



Original Research Article

Readiness for Inter-Professional Education (IPE) among healthcare professional students: A cross-sectional study

Chidzonga Midion¹, *Haruzivishe Clara², Rukweza Judith² and Chikwasha Vasco³

Abstract

¹Departments of Oral Health and Health Professions Education, Faculty of Medicine and Health Sciences, University of Zimbabwe.

²Department of Primary Health Care Sciences, Faculty of Medicine and Health Sciences, University of Zimbabwe.

³Department of Community Medicine, Faculty of Medicine and Health Sciences, University of Zimbabwe

*Corresponding Author E-mail: claraopha@gmail.com

Healthcare delivery is provided by various health professions working together. Lately collaborative practice is known to improve patient's outcomes. Interprofessional education (IPE) prepares health professions for interprofessional collaborative practice (ICP) as opposed to the traditional silo based health professions education (HPE). IPE promotes collaborative decision-making in practice. The aim of this study was to assess the perception and readiness for IPE and perceived barriers to the implementation of IPE activities among the health professions' students at the University of Zimbabwe Faculty of Medicine and Health Sciences. A mixed method cross-sectional descriptive study was used. Quantitative data was collected by administering an online Readiness for Interprofessional Learning Scale (RIPLS) questionnaire to healthcare professions students in the UZFMHS in all the years of their programmes of study. The qualitative component was in the form of comments from the students on aspects on the RIPLS questionnaire. The majority of students in all the programmes of study were in full support of interprofessional education in that it improves the relationships amongst the various healthcare professionals to the overall benefit of the patients and the community. They also appreciated the need to respect other professions and highlighted the importance of collaborative team work, positive professional identity, desisting from negative professional identity towards other professions and being appreciative of the roles and responsibilities of other members of the healthcare team. The students in the UZFMHS indicated their readiness and willingness to participate in IPE and are appreciative of the role IPE plays in fostering interprofessional collaborative practice. They also indicated positive attitudes to team work and collaboration, and little negative attitudes towards other professions and positive attitudes towards other professions and their roles and responsibilities to foster improvements in the delivery of quality healthcare.

Keywords: Interprofessional education (IPE), Readiness for Interprofessional Learning Scale (RIPLS), interprofessional collaboration, team collaboration, readiness.

INTRODUCTION

There is sufficient evidence that effective IPE enables effective interprofessional collaborative practice (ICP) (Lyon, 2018; Frenk et al., 1958; Reeves et al., 2011). World Health Organisation (WHO) defines IPE as "students from two or more professions learn[ing] about, from, and with each other to enable effective collaboration and improve health outcomes (WHO, 2010). The current HPE is outdated and fragmented and has static curriculum which does not adequately prepare for ICP (2). The ICP is defined by the WHO (2010) as

"multiple health workers from different professional backgrounds working together with patients, families, caregivers and communities to deliver the highest quality of care (WHO, 2010). The WHO framework encourages an integrated health system that can lead to improved patient satisfaction, patient acceptance of care and health outcomes, a more appropriate referral pattern, greater continuity and coordination of care, and collaborative decision making with reduced negative workplace interactions (Lyon, 2018; Frenk et al., 1958; Reeves et

al., 2011; WHO, 2010; Chan et al., provide year; Maeno et al., 2019; Lestari et al., 2016). The increased complexity of medical systems has led to increased emphasis on patient-centred collaborative approach to care with IPE being the strategy to achieve this end (WHO, 2010; Lestari et al., 2016).

The current traditional healthcare professional education provides for students to be educated in “silos” within the confines of their disciplines throughout their academic programme, with little opportunity to learn with students from other disciplines (Chan et al., 2017). This leads to failure to understand what other professionals know, think, or feel (Chan et al., 2017). This results in stereotyping of other health professionals leading to future difficulties in delivering quality, effective and holistic patient-centred care. The current silo practice is fraught with problems such as ineffective communication, poor interprofessional relationships, a lack of trust between team members, and an underestimation of other professionals’ roles and responsibilities (Masters et al., 2013). This approach does not prepare students for ICP (Chan et al., 2017; General Medical Council, 2015). The United Kingdom General Medical Council has stipulated that “learn and work effectively within a multi-professional team “as a learning goal for medical professionals (Bridges et al., 2011). In the United States the Liaison Committee on Medical Education requires the incorporation of interprofessional curricular experiences into medical education, citing “the importance of IPE and ICP for ensuring improved patient outcomes and enhanced safety and quality of care” (Talwalkar et al., 2016; Liaison Committee on Medical Education, 2013).

While the importance of IPE has long been appreciated its implementation has been slow due to numerous factors: structural and organisational conflicts related to programme length and size, geographic separation, faculty expertise, varied assessment methods and learning needs, scheduling difficulties, matching learner levels, long preparation time, poor financial support, institutional and poor staff support (Kasperski Implementation strategies, 2000). However, variations in student attitudes towards IPE (prejudices, stereotypes) may be the biggest barrier of all (Talwalkar et al., 2016; Honan et al., 2015; Furness and Armitage, 2012). Recent studies have indicated the importance of IPE and ICP and improved patient outcomes have been linked to coordinated and collaborative practice (Talwalkar et al., 2016; Liaison Committee on Medical Education, 2013; Honan et al., 2015; Canadian Interprofessional Health Collaborative, 2010). Poor communication and lack of understanding of professional roles and responsibilities can result in patient errors, positive team experiences decrease harmful stereotyping, improve understanding of roles and responsibilities and boost one’s own ability to function on a team (Talwalkar et al., 2016; Honan et al., 2015; Furness and Armitage, 2012).

Various models of IPE are available, for instance, a didactic programme, a community-based experience, an interprofessional-simulation experience. The didactic programme emphasises interprofessional team building skills, knowledge of professions, patient centred care, service learning, the impact of culture on healthcare delivery and an interprofessional clinical component (Canadian Interprofessional Health Collaborative, 2010). These interactions allow for students to understand their own professional identity and at the same time understand the other professions’ roles on the healthcare team.

ICP is a “partnership between a team of health providers and a client in a participatory collaborative and coordinated approach to shared decision making around health and social issues” (Kasperski Implementation strategies, 2000). ICP is a process inclusive of communication and decision-making, leading to a synergistic influence of grouped knowledge and skills (Kasperski Implementation strategies, 2000). Elements of collaborative practice include responsibility, accountability, coordination, communication, cooperation, assertiveness, autonomy, and mutual trust and respect (Kasperski Implementation strategies, 2000). This is the partnership that builds an interprofessional team with common goals to improve the quality and outcomes of patient care. The skills of an interprofessional team are developed through IPE.

There is now a move towards introducing IPE into the University of Zimbabwe Faculty of Medicine and Health Sciences (UZFMHS) transforming the current discipline based HPE programmes into experiential learning opportunity where students interact during their training focusing on a collaborative approach to patient-centred care, with emphasis on team interaction, communication, service learning, evidence-based practice, and quality improvement (Michaels et al., 2017).

Rationale

Health professional students from discipline-focused programmes may have diverse attitudes and readiness towards participation in IPE (Kasperski Implementation strategies, 2000). The students’ preparedness to participate in IPE will be directly dependent on their attitudes and readiness (WHO, 2010; Kasperski Implementation strategies, 2000; Maharajan et al., 2017; Parsel and Bligh, 1999; McFadyen et al., 2005; Aziz et al., 2011). A positive attitude and readiness for IPE will favour the outcomes of IPC and this emanates from attitudes and willingness to participate (Reid and Cakwe, 2011; Maharajan et al., 2017; Parsel and Bligh, 1999; Wilhelmsson et al., 2011). It thus becomes important to gain insight into our students’ willingness, attitudes and preparedness for IPE and ultimately IPC.

Aim

The study's aim was to assess the perception and readiness for IPE and perceived barriers to the implementation of IPE activities among the health professions' students at the University of Zimbabwe Faculty of Medicine and Health Sciences (UZFMHS). The results of this study shall be used in planning of IPE and IDE activities at the UZFMHS.

Objectives

- i. To determine the attitudes of health professionals students towards IPE and their readiness to actively participate in IPE activities and ultimately interprofessional collaboration using the Readiness for Interprofessional Learning Scale (RIPLS), questionnaire, the original one by Parsel and Bligh (1999).
- ii. To determine the barriers to the implementation of IPE from the students' perspectives.

METHODS

Study design

A mixed method cross-sectional descriptive study was used. Quantitative data was collected by administering an online RIPLS questionnaire to healthcare professions students in the UZFMHS in all the years of their programmes of study. The qualitative component was in the form of comments from the students on aspects on the RIPLS questionnaire.

Participants and setting

The study was conducted among the health professions students at the UZFMHS which provides health professions education to various healthcare cadres. Students from medicine, dentistry, nursing, rehabilitation, pharmacy, health promotion and health education, optometry, medical laboratory sciences, radiography and occupational health safety were recruited using a convenience sampling approach. The student population was 2147.

Study instrument

The self-administered RIPLS questionnaire was used. This 5-point Likert Scale has 19 self-reported items in four domains: teamwork and collaboration (items 1 -9); negative professional identity towards other professions (items 10-12); positive professional identity (items 13-16); the roles and responsibilities of professionals

(items 17-19).

Ethical considerations

Permission to carry out the study at the UZFMHS was granted by the Dean. Ethical clearance for the study was obtained from the Joint Parirenyatwa Hospital and College of Health Sciences Ethical Committee (JREC) and the Medical Research Council of Zimbabwe (MRCZ). Indicate details of ethical clearance obtained. Participation in the study may cause minimal psychological harm to the participants in terms of time lost in completing the questionnaire. Participation will be voluntary and a signed consent form to participate and stating confidentiality of the collected information will be obtained from the participants. Non participation would have no consequences to the students. An information sheet describing the study was given to all study participants.

Data analysis

Descriptive statistics are presented using frequencies and percentages. Likert scale data was presented using percentages for each category of strongly agree, agree, undecided, disagree, and strongly disagree on opinions regarding IPE. Likert scale data on opinions regarding IPE by the 4 domains of the RIPLS questionnaire was numeric coded 5, 4, 3, 2 and 1 (for strongly agree, agree, undecided, disagree and strongly disagree respectively). Medians and interquartile ranges were used to summarise this data with higher scores indicating agreement with opinions in each domain. Qualitative data was based on comments by students regarding IPE. The group marked "other" is for students who seem to have failed to understand the meaning of "discipline" and enteredwell disciplined, well, I follow the rules or left blank. Data analysis was conducted using Stata v15.1.

RESULTS

Quantitative results: RIPLS questionnaire

A total of 1700 RIPLS questionnaires were posted online to healthcare professions students in the UZFMHS and 350 filled in questionnaires were returned: response rate 20.6%. However, 2 students were excluded from the study because of incomplete data. Females comprised 60.1% (n=209) of the participants with 39.9% (n=139) males. The low response rate is linked to the fact that the University was closed due to the COVID-19 pandemic and a number of students had poor/none access to internet services: cost, availability.

Tables 1 shows the programmes of study in the

Table 1. Distribution of students by programme and year of study.

Programme of study	1st year	2nd year	3rd year	4th year	5th year	Total
Medicine (MBChB)	20.4% (n=19)	1.6 (n=1)	32.7% (n=32)	32.0% (n=1)	43	31.9% (n=111)
Rehabilitation (physiotherapy, occupational therapy, audiology, speech and language therapy)	24.7% (n=23)	24.6% (n=15)	8.2% (n=8)	18.0% (n=9)	0.0% (n=0)	15.8% (n=55)
Bachelor of Pharmacy (BPharm)	17.9% (n=7)	19.7% (n=12)	13.3% (n=13)	20% (n=10)	0.0% (n=0)	12.1% (n=42)
Medical Laboratory Sciences (HBMLS)	14.0% (n=13)	26.2% (n=16)	10.2% (n=10)	6.0% (n=3)	0.0% (n=0)	12.2% (n=42)
Nursing (BScNS)	5.4% (n=5)	8.2% (n=5)	15.3% (n=15)	22.0% (n=11)	0.0% (n=0)	10.3% (n=36)
Health Education and Promotion (HEP)	14.0% (n=13)	8.2% (n=5)	3.3% (n=2)	0.0% (n=0)	0.0% (n=0)	5.8% (n=20)
Radiography	2.2% (n=2)	4.9% (n=3)	9.8% (n=6)	1.6% (n=1)	0.0% (n=0)	3.5% (n=12)
Bachelor of Dental Surgery (BDS)	2.2% (n=2)	0.0% (n=0)	6.6% (n=4)	0.0% (n=0)	4.9% (n=3)	2.6% (n=9)
Other	3.2% (n=3)	4.9% (n=3)	4.9% (n=3)	0.0% (n=0)	0.0% (n=0)	2.6% (n=9)
Optometry	1.1% (n=1)	1.6% (n=1)	8.2% (n=5)	0.0% (n=0)	0.0% (n=0)	2.0% (n=7)
Diploma in Occupational Safety and Health (DOSH)	5.4% (n=5)	0.0% (n=0)	0.0% (n=0)	0.0% (n=0)	0.0% (n- 0)	1.4% (n=5)
Total number students per year of study	26.7% (n=93)	17.5% (n=61)	28.2% (n=98)	14.4% (n=50)	13.2% (n=46)	100% (n=348)

UZFMHS, the number of respondents by programme and year of study. The MBChB programme had the largest number of respondents (32.0%) followed by the rehabilitation students (16.0%). The least number of students (1%) were from the Diploma in Occupational Health and Safety (DOSH) group from which the total respondents were 5, all in year 1. The fifth years were from the MBChB and BDS which are the only 5-year programmes. The other programmes run for 4 years.

Table 2 shows responses to the RIPLS Questionnaire, expressing opinions regarding IPE on a 5-point Likert-scale (strongly agree, agree, undecided, disagree, and strongly disagree) which were numeric coded 5,4,3,2 and 1 respectively. The RIPLS summarises the opinions regarding IPE using a 19- item scale with 4 domains: (a) team work and collaboration (items 1-9); (b) negative professional identity towards other professions (items 10-12); (c) positive professional identity (items 13-16); and (e) roles and responsibilities of professionals (items 17-19). The items of each domain numeric responses were summed to give one score for

each individual student. Higher scores indicate an agreement opinion with a domain. The students appear to be in general agreement and readiness for IPE.

Table 3 shows the median mean scores and interquartile range, Q1 and Q3 for the students' opinions regarding IPE.

Team work and collaboration

The 9 items of team work and collaboration numeric responses were summed up to give one score for each individual. The maximum score for each individual is 45 (strongly agree) and minimum is 9 (strongly disagree). The summary of the scores is given with median scores ranging from 38-45. The overall median score is 42, IQR (39-45) indicating that team work and collaboration has higher scores in all disciplines. Thus, the healthcare profession students' have a positive inclination towards team work and collaboration.

Table 2. Responses to the readiness for Inter-professional Learning Scale (RIPLS) Questionnaire: opinions regarding inter-professional learning.

	Inter-professional learning opinion	Strongly Agree	Agree	Undecided	Disagree	Strongly disagree
1	Learning with other students will help me become a more effective member of a health care team	69.9%	28.9%	0.6%	0.0%	0.6%
2	Patients would ultimately benefit if health care students worked together to solve patient problems	77.0%	20.4%	1.5%	0.6%	0.6%
3	Shared learning with other health care students will increase my ability to understand clinical problems	67.9%	29.5%	1.2%	0.3%	1.2%
4	Communications skills should be learned with other health care students	56.7%	36.8%	3.8%	2.0%	0.6%
5	Team working skills are vital for all health and social care students/professionals to learn	75.3%	23.5%	0.6%	0.3%	0.3%
6	Shared learning will help me to understand my own professional limitations	60.1%	32.3%	5.3%	1.5%	0.9%
7	Learning between health and social care students before qualification would improve working relationships after qualification/collaborative practice	58.2%	35.9%	4.1%	1.5%	0.3%
8	Shared learning will help me think positively about other health and social care professionals	57.5%	35.7%	4.7%	1.8%	0.3%
9	For small-group learning to work, students / professionals need to respect and trust each other	70.3%	26.8%	2.4%	0.3%	0.3%
10	I don't want to waste time learning with other health and social care students / professionals	3.6%	5.0%	9.6%	29.8%	52.0%
11	It is not necessary for undergraduate / postgraduate health and social care students / professionals to learn together	4.0%	6.6%	11.6%	30.7%	47.2%
12	Clinical problem solving can only be learnt effectively with students / professionals from my own school / organisation	7.6%	9.9%	12.2%	36.3%	34.0%
13	Shared learning with other health and social care professionals will help me to communicate better with patients and other professionals	56.1%	40.1%	2.1%	1.2%	0.6%
14	I would welcome the opportunity to work on small group projects with other health and social care students / professionals	59.5%	36.3%	2.4%	1.5%	0.3%
15	I would welcome the opportunity to share some generic lectures, tutorials or workshops with other health and social care students / professionals	57.9%	37.3%	3.6%	0.9%	0.3%
16	Shared learning and practice will help me clarify the nature of patients' or clients' problems	49.5%	43.8%	5.4%	1.2%	0.0%
17	Shared learning before and after qualification will help me become a better team worker	70.4%	27.8%	0.6%	0.9%	0.3%
18	I am not sure what my professional role will be / is	4.6%	11.8%	19.6%	33.3%	30.7%
19	I have to acquire much more knowledge and skill than other students / professionals in my own faculty / organisation	16.8%	26.3%	24.1%	25.1%	7.6%

Table 3. Shows the median mean scores and interquartile range, Q1 and Q3 for the students' opinions regarding IPE.

Programme of study	RIPLS sub-scales median mean scores/ interquartile range, Q1 and Q3			
	Team work and collaboration	Negative professional identity towards other professionals	Positive professional identity towards other professionals	Roles and responsibilities
	(Mean/Interquartile range,Q1-Q3)	(Mean/Interquartile range,Q1-Q3)	(Mean/Interquartile range,Q1-Q3)	(Mean/Interquartile range,Q1-Q3)
Medicine (MBChB)	42 (38-44)	5(4-7)	17(16-20)	11(10-12)
Rehabilitation	42 (38 -45)	5(3-7)	18(17-20)	11(11-12)
B Pharm	42(39.5 44.5)	5(4-6)	18(16-20)	12(11-13)
HBMLS	40 (38-43)	6(4-7)	18(16-19)	11(11-12)
BSc NS	44(42-45)	5(3-8)	20(19-20)	12(11-13)
HEP	43(40-45)	6(3-8)	19.5(17.5-20)	11.5(11-13)
Radiography	43(38-43)	6(5-8)	17.5(16.5-20)	12(10-12)
Other	43(40-44)	12(5-13)	19(17-20)	11 (11-12)
BDS	42(38-45)	3(3-8)	19(16-20)	11(10-14)
Optometry	45(44-45)	6(5-6)	16(16-18)	12(10-13)
DOSH	45(45-45)	8.5	20(20-20)	11.5(11-12)
TOTAL	42(39-45)	5(4-7)	18(16-20)	11(11-13)

Negative professional identity towards other professions

The four items on negative professional identity towards other professions were numeric coded and summed up for each individual student with a maximum score of 20 and minimum of 4. Higher scores indicating negative opinion and lower scores indicating an opinion away from negative professional identity towards other professionals. A negative professional identity towards other professions median score was 5, IQR (4-7). This is very low indicating that the students are averse to negative professional opinions towards other professions.

Positive professional identity

The maximum score per individual student was 20 and the minimum 4. The four items on positive professional identity have high scores, median score: 18. IQR (16-20), indicating positive professional identity. The nursing students had the highest score of 20 along with the 5 students from DOSH.

Roles and responsibilities of professionals

There were three items on the roles and responsibilities of professionals on the 5-point Likert scale. One question, (*I am not sure what my professional role will be/is?*), was reverse coded so that higher scores indicate a positive attitude towards roles and responsibilities of professionals. These were numeric coded and summed

up to give a maximum of 15 and a minimum of 5 for each individual. Higher scores indicate a positive attitude. All the students had a high score on the three items. The score for roles and responsibilities of professionals overall median score was 10, IQR (9-11). The students therefore, reported positively that they are aware of their roles and responsibilities.

Table 3 does indicate that the students are ready and willing to participate in IPE.

Qualitative Results

Comments from the students on aspects of the RIPLS.

The majority of students in all the programmes of study were in full support of in interprofessional education in that it improves the relationships amongst the various healthcare professionals to the overall benefit of the patients and the community. They also appreciated the need to respect other professions and highlighted the importance of collaborative team work, positive professional identity, desisting from negative professional identity towards other professions and being appreciative of the roles and responsibilities of other members of the healthcare team. This is captured in the comments made regarding interprofessional education:

The students expressed the need to have IPE introduced in their training early and the feeling that the medical students tendered to be most favoured. It was also important to understand each other's profession and the boundaries of practice.

"I strongly believe interprofessional teamwork should be established during early years of clinical attachments."

The system of separating medical students from parameds established inequality and stigma issues. Paramed* students are looked down upon hence they undergo a professional identity crisis, where it seems as if the doctor is the only important health worker there is. Many issues addressed by CHS are mainly focused on Medical students and the Paramed* issues are mostly overlooked. It would of a great favour if you would consider the aforementioned issues for the better continuity of interprofessional teamwork". [para-medical*] "IPE will help healthcare providers to work collaboratively within their scope of practice to achieve appropriate patient care and management".*

"Interprofessional education is very excellent health system approach, but this would be very effective considering some unfounded prejudices of towards other health system professions are put at halt for a civilised working environment".

The need for to understand each other's roles was highlighted as no one professional has the capacity to deliver healthcare alone.

"For the efficiency of the health care system there is a huge requirement of team work because there is no health profession that can completely survive independently without the other. At one point of time a doctor is going to need a radiologist or biochemist in order to have an accurate diagnosis for the patient or a nurse in order to decrease work load. I strongly support that team working should be taught at school before students qualify in that particular profession of study".

"I believe IPE will be of great help to both health professionals and patient if and only if it's taken into practise".

"I individually support the idea of Interprofessional learning. Doing so will benefit patients in that they will be able to get the best service ,if one knows what his/her professional requirements only giving others the chance to do their jobs very well. It will also reduce the situation of ignoring other problems on patients, but after some team work a professional can then be able to notice other problems and refer the patients thereby making sure the patients are given the best service".

"I think IPE can only be effective if everyone have a clear understanding of their role and also if one loves his/her profession".

"I think it is really helpful and important to both undergraduates and postgraduate students from different disciplines to learn and practice together, not only for professional purpose, but also for the greater benefits and satisfaction of patient and client needs, for example improvement in the health outcomes".

Team work and collaborative practice was highlighted. *"Multidisciplinary team is important to holistically manage patient problems, with each of the member knowing their specific roles".*

"Interprofessional is good. It helps in team building. It also helps health professionals to appreciate the roles of other

health professionals."

DISCUSSION

It has been demonstrated that students' attitudes towards a new learning approach is culture-bound in particular where cultures are hierarchical and introducing IPE with the principle that all health professionals are equal (Lestari et al., 2016). The present study sought to: i) determine the attitudes of health professions students towards IPE and their readiness to actively participate in IPE activities and ultimately interprofessional collaboration using the modified RIPLS questionnaire (Parsel and Bligh, 1999; McFadyen et al., 2005). ii) determine the barriers to the implementation of IPE from the students' perspectives. Previous studies have indicated that four subscales are appropriate in other languages (Norgaard et al., 2016). The third subscale has been dismissed in other studies (Lestari et al., 2016; McFadyen et al., 2005). The subscale on roles and responsibilities has been identified as being weak in that undergraduate students lack professional experience apart from nursing students who do have some professional experience. In this study we used an unadapted version.

The low response rate in this study is attributable to the COVID-19 pandemic which led to the closure of the University and all students were sent to their various homes. A number of students could have had challenges with internet connectivity or no access.

(a) Team work and collaboration

The general responses to the RIPLS questionnaire indicate the students in the FMHS are ready for IPE as borne out by the percentages of the strongly agree and agree responses. Unlike other reports in the literature medical students did not oppose IPE as they were willing to share knowledge with other health professions (Lestari et al., 2016). The median scores on the team work and collaboration subscale too indicate the same level of agreement with a high mean among nursing, optometry and diploma in occupational health students. The position of the nursing students could be a result of the fact that they engage in clinical training early in their career. This is a similar finding in the literature (Lestari et al., 2016). Medical students too had a clinical exposure in their 3rd, 4th and 5th year. The high mean score in the other student groups could be a result of the small numbers of students who participated, 7 for optometry and 5 occupational safety and health. Contrary to other studies which found medical students 'scores lower than that of other students our study found that their scores were similar to other student groups (Lestari et al., 2016).

Nursing students have been found to be more willing

to collaborate with students from other health professions than medical students (Vafadar et al., 2015; Sistrunk and Bates, 2015). *“I strongly believe interprofessional teamwork should be established during early years of clinical attachments. The system of separating medical students from parameds* established inequality and stigma issues. Paramed* students are looked down upon hence they undergo a professional identity crisis, where it seems as if the doctor is the only important health worker there is. Many issues addressed by CHS are mainly focused on Medical students and the Paramed* issues are mostly overlooked. It would of a great favour if you would consider the aforementioned issues for the better continuity of interprofessional teamwork”.* [para-medical*].

The medical students are the largest group of students in the faculty hence the appearance of everything revolving around them. While there is agreement on the importance of team work there still appears to be a perception by other student groups that the medical students are regarded highly and this tends to be the position in practice at the detriment of team work and collaboration. Contrary to other studies (Lestari et al., 2016) there was no correlation with the study programme chosen especially in issues of professional identity and understanding one's role. In view of the predominance of the females in this study one may conclude that the female students appear to take a more positive view to IPE and teamwork in agreement with other studies in the literature (Wilhelmsson et al., 2011).

(b) Negative professional identity towards other professions

Some studies in the literature propose that IPE should be introduced from the very start of professional education to prevent the formation of negative interprofessional attitudes which will later be resistant to change (Wang et al., 2015; Coster et al., 2008). This position was echoed by students in our study: *I strongly believe interprofessional teamwork should be established during early years of clinical attachments.* This is in contrast to other reports that say early exposure to professional practice could lead to a negative perception with regards to healthcare team as well as of IPE (Lestari et al., 2016). This is more common among nursing students whose interactions in the hospital with other healthcare teams are not harmonious leading to negative perceptions with regards to collaborative interprofessional healthcare teams.

Students learn their disciplines 'attitudes, norms, values and practices through the role modelling and observations of their senior members. They tend to come up with discipline-bound stereotypes and negative communication approaches which negate development of collaborative practice. Some students come up with statements such as: *“Interprofessional education is very*

excellent health system approach, but this would be very effective considering some unfounded prejudices towards other health system professions are put to a halt for a civilised working environment.” There is indeed an appreciation of the effect of IPE on collaboration:

There were some aspects of resentment of other professions: *“.....The system of separating medical students from parameds* established inequality and stigma issues. Paramed* students are looked down upon hence they undergo a professional identity crisis, where it seems as if the doctor is the only important health worker there is. Many issues addressed by CHS are mainly focused on Medical students and the Paramed* issues are mostly overlooked. It would of a great favour if you would consider the aforementioned issues for the better continuity of interprofessional teamwork”.* [para-medical*] This does appear has the potential of being carried over to actual practice. IPE would erase such perceptions as one begins to understand the other professions: learning with, from and about each other's profession.

(c) Positive professional identity

All the student groups were agreeable that indeed positive attitudes to their professions is important in the promotion of quality healthcare

(d) Roles and responsibilities of professionals

The mean scores of all the different programmes was similar again showing that the students believe that IPE would be useful in promoting the appreciation of other professions roles and responsibilities: *“Interprofessional is good. It helps in team building. It also helps health professionals to appreciate the roles of other health professionals”.*

“Multidisciplinary team is important to holistically manage patient problems, with each of the member knowing their specific roles”.

This helps students appreciate their professional responsibilities and as such will tend to respect the roles and responsibilities of other professionals.

The finding in this study that there were more females than males one could infer that in agreement with other studies in the literature females appear to have a more positive view of teamwork (Lestari et al., 2016).

This study contributes to the literature in that it is one of the few researches in the literature on readiness for IPE which used the mixed method approach with health professions students from various professions in one institution. This approach allows exploration of students 'perspectives to IPE.

Limitations of the study

The limited numbers of students participating which

brings in bias. Attempts were made to reduce this bias by sending questionnaires to all possible students. The same study should be conducted with participants from all the students in the faculty when the COVID-19 pandemic has been contained. The results may be difficult to generalise due to the low number of students that could be accessed but they do give a glimpse of the readiness and willingness of our students for IPE.

CONCLUSION

The mean scores for the RIPLS questionnaire were essentially the same for the participating students. The students in the UZFMHS indicated their readiness and willingness to participate in IPE and are appreciative of the role IPE plays in fostering interprofessional collaborative practice. They also indicated positive attitudes to team work and collaboration, and little negative attitudes towards other professions and positive attitudes towards other professions and their roles and responsibilities to foster improvements in the delivery of quality healthcare.

REFERENCES

- Aziz Z, Teck LC, Yen PY (2011). The attitudes of medical, nursing and pharmacy students to interprofessional learning. *Procedia-Social and Behavioural Sciences*; 29: 639-645.
- Bridges DR, Davidson RA, Odegard PS, Maki IV, Tomkowiak J (2011). Interprofessional collaboration: three best practice models of interprofessional education. *Medical Education Online*; 16:6035-DOI:10.3402/meo.v16i0.6035.
- Canadian Interprofessional Health Collaborative (2010). A national interprofessional competency framework; February. Available from: http://www.cihc.ca/files/CIHC_IPCompetencies_Feb1210.pdf.
- Chan LK, Fraide G, Kam YW, Chak SL, Susan MB, Celia HYC, Namkiu C, Phoebe WLC, Hai YC, Julie YC, Jody KPC, Charlene CH, Jacqueline MCH, Tai PL, Veronica SFL, Qingyun L, Jian GS, Julian AT, Winnie WYT, Arkers KCW (2017). Implementation of an interprofessional team-based learning program involving seven undergraduate health and social care programs from two universities, and students' evaluation of their readiness for interprofessional learning. *BMC Edu*; 17: 221. doi.10.1186/s12909017-1046-5.
- Coster S, Ian N, Trevor M, Sheila K, Elizabeth M, Enkanah S, Lynda d'A (2008). Interprofessional attitudes amongst undergraduates students in the health profession: a longitudinal questionnaire survey. *Int. J. Nurs. Stud.*; 45:1667-8.
- El-Zubeir M, Rizk D, Al-Khali R (2006). Are senior UAE medical and nursing students ready for interprofessional learning? Validating the RIPL scale in a Middle Eastern context. *J. Interprof. Care.*; 20: 619-32.
- Frenk, Julio, Lincoln Chen, Zulfiqar A. Bhutta, Jordan Cohen, Nigel Crisp, Timothy Evans, Harvey F (2010). Health Professionals for a new century: transforming education to strengthening health systems in an interdependent world. *The Lancet* 376:1923-1958.
- Furness PJ, Armitage HR (2012). Pitt Qualitative evaluation of interprofessional learning initiatives in practice: application of the contact hypothesis. *Int. J. Med. Educ.*; 3:83-91.
- General Medical Council (2015). Outcomes for Graduates (Tomorrow's Doctors). Available from https://www.gmc-uk.org/static/documents/content/Outcomes_for_graduates_Dec_16.pdf
- Groessi JM, Vandenhousten CL (2019). Examining students' attitudes and readiness for interprofessional education and practice. *Education*.
- Honan L, Fahs DB, Talwalkar JS, Kayingo G (2015). Interprofessional learning: perceptions of first year health students. *J. Nurs. Educ. Practice*; 5:1-11.
- Kasperski Implementation strategies (2000). "Collaboration in primary care-family doctors and nurse practitioners delivering shared care". Toronto. ON: Ontario College of Family Physicians, Available from: <http://www.cfpc.ca/English/CFPC/CLFM/bibnursing/default.asp?s=1>
- Lestari E, Stalmeijer RE, Widyandana D, Scherpier A (2016). Understanding students' readiness for interprofessional learning in an Asian context: a mixed-methods study. *BMC Medical Education*; 16:179-189.
- Liaison Committee on Medical Education (2013). Proposed New Accreditation Standard ED -19-A; (cited 30 December 2015); Available from: http://www.lcme.org/new_standard_ed-19-a.htm.
- Lyon LJ (2018). Dentists' role in Interprofessional Education and Practice. *Decisions in Dentistry*; 4: 30-39.
- Maeno T, Haruta J, Takayashiki A, Yoshimoto H, Goto R, Maeon T (2019). Interprofessional education in medical schools in Japan. *PLoS ONE*; <https://doi.org/10.1371/Journal.pone.0210912>.
- Maharajan MK, Kingston R, Suan PK, Dinesh KC, Ranjit DA, Hui CC, Lui LT, Yee NT, Shin YL (2017). Attitudes and readiness of students of healthcare professions towards interprofessional learning. *PLoS ONE* 12(1):e0168863. doi.10.1371/journal.pone.0168863.
- Masters C, O'Toole Baker V, Jodon H (2013). Multidisciplinary, team-based learning: the simulated interdisciplinary to multidisciplinary progressive-level education (SIMPLE) approach. *Clin Simul Nurs.*; 9(5):e171-e8.
- McFadyen AK, Maclaren WM, Webster VS (2005). The interdisciplinary education perception scale (IEPS): an alternative remodelled sub-scale structure and its reliability. *J. Interprof Care*; 19:595-603.
- Michaels D, Couper I, Mogodi MS, Hakim JG, Mpindo MH, Chidzonga MM, Matsika A, Simuyemba M (2017). A peer evaluation of the community-based education programme for medical students at the University of Zimbabwe College of Health Sciences: A southern African Medical Education Partnership Initiative (MEPI) collaboration; *AJHPE*; 9: 138-143.
- Norgaard B, Draborg E, Sorensen J (2016). Adaptation and reliability of the Readiness for Interprofessional Learning Scale in a Danish student and health professional setting. *BMC Medical Education*; 16:1-9.
- Parsel G, Bligh J (1999). The development of a questionnaire to assess the readiness of healthcare students for interprofessional learning (RIPLS). *Med. Edu.*; 33:95-100/
- Reeves Scott, Laure P, Joanne G, Della F, Merrick Z (2011). Interprofessional education: Effects on professional practice and health care outcomes. The Cochrane Database of Systematic Review. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD002213.pub2/full>
- Reid S, Cakwe M (2011). On behalf of Collaboration for Health Equity through Education and Research (CHEER). The contribution of South African curricula to prepare health professionals for working in rural or underserved areas in South Africa: A peer review evaluation. *Afr. Med. J.*; 101:34-38.
- Sistrunk CJ, Bates T (2015). Infusing Interprofessional Education Into the Nursing Curriculum. *Nurse Educator*; 40:16-20.
- Talwalkar JS, Fahs DB, Kayingo G, Wong R, Jeon S (2016). Honan Readiness for interprofessional learning among healthcare professional students. *Int. J. Med. Educ.*; 7: 144-148.
- Vafadar Z, Vanaki Z, Ebadi A (2015). The readiness of postgraduate health sciences students for interprofessional education in Iran. *Global J. Health Sci.* 7:190-199.
- Wang R, Shi NS, Bai J, Zheng Y, Zhao Y (2015). Implementation and evaluation of an interprofessional simulation-based education program for undergraduate nursing students in operating room nursing education: a randomized controlled trial. *BMC Medical Education*; DOI 10.1186/s12909-015-0400-8.
- Wilhelmsson M, Ponzer S, Dahlgren LO, Timpka T, Faresjo T (2011). Are female students in general and nursing students more ready for team work and interprofessional collaboration in healthcare? *BMC Med.*
- World Health Organisation (2010). Framework for action on interprofessional education and collaborative practice. Geneva, Switzerland: Health Professional Network Nursing and Midwifery Office, Department of Human Resources for Health.