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Article

The Perception of Competence Limits and Assumption of Responsibility by Teachers in Interprofessional Education—A Mixed-Method Study

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Abstract: Background: Interprofessional education in the healthcare sector is becoming increasingly recognised in Germany and is increasingly being included in the curriculum. The learners are usually the focus of research. This study focusses on the teachers, as they are the ones who carry out the teaching and thus prepare the learners for practice. This article focuses on the perception of competence boundaries and the assumption of responsibility in an interprofessional setting. **Methods:** Using a mixed methods design, interprofessional courses were first identified across Germany in relation to the three professions of medicine, nursing and physiotherapy. Based on 76 fully completed quantitative questionnaires, the respondents' views were surveyed with regard to the competences of the teachers, among other things. In 15 interviews, experts were asked more in-depth questions about competence limits and the assumption of responsibility, whereby the data material was analysed according to Kuckartz's structuring qualitative content analysis. **Results:** Recognising profession-specific boundaries is considered important by 70% of respondents, but only 43% of respondents consider it important to take joint responsibility. The interviews show that legal framework conditions are crucial, but so is adherence to established roles and habits. **Conclusion:** (Self-)reflection is required in order to develop a shared assumption of responsibility. The actors must orientate their joint actions towards the needs of the patients and think across professions. As the process of (self-)reflection rarely takes place in mono-professional training programmes, opportunities to learn it are needed.

Keywords: interprofessional teaching; competence limits; assumption of responsibility; difficulties and opportunities

1. Introduction, Theoretical Background and Research Questions

"The Fact That We Show Up For Each Other, In Spite Of Our Differences,
No Matter What We Believe, Is Reason Enough To Keep Believing"

With this quote, 'Mirinda Bailey' in the episode 'Lay Your Hands On Me' (S3/E11) in Grey's Anatomy evokes the diversity of the team in the hospital as an important and valuable resource. Diversity in healthcare is not only created by gender and culture, but also by different professions and roles that create synergies in the joint care of patients. Positive effects of multiprofessional and interprofessional collaboration on the quality of care could only be proven in a Cochrane review [1], as the study situation was not clear.

Interprofessional education (IPE), i.e. students from different healthcare professions learning with, from and about each other [2], has been discussed and researched since the 1960s [3] to ensure that working together works well. In Germany, interprofessional education has gained considerable

momentum as a result of the Robert Bosch Stiftung's call for proposals [4], which has led to almost all medical faculties initiating interprofessional education projects. In addition to medical students, this primarily involves students of the newly academicised healthcare degree programmes (e.g. nursing, physiotherapy or midwifery). Four interprofessional competencies have also been included in the National Competence-Based Catalogue of Learning Objectives in Medicine [5] in the 'Overarching Competencies' section: a) mutual respect and shared values, b) role of the health professions, c) communication as a member of a team and d) acting as a member of a team [5]. This definition of the necessary competences corresponds to international models such as the British Columbia [BC, 6] Competency Framework for Interprofessional Collaboration (2008), the Interprofessional Capability Framework from Australia [7] and the Core Competencies for Interprofessional Collaborative Practice of the Interprofessional Education Collaborative [8].

Lecturers have a special role to play in interprofessional education, as they must demonstrate specific interprofessional competences in addition to the generally required didactic competences. In a previous study [9], the following IPE competences were defined: a) interprofessional communication, b) respect for other professions, c) recognition of profession-specific boundaries, d) clarity of one's own role, e) teamwork, f) interprofessional reflection, g) interprofessional conflict resolution and h) joint assumption of responsibility. However, the last point in particular has been the subject of much debate among the various healthcare professions as to the extent to which sharing responsibility is legally and practically possible. International literature also shows that sharing responsibility can lead to problems and that it seems essential to have developed an awareness of one's own role [10] and effective concepts of leadership [11].

Recognition of the professional boundaries seems essential here. However, for interprofessional cooperation to take place, these boundaries must also be overcome responsibly through dialogue [12]. The aim of this study is to investigate how teachers in interprofessional training in the professions of human medicine, nursing and physiotherapy in Germany assess professional boundaries and shared responsibility. The following research questions are explicitly analyzed:

- How are competence boundaries perceived in the collaboration in the teaching setting by the teachers who belong to the three professions of medicine, nursing and physiotherapy?
 - What function do competence boundaries have?
 - How are competence boundaries dealt with?
- What does the joint assumption of responsibility for one's own field of activity in the teaching setting have to do with competence boundaries?
 - What differences are there between the three professions?

2. Materials and Methods

A mixed methods design was chosen for this study. The results of an online questionnaire are used as a basis for a deeper understanding of the meaning, in order to enable a more complete analysis by means of guided interviews. The insights gained through the qualitative design are intended to fill gaps in the explanations that could not be adequately answered by the quantitative survey [13].

This study has received a favourable ethics vote (application no. 214/2018). This is compliant with the ethical guidelines of the Declaration of Helsinki of 1964 and its latest revision of 2018. Written consent has been obtained from all included study participants.

2.1. Quantitative Design

2.1.1. Quantitative Questionnaire

This study addresses interprofessional education at teacher level. As no standardised questionnaires were available at the time of the survey, a questionnaire was developed on the basis of theory-based literature. Publications were included

- on teaching in the university [14–17]
- on the competence development of teachers [18,19]
- for participation in didactic-pedagogical and interprofessional further training [20–22].

The online questionnaire contained a total of 28 questions and was divided into five areas: 1. socio-demographic information 2. scope and experience in teaching, 3. professional and interprofessional competences 4. self-organised IPE events 5. qualification of IP teachers. The question formats were: open and closed questions, single and multiple choice and free text. In the preliminary field, the questionnaire was carried out with five test subjects and adapted following feedback.

2.1.2. Sample

An extensive online search was conducted to identify training institutions throughout Germany in the professions of human medicine, physiotherapy and nursing. In the period from September to December 2019, contact was made with the question of whether cross-professional teaching events are offered in the respective institution and whether cooperation as such is addressed. In the event of a positive response, the willingness to participate in an online survey was requested, whereupon a link to the survey was sent out. This could be completed by December 2019. After the deadline, the data from the completed questionnaires was analysed descriptively in SPSS (Statistics 27).

2.2. Qualitative Design

2.2.1. Qualitative Guideline

Based on initial descriptive analyses of the online questionnaire, a guideline (Table 1) was developed for conducting qualitative interviews. Seven thematic areas were extracted: 1. definition of IPE, 2. own IPE events, 3. optimal IPE events, 4. basic knowledge of other professions, 5. IPE competences, 6. communication and shared responsibility, 7. IPE qualification course. Each of the areas contained one main question and detailed questions.

Table 1. Presentation of the guideline with main and detailed questions.

Main question		Detailed question(s)	
1.	What do you personally understand by interprofessionalism?	•	Is there an official definition that you work with?
2.	What do the interprofessional courses that you teach/are involved in look like?	•	Which professions are involved?
		•	What is the scope of the courses?
		•	How often do they take place?
		•	What are the learning objectives?
3.	How do you envisage optimal interprofessional education at universities of applied sciences, vocational colleges or universities, or what should it look like?	•	You have reported what your courses look like. Are there other formats that you like? And if so, what do they look like?
4.	Many people believe that the first step in interprofessional education should be to familiarise oneself with the other profession. Do you agree and if so, why do you think it is important to have basic knowledge of the other profession?	•	Is it important to you to know the content of other professions or should teachers in an interprofessional course act more as a moderator/tutor?
		•	What characterises the role of an IPE learning guide for you? Is it more content-related or organisational?
5.	In your opinion, do mono-professional competences differ from inter-professional competences?	•	If so, what are the differences?
			What competences should an interprofessional teacher generally have?
6.	In the online questionnaire that you were kind enough to complete, three quarters of respondents cited interprofessional communication as an important competence, but only less than half cited the shared assumption of responsibility. How can you explain this? Why does the aspect of taking joint responsibility seem to play a subordinate role?	•	To what extent could legal aspects play a role?
		•	Could it be due to the profession-specific professional identity in combination with hierarchical thinking? How could this be changed through interprofessional courses?
7.	What expectations do you have of an interprofessional qualification course? What should it	•	What content should it have?
		•	Which methods do you think are useful?

look like so that you feel well prepared for joint teaching?	• <i>What should not be missing under any circumstances?</i> • <i>What could the time frame look like?</i> • <i>Which formats do you find useful? E.g. blended learning formats or similar?</i>
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2.2.2. Sample

In the online survey, respondents were able to declare their willingness to be interview partners and provide their email address in a separate form. The aim was to achieve the greatest possible heterogeneity in terms of age, gender, teaching qualifications and duration and scope of interprofessional teaching. A total of 15 interview partners were selected, five from each profession - human medicine, nursing and physiotherapy. When they were contacted, the subjects received a detailed letter of information and a declaration of consent upon confirmation of the appointment. All interviewees took part voluntarily and authorised the anonymous publication of their data.

2.2.3. Interviews

The interviews were conducted between the end of January 2020 and mid-February 2021, with the first eight interviews taking place in person at the respondents' facilities. Due to the coronavirus restrictions, the last seven interviews could only be conducted digitally via the cloud-based video conferencing provider ZOOM. The length of the interviews varied from 20 to 70 minutes and were recorded on tape. The interviews were then transcribed, anonymised and analysed using MAXQDA (Analytics Pro 2022).

2.2.4. Data Analysis

The authors analysed the transcripts independently of each other by evaluating the data using structured qualitative content analysis according to Kuckartz [23]. They coded the material by defining main and sub-categories and discussing these in close dialogue. The main and sub-categories were developed consensually deductively and inductively, deductively based on the interview guide and inductively supplemented by close textual work. In order to close existing gaps, categories were formed in parallel via case summaries with the aim of comparing the categories with each other.

3. Results

3.1. Quantitative Results

A total of 798 institutions were identified throughout Germany where the three professions of human medicine, nursing and physiotherapy are trained. Contact was successful with 594 (74%) and interprofessional courses were offered at 134 (23%) institutions. A total of 125 of the stakeholders contacted gave their consent to take part in the online survey, with 76 people (61%) completing the questionnaire in full. The socio-demographic data is summarised in Table 2.

Table 2. Socio-demographic data of the IPE teachers surveyed in Germany; n=76.

Profession	n	%
Human Medicine	9	12
Nursing	26	34
Physiotherapy	29	38
Other	10	13
No answer	2	3
Age categories	n	%
26-30 years	3	4

31-35 years	7	9
36-40 years	14	18
41-45 years	15	20
46-50 years	12	16
51-60 years	20	26
Over 60 years	5	7

Gender	n	%
female	54	71
male	22	29

Degree/function	n	%
State Examination	11	14
Bachelor's degree	6	8
Master	21	28
Dr.	12	16
Prof.	11	14
Other	15	20

3.1.1. Interprofessional Competences

One part of the questionnaire focussed on IPE competences and asked which competences interprofessional teachers should have. The results are shown in Table 3.

Table 3. Response in absolute numbers and in per cent to the question ‘In your opinion, what skills should an interprofessional teacher have?’ (n=76); Multiple answers possible.

Answer option	n	%
<i>Interprofessional communication</i>	56	74%
Respecting the other profession(s)	54	71%
<i>Recognising profession-specific boundaries</i>	53	70%
Clarity of one's own role	52	68%
Teamwork	49	64%
Interprofessional reflection	48	63%
Interprofessional conflict resolution	36	47%
<i>Joint assumption of responsibility</i>	35	46%
No answer	14	18%

For 56 IPE stakeholders (74%), interprofessional communication is very important as a competence that IPE teachers should have. Recognising professional boundaries is also very important and is cited as important by 53 people (70%). Taking joint responsibility, on the other hand, appears to be less important as a competence for IPE teachers. This was not even mentioned by half of the respondents (35 people).

3.1.2. Profession-Specific Perspective

If a profession-specific evaluation is carried out, it can be stated that seven respondents from human medicine (78%) consider interprofessional communication to be important, while two people (22%) do not comment on this point. A total of 21 respondents from nursing (81%) answered the question positively, one person negatively (4%) and four people (15%) did not comment. Interprofessional communication is also an important aspect for 21 of the participating physiotherapists (73%), three (10%) answered in the negative and five (17%) gave no answer.

Recognising profession-specific boundaries' is important for six of the respondents (67%) from human medicine, one person (11%) describes this aspect as unimportant and two (22%) make no

statement. A total of 18 participants from nursing (70%) are in favour of recognising profession-specific boundaries, four (15%) deny this statement and a further four people do not comment on this. 21 participants from physiotherapy (73%) consider the recognition of profession-specific boundaries important, for three (10%) this does not play a role and five (17%) give no answer.

The profession-specific response behaviour regarding the aspect of joint assumption of responsibility is as follows: four respondents from human medicine (45%) are in favour of joint assumption of responsibility, three people (33%) reject this and two people (22%) make no statement. From the field of nursing, 13 respondents (50%) are in favour of a joint assumption of responsibility, nine are against (35%) and four (15%) do not express an opinion. Thirteen respondents (45%) from physiotherapy were in favour of a joint assumption of responsibility, eleven (38%) were against and five (17%) gave no answer. Table 4 summarises all the results for the three professions.

Table 4. Profession-specific response behaviour to the question ‘In your opinion, what skills should an interprofessional teacher have?’ n=76; Multiple answers possible.

Profession		Interprofessional communication		Recognising professional boundaries		Joint Assumption of responsibility	
		n	%	n	%	n	%
Human Medicine	Ja	7	78	6	67	4	45
	Nein	0	0	1	11	3	33
	KA	2	22	2	22	2	22
Nursing	Ja	21	81	18	70	13	50
	Nein	1	4	4	15	9	35
	KA	4	15	4	15	4	15
Physiotherapy	Ja	21	73	21	73%	13	45
	Nein	3	10	3	10%	11	38
	KA	5	17	5	17%	5	17

3.2. Qualitative Results

Nine main categories were generated from the 15 interviews with five interviewees each from human medicine, nursing and physiotherapy. All main categories and their subcategories can be found in Table 5.

Table 5. Presentation of the main categories and subcategories resulting from the interviews.

Main categories and subcategories
Definition of interprofessionalism - Own definitions - Official definitions - Terminology used
Course(s)/Teaching organisation - Courses-formal - Course content - Learning objectives - Realisation Bottom-Up - SUS - Professions involved - (S: here students) - TUT - Professions involved - (T: here teachers)
Ideal IPE events
Overarching objectives of IPE and the course as a whole (throughout the entire training programme) Theory-practice transfer

• Thinking as a team • Sustainability/continuity • Change of perspective • Appreciative interaction • Openness/curiosity • Reflection • Conditions
Necessity of IPE/IPC (interprofessional collaboration) • Patient orientation • Professional identity/professional biography • Joint clarification of roles/tasks
Basic knowledge • Competence limits
Teacher competences • Difference between interprofessional competences and monoprofessional competences • Role model function • Understanding as learning support • Curiosity/ openness/appreciation • Thinking in a team • Change of perspective • Authenticity • Role of the teacher – current • Role of the teacher – ideal • Understanding your own role
Hierarchical order • Assumption of responsibility ◦ Legal ◦ Moral
Elements of a qualification concept • Structural organisation • Blended learning • Transfer theory – practice • Continuity • Didactic skills
• Requirements for a qualification concept

The aspect of sharing responsibility was explored in greater depth in the interview. Seven of the fifteen interviewees, three from human medicine, three from nursing and one from physiotherapy, commented on this. Three levels can be identified that were mentioned in the interviews - the moral level, the legal level and knowledge with and about competence boundaries.

3.2.1. Moral Level

One interviewee from the field of human medicine answers the question as to why a joint assumption of responsibility appears to play a subordinate role

‘Because very few people even ask themselves this question during implementation.’ [Interview no. 14; physician]

The aspect of taking joint responsibility for successful patient care does not appear to be addressed either in training or in the practical setting. Nor are the problems that this can cause.

‘Well, I can't teach interprofessionally with someone who doesn't reliably take on their part of the work or their part of the tasks.’ [Interview no. 2; physician]

This person explicitly refers to interprofessional teaching, which for this doctor can only work as part of a team. Another interviewee describes socialisation processes that the different professions go through and discusses role models that learners use as a guide. If there are professions in the healthcare sector that bear legal responsibility, this is reflected on a practical and personal level. If a profession has never learnt to take responsibility, it is not used to it and also has the opportunity to evade it. And if shared responsibility is not addressed, how should it be implemented in teaching or in the practical setting?

"The shared assumption of responsibility, perhaps it's also a role model from clinical reality that has stuck in people's minds. That there is perhaps also a refusal mentality, I'm not going to take over now, so this thinking in terms of 'we', I think that is the step that is necessary before this shared assumption of responsibility." [Interview no. 12; care]

This person emphasises that a step must be taken before joint responsibility is assumed - thinking in terms of WE. In the practical setting of healthcare as well as in interprofessional teaching, which should prepare students for the practical setting, it is essential to work as a team. If this is successful, then a joint assumption of responsibility is also possible.

"Thinking in terms of the "we" and not seeing myself as a person, but not replacing this "I" with the "we", but seeing myself as part of the "we", then I can also practise joint assumption of responsibility". [Interview no. 12; care]

3.2.2. Legal Level

Only the interviewees from human medicine and one person from physiotherapy addressed this level. The consensus among the physicians is that the ultimate responsibility lies with them.

"If we have a system where every order has to be signed by the physician, then the ultimate responsibility is always with the physician and remains with the physician." [Interview no. 2; physician]

"So I think, ultimately, it's always, it always has to be, there can only ever be one person responsible." [Interview no. 1; physician]

"Because responsibility is clearly regulated by law, at least in German. Ultimately, my profession is responsible at the back." [Interview no. 14; physician]

The interviewee from the physiotherapy department addresses the reluctance to take on joint responsibility from a non-medical perspective.

"And if I take responsibility for something, I also have to take responsibility if things don't work out." [Interview no. 5; physiotherapy]

This could also explain the refusal mentality mentioned by nursing staff in the previous quote. On the one hand, the non-medical professions strive for and want to work autonomously; on the other hand, the thought of being held legally responsible for one's own actions can trigger fear - especially if the topic has not been discussed in advance.

3.2.3. Competence Limits

It becomes clear that knowledge about the competences of other professions is important. In this way, overlaps between the areas of expertise can be identified and the professions can negotiate in a patient-oriented manner which expertise is the most suitable. One interviewee from the care sector commented as follows:

"I am then the specialist for questions on my part and the others on theirs. (...) I can't know everything either, so I think that's where you reach your limits." [Interview no. 4; care]

It is noted that one's own knowledge also has limits and that those involved in the healthcare system should be aware of the limits of their expertise. On the one hand, we cannot know everything; on the other hand, there is also an opportunity to complement each other to optimise joint patient care. One interviewee from the care sector calls this a moment of relief. Instead of striving for (unattainable) perfectionism, the stakeholders should pool their knowledge, complement each other and recognise the expertise of other professions.

"And that is also a moment of relief, not having to know something about all professional groups, but reacting in an appreciative way, inviting them to be open. Because we have a lot of blind spots, that's just the way it is. And this authenticity also elegantly takes the boundaries into account, which I actually find a very relieving moment." [Interview no. 12; care]

Knowing the boundaries of competences is not just about differentiating between professions. Rather, each profession should know what it can do, but also what it cannot do and what other professions can do better. The aim should be to know ...

".. how to combine and join forces with their different competences for the benefit of the patient." [Interview no. 1; physician]

4. Discussion

4.1. Responsibility and Taking Responsibility

'You can take responsibility or have it' [24]

Responsibility is a big word. But what does it mean to take on or have responsibility? Harendza (2022) uses the example of the two professions of nursing and medicine to show that dealing with responsibility is very different. In the field of nursing, it was found that carers are given more responsibility at the beginning of their work than they are able to cope with. This leads to increased stress for them [25]. Physicians, on the other hand, are expected to familiarise themselves with the concept of responsibility even before they begin their studies. They should recognise the goals and complexity of tasks and use their skills, knowledge and a self-reflective attitude to penetrate them and find solutions. Students acquire practical skills and specialised knowledge as part of their studies. But, the ability to self-reflect is not part of the programme. However, it is considered a necessary basis for developing the ability to assume responsibility [26]. And since self-reflection does not necessarily develop during medical school [27], the question can be asked as to how physicians-to-be can develop this ability. It became clear that the two professions of nursing and medicine deal differently with the assumption of responsibility. If taking on responsibility at the start of work leads to increased stress for nurses, this could explain why they are more reluctant to take on responsibility independently. If physicians are expected to take on responsibility even before they graduate, they grow into this role whether they want to or not. Whether they are able to fulfil this responsibility does not seem to be discussed. However, in order to ensure the best possible care for patients, responsibility should be shared across all shoulders [10,28].

4.2. Learning Across Professional Boundaries

ZIPAS, the Zurich Interprofessional Training Centre, shows how this can be achieved [29]. Here, all professions learn together, training is conceived and implemented in an interlinked manner and not viewed in isolation. The framework conditions were adapted in terms of time and space. The three professions, in this case nursing, physiotherapy and physicians, are spatially close to each other in that they are all located on the ward. In addition, their shifts are synchronised so that there are no waiting times. No one profession has to wait for another. Thanks to this intensive collaboration, the professions perceive each other differently in terms of their expertise and no longer think mono-professionally, but consider in advance what could be relevant for the other profession. They overcome silo thinking and recognise the benefits of interprofessionalism. They feel part of a team and learn beyond the boundaries of their own profession [29]. This could be an opportunity to provide patients with the best possible care, to learn beyond their own professional boundaries and thus make these boundaries superfluous. For example, when a patient is mobilised, it is irrelevant which profession performs this task. The mobilisation should be carried out by the person who can do it best. Through intensive collaboration, the individuals develop other competences, they are better able to take the perspective of others, think more holistically and meet as equals. Through this teamwork, they are able to reflect on behaviours and processes, learn new ways of thinking and question their own role [29]. They not only work together, they act together [30].

4.3. Getting into Action Together

At ZIPAS, the stakeholders come together for joint action, as the patients are at the centre. Their actions are based on the relevance of the patient and their individual situation [31]. The overarching competences from the NKLM can be used as the basis for their actions: Mutual respect and shared values, role of healthcare professionals, communicating as a member of a team and acting as a member of a team [5]. Patient-centred joint action cannot be carried out in the best possible way without these competences. Here, too, it becomes clear that it is not the professions but the people in the system with their expertise that are relevant. Co-operation is essential, as the complexity of care is increasing due to demographic change [32]. A holistic view of the players in the healthcare system is therefore crucial in order to be able to correctly categorise patients and their history. This is diametrically opposed to the constant specialisation. The question of how comprehensive care can be guaranteed if each profession or speciality only sees its own part of the patient should be allowed. This reinforces silo thinking and makes it difficult to adopt a perspective. Sottas et al. [33] call for the training of learners on an intrapersonal and interpersonal level as well as on the level of a community of action with the goals of meaningful interaction with other professions and specialisms as well as reflection on one's own perspectives. If it is possible to live shared values, respect each other as individuals, communicate on an equal footing and see each other as part of a team without being reduced to a professional affiliation, the best possible care can be achieved, as this provides the opportunity to focus on the patients. And that should be the ultimate goal in healthcare.

Conflicts of Interest: The authors declare that there are no conflicts of interest and that the study was not financially supported.

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