

ORIGINAL ARTICLE

Measuring Health Professions Students' Approaches toward Interprofessional EducationAMEL A. HASSAN¹, AMAL M, HAMID¹, NADIA AHMED MOHAMMED¹, SHAHENDA A. SALIH²¹Assistant professor, Department of Nursing, Faculty of Medical Technical Science, AL zaiem Alazhari University, Sudan²Assistant Professor, Department of Nursing, College of Applied Medical Sciences, Jouf University, Kingdom of Saudi ArabiaCorresponding author: Shahenda A. Salih, Email: Shahenda@ju.edu.sa, Cell: (00966)502790407**ABSTRACT****Background:** efficient interprofessional learning acting a major part in preparing health professional undergraduates for future cooperative healthcare practice.**Methods:** To assess health professions students' Approaches toward interprofessional education.**A** descriptive cross-sectional online survey was used among fourth-year undergraduate students in nursing, anaesthesia, and midwifery program (n=132), selected by purposive sampling technique. . The tool used for data collection was readiness interprofessional learning scale (RILS).**Results:** The majority of the students strongly agreed with the clients would substantially profit if healthcare undergraduates worked simultaneously (45.5%), communication skills would be educated with other healthcare learners (48.5%), and shared education will aid me to know my particular specialized limitations (53%), and for small-group learning to work, students need to respect and trust each other (62.1%). **Conclusion:** Interprofessional education is highly appreciated by all students with different disciplines.**Keywords:** healthcare, health professions, interprofessional education, Sudan**INTRODUCTION**

Interprofessional education is about learning to work together. Being mindful of one's specific learning style and discovering one's own knowledge and experience of being employed in groups and teams can help in accepting other members of the healthcare team and their different positions (1–3). Efficient, well-functioning teams have an immense capacity to enhance the delivery of healthcare. There is growing evidence that interprofessional education is an important part of addressing problems such as patient safety, chronic disease management and primary health care in the development of more effective healthcare(4,5) Health practitioners' education and health care programs already face many problems, including an ageing population, increased life expectancy, chronic diseases, complex health issues and social exclusion(6–8) There is a need to balance the growing cost of health care and, at the same time, to ensure healthy and comprehensive patient-centred facilities (9). Real interprofessional learning (IPL) shows the main role in arranging individual health professional learners for future collaborative healthcare practice(10–12). In contrast to that provided by a team of people from a single discipline, a multi-disciplinary healthcare team can have improved patient results and quality of care. In the interprofessional team, practitioners from various backgrounds make specific contributions to achieving a greater quality of life and improved protection for their patients. The World Health Organization (WHO) believes that interdisciplinary collaborative practice in healthcare environments enhances patient management outlines (1). Furthermore, In addition, it considers IPL as one of the most successful methods in healthcare settings to achieve productive collaborative practice. In addition to the positions of its team members from other careers, IPL allows students to consider the main responsibilities of their respective careers(13). Across health care disciplines, and emphasis on interprofessional practice (IPP) has taken place with the motivation to increase the quality of patient

care(14). Interprofessional practice emphasizes partnerships to provide full-person health care to maximize patient outcomes between various health care providers, patients, and their caregivers (15,16). IPP, is a dynamic method that often needs formal training in order to execute it properly (17). IPE leads to improvement in the knowledge, skills, and attitude among the multi-professional health care team(18–20). A recent refined concept of IPE beliefs in the sustainability of the improvements of IPE, through focusing on the shared competencies across the health care team(20). Health professions students hold the view that each is an expert in his own field i.e. doctors cure and nurses care. This means that the professions of nursing and medicine do not overlap. However, as professional boundaries become increasingly blurred, such assumptions become outdated. As hierarchies, roles and boundaries become unclear this may lead to uncertainty and competition. This notion of competition arises only because the medical and nursing students have not learned to work collaboratively during the early stages of their undergraduate studies. Introducing the IPE throughout the under& postgraduate studies and continuing with it during practice will help stop misunderstanding and competition between health care professionals. Patient safety challenges, shortages of health and human resources, and an aging population with increasingly complex health care needs are confronting our health care climate(21). This paper aimed to measure behaviours and preparation of undergraduate healthcare professional students to engage in interprofessional learning activities for interprofessional education, also the paper aimed to assess collaboration between undergraduate students of different health sciences colleges, to assess students with information and skills to understand their own future profession and gain information and understanding of other health professions roles in health care, to determine group work skills, communication and leadership skills among participants

and to provide students with the opportunity to develop interprofessional competencies required for effective collaborative practice.

MATERIAL AND METHOD

A cross-sectional electronic-based study design was conducted for two months from May to June 2021 at the Alzaiem Alazhari University, Faculty of Medical Technical Sciences Sudan. Purposive sampling was performed. Using the software, the sample size was determined by considering the total student population during the study period; power was maintained at 80% response distribution at 50 % the confidence interval was set at 95 and the error margin was set at 5%. All the students were invited to take part in the research. The total population was 154 students, 88 in nursing, 42 in anaesthesia, 24 in midwifery. However, 132 students completed the survey 78 in nursing, 32 in anaesthesia, and 22 in midwifery, which was a reasonable sample size with a response rate of 85.5%. Respondents who were not interested in participating were omitted from the study. The research was accepted by the faculty Research and Ethics Committee and informed consent from the healthcare students was obtained. Reliable tools have collected data that is essential for assessing interprofessional education (IPE) and ensuring quality. To evaluate the responses of the students, a 5-point Likert Scale (strongly agree = 5, agree = 4, neutral = 3, disagree = 2 and strongly disagree = 1) was used. There are 19 self-reported items under four distinct domains in the study method. Domain 1 concentrated on the facets of cooperation and teamwork (item 1-9). Domain 2 concentrated on the negative identification of the professional against other occupations(item 10–12). Worldwide, for the past 20 years or so, the interprofessional sector has been constructing

and developing methods for assessing the effect of IPE across different settings in education and healthcare. In order to facilitate best practice initiatives and improve IPE approaches, these findings can be used to benchmark and compare performance at the national and international levels. Readiness for Interprofessional Learning was one of the first methods used to assess students' attitudes towards interprofessional learning.(Parsell & Bligh, 1999)Scale(RIPLS)

Scale (RIPLS) (Parsell & Bligh, 1999) (Cornelia M., Sarah B., & Scott R. (2015) and Coster S etal, 2018)(22). In addition, demographic features of the participants (age, gender, and specialty) were also collected. The information obtained was coded, entered and processed using version 25 of the Social Science Statistical Package (SPSS). Significance was regarded as $P \leq 0.05$ for data analysis. There was the use of descriptive statistics with mean and SD studies

RESULTS

Table 1: Socio-demographic data (n=132)

Age	Frequency	Percent
20-25	118	89.4%
26-30	8	6.1%
31-36	6	4.5%
Gender		
Female	132	100%
Male	0	0.0%
Specialty		
Nursing	78	59.0%
Anesthesia	32	24.3%
Midwifery	22	16.7%
Total	132	100%

The Readiness for Interprofessional Learning Scale (RIPLS)

Table 2: mean scores of interprofessional education (n=132)

Item	Mean	Std. Deviation
Domain 1: Teamwork & collaboration		
1. Learning with other students would make me a more active member of a healthcare team	4.18	0.91
2. If healthcare students worked together, patients would eventually benefit from it.	4.32	0.77
3. Shared learning with other students in the healthcare sector would boost my ability to Recognize health concerns.	4.19	0.95
4. Communication skills with other health students should be learned	4.32	0.75
5. For all healthcare students, team-working skills are important to learning	4.17	0.95
6. Shared learning would encourage me to know my own professional limitations	4.21	0.75
7. Before certification, learning among healthcare students would boost Post-qualification working relationships	4.36	0.92
8. Shared learning will help me think differently of other healthcare Skilled practitioners	4.24	1.05
9. Students need to respect and trust each other to make small-group learning function.	4.24	0.61
Domain 2: Negative professional identity		
10. I don't want to waste time learning with other healthcare students	2.89	1.18
11. It is not necessary for undergraduate healthcare students to learn together	3.18	1.26
12. Clinical problem solving can only be learnt effectively with students from my own school	3.23	1.23
Domain 3: Positive professional identity		
13. I'll be supported by mutual learning with other healthcare professional's Better contact with patients and other experts.	4.24	0.91
14. I will appreciate the ability to collaborate with other health care students on small group projects.	4.15	0.89
15. Shared learning will help me explain the essence of the concerns of patients or clients.	4.21	0.94
16. Shared pre-qualification learning will help me become a better team worker.	4.30	0.93
Domain 4: Roles and responsibilities		
17. The key role of allied health professionals is to provide doctors with resources.	4.17	0.90
18. I don't know what my professional role would be.	2.90	1.28
19. I need to learn a lot more experience and skills than other students	4.21	0.81

For the statement 'Learning among healthcare students before qualification will enhance working relationships after qualification, the highest mean score was obtained. The second highest mean score was obtained for the statements 'Patients would eventually gain if healthcare students worked together "and" Communication skills should be acquired with other healthcare students. "Students obtained lowest mean score, for the statement 'I don't want to waste time studying with other healthcare and 'I am not sure what my professional role will be.

Cross tab between socio-demographic and Perception of students towards interprofessional education: The cross tab was done between age, gender and specialty and 5-point Likert scale then taken the Pearson chi-square value to different subscale statements which were varied from significant to insignificant test. In some comments, the teamwork and coordination sub-scale reflected exceptionally positive attitudes. The majority of learners

firmly agreed with the statements "Patients would ultimately benefit if healthcare students worked together (45.5%) with significant P.value (.000), Communication abilities should be educated with other healthcare learners (48.5%), and Joint learning will assist me to recognize my own professional restrictions (53%) with insignificant P. value (.037), Students must value and trust each other in order for small-group learning to succeed (62.1%) with significant test (.000). According to subscale negative professional identity disagree (40.9%) regarding the statement "I don't want to waste time learning with other healthcare students" with significant test (.000) while 51.5% had a positive professional identity in the statement of 'Shared learning before qualification will help me become a better team worker" with significant P.value (.000). The subscale roles and tasks revealed that (43.9%) of them regarding the statement "I have to acquire much more knowledge and skill than other students" with insignificant

Table (3) cross tabs between socio-demographic and perception of students towards interprofessional education (n=132)

Variables	Strongly disagree N%	disagree N%	Neutral N%	Strongly Agree N%	Agree N%	p.v
Domain 1: teamwork and collaboration						
1. I would be a more successful member of a healthcare team through studying with other students.	-	10 (7.6%)	14 (10.6%)	50 (37.9%)	58 (43.9%)	.000
2. If healthcare students acted collectively, patients would eventually benefit from	-	6 (4.5%)	6 (4.5%)	60 (45.5%)	60 (45.5%)	.000
3. Shared learning with other students in healthcare would improve my ability to understand clinical issues	2 (1.5%)	8 (6.1%)	12 (9.1%)	50 (37.9%)	60 (45.5%)	.000
4. Communication skills with other health care professionals should be taught	-	6 (4.5%)	4 (3.0%)	64 (48.5%)	58 (43.9%)	.037
5. For all healthcare students, team-working skills are essential to learn	2 (1.5%)	8 (6.1%)	14 (10.6%)	50 (37.9%)	58 (43.9%)	.000
6. Shared learning would encourage me to know my own professional shortcomings	-	6 (4.5%)	8 (6.1%)	70 (53.0%)	48 (36.4%)	.000
7. Learning before graduation among healthcare students will enhance working relationships after qualifications	2 (1.5%)	6 (4.5%)	10 (7.6%)	38 (28.8%)	76 (57.6%)	.003
8. Shared learning would motivate me to think of other healthcare professionals favorably	2 (1.5%)	12 (9.1%)	12 (9.1%)	32 (24.2%)	74 (56.1%)	.004
9. Students need to respect and support each other to make small-group learning function	-	2 (1.5%)	6 (4.5%)	82 (62.1%)	42 (31.8%)	.674
Domain 2: Negative professional identity						
10. With other health care students, I don't want to waste time studying	8 (6.1%)	54 (40.9%)	34 (25.8%)	16 (12.1%)	20 (15.2%)	.000
11. Undergraduate healthcare students do not need to study together	10 (7.6%)	34 (25.8%)	40 (30.3%)	18 (13.6%)	30 (22.7%)	.001
12. Only learners from my own school will learn about clinical problem solving effectively.	4 (3.0%)	44 (33.3%)	32 (24.2%)	22 (16.7%)	30 (22.7%)	.001
Domain 3: Positive professional identity						
13. Shared learning with other healthcare professionals would help me appropriately interact with patients and other professionals	2 (1.5%)	6 (4.5%)	12 (9.1%)	50 (37.9%)	62 (47.0%)	.000
14. I will appreciate the ability to engage with other health care learners on small group work	2 (1.5%)	8 (6.1%)	8 (6.1%)	64 (48.5%)	50 (37.9%)	.000
15. Shared learning will help me describe the scope of the difficulties of patients or clients.	2 (1.5%)	10 (7.6%)	4 (3.0%)	58 (43.9%)	58 (43.9%)	.000
16. Shared pre-qualification learning will aid me to become better team worker	2 (1.5%)	8 (6.1%)	6 (4.5%)	48 (36.4%)	68 (51.5%)	.000
Domain 4: Roles and responsibilities						
17. The major role of allied health professionals is to provide doctors with assistance.	2 (1.5%)	6 (4.5%)	14 (10.6%)	56 (42.4%)	54 (40.9%)	.000
18. I don't realize what my career path would be	16 (12.1%)	42 (31.8%)	36 (27.3%)	14 (10.6%)	24 (18.2%)	.000
19. I need to learn a lot more knowledge and skills than other students	-	6 (4.5%)	14 (10.6%)	58 (43.9%)	54 (40.9%)	.774

P. value (0.774).

Cross tabulation with study variables presented in Table 3

DISCUSSION

Many researchers around the world have identified the positive effects of interprofessional practice on improved patient care. In medical and health-related educational initiatives, patient-centric treatment has been shown to be essential and can be encouraged by IPL (20). During their studies, students from various programs enjoyed the function of cooperative learning with other health professional courses in identifying and addressing clinical problems (21,23) The current study showed that the beginning of basic courses until advanced courses which are (Anatomy, physiology, basic skills, health profession ethics, epidemiology, pathology, biochemistry, community health nursing, and research methodology) in the first year until fourth-year students became more positive attitude in the highest mean score was obtained for the statement 'Learning between healthcare students before qualification would improve working relationships after qualification. The second highest mean score was obtained for the statements "Patients would ultimately benefit if healthcare students worked together" and "Communication skills should be learned with other healthcare students "These results were similar in the study, the attitudes and preparation of students for IPL were optimistic in all RIPL subscales at the beginning of the public health course in the first semester. The highest scores were evaluated in teamwork and collaboration also. The statements "Patients would ultimately benefit if health care students worked together to solve patients problems" and "Shared learning will help me to clarify the nature of patient' problems" were scored high (24).

The participants in our study agreed that their shared learning experience will improve their communication skills, especially when managing their patients and communicating with different healthcare providers. One of the main factors for good collaborative practice in healthcare is developing communication skills. This result was accepted with the research conducted by D. A. A. and S. Murphy et al 2011, which had the same significance (20).

The current results revealed that Students obtained the lowest mean score, for the statement 'I don't want to waste time learning with other healthcare students' and 'I am not sure what my professional role will be. Like a study done by Mari et al, 2017 the lowest score for the items 'I'm not certain what my professional position would be,' said the poor understanding of their own positions and obligations by the students. It is of great importance to recognize their own professional position in the healthcare team and lack of clarification about these positions can result in them not working well with other health professionals(20) . Students stated that joint learning with other healthcare practitioners would help me better interact with patients and other practitioners and also share knowledge and expertise with other professionals in a statement that "I will welcome the opportunity to work with other healthcare students on small group projects." This

outcome clashed with the study finding that students clashed that they should work closely with people from other careers and claimed that they did not do something (25). Our research showed the lowest mean score in the sentence 'I have to learn a lot more experience and skills than other students.' Horsburgh et al. (2001) indicated that undergraduate students thought they needed to learn more expertise and information than other allied healthcare professionals. This aligned with the outcome (26).

The mean scores for the RIPLS domains 'teamwork and collaboration', 'positive professional identity and their roles and responsibilities were not significantly different among students from different disciplines. This shows that students from all disciplines were ready for team working, encouraging positive professional. In order to better understand the role of other health professionals in the healthcare team, at the initial stage of their professional career, every student in healthcare must understand their own professional identity. This will allow them to properly interact with their peers from other careers and improve their ability to collectively solve issues related to healthcare. This is like the outcome reported in this report earlier(25).

Limitations: The first limitation of the survey obtained answers with very few non-respondents from most of the students in the sample population. A common concern in survey-based research is non-response. Second, the research concentrated only on medical students in the fourth year, so this outcome can not be generalized at the other level. Thirdly, the findings may be a snapshot and may not be able to be extrapolated to other universities because of the research design and sampling from a single study site.

Conclusion: The study concluded that interprofessional education is highly appreciated from all students with different disciplines and it has positive effects on the attitude positive of students on enabling the active collaborative practice to enhance health systems and improve the results of health care. Increase awareness of the undergraduate students at the colleges of nursing, midwifery and anaesthesia about teamwork and leadership skills. Developing the skills of collaborative health care, teamwork and leadership among health professions and hence raise the quality of health care.

Acknowledgements: All the authors acknowledge students of the Faculty of Medical Technical Sciences, Alzaiem Alazhari University for participating in this study.

Funding: There was no financial support and sponsorship from any site

Interest conflicts: The authors note that there is no conflict of interest in the publishing of this text.

REFERENCES

1. Organization WH. Framework for action on interprofessional education and collaborative practice. World Health Organization; 2010.
2. Foronda C, MacWilliams B, McArthur E. Interprofessional communication in healthcare: An integrative review. *Nurse Educ Pract.* 2016;19:36–40.
3. Thannhauser J, Russell-Mayhew S, Scott C. Measures of interprofessional education and collaboration. *J Interprof Care.* 2010;24(4):336–49.

4. Thistlethwaite J. Interprofessional education: a review of context, learning and the research agenda. *Med Educ.* 2012;46(1):58–70.
5. Widyandana D. EVALUATING INTERPROFESSIONAL EDUCATION PRINCIPLE IN A LONGITUDINAL COMMUNITY-BASED PROGRAM FOR 3 SCHOOLS OF HEALTH PROFESSIONS: MEDICINE, NURSING, AND NUTRITION. *J Pendidik Kedokt Indones Indones J Med Educ.* 2018;7(1):59–63.
6. Frenk J, Chen L, Bhutta ZA, Cohen J, Crisp N, Evans T, et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. *Lancet.* 2010;376(9756):1923–58.
7. Cancedda C, Farmer PE, Kerry V, Nuthulaganti T, Scott KW, Goosby E, et al. Maximizing the impact of training initiatives for health professionals in low-income countries: frameworks, challenges, and best practices. *PLoS Med.* 2015;12(6):e1001840.
8. Barrett MA, Bouley TA, Stoertz AH, Stoertz RW. Integrating a One Health approach in education to address global health and sustainability challenges. *Front Ecol Environ.* 2011;9(4):239–45.
9. McMillan M, Rhodes J, Winder P, Strathearn M, Anakin M. Comparing Evaluation Responses of an Interprofessional Education Initiative with Students in Undergraduate Nursing and Medical Programmes. *Nurse Educ Today.* 2021;105023.
10. Brashers V, Haizlip J, Owen JA. The ASPIRE model: grounding the IPEC core competencies for interprofessional collaborative practice within a foundational framework. *J Interprof Care.* 2019;
11. Bridges D, Davidson RA, Soule Odegard P, Maki I V, Tomkowiak J. Interprofessional collaboration: three best practice models of interprofessional education. *Med Educ Online.* 2011;16(1):6035.
12. Organization WH. Interprofessional collaborative practice in primary health care: Nursing and midwifery perspectives: Six case studies. Geneva: World Health Organization; 2013. 2020.
13. Matsuzaka Y, Hamaguchi Y, Nishino A, Muta K, Sagara I, Ishii H, et al. The linkage between medical student readiness for interprofessional learning and interest in community medicine. *Int J Med Educ.* 2020;11:240.
14. Fraher E, Brandt B. Toward a system where workforce planning and interprofessional practice and education are designed around patients and populations not professions. *J Interprof Care.* 2019;33(4):389–97.
15. Zwarenstein M, Goldman J, Reeves S. Interprofessional collaboration: effects of practice-based interventions on professional practice and healthcare outcomes. *Cochrane database Syst Rev.* 2009;(3).
16. Fox A, Reeves S. Interprofessional collaborative patient-centred care: a critical exploration of two related discourses. *J Interprof Care.* 2015;29(2):113–8.
17. Welsch LA, Rutledge C, Hoch JM. The modified Readiness for Interprofessional Learning Scale in currently practicing athletic trainers. *Athl Train Educ J.* 2017;12(1):10–7.
18. Robben S, Perry M, van Nieuwenhuijzen L, van Achterberg T, Rikkert MO, Schers H, et al. Impact of interprofessional education on collaboration attitudes, skills, and behavior among primary care professionals. *J Contin Educ Health Prof.* 2012;32(3):196–204.
19. Tunstall-Pedoe S, Rink E, Hilton S. Student attitudes to undergraduate interprofessional education. *J Interprof Care.* 2003;17(2):161–72.
20. Maharajan MK, Rajiah K, Khoo SP, Chellappan DK, De Alwis R, Chui HC, et al. Attitudes and readiness of students of healthcare professions towards interprofessional learning. *PLoS One.* 2017;12(1):e0168863.
21. Williams B, Boyle M, Brightwell R, McCall M, McMullen P, Munro G, et al. A cross-sectional study of paramedics' readiness for interprofessional learning and cooperation: results from five universities. *Nurse Educ Today.* 2013;33(11):1369–75.
22. Coster S, Norman I, Murrells T, Kitchen S, Meerabeau E, Sooboodoo E, et al. Interprofessional attitudes amongst undergraduate students in the health professions: a longitudinal questionnaire survey. *Int J Nurs Stud.* 2008;45(11):1667–81.
23. Holthaus V, Sergakis G, Rohrig L, Wilcox J, Thomas E, McClerking C, et al. The impact of interprofessional simulation on dietetic student perception of communication, decision making, roles, and self-efficacy. *Top Clin Nutr.* 2015;30(2):127–42.
24. Williams B, Brown T, Boyle M. Construct validation of the readiness for interprofessional learning scale: a Rasch and factor analysis. *J Interprof Care.* 2012;26(4):326–32.
25. Aziz Z, Teck LC, Yen PY. The attitudes of medical, nursing and pharmacy students to inter-professional learning. *Procedia-Social Behav Sci.* 2011;29:639–45.
26. Southall TM, MacDonald S. Fostering Undergraduate Medicine, Nursing, and Pharmacy Students' Readiness for Interprofessional Learning Using High Fidelity Simulation. *Cureus.* 2021;13(1).