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Hot topic in geriatric medicine

Interprofessional education in geriatric medicine



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ABSTRACT

The majority of older patients present with complex health needs that often require to be addressed by more than one discipline. Hence, the involvement of physicians, nurses, physiotherapists, occupational therapists, pharmacists and other disciplines, adopting a patient-centred interprofessional approach, is an essential component of successful care. A growing phenomenon in education is interprofessional education (IPE), in which various health professionals learn with, from and about another in order to improve collaboration and the quality of care. This article presents a geriatric medicine literature review on IPE, covering several studies that have examined such education, describing different types of intervention and the involvement of various health professionals. There was no clear evidence that could be drawn from the available literature about best practice and intervention, due to the differences in interventions and the lack of replication studies. In this article, we have also reviewed the theories on which IPE is based and its suitability for application to the discipline of geriatric medicine (e.g. regarding curriculum design, clinical practice, and the optimisation of collaboration between team members). Present evidence supports the assumption that IPE-related general principles are applicable to education in geriatric medicine.

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There is now sufficient evidence to indicate that interprofessional education enables effective collaborative practice which in turn optimizes health services, strengthens health systems and improves health outcomes
 WHO 2010

1. Introduction

Geriatric medicine is characterised by a multidisciplinary approach in which physicians, nurses, physiotherapists, occupational therapists, psychologists, pharmacists and many other disciplines work closely together in a so-called collaborative practice [1]. An increasing number of health professionals are

expected to be involved in future care, given the trend in increasing life expectancy worldwide, patients' safety, and the complexity of their needs. This has led to an increasing need for appropriate training in geriatric medical care using a multidisciplinary approach [2]. Within the traditional model, all disciplines are trained separately during undergraduate and/or postgraduate training [1,3]. To date, training in interdisciplinary teamwork for collaborative practice, e.g. interdisciplinary collaboration, has not received much attention from any particular profession [1,2]. However, it is well known that communication and collaboration problems may cause team failure and negative patient outcomes [4]. A monodisciplinary educational approach does increase each profession's knowledge and skills separately; however, there may also be advantages in IPE, which is a growing phenomenon in medical education [5]. The World Health Organization has indicated that IPE is an innovative and system-transforming solution that will ensure the appropriate supply, mix and distribution of the health workforce [1]. Many professional accreditation bodies, such as the General Medical Council in the UK, and others worldwide (e.g. CanMEDS framework for learning

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goals for residents in medical specialties) recommend education in interprofessional collaboration [6–8].

2. IPE definitions and theory

2.1. Definitions

There are many definitions of IPE, the best known and widely accepted is from CAIPE: “Interprofessional education occurs when two or more health professionals learn with, from and about each other to improve collaborations and the quality of care” [9]. IPE includes all such learning in academic and work-based settings before and after graduation, adopting an inclusive view of ‘professional’ [1,9]. Two types of education should be distinguished: multiprofessional and interprofessional (Fig. 1). Multiprofessional education (MPE) is often not much more than the simultaneous education of different health professionals. As such, professionals learn with another, not from or about another. It is also called shared learning, interdisciplinary education (IDE) or common learning (Fig. 1a) [5,10]. In MPE, the educational content sent to the participating health professionals is identical, and interaction between these professionals is not the primary goal. Interaction certainly can happen unplanned during the education time, e.g. if a teacher stimulates interaction between the participants or during coffee breaks [11]. IPE is shown in Fig. 1b, the learning between different health professionals, in which they learn from and about another, while being with the ‘another’ is called peer learning and peer teaching. This is referred to as the ‘real’ IPE in most medical education research papers [12,13], which also happens informally when health professionals collaborate in patient care [5,10], for example, when pharmacists and physicians manage polypharmacy in geriatric patients. The primary goal of optimising patients’ drugs leads to informal workplace learning, due to the differences in knowledge and skills [14].

2.2. The theories underpinning IPE

As stated above, the true IPE is shown in Fig. 1b, although the term is often misused for MPE shown in Fig. 1a. IP learning may be informal, bringing health professionals together in clinical practice, with adopted in work processes already established multidisciplinary team meetings or quality circles [5,10]. Unplanned learning, such as this can easily produce negative informal interprofessional learning by that same route [10]. A hidden curriculum can, for example, promote ageism through the interaction and observation of negative role models during this training, not planned by curriculum designers and relying only on informal interdisciplinary learning [15]. Therefore formal, organized IP learning should be considered for both undergraduate and postgraduate training [16].

Many educational theories underline the development and understanding of IPE, and are summarised in Table 1.

Some of these are explained in more detail below. The IPE is complex and it concerns the individual learners thus being “learner-centred”, while others are orientated primarily towards group dynamics [11,16,27]. Regarding learners, the most frequently used theories are for adult learning and self-determination [28,29]. These theories assume that adult learners are independent and self-directing, have (various degrees of) experience, integrate learning to the demand of their everyday life, are more interested in immediate problem-centered approaches and are motivated more by internal than external drives [28,29]. What adult learning theory lacks is the context of learning, as described by self-determination theory – teaching and learning should be organized so that learning is within the learners’ control and creates a goal

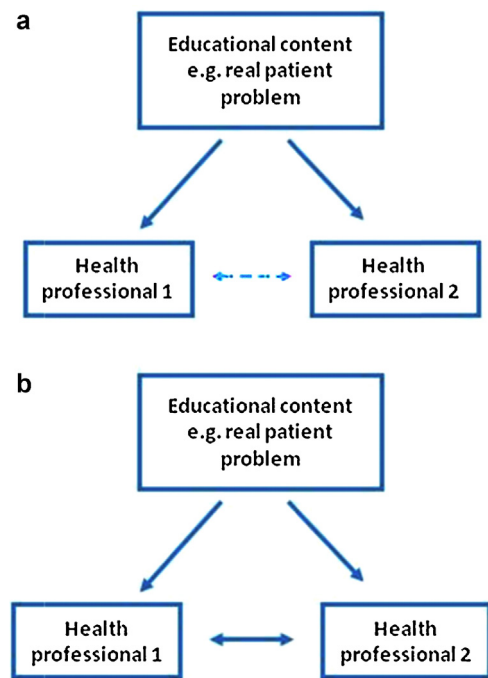


Fig. 1. Concepts of interprofessional education. a: multiprofessional education, also shared learning, common learning, or interdisciplinary education: low interaction between participants; b: interprofessional education, also interprofessional learning or teaching, peer teaching, peer learning: high interaction between participants.

towards which learners strive so that they become able to accept responsibility for their own learning [28,29]. Group dynamics may play an important role in IPE [11,27]. The contact theory of Alport concludes that contact between different groups is the most effective way to reduce tension between them. This requires equality between group members, working together on common goals, co-operation during contact, and understanding differences as well as similarities between themselves [30].

2.3. The effectiveness and evaluation of IPE

The relevant literature states that the effectiveness of IPE depends on achieving the following: it is delivered at an acceptable cost (in financial and other terms), it does not produce negative side effects (e.g. a negative stereotype about IPE), and it achieves positive outcomes (e.g. improved attitude towards collaboration) [62].

In practice, however, it may be difficult to ascertain IPE effectiveness (long- and short-term), which may be classified as [62,63,73]:

- positive;
- negative (the literature on IPE states that the absence of evidence of effectiveness is not sufficient for a conclusion that IPE is ineffective!);
- neutral – if data from the IPE impact does not show whether it is effective or harmful.

The ongoing expansion of IPE is determined by factors including the aim of cutting the costs of delivering undergraduate education, the aspiration to align real clinical practice with the health curricula, the changes in healthcare organisation (particularly regarding the improvement of patient safety), the rise of specialisation within the profession, and the increasing promi-

nence of team-based care. There is as yet, however, no clear evidence for the cost-effectiveness of IPE [74].

When thinking about evaluation, it is worth remembering Barr's seven objectives of IPE [51]:

- to modify reciprocal attitudes;
- to establish common skills, values and knowledge;
- to build teams;
- to solve problems;
- to respond to community needs;
- to change practice;
- to change the professions.

Also, the IPE outcomes could be classified as follows [72]:

- level 1 – reaction;
- level 2a – modification of attitudes/perceptions;
- level 2b – acquisition of knowledge/skills;
- level 3 – behavioural change;
- level 4a – change in organisational practice;
- level 4b – benefits to patients/clients, ideally aiming for improvements at all levels, but the levels 4a and 4b not being applicable for the undergraduate IPE [74].

Many review studies examining the effectiveness of IP learning (Fig. 1b) show significant changes in learners' reactions, knowledge, skills and attitudes [13,16,33,34]. Patient care improvement was reported at the levels of outcome, adherence and satisfaction, while the clinical process was reported as improving in both undergraduate and postgraduate training [11,13,16,35]. However, the quality of evidence provided was mostly low [35,36]. Across the different studies, a variety of settings was used – such as acute, primary and community care – and a range of conditions were taken as topics, e.g. acute cardiac care, asthma or arthritis. The health professionals involved were often nurses and medics, but other kinds of health professionals also participated, including physiotherapists, social workers, occupational therapists and psychologists [11,35,37].

For example, IPE group meetings may be inefficient if members avoid making difficult decisions, unconsciously avoiding their primary task, which is described in the working mentality theory [31]. The learning team as an autonomous learning organization has been described by Senge; in learning organizations, members continually expand their capacity to create the results they truly desire, new and expansive patterns of thinking are nurtured, collective aspiration is set free, and people are continually learning to see the whole together [32]. Unfortunately, this is often not the

Table 1
Summary of the theories underpinning IPE.

Theories incorporated into IPE	Description	Practical endpoints/objectives with relation to IPE
Contact theory [17–19]	Face to face contact that reduces prejudice between groups Contact situations need to continue long enough to allow anxiety/conflict to diminish	Work together on common goals Learners understand differences as well as similarities between themselves
Self-categorisation theory [20]	Describes the conditions in which a person will consider collections of people as 'a group' as well as the consequences of perceiving them in those terms	Help to form social categories in which differences and similarities can be understood and utilised for improving learnings sources
Social identity theory [64]	Describes how an individual's behaviour towards others is determined by their own group traits and personal traits Unfortunately the individual may reinforce negative perceptions if they lack perception of their own bias/values	Helping to clarify identities within a single profession
Social learning theory [65]	Cognitive development theory describing the need for social interaction to assist learning	Face to face interaction
Social exchange theory [66]	Social interaction between groups assists learning by exchange of the benefits each group derive	Multidisciplinary feedback exercises
Situated learning theory [67]	Learning is a function of the activity, context and culture in which it occurs Therefore an authentic context ± social interaction improves learning	Strong element of IPE in practice situations
Co-operation theory [68] (Axelrod and Keohane, 1985)	Describes how co-operation is required for survival of a species, therefore co-operating groups function more effectively than individuals alone	Co-operation
Relational awareness theory [69]	Explains why behaviour changes depend on conditions	Highlights the need for recognizing which environments encourage positive behaviour Relieve stress in interprofessional working
Social defence theory [70]	Under stress individuals fall back on uni-professional tendencies and fail to collaborate effectively	
Negotiation theory [21]	Describes the building of a shared environment, and long-term trust	Extract issues from emotions and keep parties focussed
Work-group mentality theory [22]	Describes the dynamics and functioning of a group to the extent that group members manage shared stresses/anxieties together	Capacity to function more effectively as a group
Discourse analysis [23]	Describes the analysis of language used by persons but also prefer to analyze 'naturally occurring' language use, and not invented examples	The exchange of informed views as to which of several alternative choices should be taken when problem solving
Loss and change theory [24]	Describes the stress associated with loss of an individual's identity	IPE which asks people to change from what they are is often considered stressful Aim to preserve professional identities
Systems theory (Engel 1977)	Describes complex problem solving within systems and how the work of one affects many other disciplines	The practicalities of different disciplines working together
Team and organisational learning [25,26]	Working together to achieve a common objective in a group	Group learners to share knowledge and complement colleagues skills
Adult learning (andragogy) [28]	Independent and self-directed learning Learning in adults is motivated by relevant xperience/error Motivated more by internal than external drives	Integrate learning to the demand of everyday life Problem-centred rather than content orientated
Self-determination [29]	Describes sources of motivation behind choices people make without external influence and interference	Teaching and learning organized within learners' control Creates goals for learners

Table 2

Summary of the advantages and disadvantages and requirements for IPE [1,10,12,61].

Advantages	Requirements and disadvantages
Students have real world experience and insight	Needs balance in input (not for one group to plunder the expertise of the other group)
Staff from a range of professions provide input into programmed development	Requires staff training
Students learn about the work of other practitioners	Organizations have to have same vision
Improved workplace practices and productivity	Assessments requirements have to match between curricula
Improved patient outcomes	Staff needs to collaborate in designing education
Raised staff morale	Difficult to find learning resources that meet all participants
Improved patient safety	Result in more complex curricula
	Accreditation needs adjustments for this
	More complex financial system

case in IPE teams, although it should be striven for, in order to improve effectiveness [11].

Measurement instruments have been developed to assess different aspects of IPE: readiness, attitude, interactional factors, acquisition of skills, etc. Nevertheless, and despite the obvious need for better evaluation of IPE, this has been difficult to achieve. Reasons for this difficulty include [75–77]:

- terminological inconsistencies and lack of consensus around the definition of IPE;
- the lack of consistent information about the aims of IPE activity, the methodology, and the underpinning educational models used;
- the lack of consensus on what to measure, when assessing various aspects of IPE;
- the lack of reliable and validated instruments with well developed psychometric properties for assessing IPE in order to assure quality.

Given that there is a significant lack of information about IPE interventions in relation to the IPE objectives, and about IPE costs, it is not surprising that cost-effectiveness related to IPE is not really known [74]. What is clear, however, is that new larger randomised studies containing both qualitative and quantitative methods are needed to determine the impact of IPE interventions on professional practice and healthcare outcomes. The heterogeneity of the interventions, in the format in which these were delivered, the studies' methodological limitations, their clinical context and the use of other different interventions, contributed to the insufficiency of our understanding of how to achieve the desired outcomes, and also of the effect of IPE [36,71,74,76].

The advantages and disadvantages of IPE and the requirements related to it, are listed in Table 2.

3. Interprofessional learning in geriatric medicine

PubMed was searched in English language up to 2015 for papers on interprofessional learning in geriatric medicine using the following search terms (interprofessional [ti] OR interdisciplinary [ti] OR multidisciplinary [ti]) AND (education [ti] OR learning [ti]) AND (geriatric[ti] OR old [ti] OR elderly [ti]). From the 27 results, titles and abstracts were screened for relevance using the following exclusion criteria:

- not about education and/or learning;
- not about geriatric medicine;
- no study data shown.

Fifteen papers were not relevant or retrievable (mainly those from before 1990) remaining 12 papers. One additional paper was found by screening the references from the included papers, resulting in 13 relevant papers, of which no systematic reviews. This means that currently, IPE in geriatric medicine has been sparsely addressed in literature, although geriatric medicine is an interprofessional discipline in itself. The thirteen relevant studies were summarized in Table 3 [37–49]. Medical, nursing, pharmacy and social worker students were involved in the majority of these studies. Only two referred to multiprofessional compared to interprofessional learning and undergraduate, postgraduate or combinations of both trainings were addressed. The majority of results were positive, pointing to the conclusion that present level of evidence suggests that IPE is effective in geriatric medicine. However, it is not possible to draw any meta-conclusions from these studies given that the interventions, outcome measures and participants differ significantly. In conclusion, the methodological issues that emerged after the analysis (e.g. frequent lack of precise data), meant that no “best evidence” can be adduced yet in order to suggest optimal IPE activities, considering also possible publication bias [50].

In summary, the evaluation of IPE outcomes in geriatric medicine related to the Kirkpatrick four point typology educational outcomes have not yet been systematically reported (Table 3).

4. Implications

4.1. Implications for educational practice

The lack of systematic evidence for IPE in geriatric medicine may imply that the simultaneous training of different groups of health professionals without mutual interaction brings no additional benefit over monodisciplinary training, notwithstanding the possible logistical or financial benefits of combining these groups of learners. Yet, if we assume that the learning goals include improved patient care, perhaps the question should be rephrased as “why not IPE?” [10].

Apart from setting clear objectives for the learners for effective IPE in geriatric medicine, the following issues are also important to address while planning IPE: the faculty development, what are the perceived demands of the learning opportunity and learning context, the relationship to prior learning, what is the learners' self-concept, what affects the groups balance, teaching strategy and assessment. However, all these also apply to the IPE related to the other subjects, not specifically to the geriatric medicine [10].

4.1.1. Faculty development and IPE planning

With IPE, planning may be even more important than it is for other educational activities. For exceptional factors may have to be considered, such as the need for a bigger learning space, the ability of teachers to accommodate larger numbers of participants, participants belonging to different institutions and having different levels of knowledge, and varied or even incompatible institutional timetables. Also, IPE requires skilled and effective educators for professionals from different backgrounds and with different levels of skills and knowledge. The development of a faculty for IPE is essential and challenges include developing educators who – as well as having appropriate knowledge, even expertise, skills, clinical experience in geriatric medicine topics – are also capable of overcoming problems of stereotyping, elitism, fear of losing professional status; who possess skills in conflict

Table 3

The results of studies assessing geriatric IPE.

Author, year	Type of interprofessional education	Participants	Teaching strategy	Teaching content	Results
Balogun et al., 2014 [38]	Interprofessional learning	Medical (<i>n</i> = 144) and nursing (<i>n</i> = 107) students	90-min interactive, case-based workshop	Transitional care	90% of students were better able to describe the necessary interprofessional communication. 80% of the students reported an enhanced appreciation of interprofessional teamwork
Gould et al., 2014 [40]	Interprofessional learning	Medical students, residents, social workers	Conduct a comprehensive geriatric assessment in patients followed by a clinic-based consultation session	Comprehensive geriatric assessment	Participants' perception of interprofessional collaboration increased
Reilly et al., 2014 [45]	Interprofessional learning	Medical, physician assistant, occupational therapy, social work, physical therapy students; pharmacy students; dental students	Participation in an interprofessional, team-based, geriatric home training program. Led by interprofessional faculty teams	Interprofessional team-based care	All disciplines demonstrated a higher likelihood of understanding their roles in an interprofessional health care team than before the experience
Ford et al., 2014 [47]	Multiprofessional education	Dentistry, family medicine, internal medicine, nursing, occupational therapy, physical therapy, psychology, social work, cell biology, communication studies, emergency medicine, nutrition, pharmacy GPs and practice nurses	Lectures, workshops, conference presentation, e-learning (36 h)	Advanced illness, including multiple chronic conditions, frailty, symptom management, and medication management. The importance of health care teams and care coordination	Positive evaluation of training Self-reported gained information and applicability in practice
Oeseburg et al., 2013 [44]	(Mostly) Multiprofessional education		Four half-day shared sessions, lectures and homework discussions	To realise a shift in tasks and responsibilities from GP to practice nurse Topics: screening, geriatric assessment, treatment and intervention plan	Lectures were appreciated, however other facets such as duration were appreciated less
MacRae, 2012 [43]	Interprofessional learning	Physician assistant, dental, occupational therapist, physical therapist	Twice a week 4 h during two semesters. Classroom meetings, home visits, small group discussions	Refining their professional parameters (turf), learning how to successfully collaborate with other professionals (team), and determining how to effectively design intervention plans for elders within their own communities (town)	Students gained clearer perceptions of other professions through their work with each other and the ability to more effectively communicate with other profession
Rask et al., 2007 [37]	Interprofessional learning	Nurses, physiotherapists, occupational therapists, nursing assistants, maintenance staff	Multidisciplinary quality improvement project with additional training (two full day workshops)	Interprofessional fall management	Less falls compared to the control group Better care documentation
Juntunen and Heikkinen, 2004 [41]	Interprofessional learning	Nurses, social workers and physiotherapists	Virtual school with online interaction with web lectures, written materials, learning platform, team tasks (15 ECTS)	The care of the elderly	The education was appreciated. A teacher to motivate and for guidance was missing
Rosher et al., 2001 [46]	Interprofessional learning	16 internal medicine residents, 7 medical students, 3 student nurses, and 1 social work student	Rotation in a community-based geriatric evaluation clinic with multidisciplinary approach. No interaction between different learners, but learners interact with the team	Geriatric multidisciplinary care	Appreciation of the learning experience
Thompson et al., 1988 [48]	Interprofessional learning	Medicine, pharmacy and nursing students	Multidisciplinary case discussions after visits, teams with all professions represented	Multidisciplinary care to nursing home patients	Positive evaluation on shared decision-making, and solving problems in teams

Table 3 (Continued)

Author, year	Type of interprofessional education	Participants	Teaching strategy	Teaching content	Results
Croen et al., 1984 [39]	Interprofessional learning	Medical and nursing students	Patient work up in teams of one medical and two nursing students	The role of each discipline in caring for the aged	Increased medical students' perceptions of the nurse's role in caring for hospitalized elderly patients ($P < 0.05$) All participants concurred that working with students in another health profession was a valuable learning experience. While nursing students felt that the program achieved all its goals, responses of medical students were more variable
Kappelman et al., 1981 [42]	Interprofessional learning	Students of dentistry, law, medicine, pharmacy, social worker	Interdisciplinary health teams, case discussions, seminars, patient visits	The aging process The team approach needed With several knowledge, skills and attitudes per discipline	Positive attitudes towards other disciplines More knowledge about community resources compared to control group. Self-reported skills in giving patient information. More positive attitude towards the older patient compared to a control group. High appreciation of education, 100% patient satisfaction
Braude et al., 2015 [49]	Interprofessional learning	Trainees in geriatric medicine, trainees in medicine, nurses in geriatric medicine ($n = 98$)	Simulation training with role playing	Different scenarios: acute illness, continence care, dementia care, complex discharge planning, delirium, end-of-life decision making	Improved self-confidence by 11.5% overall (precourse versus post-course $P < 0.01$ for all scenarios)

resolution, knowledge or experience in IP practice and education, and the ability to promote collaborative practice; and who are, according to Barr, “attuned to the dynamics of interprofessional learning, skilled in optimizing learning opportunities” [52,53].

4.1.2. The perceived demands of the learning context

Many adult learners are more interested in immediate, problem-centred approaches to problems connected with their current context than they are in subject-centred approaches [29]. It follows that the vulnerable older patient is the ‘problem’ who concentrates more interest than any other for the majority of health professionals involved with geriatric medicine [10,29]. The learning context includes learner perceptions of learning, which can be influenced by e.g. learning materials, assessment requirements, timetables, and the room in which the education is provided [10].

4.1.3. The learner's self-concept

Interprofessional learning can challenge the learner's perception to doubt their competence and their self-awareness, particularly if a learners' expertise is not acknowledged enough by the group or if the level of expertise are inappropriate for the learning task [10,28]. The tutor has a key role to ensure that the learning environment is conducive to discussion that will enable learners to examine both different views and also their own assumptions.

4.1.4. The relationship to prior learning

The interprofessional learning lead must ascertain the learners' prior knowledge in order to understand the level of knowledge, skills and attitudes that each professional brings to the IPE, in order

to create meaningful learning opportunities and to solve older patient problems as a group [29,54].

4.1.5. The group's balance or dynamics

An icebreaker session is advisable for the start of the IPE, to enable different health professionals to overcome the professional stereotyping and assumptions on the part of others [10,55]. The optimal number of participants is a group of five to ten learners, with health professions equally represented in order to prevent skewing in favour of any group, which may inhibit interaction [11,56].

4.1.6. The teaching strategy

Teaching strategies that have proved to be suitable for IPE include simulations, case- or problem-based learning, working in interprofessional teams, or shadowing where a given problem related to older patients has a central role [10].

4.1.7. The assessment

The assessment of interprofessional learning is also important to facilitate learning [57]. It has been shown that without assessments, education is less valued, has higher levels of absenteeism and disengagement [10]. It is however important that assessment should be meaningful. Practically, a summative assessment may be more difficult than a formative assessment, due to the different requirements of various professional accreditation bodies for learners from different backgrounds. The assessment may be performed on group or individual level. Common examples reported in the literature include group presentations, knowledge tests and essays [10].

In sum, significant changes to educational practices are needed if IPE is to be implemented. Although the current monodisciplinary

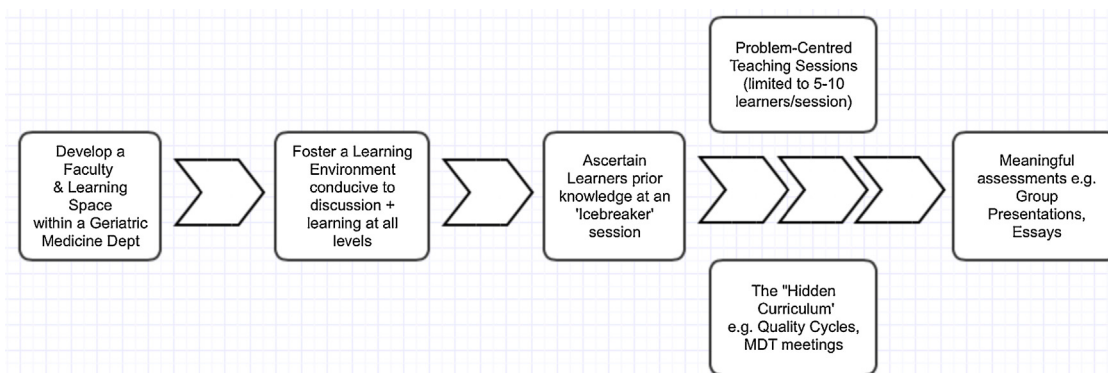


Fig. 2. Planning process of IPE.

approach and its associated learning opportunities are non-authentic when compared to actual clinical practice, they constitute at present a gold standard for both undergraduate and postgraduate training (e.g. a lecture). The preferred option is for IPE to become an integral part of the full health care curriculum, combined with the monodisciplinary approach, which is essential for gaining basic knowledge in geriatric medicine. Fig. 2 represents a proposed planning process for implementation of IPE within a geriatric medicine department.

According to some authors, IPE should be introduced early in the undergraduate training [58], but the present evidence is insufficient for any firm recommendations to be drawn.

4.2. The implications for clinical practice

Changes in the educational practice have implication on the changes in clinical practice. Patient care is becoming a multidisciplinary concern, particularly in geriatric medicine and it is now an imperative that the educational activities prepare health professionals for such collaborative practice [1]. It is shown that improving interprofessional training can have benefits to the level of patient care [1,35]. Ultimately, providing the best patient care should be the shared goal. However, many borders still need to be crossed, both between health professionals involved and between educational and clinical practice, knowing that many international professional bodies and the WHO strongly advises crossing these borders [1].

One example of the importance of interprofessional learning in clinical practice involves the improvement of patient care by quality cycles and multidisciplinary team (MDT) meetings [5]. These cycles and MDT meetings are assessed as having positive side effects for various clinical processes, although they have no formal status in educational terms because they are considered to be “hidden curriculum” despite clearly presenting a great learning opportunity. We know that from a traditional lecture the knowledge uptake is very low, with an estimated 5% remaining shortly after the lecture, and if not used or rehearsed the estimated half time of this knowledge is about two years [59,60]. But, it is assumed that learning from real clinical tasks (e.g. quality cycles, MDTs) is better retained due to the relevance for daily clinical practice; however, this assumption cannot be substantiated by evidence from the present educational literature. It may be that multidisciplinary tasks should be formalized in daily practice as an accredited task in which all health professionals interact and learn. Therefore, working schedules should ultimately make more time for formalized learning at the workplace, e.g. by quality circles,

but this question can be put for possible future research projects.

5. Conclusion and recommendations

As life expectancy continues to increase worldwide, more health professionals from different backgrounds will be expected to work together, looking after older patients in various multidisciplinary teams. Appropriate education, which should most likely include IPE, may well be the crucial key to achieving overall better success in patient care, as IPE involves shared learning goals and interaction between health professionals. Although the general educational principles of IPE are probably applicable to education in geriatric medicine, this should be scoped and tested by further research.

Key points

- World Health Organization and many professional accreditation bodies worldwide recommend education in interprofessional collaboration.
- There is no evidence at present what is the best practice and intervention in IPE in geriatric medicine.
- The IPE related general principles are applicable to the education in geriatric medicine.
- Teachers who provide motivation, support and advice are crucial for the joint work of different health professionals in geriatric IPE.
- Collaboration by students from different professions improved each party's understanding of the other's role in the care of elderly patients.
- The positive outcomes from the IPE programmes in geriatric medicine were found regardless how these were delivered (e.g. via a standardised simulation training programme or via the team members).

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