Interprofessional education (IPE): analysis of an IPE internship involving last grade medical students.

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Inleiding

Door de toenemende specialisering en differentiering in de medische wereld is de huidige patiëntenzorg een pak complexer geworden. De zorg voor de patiënt wordt meer en meer interprofessioneel. Deze Interprofessionele Coöperatie (IPC) heeft als doel de patiëntenzorg te optimaliseren en uiteindelijk klinische resultaten pogen te verbeteren. Om toekomstige artsen op deze IPC voor te bereiden is er een groeiende noodzaak aan Interprofessionele Educatie (IPE) voor studenten.

In dit artikel analyseren we de zevenenzeventig verslagen van laatstejaars studenten van de faculteit geneeskunde, Departement Maatschappelijke Gezondheidszorg en Eerstelijnszorg (KULeuven) die in het jaar 2018 gedurende vijf weken een IPE stage volgden. Gebruik makende van de Quagol methode is het zo de bedoeling vast te stellen wat de ervaringen van de studenten waren en wat het effect van deze stage op de competenties van de studenten was. Ten slotte is het de bedoeling om deze analyse te vergelijken met de huidige literatuur om eventuele gelijkenissen/verschillen bloot te leggen.

Interprofessional Education (IPE): analysis of an IPE internship involving last grade medical students.

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Abstract

Background:

Analysis of the anonymised reports of seventy-seven last grade medical students following an IPE internship during the year 2018 to know what the experiences and effects of IPE for last grade medical students were, and to compare these findings to the current literature.

Methods:

Reports were written by seventy-seven medical students after completion of a five-week long IPE program and subsequently anonymised before given to the authors for processing. Twelve reports were excluded (internationally organised), the remaining sixty-five anonymised qualitative reports were encoded according to the Quagol method and analysed using qualitative software (Weft QDA©) by two researchers[a, b] to reduce subjectivity. Final results were compared and discussed by two researchers[a, b].

Results:

Students had an overwhelmingly positive attitude towards the IPE internship. Most students reported to have enriched their knowledge and become acquainted with multidisciplinary care. They felt more prepared for future interprofessional care (IPC) through the IPE internship. Factors influencing opinions of students were grade of organisation of an IPE activity, professionality of supervisors, student preferences and activity variation. Reports concerning optimal time duration of various IPE activities and activity variation were inconsistent. Most students believed future medical care to be multidisciplinary, patient centred and with an important emphasis on prevention. New technologies were regarded as valuable new tools in IPC.

Conclusion:

In conclusion students had an overwhelmingly positive attitude towards IPE. Through this IPE internship students acquired necessary knowledge and skills for IPC and they felt more prepared for future IPC. More research however is needed in order to detect the possible facilitators or barriers to IPE and further on to explain how IPE leads to IPC and possibly improved patient care. Although

this IPE internship was welcomed by most students, organisation and optimisation of the IPE internship still remains to be done. Further research is needed in order to establish optimal IPE models.

Keywords: Interprofessional Education, medical students, qualitative research, Quagol method

Background

Medical care has become increasingly complex and organised in multidisciplinary teams [1,2]. Interprofessional collaboration between healthcare workers is needed in order to ensure patient safety and quality care [2,3]. Interprofessional education (IPE) has become an important element in medical education in order to prepare students for an interprofessional collaboration practice [1,2].

According to the UK Centre of Advancement of IPE (CAIPE) *"interprofessional education occurs when two or more professions learn with, from and about each other to improve collaboration and the quality of care"* [4]. Health care education should therefore focus on a team-based approach [1]. Recommendations for IPE have been published by the World Health Organization [3]. In current literature, effects of interprofessional education have been mostly reported as positive [5,6]. In the past, literature about planning and evaluation of IPE activities has been mainly focused from a faculty's perspective and rarely the students were asked their attitude towards IPE [7,8]. Nowadays many articles also focus on attitude towards IPE from a student's perspective [9-15].

Our goal is to analyse, from a student's perspective, the qualitative reflections of a five week internship of sixty-five undergraduate medical students at the department of General Practice, University Leuven to know what the experiences and effects of IPE for last grade medical students were. Secondly, to compare these results to the current literature in order to expose possible similarities and differences in findings.

Interprofessional Education: literature search

Search Method:

Pubmed database was searched using the following keywords (MeSH terms using "PubMed Advanced Search Builder") in different combinations: "Interprofessional Education", "IPE", "interprofessional", "education", "medical student" and "student". Search field = Title/Abstract. Language = English. Date – Publication =1th of January, 2010 until the 1th of April, 2019. Selection of articles was done by: relevance, systematic reviews, higher sample sizes and date of publication.

Interprofessional Education (IPE):

The Institute of Medicine Committee on Quality of Health Care in America *recommends that healthcare professionals work in interprofessional teams in order to offer a solution to the growing complexity of Medical care. IPE is an adequate tool to prepare healthcare students for future Interprofessional collaboration* [1].

IPE models:

Examples of possible models applicable for interprofessional education are a didactic program, a community based experience and an interprofessional simulation experience [16]. In order to enhance the success of an IPE program recommendations were made [16]: 1) adequate administrative support, 2) adequate interprofessional programmatic infrastructure, 3) dedicated and educated faculty and staff and 4) acknowledgement of student efforts through grades/certificates. In another article, key factors for successful implementation of IPE were reported to a be national policy towards more collaborative practice, an organisational support and a senior management [6].

Many forms of IPE programs and activities currently exist such as clinical internships, case studies, simulated patient courses, multi-professional conferences [17-19]. In a recent systematic review is illustrated how IPE programs vary substantially across countries [20]. More IPE initiatives were launched in developed countries and IPE was conducted mostly at an undergraduate level. A high grade of variety of teaching models was used by the different faculties. Nursing was the healthcare discipline most involved with IPE programs [20].

As technology keeps being improved, techniques such as web based designs are introduced in IPE enabling students of different disciplines to meet asynchronously and conveniently according to their schedules [21]. Distance education and E-learning can be incorporated in IPE, facilitating team cooperation and collaboration [22]. Success varied according to the different teaching models. Although interprofessional cooperation (IPC) has become an expected competency globally in healthcare, many (undergraduate) healthcare educational programs lack adequate IPE programs [23-25].

Perceptions and attitudes towards IPE:

In another systematic review perceptions and attitudes of medical and nursing students were synthesised using narrative synthesis and categorised according to “Readiness for IPE”, “Facilitators to IPE” and “Barriers to IPE” [9].

Readiness for IPE:

It was concluded that readiness for IPE in students was highest at start and in students with prior IPE experience but declined significantly over time. Readiness for IPE could be higher in female students [9]. Another article however seems to contradict this by suggesting that in nursing students IPE readiness was higher in male students [13]. In general, students seemed to have a positive attitude towards IPE [9,12,13,26-29]. Examples of factors that affect perceptions and attitudes towards IPE are prior experiences, age, and gender [6].

Facilitators to IPE:

Numerous facilitators of IPE were described, mostly at curricular level. Examples were training in team communication skills, Interprofessional Training Units, Simulation based IPE [9]. Trough IPE, all students reported an increase in understanding the importance of communication and teamwork in patient care. More recently a study conducted in four hundred thirty-nine healthcare faculties throughout the United States, focussed from a faculty's perspective, explored the positive and negative factors influencing health care faculties to engage in IPE through the use of text analysis (software data analysis). The three major categories facilitating IPE were: patient care, student learning and health care teams [29].

Barriers to IPE:

Two major negative factors influencing health faculties to engage in IPE were reported: scheduling and coordination [29]. Substantial infrastructure/organisation is necessary [16]. A lack of decent organisational support may indeed seriously jeopardise the longer-term viability of IPE [6]. Technology and E-learning may help to overcome these problems [21,22]. Examples of student's barriers to IPE are belonging to a specific social group, miscommunication, unprofessional behaviour, emphasising on individual knowledge rather than team work skills, confusion when IPE goals were combined with profession specific goals and lack of assessment [9,16].

Effects of IPE:

Two systematic reviews report on the effects of IPE [5,6]. In general, effects reported were mostly positive. Due to the continued growing interest in IPE the last decades, numbers of studies have been increasing steadily [6]. IPE may improve attitude, knowledge and skills, leading to IPC [3,4]. In turn it may lead to an enhanced patient/clinical care. Evidence is growing supporting that IPE can positively affect professional practice as well as improve clinical outcomes [6].

Yet impacts remain to be identified and further research is needed. Linking the development and implementation of IPE activities to improved IPC and clinical outcome, moreover into a positive measurable effect, remains difficult [5,6,30,31].

IPE Theories:

As for now, no generalisable theory has explained how learning trough IPE is advantageous [32]. Theory may enhance the development of an interprofessional education curriculum [33]. The use of the social capital theory, which describes the cumulative advantage of being part of a social network, may explain how trust is generated between different health care groups through IPE activities [34]. Another model frames the concept of "interprofessionality", not to be mistaken with "interdisciplinarity", *"which concerns the processes and determinants that influence IPE initiatives as well as determinants and processes inherent to IPC"* [34].

Methods

IPE internship:

Seventy-seven last grade medical students of the medical faculty of Leuven, Department of Public Health and Primary Care, took part in a five-week long IPE internship. Of these seventy-seven medical students, twelve were excluded since their IPE internship were internationally (Brazil, Senegal, Suriname, Nepal) and substantially different from the Belgian healthcare system.

The IPE internship was organised during five-week long periods from the 26th of February, 2018 until the 22th of June, 2018. During these five weeks, medical students followed five different disciplines (one discipline per week) based on their own preferences from a list out of ten possible disciplines (Table 1). Students were given IPE activity specific goals to be met (mixed, IPE centred as well as profession centred). In the end the students had to write their proper reflection note. These reflections were subsequently anonymised before given to the authors for analysis.

Pharmacy	Occupational medicine
Youth healthcare	Social work
Elderly care	Palliative care
Psychiatric primary care	Home nursing
Revalidation	Science and policy

Table 1: ten possible disciplines.

Analysis of the qualitative data:

The qualitative analysis was done by the Quagol method consisting of two major phases: firstly the "preparation of the coding process" and secondly the "actual coding process" (using qualitative software) [35].

Phase 1: preparation of the coding process.

The sixty-five reflections were read thoroughly and "concepts" were highlighted. As such a holistic understanding of the student reflections was achieved.

Phase 2: actual coding process using qualitative software.

Secondly loose concepts were linked until a list of codes was formed. These codes were categorised in an hierarchical form until a "coding tree" was created (Figure 1). The final coding tree resulted from the discussion between two authors (MR, EB) and condensation to be more practical. Afterwards all relevant fragments were linked to the appropriate codes using a qualitative data analysis tool (Weft QDA©) separately by two encoders (MR, EB) to reduce subjectivity and compared. Lastly the essential findings were compared and discussed by two encoders (MR, EB) until consensus was achieved.

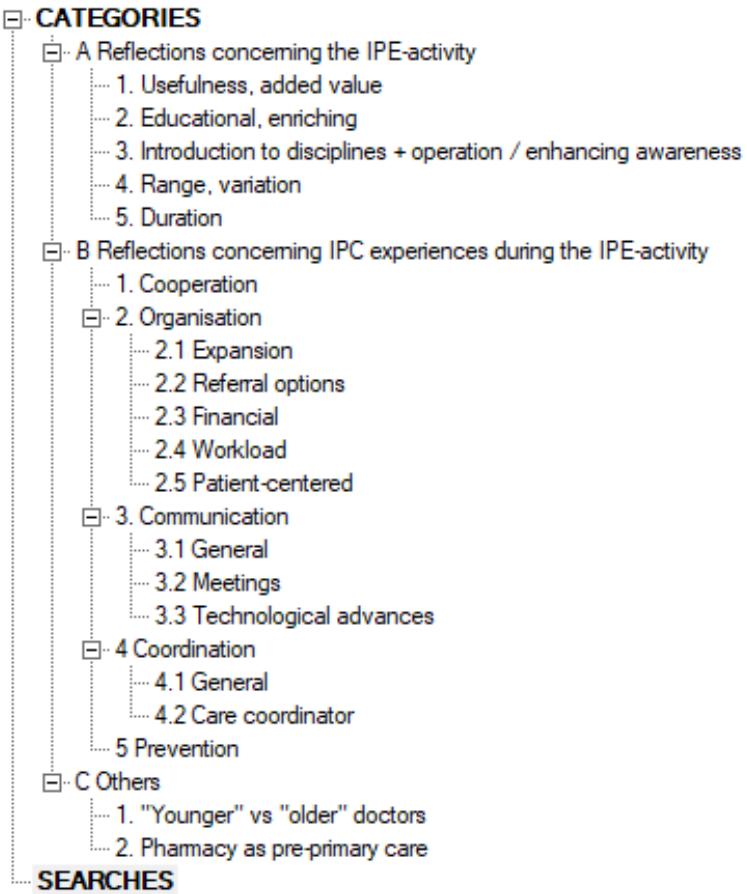

Figure 1: final "coding tree" using Weft QDA©.

Ethical committee:

This research concerns a purely retrospective study with data made anonymous prior to acquisition. At no time there was contact with test subjects or human body material.

Results

The following section depicts the general tendencies in student opinions after being encoded and analysed by two researchers (MR, EB). Quotes were translated from Dutch to English for reading convenience. Factors taken into account were quotes being confirmative, remarkable or contradictory.

Format quotes: Text [<<Weft QDA© number>>, <<student's Reflection number>>]

1. Reflections of students concerning the IPE internship.

Usefulness, added value:

Students were overwhelmingly positive about the usefulness and added value of the IPE internship.

'… It was a useful internship… ' Text [9383-9409, R01], [66907-66932, R15], [193767-193805, R45], [262656-262771, R60] […] *'… was very interesting … '* Text [7-61, R01], [78972-78996, R18], [82637-82664, R19] […] *'… added value… '* Text [55736-55839, R13], [129561-129605, R27], [133737-133786, R29], [150310-150378, R32], [221396-221503, R51], [263084-263167, R60], […]

A small number of students did had some doubts initially, at the end of the IPE internship however reflections had become much more positive.

'In all honesty I did not understand the purpose at first. However, I soon realised that the main goal of all these activities was to ease the contact with other primary care services.' Text [5534-5761, R02] *'However, at the start I was not convinced of the relative added value of IPE internship in this period compared to an additional GP internship. … given that I have certainly acquired many practical tips and insights, I am nevertheless more positive towards IPC and notice this also among my colleagues.'* Text [27605-27907, R07] *'Originally I wasn't interested in this internship because I knew it was going to be tough, but I am very happy that I did it and can only recommend anyone to do this too.'* Text [197011-197206, R45]

Some IPE activities were favoured over others due to various factors e.g. students preferences and organisational factors.

'The pharmacy was the least useful IPE activity for me.' Text [98834-98882, R24] *'… my IPE activity at the pharmacy was a positive experience.'* Text [230751-230816, R54] *'I am especially grateful for following an IPE activity with the palliative support team.'* Text [138393-138468, R30]

Overall students were very encouraging towards the organisation of the IPE experience.

'As a future general practitioner I find this interprofessional internship an enormous added value in our training.' Text [55736-55839, R13] *'The past few weeks the IPE internship was very fascinating and I hope that the internship will be continued for future colleagues.'* Text [92980-93091, R22]

<u>Educational, enriching:</u>

Students reported almost unanimously to have enriched their knowledge during the IPE internship. This could be enlarging their theoretical knowledge, practical experience, technical handling and developing a different view on certain matters or prejudices.

'This is definitely something I have learned for the future.' Text [11264-11321, R03], [55355-55440, R12], [88294-88389, R21], [105322-105392, R25], […] *'In addition to learning medication and treatment procedures, I have also improved my communication skills with patients.'* Text [166835-167087, R36] *'This has increased my medical knowledge…'* Text [14146-14284, R04] *'I learned the legal framework, the physician's responsibility and also technically more about administering…'* Text [266255-266630, R61] *'And although IPE seemed to confirm some prejudices about other disciplines, conversely it disproved many.'* Text [30716-30845, R07] *'I know that these internships have changed my view on other disciplines and …'* Text [146080-146199, R31]

A number of educational learning gaps were perceived by students during their IPE internship: palliative care, wound care, health policy/health economy and medical reimbursement policy.

'Health policy/health economics turned out to be a big gap in our education.' Text [70010-70089, R16] *'Following along with the wound care specialist was an opportunity for me, since we didn't see much about this in our basic medical training.'* Text [251929-252075, R58]

Through IPE students felt more prepared for future IPC, possibly improving patient care.

'… now that I have become familiar with these different entities, in future I will be able to work more multidisciplinary as a doctor. Text [16780-16905, R04] *'All in all, Through this internship, I feel better*

prepared to start my GP Training.' Text [258869-258963, R59] *'In terms of interprofessional work, this was certainly an instructive internship for the future.* Text [50279-50488, R11] *'Furthermore, through internship, I acquired a deeper knowledge how the GP can involve various care providers optimising patient care.'* Text [25209-25391, R06]

Introduction to other disciplines:

Although some students had more foreknowledge then others concerning the various disciplines in primary care medicine, all students reported to have acquainted with various partners and their functioning.

'Through this IPE internship I became acquainted with various health care institutions that are very useful …' Text [13540-13676, R04] *'I only had a vague idea of the tasks and functioning of most services. It was a great added value to walk alongside for a week and experience this directly.'* Text [51685-51888, R11] *'This way we gained more insight into the specific functioning of each service and experienced their qualities and defects.'* Text [75999-76165, R18] *'Since my grandparents both stayed at a nursing care, I already had a good idea about its functioning. Nevertheless, it was interesting to expose possible strengths and/or difficulties …'* Text [210727-211010, R49]

Range, variation:

Opinions of students were inconsistent, factors influencing opinions were: organisational (whether the internship positions were well-informed or not), efforts of supervisors, student's preferences that may or may not have been met and choice limitation to five (out of ten) IPE activities.

'Virtually every IPE activity had devised a beautiful and varied program for us.' text [59918-60004, R14] *'Some IPE activities were not fully aware of the general purpose, contrarily others made a very extensive effort. Most of the people who guided me were very enthusiastic though and wanted to teach me things...'* Text [216536-216829, R50] *'It would have been an added value if more IPE activities could have been followed. I also would like to have participated in palliative care and in psychiatric care during my IPE internship.'* Text [55521-55730, R12]

Duration:

Some students considered one week too long for a number of IPE activities, others mentioned one week being only enough to get a mere impression. Generally speaking students found that one week was too long for pharmacy, nursing home and home care IPE activities.

'For the IPE activities nursing home and pharmacy one week felt like a long time, and my supervisors felt the same way.' Text [141139-141291, R30] *'For some IPE activities a week seemed a bit long, for others a week seemed too short…'* Text [129454-129560, R27] *'Of course it is not possible to get acquainted with all the possible primary care services in only 5 weeks.'* Text [58349-58459, R13]

2. Reflections of students concerning IPC experiences during the IPE internship.

Cooperation:

Opinions of students were very variable whether sufficient cooperation was achieved between various services in primary care. Most students however experienced a well-developed multidisciplinary cooperation to be beneficial for patient care and moreover the future in primary care medicine.

'Reorganisation of primary care certainly offers opportunities for better cooperation between general practitioners and other actors.' Text [4234-4355, R01] *'As a general practitioner, it is important to know the primary care network and to cooperate with these services.'* Text [13209-13322, R03] *'This is an example of how good multidisciplinary collaboration can really pay off.'* Text [29697-29792, R07]

Organisation:

Most organisations included in the IPE internship were experienced by the students as being well organised. A thorough organisation was perceived as important. It was noted by many students that home care has become increasingly important. Sometimes too extensive fragmentation lead to losing the overview.

'... a good and efficient organisation is of great importance …' Text [38137-38214, R09] *'Post-hospitalisation assistance nowadays has become more extensive than ever, due to technological progress and efforts of the government and numerous care-providing organisations.'* Text [23016-23197, R06] *'The medical landscape is somewhat fragmented at the moment. To make it all a bit more accessible, I think medical care should become more centralised so that GPs have a limited number of points of contact to refer to.*' Text [62683-62925, R14] *'These organisations often form a complicated tangle, each one with its own specific conditions, application procedures and implementations, thus making it difficult to familiarise yourself with them …'* Text [151113-151318, R33]

Students learned about various referral centres, and the importance of correct indications.

'You have to know where to refer the patient to and for what indication. You need to know what the possibilities of a service are and what their weaknesses are.' Text [187336-187495, R43]

Workload in primary care medicine was experienced to be high by most students and financial resources as rather poor, having a possible negative influence on functioning.

'The call for help due to excessive work pressure by healthcare workers is being heard for quite some time now and certainly is justified...' Text [94108-94279, R23] *'For most services, the workload and financing in particular pose a threat to their operation.*' Text [129231-129330, R27] *'… how often the functioning and problems of a service can be traced to financing issues.'* Text [131131-131236, R28] *'This meant that the financial side was always clearly present.'* Text [182479-182543, R41]

Most students suggested that primary care should be patient centred and health care should be multidisciplinary. Other important comments by some students were freedom of choice and privacy of the patient.

'… a multidisciplinary team capable of providing primary care for a patient. The patient is central to this multidisciplinary care …' Text [35977-36112, R09] *'Multidisciplinary work will become increasingly important in the future to be able to meet a patient's needs…'* Text [15660-15781, R04] *'The patient's freedom of choice must also be preserved.'* Text [18434-18494, R05]

Some students stated that they had broadened their career choice after the internship.

'… that in addition to being a general practitioner, there are also several other options to work as a doctor or...' Text [239181-239358, R55] *'My opinion turned out to be quite incorrect. This internship also broadened my personal career options.* Text [255572-255790, R59] *'I found the youth care internship particularly interesting in function of my future career.'* Text [254773-254881, R59]

Communication

Efficient multidisciplinary communication was generally regarded as important, yet numerous students felt like current multidisciplinary communication was insufficient, sometimes even leading to misconceptions.

'It would be good to focus more on mutual communication and trust, … ' Text [168702-168781, R37] *'… the take home message is a necessary improvement of the difficult communication with GPs from time to time.'* Text [154857-154942, R33] *'These misunderstandings still occur frequently due to the lack of correct written communication.'* Text [206278-206368, R48]

Students perceived IPE to be a facilitator of good communication, possibly leading to better patient care.

'I think it is a very good hint for myself and all other students and GPs to communicate as openly as possible with other care providers. This will not only promote cooperation, but also benefit the healthcare continuity. The patient can only benefit from it.' Text [190443-190727, R43] *'By doing an IPE internship at these regional services, the threshold to ask for advice will also be lower.'* Text [281866-282101, R65] *'… good communication with this service ensures better patient care.'* Text [55143-55355, R12]

Recent technological innovations (e.g. digital platforms) were believed to be valuable tools in further developing multidisciplinary communication in the future although a central platform remained to be created.

'*There is a good evolution in the online accessibility of many services.'* Text [62926-63013, R14] *'… do not yet have an online platform in which every care provider can fulfil his or her function and where communication between the different care providers can also take place in a coordinated manner.'* Text [25868-26083, R06] *'… they create platforms for their own care network but make them incompatible with other care providers*.' Text [26156-26264, R06]

Most students felt multidisciplinary meetings to be important, but opinions were inconsistent whether sufficient meetings were being organised, and how to combine these with an already high work load.

'Indeed, many meetings are already being organised to which the doctor is invited.' Text [52631-52730, R12] *'One question that I kept asking myself during this internship is how a doctor can provide time to participate in all these different types of multidisciplinary consultations. On one hand, it is good that the general practitioner can be involved within all these organisations to provide care continuity and to coordinate care. On the other hand, it seems impossible to me to participate in all these meetings …'* Text [87501-88277, R21]

<u>Coordination:</u>

General practitioners were generally regarded as a potential care coordinator by the students.

'The GP can act as a trusted person, pivotal figure and coordinator of care for all patients.' Text [24485-24612, R06] *'The general practitioner could, once this platform has been created, play a clear role as confidential adviser, medical expert and coordinator of care, …'* Text [[26264-26417, R06] *'A doctor, and in particular a general practitioner, will increasingly become the coordinator of a multidisciplinary team …'* Text [[35880-36000, R09]

Prevention:

Preventive medicine was believed to be very important in primary care medicine and regarded as sufficiently developed by most students.

'As a doctor, the emphasis is not only on treatment, but also on prevention.' Text [30919-31006, R08] *'I would like to elaborate on my last preventive internship. In my opinion, preventive healthcare services are incorrectly considered less important. However, I have experienced how incredibly important prevention is.'* Text [271853-272368, R63]

Younger vs older doctors:

A smaller number of students perceived younger medical doctors to be more cooperative and communicative.

'For example, pharmacists and home nurses said collaboration with younger doctors was going much more fluently, since they had been trained with a different attitude.' Text [142232-142485, R31] *'For example, pharmacists indicated that communication with younger doctors was a lot easier and that the threshold to contact them was therefore lower.'* Text [6954-7153, R02]

Discussion

During this IPE internship students had overwhelmingly positive experiences. Attitude of students towards the IPE internship was mostly positive. Some students did have some initial doubts towards IPE and IPC, through this IPE internship however they adapted a much more positive attitude. Practically all students reported to have enriched their knowledge during the IPE internship and became acquainted with various services and their functioning. Although IPE activity specific goals were mixed (IPE centred and profession centred), most of the students reported to being able to meet their IPE activity given goals. A number of students perceived lack of organisation in some IPE activities during the internship being a barrier to IPE. Concerning optimal time duration of various IPE activities and activity variation, reports were very inconsistent. Factors influencing opinions of students were grade of organisation of an IPE activity, professionality and efforts of supervisors, student preferences and

activity variation. Students believed future primary care medicine to be multidisciplinary and patient centred, attaching great importance to preventive care and a thorough multidisciplinary cooperation, communication and coordination. Students felt like IPE enhanced their communication skills, technology offering new ways of communication and even IPC as a whole. The lack of standardisation in ICT tools and systems however was perceived as an important limitation to its full potential. The GP was often suggested as a possible coordinator in this multidisciplinary structure. High workload and financial shortages were perceived as negative influencers of IPC. During their IPE internship numerous students felt like optimal IPC has yet to be achieved. Through this IPE internship students felt much more prepared towards future IPC, possibly improving patient care.

This analysis confirms literature findings of an overall positive attitude of students towards IPE [9,12,13,26-29] as well as a gain in knowledge or skills through IPE [5,6]. In this study, goals given to students weren't only IPE related but also profession specific. Yet most students seemed to have been able to achieve their targets. Literature findings however state that confusion occurred when IPE goals were combined with profession specific goals [9,16]. Reports suggested a thorough organisation of an IPE activity facilitated IPE, contrarily insufficient organisation created a barrier towards IPE. These perceptions were consistent with the literature search [16]. Another barrier reported by students was insufficient professionalism of supervisors, confirming literature findings [9,16]. Next, students reported to have improved communication through IPE possibly even leading to better IPC and better practice or patient outcome. Literature search seemed to confirm this [9] although insufficient research is currently available whether IPE leads to better IPC [3,4] or patient care [6]. Lastly most students shared mainstream thoughts of multidisciplinary, patient centred primary care with high regards for prevention [1,3,4]. Through IPE students felt more prepared for IPC, demonstrating its potential as an adequate tool to prepare students for future multidisciplinary patient care [1]. The similarity between the reflections and the literature search demonstrated the quality of the reports.

There are a number of limitations in this study to be taken into account. Firstly these students' reflections concerns qualitative data. As such, through this data it remains impossible to measure exact effects of the IPE internship. Secondly, these reflections depict opinions and experiences of students and are not to be mistaken with facts. We have to take into account that these student reflections are subjective and may also have been influenced whether their preferences were met or not. Similarly, although the Quagol method and a second encoder was used to reduce subjectivity, this analysis is not a mathematical measurement. Lastly, this study was locally organised (Flanders, Belgium). There are no structured data of the supervisors of the different IPE activities. From personal contacts we know however they were very pleased with the initiative.

As already stated above, further research is needed concerning the effects of IPE and moreover if IPE leads to better IPC and possible ways to measure this. Subsequently more research is needed whether better IPC in turn leads to better clinical outcomes. Facilitators and barriers of IPE should continue to be identified and further explained. Lastly more research is needed in order to develop IPE models for optimal learning experience, variation in activities, duration of activity and others.

Conclusion

In conclusion students had an overwhelmingly positive attitude towards IPE, having contact with a variety of services and their functioning. Through this IPE internship students acquired necessary knowledge and skills for IPC. Students felt more prepared for future IPC through this IPE internship. More research however is needed in order to detect the possible facilitators or barriers to IPE and further on to explain how IPE leads to IPC and possibly improved patient care. Although this IPE internship was welcomed by most students, organisation and optimisation of the IPE internship still remains to be done. Further research is needed in order to establish optimal IPE models.

References

1. Greiner, A. C., & Knebel, E. (2003). In *Health Professions Education: A Bridge to Quality*. Washington (DC).
2. Tsakitzidis, G., & VanRoyen, P. (2017). In *Leren interprofessioneel samenwerken in de gezondheidszorg.* Wommelgem: De Boeck.
3. Gilbert, J. H., Yan, J., & Hoffman, S. J. (2010). A WHO report: framework for action on interprofessional education and collaborative practice. *J Allied Health, 39 Suppl 1*, 196-197. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/21174039
4. Barr, H. L., H. (2011). Principles of Interprofessional Education. *CAIPE Centre for the Advancement of Interprofessional Education*.
5. Reeves, S., Perrier, L., Goldman, J., Freeth, D., & Zwarenstein, M. (2013). Interprofessional education: effects on professional practice and healthcare outcomes (update). *Cochrane Database Syst Rev*(3), CD002213. doi:10.1002/14651858.CD002213.pub3
6. Reeves, S., Fletcher, S., Barr, H., Birch, I., Boet, S., Davies, N., . . . Kitto, S. (2016). A BEME systematic review of the effects of interprofessional education: BEME Guide No. 39. *Med Teach, 38*(7), 656-668. doi:10.3109/0142159X.2016.1173663

7. Curran, V. R., Sharpe, D., & Forristall, J. (2007). Attitudes of health sciences faculty members towards interprofessional teamwork and education. *Med Educ, 41*(9), 892-896. doi:10.1111/j.1365-2923.2007.02823.x
8. Coster, S., Norman, I., Murrells, T., Kitchen, S., Meerabeau, E., Sooboodoo, E., & d'Avray, L. (2008). Interprofessional attitudes amongst undergraduate students in the health professions: a longitudinal questionnaire survey. *Int J Nurs Stud, 45*(11), 1667-1681. doi:10.1016/j.ijnurstu.2008.02.008
9. Visser, C. L. F., Ket, J. C. F., Croiset, G., & Kusurkar, R. A. (2017). Perceptions of residents, medical and nursing students about Interprofessional education: a systematic review of the quantitative and qualitative literature. *BMC Med Educ, 17*(1), 77. doi:10.1186/s12909-017-0909-0
10. Roy, V., Collins, L. G., Sokas, C. M., Lim, E., Umland, E., Speakman, E., . . . Jerpbak, C. M. (2016). Student Reflections on Interprofessional Education: Moving from Concepts to Collaboration. *J Allied Health, 45*(2), 109-112. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/27262468
11. Shelvey, B. M., Coulman, S. A., & John, D. N. (2016). Evaluating an undergraduate interprofessional education session for medical and pharmacy undergraduates on therapeutics and prescribing: the medical student perspective. *Adv Med Educ Pract, 7*, 661-670. doi:10.2147/AMEP.S116618
12. Kolb, S., Vasilakis, T., Stein, B., Stadelmann, J., Munzinger, A., Fley, G., . . . Harlein, J. (2017). Attitudes and preferences concerning interprofessional education of first-year students and experienced medical and nursing staff. *J Interprof Care, 31*(2), 164-166. doi:10.1080/13561820.2017.1283301
13. Woermann, U., Weltsch, L., Kunz, A., Stricker, D., & Guttormsen, S. (2016). Attitude towards and Readiness for Interprofessional Education in Medical and Nursing Students of Bern. *GMS J Med Educ, 33*(5), Doc73. doi:10.3205/zma001072
14. Zeina, M., Jones, A. E., & Colebatch, R. (2018). Medical student reflections on interprofessional education. *Adv Med Educ Pract, 9*, 737-738. doi:10.2147/AMEP.S181251
15. Curran, V. R., Sharpe, D., Flynn, K., & Button, P. (2010). A longitudinal study of the effect of an interprofessional education curriculum on student satisfaction and attitudes towards interprofessional teamwork and education. *J Interprof Care, 24*(1), 41-52. doi:10.3109/13561820903011927
16. Bridges, D. R., Davidson, R. A., Odegard, P. S., Maki, I. V., & Tomkowiak, J. (2011). Interprofessional collaboration: three best practice models of interprofessional education. *Med Educ Online, 16*. doi:10.3402/meo.v16i0.6035

17. Riva, J. J., Crombeen, A. M., Rycroft, J. E., Donkers Ainsworth, K. E., Gissler, T. P., Burnie, S. J., & Busse, J. W. (2011). Interprofessional education for medical students in clinical settings: a practical guide for an elective half-day. *J Can Chiropr Assoc, 55*(3), 168-173. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/21886278
18. Nagge, J. J., Lee-Poy, M. F., & Richard, C. L. (2017). Evaluation of a Unique Interprofessional Education Program Involving Medical and Pharmacy Students. *Am J Pharm Educ, 81*(10), 6140. doi:10.5688/ajpe6140
19. Brashers, V., Owen, J., Blackhall, L., Erickson, J., & Peterson, C. (2012). A program design for full integration and assessment of clinically relevant interprofessional education into the clinical/clerkship year for nursing and medical students. *J Interprof Care, 26*(3), 242-244. doi:10.3109/13561820.2011.653610
20. Herath, C., Zhou, Y., Gan, Y., Nakandawire, N., Gong, Y., & Lu, Z. (2017). A comparative study of interprofessional education in global health care: A systematic review. *Medicine (Baltimore), 96*(38), e7336. doi:10.1097/MD.0000000000007336
21. Reis, P. J., Faser, K., & Davis, M. (2015). A Framework for Web-Based Interprofessional Education for Midwifery and Medical Students. *J Midwifery Womens Health, 60*(6), 713-717. doi:10.1111/jmwh.12331
22. McCutcheon, L. R. M., Alzghari, S. K., Lee, Y. R., Long, W. G., & Marquez, R. (2017). Interprofessional education and distance education: A review and appraisal of the current literature. *Curr Pharm Teach Learn, 9*(4), 729-736. doi:10.1016/j.cptl.2017.03.011
23. Schmitt, M., Blue, A., Aschenbrener, C. A., & Viggiano, T. R. (2011). Core competencies for interprofessional collaborative practice: reforming health care by transforming health professionals' education. *Acad Med, 86*(11), 1351. doi:10.1097/ACM.0b013e3182308e39
24. Zorek, J., & Raehl, C. (2013). Interprofessional education accreditation standards in the USA: a comparative analysis. *J Interprof Care, 27*(2), 123-130. doi:10.3109/13561820.2012.718295
25. Sytsma, T. T., Haller, E. P., Youdas, J. W., Krause, D. A., Hellyer, N. J., Pawlina, W., & Lachman, N. (2015). Long-term effect of a short interprofessional education interaction between medical and physical therapy students. *Anat Sci Educ, 8*(4), 317-323. doi:10.1002/ase.1546
26. Homeyer, S., Hoffmann, W., Hingst, P., Oppermann, R. F., & Dreier-Wolfgramm, A. (2018). Effects of interprofessional education for medical and nursing students: enablers, barriers and expectations for optimizing future interprofessional collaboration - a qualitative study. *BMC Nurs, 17*, 13. doi:10.1186/s12912-018-0279-x
27. Lestari, E., Stalmeijer, R. E., Widyandana, D., & Scherpbier, A. (2016). Understanding students' readiness for interprofessional learning in an Asian context: a mixed-methods study. *BMC Med Educ, 16*, 179. doi:10.1186/s12909-016-0704-3

28. Osman, A. (2017). What makes medical students receptive to interprofessional education? Findings from an exploratory case study. *J Interprof Care, 31*(5), 673-676. doi:10.1080/13561820.2017.1340876
29. Olenick, M., Flowers, M., Munecas, T., & Maltseva, T. (2019). Positive and Negative Factors That Influence Health Care Faculty Intent to Engage in Interprofessional Education (IPE). *Healthcare (Basel), 7*(1). doi:10.3390/healthcare7010029
30. Brandt, B., Lutfiyya, M. N., King, J. A., & Chioreso, C. (2014). A scoping review of interprofessional collaborative practice and education using the lens of the Triple Aim. *J Interprof Care, 28*(5), 393-399. doi:10.3109/13561820.2014.906391
31. Brashers, V., Erickson, J. M., Blackhall, L., Owen, J. A., Thomas, S. M., & Conaway, M. R. (2016). Measuring the impact of clinically relevant interprofessional education on undergraduate medical and nursing student competencies: A longitudinal mixed methods approach. *J Interprof Care, 30*(4), 448-457. doi:10.3109/13561820.2016.1162139
32. Reeves, S., Goldman, J., Gilbert, J., Tepper, J., Silver, I., Suter, E., & Zwarenstein, M. (2011). A scoping review to improve conceptual clarity of interprofessional interventions. *J Interprof Care, 25*(3), 167-174. doi:10.3109/13561820.2010.529960
33. Hean, S., Craddock, D., Hammick, M., & Hammick, M. (2012). Theoretical insights into interprofessional education: AMEE Guide No. 62. *Med Teach, 34*(2), e78-101. doi:10.3109/0142159X.2012.650740
34. D'Amour, D., & Oandasan, I. (2005). Interprofessionality as the field of interprofessional practice and interprofessional education: an emerging concept. *J Interprof Care, 19 Suppl 1*, 8-20. doi:10.1080/13561820500081604
35. Dierckx de Casterle, B., Gastmans, C., Bryon, E., & Denier, Y. (2012). QUAGOL: a guide for qualitative data analysis. *Int J Nurs Stud, 49*(3), 360-371. doi:10.1016/j.ijnurstu.2011.09.012