link to the Google Form® was sent to the respective groups. The survey had a brief background about the study, informed consent and instructions. The survey included the participant's demographic details (age, gender, and ethnicity), the programme of study and prior experience with IPE. The survey took the form of a Likert scale with answers ranging from "strongly disagree to strongly agree" denoted by numbers 1 to 5, respectively. Participants were allowed a week to respond.

Data analysis

Data were analysed using descriptive statistics, including frequencies, percentages, mean and standard deviation. ANOVA was also used, which involved comparing variances from two data sets. Data was captured on an MS Excel® spreadsheet, MS Office 365 (2016). Descriptive and inferential data analysis was done on the quantitative data, including the participants' demographics. Quantitative data was captured on Microsoft Excel®, and MS Office 365 (2016) and analysed using Stata V15 statistical analysis software. Frequency tables were used to summarise the trends.

Evaluation of methodological choices

Data was collected and generated in a way that is fair and not harmful to the participants. For instance, an agreement Likert scale questionnaire was used which offered respondents a reasonable range (five options) of answers to choose from. The method was appropriate for fulfilling the overall aims of the study because the population size was sufficient, N = 267 (53 pharmacy and 214 medical students); this allowed researchers to generalise and make recommendations based on the findings.

Results

A response rate of 75.28% was obtained; this was deemed satisfactory and representative. Respondents included 157 medical students and 44 pharmacy students, denoting 73.36% and 83.01%, respectively. Questions were categorised based on similarity in concepts aimed to investigate respondents. Four categories, as detailed below, were derived and these guide the results and discussion of the findings.

a. Students' perspectives on shared learning about self-improvement.
b. Students' understanding of the goal of a multidisciplinary healthcare team.
c. Students' perceptions about learning together before qualification.
d. Students' knowledge about their professional roles and other professions' roles.

Demographics and educational background information

Results show that 67% were females and 31% were males, 83.16% were African and 7.92% were Whites, 5.94% were Indians and 2.47% were Coloured, 1.48% were aged 16–20, 85.14% were

aged 21–25, 12.37% were aged 26–30 then 0.49% was aged 30 and above. Of the 201 respondents, 26 had previously obtained a qualification, and the majority had a Bachelor of Science degree. A total of 107 medical and 16 pharmacy students indicated that IPE was not offered in their curricula; more than half of the respondents, 61.19%, shared this viewpoint.

Students' perspectives on shared learning about self-improvement

In this category of questions 80.09% were positive (Figure 1), where respondents either agreed, or strongly agreed that shared learning with other disciplines would help individuals become more effective members of a healthcare team, 79.6% were positive that it would help them understand clinical problems, 84.57% were certain that it would help them think positively about other professions and only 76.11% students think that it would help them understand their limitations and become better team workers. Similarly, there is a finding in a study done by Larivaara & Taanila in 2004 where interprofessional collaboration assisted doctors in finding solutions for challenging patient problems and understanding the value and roles of other healthcare professionals.[11] Therefore, it was unsurprising that most students from both disciplines strongly agreed that shared learning would positively impact individuals' self-improvement. Based on the results, it was deduced that students understand the relevance and importance of shared learning as part of the curriculum.

Students' understanding of the goal of a multidisciplinary healthcare team

Out of 201 respondents, 76.61% either agreed, or strongly agreed that working together would benefit patients, and 77.61% were certain it would help clarify the nature of patient problems as seen in Figure 2. While none of the pharmacy students disagreed, 2.54% and 5.73% of medical students disagreed, and strongly disagreed respectively that working together will ultimately benefit the patient. In both disciplines, 82.08% of students either

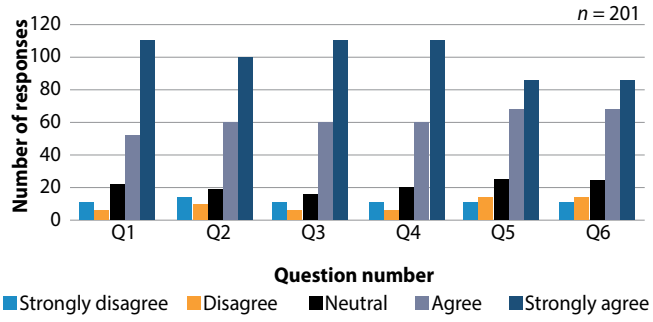

Figure 1: A summary of students' perspectives on shared learning about self-improvement based on Questions 1, 3, 4, 6, 9 and 16

Key: Q1 – Learning with other students will help me become a more effective member of a healthcare team; Q3 – Shared learning with other medical and pharmacy students will increase my ability to understand clinical problems; Q4 – Learning with medical and pharmacy students before qualification would improve relationships after qualification; Q6 – Shared learning will help me to think positively about other professionals; Q9 – Shared learning will help me to understand my limitations; and Q16 – Shared learning before qualification will help me become a better team worker.

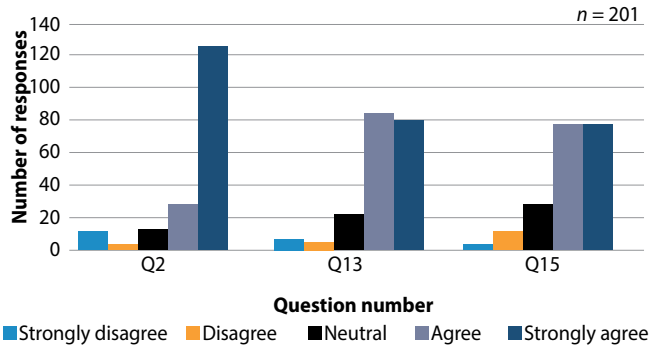

Figure 2: A summary of students' understanding of the goal of a multidisciplinary healthcare team based on Questions 2, 13 and 15

Key: Q2 – Patients would ultimately benefit if medical and pharmacy students worked together to solve patient problems; Q13 – Shared learning with medical and pharmacy students will help me to communicate better with patients and other professionals; and Q15 – Shared learning will help to clarify the nature of patient problems.

agreed, or strongly agreed that learning together would improve communication among healthcare professionals and patients. This agrees with a study that was done by Illingworth & Cheivanayagam in 2007 that interprofessional education improved trust and enhanced communication, leading to changes in the attitudes that professionals may have towards each other.[12]

Students' perceptions about learning together before qualification

Results show that 89.55% of the 201 respondents were positive that it is necessary to effectively communicate with each other as professionals (Figure 3). About 89.05% reported that it is important to trust and respect each other in small-group learning. A majority, 85.57% reported that it is important to have team working skills. Collaborative learning was not deemed to be a 'waste of time' as reported by the majority (78.10%) of the respondents. A large portion, 69.65% of respondents were positive that clinical problem-solving skills could be learned with students from different departments. A majority, 80.09%, were willing to work on small group projects with each other. A study published in 1997 by Tanskanen et al., revealed that pharmacists and doctors had a controversial perception of each other's roles and responsibilities, and this negatively affected their communication and ability to work as a team.[8] This was congruent with the current study findings as about five medical students were of a viewpoint that interprofessional education will not assist them in clinical problem-solving skills.

Students' knowledge about their professional roles and other professions' roles

As observed in Figure 4, 70.14% of both medical and pharmacy students either disagreed or strongly disagreed that they were not sure of their roles in an interprofessional group simply meaning they understood their roles. Interestingly, the emergence of "neutral" as an answer for question 17 was observed, which tells us that students were not sure whether other healthcare professionals' functions were to support doctors or pharmacists. It was also noted that 54.77% of medical students agreed that

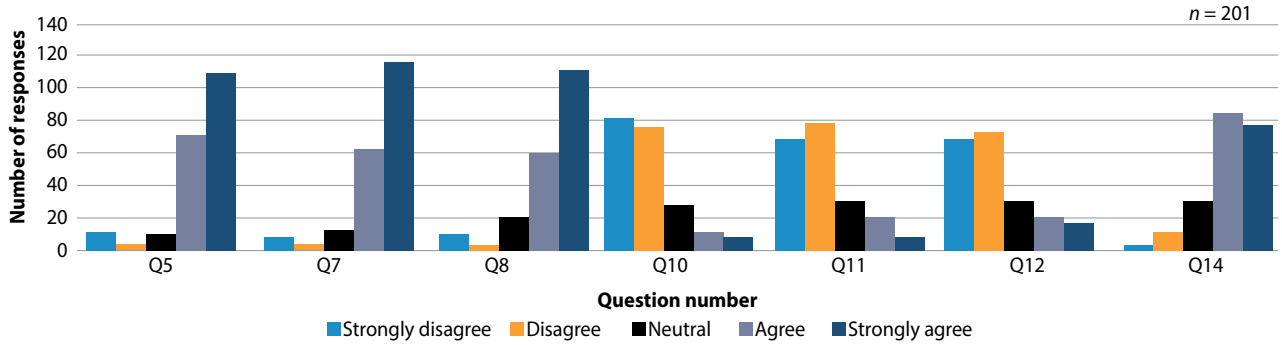

Figure 3: A summary of students' perceptions about learning together before qualification based on Questions 5, 7–8, 10–12 and 14

Key: Q5 – Communication skills should be learned with medicine and pharmacy students; Q7 – For small-group learning to work, students need to trust and respect each other; Q8 – Team-working skills are essential for medical and pharmacy professionals to learn; Q10 – I don't want to waste my time learning with medical and pharmacy students; Q11 – It is not necessary for undergraduate medical and pharmacy students to learn together; Q12 – Clinical problem-solving skills can only be learned with students from my department; and Q14 – I would welcome the opportunity to work on small-group projects with other medicine and pharmacy students.

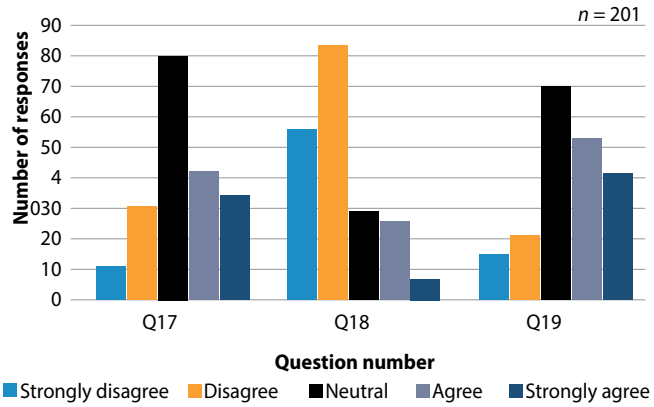

Figure 4: A summary of students' perceptions about learning together before qualification based on Questions 17–19

Key: Q17 – The function of medicine/pharmacy and therapists is mainly to provide support for doctors/pharmacists; Q18 – I'm not sure what my professional role will be; and Q19 – I have to acquire much more knowledge and skills than other medical/pharmacy students.

they were expected to learn more than other disciplines while pharmacy students were neutral about the notion, and it can be assumed that they were unsure. This shows clearly that some students were not certain if they understood different professional roles in interprofessional groups. This gap of knowledge can be filled by introducing IPE earlier in the curriculum of both pharmacy and medical students. It would, however, be justifiable for 4th-year medical students not to understand their professional roles in interprofessional groups since they would not have been exposed to IPE as per the current curriculum at the institution. The findings of this study are congruent with the previous outcomes of a study by Oxelmark,[13] who reported that medical students lack knowledge about the roles of other healthcare professionals and only realise their professional responsibilities after learning together. Pharmacy students, on the other hand, had been exposed to IPE during the first week of their final year studies together with other disciplines such as nursing, physiotherapy and dentistry.

Discussion

The current study answers if medical and pharmacy students have IPE included in their curriculum, and their willingness to be part of IPE and it answers the question regarding their interprofessional impressions of each other. Before this study, only a few studies had been done on interprofessional impressions among pharmacy and medical students. However, studies done previously focused on interprofessional impressions amongst other disciplines. For example, in 2015 Wilbur and Kelly at the Qatar University College of Pharmacy and the University of Calgary used a focus group including pharmacy and nursing students that covered similar objectives as the current study.[3]

The findings of this study demonstrate that IPE is not formally integrated into the curriculum for medical and pharmacy students at SMU. Although an IPE programme exists for final-year students across health sciences, medical students have not participated due to timetable misalignment and logistical challenges. This has led to a perception among some students that IPE is absent from their curriculum. Despite this, the survey reveals that students from both disciplines recognise the importance of learning together and view each other as valuable collaborators in patient care.

These findings are significant within the context of South Africa's National Health Insurance (NHI), where the Contracting Unit for Primary Health Care (CUP) is envisioned as the primary service delivery model. Effective CUP delivery requires cohesive, multidisciplinary teams, a goal that can be achieved through structured IPE. IPE fosters teamwork, improves communication, and clarifies professional roles, ultimately enhancing patient outcomes and service efficiency. In the absence of IPE, students may develop incomplete perceptions of each other's roles, which can hinder future collaboration.

The study also suggests that the lack of IPE may have influenced the differing perceptions between medical and pharmacy students. While most respondents recognised the importance of IPE and expressed willingness to engage in shared learning, their actual exposure to it was limited. This highlights the need for SMU

to prioritise structured, curriculum-based IPE, ensuring that all health science students gain practical experience in collaborative practice. Given the findings, future research should explore interprofessional perceptions among other disciplines, such as pharmacy and nursing or dentistry students, to provide a broader understanding of interprofessional dynamics in healthcare education.

Limitations and recommendations for future studies

The study was initially designed to be conducted using self-administered questionnaires. However, due to the COVID-19 pandemic, the survey was conducted via Google Forms®. Consequently, the target population was reduced from 53 pharmacy students and 214 medical students to 44 pharmacy and 157 medical students. While this may have impacted the study's robustness, it remains both feasible and reproducible, as a response rate of ≥ 75% was achieved.

The use of an online survey may have inadvertently excluded students with limited internet access or those less engaged with digital platforms, potentially leading to participation bias. Additionally, the study was limited to 4th year pharmacy and medical students at a single university in South Africa, restricting the generalisability of the findings to other institutions and healthcare settings. Furthermore, the exclusion of other key healthcare disciplines, such as nursing, physiotherapy, and occupational therapy, means that the study does not fully capture a comprehensive multidisciplinary perspective. A truly holistic approach requires input from a broader range of healthcare professionals. Despite these limitations, the findings indicate that most pharmacy and medicial students recognise the value of IPE.

The survey format did not allow participants to fully articulate their impressions of each other's professions, as it relied exclusively on close-ended Likert scale questions. This format may have introduced social desirability bias, where students selected more favourable responses to align with perceived norms rather than their actual opinions. Additionally, the study relied solely on quantitative data, lacking qualitative insights (e.g. open-ended responses or interviews), which may have provided a deeper understanding of why some students expressed reservations about interprofessional collaboration.

To enhance future research, the following recommendations are proposed: (i) incorporating more qualitative studies to allow students to express their perspectives in greater depth; (ii) expanding the study to include multiple universities and a wider range of healthcare disciplines; (iii) integrating qualitative research methods, such as focus groups or interviews, to explore the underlying factors influencing students' perceptions; and (iv) conducting a longitudinal study to track changes in interprofessional attitudes over time.

Conclusions

The survey results indicate a generally positive perception of IPE among students, with most respondents strongly agreeing on its importance. However, notable differences in perceptions were observed between the two groups. While the majority of pharmacy students expressed confidence in their ability to contribute effectively within a multidisciplinary team, a smaller proportion of medical students viewed the inclusion of pharmacy students as critical to patient outcomes. This disparity suggests a potential gap in understanding the roles of different healthcare professionals, highlighting the importance of interprofessional education to promote mutual respect and collaborative practice.

Overall, the findings emphasise the need for structured, curriculum-based interprofessional education to enhance mutual understanding, respect, and teamwork among future healthcare professionals. Integrating shared learning experiences for pharmacy and medical students is recommended to prepare them for effective collaboration in clinical settings.

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Conflicts of interest

The authors declare no conflict of interest.

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Ethical approval

Ethics approval was obtained from the Sefako Makgatho University Research Ethics Committee, Ethics Reference Number, SMUREC/P/71 /2020:UG.

Informed consent was obtained from all subjects involved in the study

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References

1. Vuurberg G, Vos JAM, Christoph LH, de Vos R. The effectiveness of interprofessional classroom-based education in medical curricula: A systematic review. Journal of Interprofessional Education and Practice. 2019;15:157-67. https://doi.org/10.1016/j.xjep.2019.01.007.
2. Yan J, Gilbert JHV, Hoffman SJ. World Health Organization (WHO). Study Group on Interprofessional Education and Collaborative Practice. Journal of Interprofessional Care, 2007;21:58801509.
3. Wilbur K, Kelly I. Interprofessional impressions among nursing and pharmacy students: A qualitative study to inform interprofessional education initiatives. Biomedical Central Medical Education. 2015;15(53):1-3. https://doi.org/10.1186/s12909-015-0337-y.
4. Alfehaid LS, Qotineh A, Alsuhebany N, Alharbi S, Almodaimegh H. The perception and attitudes of undergraduate healthcare sciences students of feedback: A qualitative study. Health Profession Education. 2018;4:186-97. https://doi.org/10.1016/j.hpe.2018.03.002.
5. Thistlethwaite J. Interprofessional education: a review of context, learning and the research agenda. Medical Education. 2012;46(1):58-70. https://doi.org/10.1111/j.1365-

2923.2011.04143.x.
6. Pitout H, Human A, Treadwell I, Sobantu N. Healthcare students' perceptions of a simulated interprofessional consultation in an outpatient clinic. Innovations in Education and Teaching International. 2014;53:338-48. https://doi.org/10.1080/14703297.2014.993417.
7. Reeves S, Perrier L, Goldman J, Freeth D, Zwarenstein M. Interprofessional education: effects on professional practice and healthcare outcomes. Cochrane Database of Systematic Reviews. 2013(3). https://doi.org/10.1002/14651858.CD002213.pub3.
8. Tanskanen P, Jäkälä J, Airaksinen M, Enlund H. Physicians' views on cooperation with community pharmacists in Finland. Journal of Social and Administrative Pharmacy. 1997;14:220-30.
9. McFadyen AK, Webster V, Strachan K, et al. The Readiness for Interprofessional Learning Scale: a possible more stable sub-scale model for the original version of RIPLS. Journal of Interprofessional Care. 2005;19(6):595-603. https://doi.org/10.1080/13561820500430157.
10. McCombes S. How to write a research methodology. 2019. Available from: https://www.scribbr.com/dissertation/methodology/. Accessed 19 May 2025.
11. Larivaara P, Taanila A. Towards interprofessional family-oriented teamwork in primary services: The evaluation of an education programme. Journal of Interprofessional Care. 2004;18(10):153-63. https://doi.org/10.1080/13561820410001686918.
12. Illingworth P, Chelvanayagam S. The benefits of interprofessional education 10 years on. British Journal of Nursing. 2017;26(14):813-8. https://doi.org/10.12968/bjon.2017.26.14.813.
13. Oxelmark L, Nordahl Amorøe T, Carlzon L, Rystedt H. Students' understanding of teamwork and professional roles after interprofessional simulation - a qualitative analysis. Advances in Simulation. 2017;2(1):1-8. https://doi.org/10.1186/s41077-017-0041-6.