

From Department of Neurobiology, Care Sciences and Society
Karolinska Institutet, Stockholm, Sweden

STUDENTS' WORKPLACE LEARNING IN PRIMARY HEALTH CARE: LEARNING FROM PATIENTS

Karin Björklund



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STUDENTS' WORKPLACE LEARNING IN PRIMARY HEALTH CARE: LEARNING FROM PATIENTS

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By

Karin Björklund

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Principal Supervisor:

MD, PhD Charlotte Leanderson
Karolinska Institutet
Department of Neurobiology, Care Sciences
and Society
Division of Family Medicine and Primary Care

Opponent:

Associate Professor Per Kristiansson
Uppsala University
Department of Public Health and Caring Sciences
Division of Family Medicine and Preventive
Medicine

Co-supervisor(s):

Professor Terese Stenfors
Karolinska Institutet
Department of Learning, Informatics,
Management and Ethics
Division for Learning

Examination Board:

Associate Professor Lars Henningsohn
Karolinska Institutet
Department of Clinical Science, Intervention
and Technology
Division of CLINTEC

Professor Gunnar Nilsson
Karolinska Institutet
Department of Neurobiology, Care Sciences
and Society
Division of Family Medicine and Primary Care

Professor Lena Nilsson-Wikmar
Karolinska Institutet
Department of Neurobiology, Care Sciences
and Society
Division of Physiotherapy

Professor Martin Fahlström
Umeå University
Department of Department of Clinical Sciences
Units: Professional Development

To Anders, Olivia and Gustav

We do not learn from experience. . . we learn from reflecting on experience.”

— John Dewey

ABSTRACT

Background: Facilitation of patients' participation in own care is considered key component to achieve a person-centered, high-quality care delivery. Person-centered care, including communication techniques and patient-centered working methods, taking into account the patients' autonomy and participation in own care, can affect the outcome of the patients' care and health. For students in health care education, communication and patient-centeredness are important core competencies to practice during workplace learning. In order to achieve adequate professional competences, workplace learning plays an important role in students' clinical training. Students' clinical competence and communication skills can be facilitated if the students are given the opportunity to actively, under supervision, provide care during patient encounters. Patients' active participation in undergraduate education can positively affect their experience of health care and facilitate students' clinical learning. However, patients are seldom specifically involved in medical students' clinical education about communication and patient-centeredness. At the same time, patients describe having important knowledge to communicate to medical students to facilitate the students' clinical learning.

Aim: The overall aim of the present thesis was to explore how patients' participation in clinical education can facilitate medical students' learning regarding communication skills and patient-centeredness.

Method: In Study I, data were collected using the Clinical Learning Environment, Supervision and Nurse Teacher Evaluation Scale (CLES + T), the Client Satisfaction Questionnaire-8 (CSQ-8), and interviews with clinical supervisors. In Study II, the Patient Feedback in Clinical Practice (PFCP) questionnaire was composed and validated. In Study III, evaluation surveys and interviews were used to explore students' experiences of their learning from the patients' written feedback that patients provided on the PFCP questionnaire. In Study IV, students, peers, and clinical supervisors' experiences of a multi-source feedback (MSF) setting were explored using evaluation surveys. Prior to the data collection for Study IV, semi-structured interviews with students and clinical supervisors and iterated discussions within the authors' team were conducted to adapt the PFCP questionnaire to enable peers and clinical supervisors to provide feedback and for students to perform self-evaluation. In Studies I–IV, statistical and qualitative content analyses were used to analyze the data.

Results: Patients, students, and clinical supervisors at the student-run clinic (SRC) in Study I experienced facilitated student-centered learning and tutoring while maintaining high-quality patient care. The validation process in Study II resulted in the 19-item PFCP questionnaire, which includes two dimensions: consultational approach and transfer of information. The patients, students, and clinical supervisors experienced the content and structure of the PFCP questionnaire in alignment with the consultation, authentically reflecting the patient encounter and capturing the patient's agenda in the consultation. In Study III, the students experienced the patients' written feedback, obtained from the PFCP questionnaire, as providing useful information that facilitated a reflective self-directed learning process that identified areas for improvement and further clinical training. In Study IV, the students, peers, and clinical supervisors experienced the written MSF as providing multifaceted perspectives of patient-centeredness that contributed to identifying levels of knowledge and areas for further training.

Conclusion: The results of Study I indicate that SRC in primary health care has the potential to enhance student-centered learning and supervision while maintaining high-quality patient care. The results of Study II indicate that the PFCP questionnaire is a valid, reliable, and internally consistent questionnaire for patients' written feedback to medical students. The results of Study III indicate that patients' written feedback provided the students with concrete feedback that facilitated the students' ability to identify levels of knowledge and areas for further clinical training. The results of Study IV indicate that MSF, gathered with the original and adapted PFCP questionnaires and provided adjacent to an encounter, could be an adequate learning activity both for the medical students and their peers. Additionally, increased patient participation in students' workplace learning could clarify and facilitate clinical supervisors' pedagogical assignment. The results indicate that the patients' subjective experience of care visualized the importance of including patients as a valuable resource in students' workplace learning.

Keywords: Communication, feedback questionnaire, medical students' learning, multi-source feedback questionnaire, patient-centeredness, patient feedback, person-centered care, primary health care, student-run clinic, workplace learning.

PROLOGUE

I have always viewed communication as a crucial competence, especially in my work with patients and students. Through my previous work as an occupational therapist and my research projects in medical education, I have acquired puzzle pieces of knowledge and experience of how to communicate as a professional and how communication models differ between health care professions. This prompted my interest in developing an in-depth understanding of how communication models and techniques can affect and shape dialogues between patients and health care providers, and thereby affect health care outcomes. It also inspired me to explore how to incorporate patients' perspectives in workplace learning.

After more than three and a half years as a Ph.D. student, I became a patient, an experience that has given me new perspectives on the value of being included as an adequate and actionable collaborative partner in my own care. During my need for care, most health care providers informed me about what they considered important for me to know. Because of my pre-understanding of patient-centered communication, I may have been more likely than the average patient to recognize an iterative one-way communication while I received information during numerous encounters. However, talking to friends and family members, I realized that they had similar experiences during their need for care. It is therefore important to me that this doctoral research could contribute with some additional puzzle pieces on how we can take into account and learn from patients' perspectives and experiences of the dialogue that take place during patient encounters.

LIST OF SCIENTIFIC PAPERS

This thesis is based on the following papers, which will be referred to in the text by their Roman numerals:

- I. Froberg M, Leanderson C, Flackman B, Hedman-Lagerlof E, Bjorklund K, Nilsson G, Stenfors T. Experiences of a student-run clinic in primary care: a mixed-method study with students, patients and supervisors. *Scand J Prim Health Care*. 2018;36(1):36-46.
- II. Björklund K, Stenfors T, Nilsson G, Alinaghizadeh H, Leanderson C. Let's ask the patient – composition and validation of a questionnaire for patients' feedback to medical students. *BMC Med Educ*. 2021;21(1):269.
- III. Björklund K, Stenfors T, Nilsson G, Leanderson C. Learning from Patients' Written Feedback: Medical Students' experiences. 2021. (Submitted).
- IV. Björklund K, Stenfors T, Nilsson G, Leanderson C. Multisource feedback in medical students' workplace learning in primary health care. 2021. (Submitted).

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LIST OF ABBREVIATIONS

AVC	Academic Primary Care Center
CLES + T	Clinical Learning Environment, Supervision, and Nurse Teacher Evaluation Scale
CPD	Continuing professional development
COSMIN	Consensus-based Standards for the Selection of Health Status Measurement Instruments
CSQ-8	Client Satisfaction Questionnaire-8
EFA	Explorative factor analysis
F1	Factor 1
F2	Factor 2
GPCC	University of Gothenburg Centre for Person-centred Care
KI	Karolinska Institutet
MANCOVA	Multivariate analysis of covariance
OECD	Organisation for Economic Co-operation and Development
PFCP	Patient Feedback in Clinical Practice
PHC	Primary health care
SD	Standard deviation

1 INTRODUCTION

A key component to achieve person-centered, high-quality health care is patients' participation in their own care (1-6). Person-centered care, including communication techniques and patient-centered working methods, taking into account the patients' autonomy and participation in own care, can affect the outcome of the patients' care and health. (1,7-9). For health professionals, the abilities to communicate effectively and to apply patient-centeredness are core competencies. For health care students, it is important to develop clinical and communication skills to meet the needs of present and future care and to be able to work in different health care systems and contexts, such as primary health care (PHC). To train and practice communication and patient-centeredness during students' workplace learning is therefore crucial (10-12) and plays an important role in students' clinical training (13-15). Students' clinical and communication skills can be facilitated if the students are given the opportunity to actively, under supervision, provide care during patient encounters (16-19). Patients' active participation in undergraduate health care students' education, can also affect the patients' experience of health care positively and facilitate students' learning (10,20,21). However, patients are more seldom specifically involved in students' clinical training and seldom provide information on their experience of care during the encounter. At the same time, patients describe having important knowledge to communicate to the students (4,7). The idea of learning with patients rather than about them is spreading. If this idea is to be realized, patients must become more active partners in health care and bring their expertise and voices into health care education. It would therefore be of great value if patients could be more systematically involved in students' clinical training, specifically, if they would share their perceived experience on communication and patient-centeredness after a clinical encounter. This thesis seeks to explore how including patients' perspectives on communication and patient-centeredness during clinical encounters can facilitate medical students' clinical training during workplace learning in primary health care.

2 BACKGROUND

2.1 HEALTH CARE

2.1.1 Patients in health care

Over the past 40–50 years, patients have been expected to fit into the routines and practices of health care and social care services that the health professionals considered the most appropriate (22-24). Accelerating over the past decade, continual work has been performed to optimize health care by providing more person-centered care and tailoring services to the needs of individuals (20,22,23). Research shows that continual work to improve health care delivery and facilitate patients' participation in their own care is considered crucial to achieving person-centered, high-quality care and better health outcome for the patients (1-6). The enforced Swedish Patient Act, implemented in 2015 (6), aims to strengthen the patient's participation in own health care and states that the health care should, as far as possible, be designed and implemented in agreement with the patient (25). The Swedish National Board of Health and Welfare's guidelines also emphasize patients' participation in health care (20). A patient-centered approach and working method include a framework for dialogue (26), transfer of knowledge and takes into account both patients' and health care professionals' autonomy (1,7,27).

Patient-centered communication between patients and health care providers can help achieve the value-based goals described in the Health and Medical Services Act and the guidelines of the Swedish National Board of Health and Welfare and result in better concordance, patient satisfaction, improved treatment adherence, and improved health outcomes (4,7,9,20,25,27,28). The American national report *Improving Diagnosis in Health care* highlights the value of and need for adequate communication with the patient to ensure accurate diagnosis and management of the patient's cause of concern (29). Patients' ability to participate in decisions about their treatment and care can be facilitated and improved through increased patient participation in own health care and educational interventions to enhance health professionals' communication skills (10,20,21).

The Swedish Agency for Health and Care Analysis has emphasized the need for application of appropriate communication models to strengthen the consultation during patient encounters and to increase opportunities for patients to participate in their health care (4,5,28). Research has elicited patients' desire to be more involved during clinical encounters in order to increase patients' ability to participate in decisions about their care (4,7). Despite

evidence demonstrating the advantages of increased patient participation in care and continual work in health care and health education, previous measurements and reports demonstrate that there is still a need to improve patients' participation and the provision of information in health care (2-5,30).

2.1.2 Person-centered care

In recent years, person-centered care has become a core concept and ethical viewpoint to guide professionals in their clinical practice (31-37). In the present thesis the concept of person-centered care as defined by the University of Gothenburg Centre for Person-centered Care (GPCC) will be used (31,32), which is widely used in Swedish health care. In the strive for person-centered care, this thesis focuses on how patients' participation and inclusion of patients' written feedback on the experience of communication and patient-centeredness during an encounter can facilitate medical students' workplace learning.

According to the GPCC, person-centered care includes three key elements: partnership, the patient's narrative description, and documentation (32). The first key element, the partnership between patients, their relatives, and health professionals, involves mutual respect for and trust in each other's knowledge and expertise. The second key element, which is a prerequisite to person-centered care, is the patient's narrative description of present health condition. The patient's suggested treatment is then planned in partnership and documented in the patient's health plan. The third key element, the documentation, includes the patient's narrative and health plan and is documented in the patient's journal (31,32).

2.1.3 Health literacy

During the twenty-first century, increased awareness of the concept of health literacy has become essential for health care professionals (38). Health literacy describes the patient's ability to understand and interpret the meaning of health information in spoken, written, or digital form (38). Health literacy includes the attitudes and skills that facilitate patients' ability to take control of and be responsible for their health, the ability to seek health information and navigate in complex health care systems (29,38). Health literacy describes the personal social resources and characteristics needed for a person to access, understand, and use the information in decisions about own health and care (29,39). Furthermore, health literacy affects the patients' ability to communicate with health professionals, discern what constitutes high-quality advice, and translate the advice into health-related actions (38).

The interaction between health providers and patients is important to achieve improved patient care, since health providers often determine the parameters of health interactions such as provision of information (30, 38). Therefore, it is important for students to understand and take into account the necessity of adequate communication skills in professional practice.

2.1.4 Patient-centeredness as working method during the patient encounter

Communication ideologies and values regarding the relationship between doctors and patients are reflected in theoretical models such as the concept of patient-centeredness (10,40,41). These models provide important frameworks for doctors' communication with patients during medical consultations (10,12,40,42). Many countries, as well as international organizations such as the OECD, have chosen to use patient-centeredness as an approach in health care meetings to ensure that patients' needs, values, and preferences are appropriately considered (7,43,44). The psychoanalyst Enid Balint was one of the first to state that patient-centered medicine involves understanding the patient as a unique human being, referring to patients' individual needs and approaches (45). The British physician Ian McWhinney provided a summary of the concepts of patient-centeredness as one where the physician tries to enter the patient's world and see the illness through the patient's eyes (46). Professor Moira Stewart and colleagues suggest one of the most comprehensive definitions of patient-centeredness, including six interconnecting dimensions: (i) exploring both the disease and the illness experience; (ii) understanding the whole person; (iii) finding common ground between the physician and patient; (iv) incorporating prevention and health promotion; (v) enhancing the doctor-patient relationship; and (vi) "being realistic" about personal limitations and issues, such as the availability of time and resources (47). The concept of patient-centeredness will be used in this thesis to describe the working method, including communication techniques, applied throughout a patient encounter to include and take into account patients' perspectives during the dialogue between the doctor and the patient.

In models of patient-centeredness, patient participation during the clinical encounter is crucial, to enhance the decision-making process, improve adherence, and optimize self-management (1,25,43). One of the key components of patient-centeredness in the dialogue with patients during an encounter is patient-centered communication (10,12,48), a two-way dialogue between the patient and the doctor (48,49). Models and structures have been developed for these interactions since the beginning of the twentieth century (40,41,45,50-54). As a result of the development of patient-centered working methods, the view of consultations has changed from that of a meeting in which the patient is the passive recipient

of the diagnosis and treatment to one in which the patient is an active participant in the dialogue during a clinical encounter (55-57). Focus has shifted from the traditional conceptual doctor-centered care to patient-centered care (55,56).

Since the 1970s, the conceptual frameworks for patient-centered consultation have been developed and been applied as pedagogical model during encounters (48,50,56-58,60,61). The consultation model provides doctors with a clear chronology and structure for the consultation during the patient encounter (10,53). It delineates the skills that facilitate doctor-patient communication (42,53,59,61), strengthens interactions between the doctor and the patient (42,53,59,61) and emphasizes the patient as a collaborative partner during the encounter (59,62). The model can help doctors clarify and understand patient's perspectives regarding the patient's cause of concern (47,59,60).

The consultation model divides the encounter into three phases: the patient's agenda, the doctor's agenda, and the shared part (49,50,52,53,60,61,63). The patient's agenda, on which the patient is the expert, is elicited during the initial part of the consultation through open-ended questions and applications of adequate summaries. These questions explore the patient's ideas, concerns, and expectations related to the patient's cause of concern (8,49,50,54,61,64,65). In the next phase, during the consultation, the doctor's agenda, in which the doctor is the expert (42,49,61), consists of focused medical history questions and clinical examination (40,48,63). In combination with the patient's agenda, this information provides grounds for clinical reasoning and formation of a working hypothesis (40,48,63). The last phase of the consultation, the shared part, is based on the doctor's explanation and motivation of the rationale for the suggested medical plan and presented based on, and in relation to, the patient's pre-understanding and questions related to their current symptoms/signs/medical problems (42,49,61,63). The explanations and motivations provide the patient with adequate information and knowledge, that enables the patient to participate in the mutual agreement about recommendations and decisions on future care (9,40,42,58,61-63). Patient-centeredness also includes using adequately applied summaries throughout the dialogue, e.g., after the patient's part of the consultation (48,49,63).

Despite the well-documented benefits of using patient-centeredness as a working method in the consultation during patient encounters, and despite continuing professional education in the subject, research and report indicate that patients would like to be more involved during the encounter with doctors (4,5,7).

2.2 HEALTH EDUCATION

Today's health education programs comprise a vast number of courses and focus on content that covers theoretical knowledge, clinical practice, and professional development. Clinical training is usually initiated at an early stage of education and consists of simulation modules and authentic clinical training in workplace-based practice.

2.2.1 Workplace learning

Over the past few decades, the concept of workplace learning has been used in medical education (66,67). One definition describes workplace learning as “learning that occurs through the relations and dynamics between the individual actors and collectively” (68, p.19). Workplace learning refers to a learning situation primarily designed for practice, in which the students provide health care (66,67,69). Workplace learning has become an integrated and important part of health education (13-15), falling mainly under the concept of clinical education and spanning all stages of health care students' education (13).

Workplace learning provides the students with real-life situations in which they can develop and attain workplace competencies (66,67,69), that are necessary to learn and develop for future professional work (13). Workplace learning also creates the conditions for students to learn with real patients. Students can train through the interactions with patients while clinical supervisors serve as facilitators (70,71). In addition, students' learning can be facilitated through interactions with peers from their own and other health-care professions (71-74). The concept of workplace learning will be used in this thesis to describe the students' learning in clinical practice in PHC.

2.2.1.1 Educational units in workplace learning

During students' workplace learning, the clinical environment is an important setting and place for students to learn (66) and provides students with a way to obtain clinical experience and to gain insight in health care in the community (75,76). In addition to the general learning environment at hospitals and PHCs, during student workplace learning, students also undertake clinical rotations at dedicated clinical educational units (77). Educational units, such as clinical education wards, interprofessional training units, student skills training units, and student-run clinics (SRCs) have become an important part of students' clinical education (77-82). The educational units are often designed to include students from single or multiple health care programs and to accommodate varying numbers of students (77,80,81). The purpose of such educational units is to facilitate processes such as problem-based learning and interprofessional learning (77,80). In these

dedicated student educational units, under the guidance of clinical supervisors, the students are the main providers of care (83-85). Students' active learning is also facilitated by peers and indirect/direct supervision (77,81,84). In these authentic clinical environments, students can understand the context in which knowledge is to be applied, which may further facilitate learning (78). For clinical supervisors, focus is directed toward the relationship between the student and patient (86), with increased focus on student-centered tuition that supports the student's professional development as a clinician (80,87). Research shows that patients cared for in an educational unit had high levels of satisfaction with their care and also perceived the medical quality of care as comparable to that of ordinary care (84).

SRCs have operated mainly in the United States since the late 1960s and have increasingly been used internationally as learning environments in medical education (83,84). However, in Sweden SRCs has mainly focused on inter-professional education in hospital-based settings and are seldom established as pedagogical learning units in PHC for students of different health professions (77,80). Little is known, therefore, about the actual effects of performing clinical rotations at an SRC health care unit on students' learning outcomes outside hospital-based settings (86). Nor do we know how the SRC setting can enhance the clinical supervisors' pedagogical assignment. In this thesis, we analyze experiences of a student-run clinic in primary health care as an arena for students' workplace learning.

2.2.1.2 Workplace learning in primary health care

The PHC centres' role in the health care system has increased and will further increase during the coming years in Sweden (5,88). During students' workplace learning in PHC, the students meet patients from a diverse population with various diseases and illnesses (89). Primary health care is, therefore, an important arena for students to perform workplace learning and develop and attain workplace competencies (90). Therefore, PHC is also an essential arena for pedagogical research (90).

In Region Stockholm there are over 200 PHC centres and in total over 500 health care units involved clinical health care education, including primary rehabilitation centres, child and maternity centres with different corporate structures. Region Stockholm has also established eight Academic primary health care centers (AVCs), which increased focus on education, research and continuing professional development (CPD) (91). Students from programs such as medicine, nursing, occupational therapy, physiotherapy, and psychology take part in workplace learning for various periods and at various educational stages in PHC. One to four

students per educational program usually perform clinical training simultaneously, which means that the number of students at the units differs over time, as does the profession the students are studying and the semester, they are in. Students from the medical program at KI perform clinical rotations at PHC centers from semester one to semester eleven (except for semesters eight and ten), and the placements usually last between four and seven days per semester. Students thus have limited opportunities to meet students from their own and other health professions during clinical training.

2.3 LEARNING

Several definitions of learning are presented in the literature. One broad definition is “any process that in living organisms leads to permanent capacity change and which is not solely due to biological maturation or ageing” (92, p. 3). Learning is often, though, defined as “the route in which any type of knowledge is attained” (93, p. 4, 94, p. 47). Learning consists of both content and process: content describes what is to be learned and the process indicates how the learning proceeds (95). For the learners, this means that the learning involves change that enables them to acquire new knowledge, attitudes, and habits and make both personal and social adjustments (92,95).

An important theory in adult learning is self-directed learning, which has its origin in several theoretical frameworks (96). Many researchers use terms similar to self-directed learning interchangeably, e.g., “self-regulated learning” and “self-teaching,” since the differences between the concepts are often subtle and inconsistent (97). In this thesis, the concept of self-directed learning that has its origin in the constructivist theoretical framework will be used (92,98-100). Knowles (1975) provided one of the most foundational definitions of self-directed learning as the “process in which a learner takes the initiative, diagnoses their learning needs, creates learning goals, identifies resources for learning, applies appropriate learning strategies and evaluates their learning outcomes” (101, p. 18). The theoretical literature describes multiple dimensions in the self-directed model: the process of learning (the management of learning tasks), personality characteristics of the learner, factors in the learners’ context that influences the possibility and likeliness that learners will undertake self-directed learning, and the construction of knowledge during the learning process (the metacognitive process) (98,100). In addition, to promote self-directed learning, the model includes an extensive rationale for encouraging reflection (102-104). Self-reflection supports students in the process of identifying knowledge gaps and areas for improvement (95,99,102-

106) and allows students to transform current experiences and ideas into new knowledge and actions (103,105,106).

2.3.1 Students' workplace learning

Students can learn from each other or patients through social interactions and conversations (16) and this socialization can be characterized as continually and increasing participation in a community of practice (69,107). The students' opportunity to integrate in health care during workplace learning, enables the students to practice health care with increasing complexity in alignment with learning objectives and educational level (16,67) and where the supervisors secure professional requisite for safe high-quality care and facilitate students own progressive development of professional practice (67,108,109). For the students to understand new ideas and information, they must process information and knowledge by interacting and engaging with others, such as peers, clinical supervisors, and patients during their workplace learning (13).

In a learning activity created in a work-related setting (e.g., the clinical encounter), with a relevant and realistic context, students can process and practice their knowledge and skills in relation to their pre-understanding and perceived meaningfulness of the learning activity (16,92,100,102,110-112). Meaningful learning occurs if the students can actively process the information and knowledge they have obtained, and if they consider the learning activity understandable and useful (16,105,112-116). By reflecting on their learning experience in relation to their pre-understanding of the subject, students can identify their learning needs and monitor the growth of their knowledge and skills (16,96,99,105,111,112). If the students are facilitated in the learning process of transporting theoretical thoughts and knowledge into a practical learning process, the students can develop knowledge and skills and thereby can their professional development be strengthened (16,72,112-114,117). In addition, if students know beforehand what they are expected to learn, how and why they should learn it, what the learning objectives are, and how the learning objectives are related to their education, it can facilitate and motivate students clinical learning (16,99,100,108,114,115,117). Research shows that when learning activities deal with an actual patient problem, students experience the activities as more meaningful, and their motivation to perform the activities increases (16,115,116,118). Moreover, if students can directly apply newly acquired knowledge to a clinical situation, they retain the knowledge better and more permanently (118,119).

Interactions between students can be included in workplace learning to further facilitate students' learning in clinical practice (72-74,120,121). Exposure to peers' clinical work allows students to compare and relate their work to that of their peers, which facilitates students' self-evaluation of their own performance (72-74,120,122,123). The students are encouraged to use each other as a resource to develop theoretical and practical knowledge and skills that can be implemented in clinical practice (73,74,122). This thesis addresses perspectives on peer learning in the context of MSF.

2.3.1.1 Clinical supervisors' role in students' workplace learning

During students' workplace learning, clinical supervisors have a responsibility as role models and contribute their expertise to the students' understanding of what they are supposed to learn and perform (76,109,124). The clinical supervisor facilitates the student's learning while the student performs parts of the encounter, based on the student's level of competence, study semester, and learning objectives (109,124,125). The patient's subjective experience of the students' performance during the encounter is seldom included in feedback to the students (126,127). Instead, the clinical supervisors are often the interpreters of the patient's subjective experiences of the care during the encounter (17,128). Recent research describes how a patient's experience of an encounter can add valuable information for the clinical supervisor to include in their feedback to the student after the encounter (129).

2.3.1.2 Patients' role in students' workplace learning

Traditionally, in medical students' clinical education, patients' involvement has often been passive and objectified. For instance, patients have been used to illustrate a specific condition or a clinical finding (17,130-133). In recent years, patients' involvement in medical education has increased, and their role in education has moved towards that of more active partners in learning, such as a feedback providers, mentors, and also as participants in assessing student performance (125,129,132-136).

During students' workplace learning, meeting patients is central and crucial to facilitating students' professional development (16-19,118). In the meeting with patients, students can learn and develop clinical and communication skills, as well as patient-centeredness (118), with an initial focus on the students' approach in dialogues with patients (17,70,125,133). Patients are seldom directly involved in students' clinical education, even though previous research shows that patients experienced having important knowledge to provide to students to facilitate clinical learning (17,130,134,137), regarding communication and professional behavior (138). Knowledge is required to further explore the patients' role in health care

education. This thesis will address, aspects of how patients could be an important partner in students' workplace learning.

2.3.2 Students' learning; communication and patient-centeredness

For students, developing communication skills is a complicated process that is based on the students' reflections and on evaluations of their performance and behavior (139). Training enables students to develop their communication skills (12,139-142) and they can learn and develop the ability to communicate both during routine patient encounters and in simulated learning situations (141).

In medical education, communication skills training is often based on the conceptual frameworks of patient-centeredness (11,54,59,61,65,143,144). Since the 1980s, a robust body of research has been established to understand both the teaching of medical interviewing and doctor-patient communication skills used as a working method during encounters (53,59,61,143,145,146). The Calgary-Cambridge Guides is an established practical teaching tool that provides detailed guidance to facilitators on how to teach and provide structured feedback to medical students. The guide provides guidance about the process of communication and how to effectively gain content of information during consultations (49,53,54,59,61,143). Through the work of the Maastricht Medical School, a general model for doctor-patient communication has been further developed based on previous guides and models (61). The model is applied as a working method at all Swedish medical universities, including the Karolinska Institutet (54,59,61,143,147).

Over the course of the medical program at KI, communication and patient-centeredness is taught to and trained by medical students with progressively increasing complexity (147). To train and develop clinical competencies, e.g., training in skills lab training and clinical rotations are undertaken throughout the program. Depending on the level of the students' studies and the level of their knowledge and skills, the students perform these learning activities under the direct/indirect supervision of a clinical supervisor. Communication skills and patient-centeredness are assessed both formative and summative throughout the program.

Despite continuing education and training regarding communication and patient-centeredness, medical students' attitudes often shift from early in education being patient-centered to later being represented by a more traditional paternalistic approach (148,149). Previous research has demonstrated that through specific and continuing education, however,

medical students can develop and maintain the ability to apply a patient-centered approach (26,149). It is therefore important for medical students to train and develop patient-centered working methods competences. However, exploring the patient's thoughts and experiences after a consultation is not always included in guidelines for clinical practice or throughout medical curricula. Furthermore, in health care, patients' perspectives on the impact of doctor-patient communication have only more recently been analyzed systematically (150). This thesis will focus on including patients' perspectives on encounters as an important facilitator in students' clinical training regarding communication and patient-centeredness.

2.3.3 Feedback in learning

Research emphasizes feedback as central to students' learning and is described as a process through which students interpret information from various sources and apply this information to enhance their learning strategies (151-154). Feedback can be summarized as "information with which a learner can confirm, add to, overwrite, tune, or restructure information in memory, whether that information is domain knowledge, meta-cognitive knowledge, beliefs about self and tasks, or cognitive tactics and strategies" (155, p. 5740). Hattie & Timperley describes feedback as comprising three core concepts: information, reactions based on information, and a cycle that promotes the identification of knowledge gaps and need for further training (152).

Instructional feedback related to a specific task and provided continually can motivate and facilitate students' clinical learning (128,151,156,157). Feedback can also help students identify their competence levels and knowledge gaps related to the intended learning objectives (151,152,154) and can narrow the gap between actual and desired performance (158). Students can use feedback to improve their ability to obtain new knowledge and skills (126,152,154). In addition, feedback can facilitate the students' development of clinical and communication competencies, which can enable progression to a higher level of knowledge and skills (142,154). Feedback can also play an important role in the ability to achieve insights and develop abilities necessary for reflective professional practice (117,153). Students' communication skills are best learned and retained if they receive feedback immediately after a patient encounter (10,159) and if the feedback is visualized from a learner's perspective (153).

2.3.3.1 Feedback in students' workplace learning

Research shows the necessity for students to periodically receive feedback during their workplace learning to provide the students with an opportunity to demonstrate their own understanding and close the gap between current and desired performance (160). At the workplace, various factors can act as barriers to providing high-quality feedback. One such factor is time, which can be a barrier for both supervisors and students (108,160-162). At the clinic, e.g., a PHC center, clinical supervisors often have little time dedicated for the tutorial assignment such as both formal and informal feedback processes (160,161).

During workplace learning, clinical supervisors play a central role in providing actionable feedback to support students' ability to fulfill intended learning outcomes (108,109,126,162). The clinical supervisors' feedback mainly reflects the teachers' experiences of the students' abilities, including clinical competencies and ability to communicate and apply patient-centeredness during a patient encounter (126,128). In addition to receiving feedback from clinical supervisors, students sometimes receive feedback from peers and sometimes perform self-evaluation (126,163,164). Feedback from peers can facilitate students' development of skills and can provide a guide for future decisions and plans for further improvement (165). Evaluation from peer is though dependent on trust and requires attention to the confidentiality between the students, e.g., the importance of a transparent and regulated form for provision of feedback with bilateral knowledge of content both in the provider and the receiver of feedback (151-153,166,167). Furthermore, the skills and knowledge domains used for peer feedback must be manageable for the students regarding the students' level of competence. Peer feedback can otherwise be undermining, divisive, and destructive (151-153,166,167). Self-evaluation can stimulate a self-reflective learning process in which students can reflect on their clinical performance and identify their competency levels and further clinical training needs (163,164). Patients, however, are seldom asked to provide feedback to students regarding the patients' experiences of the students' ability to communicate and apply patient-centeredness during the encounter (126-128,168). When patients are asked to provide feedback, the feedback is usually anonymous, delayed, and rarely specifically targets students' ability to apply communication and patient-centeredness (126,127). Additionally, patients are seldom asked to provide feedback that is in alignment with students' learning objectives (127). Also, in feedback sessions, where patients provide feedback it is important to take into account possible aspects of dependability between health care and patients, which includes patients, students and clinical supervisors (135). Furthermore, in studies, students often describe the patients' feedback mainly as generally encouraging, moderate, and

positive, but not concrete (127,163,169). It can be gratifying for students to receive this type of feedback, but they may not experience it as an actionable learning tool (151). This thesis will stress the impact of patients' written feedback as a source to facilitate students' communication and patient-centeredness learning.

2.3.3.2 Multi-source feedback in students' workplace learning

Feedback from multiple sources, e.g., clinical supervisors, patients, and peers—sometimes used in combination with student's self-evaluations—can further facilitate students' clinical training about clinical and communication skills (163,168,170,171). Terms that are used to describe feedback from several sources include 360-degree feedback and multisource feedback. In this thesis, the term multisource feedback (MSF) is used.

MSF is a question-based process that allows the feedback to be collected systematically; the aim is to provide feedback from various perspectives (142,157,172). MSF explores broad range of competencies, particularly on a generic level and from multiple sources (157,172), who can observe performance directly (156,168). MSF can facilitate students' awareness of expected communication skills standards and foster self-reflection on students' potential for improvement (170,174). However, because of barriers such as logistical and organizational challenges, medical students seldom receive MSF during their workplace learning (168,170,171).

2.3.4 Survey questionnaires for gathering feedback

2.3.4.1 Patient feedback questionnaires

Survey questionnaires can be used to increase patients' participation in medical students' learning and to better understand patients' perceived experiences of students' ability to communicate and apply patient-centeredness during encounters. A plethora of questionnaires have been developed for patient feedback to health care providers and medical doctors during residency. Some of these questionnaires have also been developed to provide patients feedback to a specific clinic or specialist doctor after care has taken place (10,175-179). Only a few questionnaires are found in the literature that have been developed and validated for gathering patients' feedback to medical students (129,169,180). These questionnaires provide mainly delayed, anonymous, nonspecific, and general feedback about patients' experience of provided care (178,179,181). In summary, to my knowledge there is at present no patient feedback questionnaire that gathers patients' experiences of students' communication and

patient-centeredness during the encounter that could be used as a learning tool in students' workplace learning.

2.3.4.2 Multi-source feedback questionnaires

Only a few studies were found in the literature where different groups of participants provided feedback to a medical student using the same feedback questionnaire or evaluation form to evaluate the same specific situation (173,182). Occasionally, embedded in different teaching and learning programs, internationally the medical students receive various MSF obtained from different questionnaires and evaluations form (163,170,173,183,184). Additionally, medical students can sometimes receive MSF that is obtained from different feedback questionnaires, which have mainly been developed for feedback to medical resident students during their clinical education (163,173). The feedback from the MSF is often provided anonymously and delayed provided from different patient encounters (163,171), hence providing an overall perspective (183).

To provide MSF as a source for students' self-directed learning, pre-defined specific items addressing various patients' perspectives of communication and patient-centeredness skills during a patient encounter, could be used. However, to my knowledge such MSF questionnaire is lacking that gathers feedback to medical students from multiple participants (patients, peers, clinical supervisors, and students) mutually experienced context and is focused on patients' perspectives of a student-led encounter.

3 RATIONALES FOR THIS THESIS

A key component in achieving person-centered, high-quality health care delivery is that through continual work improve patients' participation in own health care (1-6). However, despite continual health care improvement work and widespread understanding of the advantages of increased patients' participation, health care still needs to be improved in areas regarding patients' participation, information, and obtained consent (2, 3, 5,30). In addition, research shows that despite educational interventions on communication and patient-centeredness during undergraduate health education, residency, and continuing professional development (CPD) for specialists, the health care system still fails to systematically incorporate communication and patient-centeredness as tools in the effort for achieving improved person-centered care. This calls for a paradigm shift, with the patient as a noticeable and actionable collaborator in health care and where the patients' perspectives are incorporated in daily medical work. To achieve this paradigm shift, we need to better understand how to systematically involve patients in medical students' clinical training in communication and patient-centeredness during workplace learning. However, evidence is lacking regarding the optimal form of patient participation in medical students' learning (134,185). It is therefore of interest to explore how to design learning models and activities that use patients' perspectives on communication and patient-centeredness during the patient encounter to facilitate students' clinical training, aiming to improve the patient care (182).

4 RESEARCH AIMS

The overall aim of the present thesis was to explore how patients' participation in clinical education can facilitate medical students' learning regarding communication skills and patient-centeredness.

To explore the value of obtaining patients' perspectives to facilitate students' workplace learning in communication and patient-centeredness, the following was performed:

- Analysis of experiences of a student-run clinic in primary health care as an arena for students' workplace learning. (Study I)
- Composition and validation of a patient feedback questionnaire. (Study II)
- Exploration of students' experiences of learning from patients' written feedback. (Study III)
- Exploration of students', peers', and clinical supervisors' experiences of providing and receiving MSF, with use of adapted feedback questionnaires. (Study IV)

The specific research aims, and research questions explored in the individual studies were:

- To analyze experiences of a clinical education unit in a student-run clinic (SRC) in primary health care (PHC) from students', patients' and supervisors' perspectives. (Study I)
- To compose and validate a feedback questionnaire for patients' feedback to medical students regarding students' communication and application of patient-centeredness in clinical practice. (Study II)
- To explore medical students' experiences of their learning from patients' feedback obtained through the Patient Feedback in Clinical Practice (PFCP) questionnaire. (Study III)
- To explore the provision of MSF in medical students' clinical learning in primary care (PHC). Study IV was conducted as follows:
 - How do students experience to receive feedback from patients, peers and clinical supervisors and perform self-evaluation through a feedback questionnaire?
 - How do peers and clinical supervisors experience to provide feedback through a questionnaire?
 - Can written MSF adjacent to a patient encounter in PHC be a feasible learning activity during clinical rotations in PHC?

5 RESEARCH APPROACH

5.1 PHILOSOPHICAL POSITIONING

A theoretical framework can be used in medical education research to explain and visualize the beliefs underlying the research and to understand and articulate beliefs about the nature of reality, what can be known about it, and how to attain this knowledge (187). Medical education research has evolved from a wide range of paradigms such as positivism, post-positivism, critical theory, and constructivism (187,188). Clinicians and researchers from different health disciplines have contributed to developing medical education theory and/or research practice in a complex and versatile area (189). Given the relevance of the theory that underlies a research project and the existence of sometimes conflicting theories about and approaches to research, it is therefore important for researchers in medical education to be explicit about assumptions guiding their research and to more carefully link their research to a theoretical framework (189,190).

In research, the interpretation the researchers make based on beliefs and the theoretical frameworks, can be described as ontological (about the structure of the natural world), epistemological (about how the natural work can be understood), and methodological (what is being studied based on research questions or phenomenon) (187,188). The positivist paradigm is based on the belief that there is a natural science method that can be applied to the social sciences which can be captured (ontology), that the findings derived from the data represent the truth (epistemology), and that data is mainly produced through using quantitative methods (methodology). The post-positivist and positivist paradigms share the same ontology, but in post-positivism it is assumed that it is not possible to reflect reality perfectly. In post-positivism, therefore, the findings of experiments are quantitatively evaluated via statistics and considered probably true and qualitative methods are included to identify a valid belief (191-193). Constructivism is based on relativism—the idea that there are multiple realities that reflect different perspectives. Through the interplay between the subject and object meaning is created in which the subject constructs the reality of an object (in the natural world) (92,188,192,193). In research the findings are created by the researcher and the objects of study (epistemology) (92,188,192,193). Social constructivism describes the meaning-making of reality as an activity of the individual mind and examines the development of commonly constructed understandings of the world that form the basis for shared assumptions about reality (191-193). The attempt to explore research from a social constructivism perspective support inclusion of a mixed-methods research model—that is, an

approach that includes qualitative and quantitative methods (193,194). The basic beliefs of social constructivism form the theoretical framework of the current thesis.

To obtain a rich and varied picture of the phenomenon under study, understand and make sense of participants' experiences of and perspectives on the areas in focus, and perform research in a clinical context, both quantitative and qualitative methods were applied in each study in this thesis. In medical education research, mixed methods are particularly relevant when studying new questions or complex initiatives, interactions among multiple players, and interactions in a natural setting, such as PHC (194). Furthermore, combining qualitative and quantitative methods can provide more detailed understanding of the educational process, and outcomes associated with medical education activities (186). Mixed-methods also provide opportunities to address different questions in a research study and thus to present a more comprehensive understanding of particular phenomena (186).

5.2 FRAMEWORK FOR DESIGN AND EVALUATION OF LEARNING ACTIVITIES

Using educational theories to develop the design of medical education is an important first step to obtain effective workplace learning during clinical rotations (195). One such theory is constructivism (92,188,192,193). Research shows that constructivism has important implications for teaching and learning (99,195,196). In this thesis, social constructivism was used as a theoretical framework. In social constructivism the learners are viewed as active participants who process information to construct their understanding individually and in interaction with others and the environment (196). In this thesis, theories of students' self-directed learning and feedback, relevant to each study's design, were applied to explore how patients' participation in clinical education can facilitate medical students' learning about communication and patient-centeredness during their workplace learning.

6 METHOD

In the following section a description of study context, information of participants, data collection methods and data analysis methods for each study are presented. An illustration of how the studies are related to each other is presented in Figure 1. An overview of the four studies is presented in Table 1.

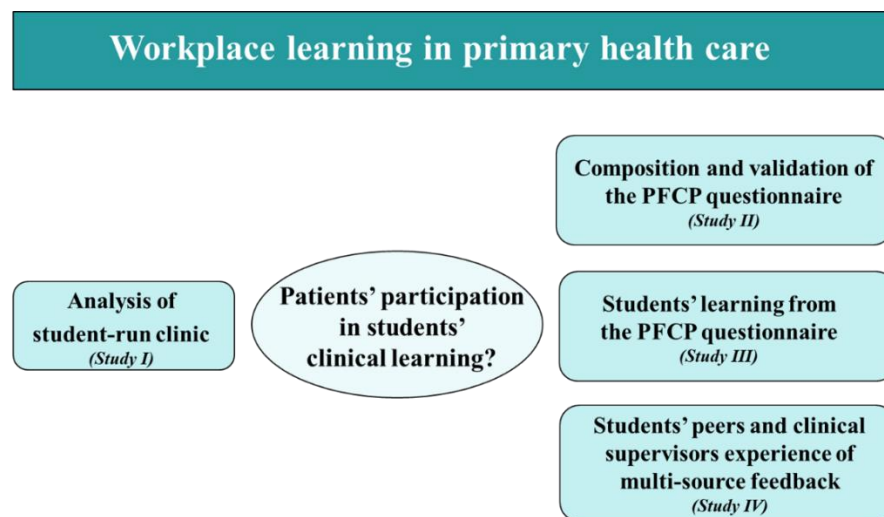


Figure 1. Illustration of the included studies

Table 1. Overview of the four studies.

	Study I	Study II	Study III	Study IV
Study period	2014–2015	Mar 2016–May 2018	Mar 2016–May 2018	Oct 2017–Dec 2019
Focus of inquiry	Evaluation of a student-run clinic in PHC	Composition and validation of a patient feedback questionnaire	Students' experience of their learning from patients' written feedback from the PFCP questionnaire	Students, peers, and clinical supervisors' evaluation of MSF with use of original and adapted PFCP questionnaires
Study population	Patients Students (nursing, medical, occupational therapy and physiotherapy program) Clinical supervisors (nursing, medical and physiotherapy professions)	Content experts, KI. Patients Medical students Clinical supervisors	Medical students	Patients Medical students Clinical supervisors
Number of subjects	<u>Evaluation of SRC</u> 938 patients 227 students 35 clinical supervisors	<u>Composition of questionnaire</u> 4 content experts 69 patients 22 medical students 7 clinical supervisors <u>Validation of questionnaire</u> 246 patients 80 medical students 27 clinical supervisors	<u>Students' evaluation of learning</u> 59 medical students <u>Patients' feedback</u> 189 patients (from Study II)	<u>Adaption of the PFCP questionnaire for MSF</u> 10 medical students 3 clinical supervisors 5 PHC centers <u>MSF</u> 43 patients 16 peers 12 clinical supervisors 33 medical students <u>Evaluation of MSF</u> 26 medical students 9 peers 7 clinical supervisors
Context for data collection	SRC at one PHC center	8 PHC centers	8 PHC centers	6 PHC centers
Study approach	Mixed-methods	Mixed-methods	Mixed-methods	Mixed-methods
Data collection	CLES + T CSQ-8 Interviews with clinical supervisors	Interviews with content experts, patients, students, and clinical supervisors Patients' feedback from the PFCP questionnaire Students and clinical supervisors' evaluation survey of using the PFCP questionnaire	Students' evaluation survey and interviews Patients' feedback from the PFCP questionnaire	Interviews with students and clinical supervisors to adapt the PFCP questionnaire Patients', peers', and clinical supervisors' feedback and students' self-evaluation on the PFCP questionnaires Students, peers, and clinical supervisors' evaluation survey of using the PFCP questionnaires
Data analysis	Kruskal-Wallis rank test Wilcoxon rank-sum test Descriptive statistics Qualitative content analysis	Explorative factor analysis Cronbach's alpha Oblique rotation MANCOVA Descriptive statistics Qualitative content analysis	Descriptive statistics Qualitative content analysis	Descriptive statistics Qualitative content analysis

6.1 CONTEXTS

The studies were performed at eight PHC centers in Stockholm County: Study I was conducted at one center; Studies II and III were conducted at all eight centers; and Study IV was conducted at six of the eight centers. All eight PHC centers are located in the suburbs of Stockholm County and have different socioeconomic characteristics.

6.2 RECRUITMENT AND PARTICIPANTS

6.2.1 Procedures

In Study I, it was important to include patients who had been taken care of a student at the SRC and students who had performed their clinical rotation, and clinical supervisors who had supervised at the SRC. In Study II, in the composition process, it was essential to include content experts in teaching communication and patient-centeredness at medical education, KI. It was also important to include patients who had experiences of patient encounters and had participated in a student-led encounter, and medical students and clinical supervisors with experience of learning and teaching regarding communication and patient-centeredness in PHC. During the validation and adaptation of the questionnaire and data collection in Studies II–IV, it was essential to include patients who had participated in a student-led encounter, medical students who performed clinical rotation in PHC, and the medical students' clinical supervisors.

6.2.2 Inclusion and exclusion criteria

6.2.2.1 Studies I–IV

In all studies the inclusion criteria were patients over 18 years of age, without cognitive disabilities, dementia and/or mental disorders. The students' clinical supervisors preselected the patients at the PHC centers based on the patients' problems/symptoms in relation to the students' learning objectives. Patients who accepted being taken care of a student in PHC centers were asked to participate in actual study. Furthermore, patients visiting PHC centers were asked to participate in the testing process of the items' content (Study II). Additional inclusion criteria in Study I were students from the medical, nursing, occupational therapy, physiotherapy, and psychology programs who performed workplace learning at the SRC and clinical supervisors who supervised at the SRC. In Studies I–IV, inclusion criteria were also medical students (in semesters 2–11) from the medical program, KI; for Studies II and IV, the inclusion criterion was also the medical students' clinical supervisors.

6.2.3 Participants

6.2.3.1 Study I

In Study I, to receive aspects of how a clinical education unit in SRC was experienced, 227 students (medical, nursing, occupational therapy, physiotherapy, and psychology), 938 patients and 35 clinical supervisors (medical, nursing, and physiotherapy professions) participated.

6.2.3.2 Study II

In Study II a patient feedback questionnaire was (A) composed and (B) validated in two parts. The A) composition process comprised four steps. Steps two to four addressed different groups of participants: in step 2, the *selection and composition of items and construction of an item pool*, four clinical lecturers at KI's Division of Family Medicine and Primary Care participated; in step 3, the *test of the items' content*, 44 patients, 15 students, and four clinical supervisors at three PHC centers participated; and in step 4, the *test of the applicability of the questionnaire*, 25 patients, seven medical students, and three clinical supervisors at three PHC centers participated. During the validation of the questionnaire, 246 patients, 80 medical students, and 27 clinical supervisors at eight PHC centers participated.

6.2.3.3 Study III

Fifty-nine medical students participated in Study III, exploring their experience of learning from the patients' written feedback; of these, 57 completed the evaluation survey and six were interviewed. The students received written feedback from 189 patients obtained from the PFCP questionnaire. Data included in Study III are students' evaluation of their learning from the patients' written feedback on the PFCP questionnaire composed in Study II.

6.2.3.4 Study IV

Twenty-six medical students, nine peers, and seven clinical supervisors participated in Study IV. They explored their experience of an MSF setting, including providing and receiving written feedback, with the use of evaluation surveys. Some participants participated in multiple MSF sessions, although each participant completed an evaluation of the MSF setting only once. Ten medical students and three clinical supervisors at five PHC centers participated in the interviews during the adaptation of the PFCP questionnaire. Forty-three patients, 16 peers, and 12 clinical supervisors provided feedback using the original or adapted PFCP questionnaires, and 33 medical students performed a self-evaluation at six PHC centers.

6.3 DATA COLLECTION

The data collection for Studies I–IV is described in the following section.

6.3.1 Study I

The focus of Study I was to explore patients', students', and clinical supervisors' experience of the SRC as a learning model in PHC. The Clinical Learning Environment, Supervision and Nurse Teacher Evaluation Scale (CLES + T) questionnaire was used to explore medical, nursing, physiotherapy, occupational therapist and physiotherapist students' experiences of the SRC (197-199). Three dimensions in the questionnaire, focusing on the learning environment, were preselected: (1) the pedagogical atmosphere (items 1–9); (2) premises of care at the unit (items 14–17); and (3) supervisory relationships (items 18–25). The Client Satisfaction Questionnaire 8 (CSQ-8) was used to explore the patients' experiences of the SRC (200). Two questions were added to the CSQ-8 in 2015 to clarify the patients' experiences: what worked well at the student-run clinic, and what could have been done differently and better? The CLES + T and CSQ-8 have demonstrated good psychometric properties (198-201). Clinical supervisors from the medical, nursing, and physiotherapy professions were interviewed (by the authors TS, CL, MB, and BF) using a semi-structured interview guide to explore their experience supervising at the SRC (202).

6.3.2 Study II

The focus of Study II was to compose and validate a questionnaire for patient feedback to medical students to explore patients' experiences of students' communication and patient-centeredness during the encounter. The consensus-based standards for selecting a health measurement instrument checklist (the COSMIN checklist) was used as a guide to ensure the quality of the process (203). The process was divided into two parts: (A) the composition of the questionnaire and (B) the validation of the questionnaire and are illustrated in Figure 2.

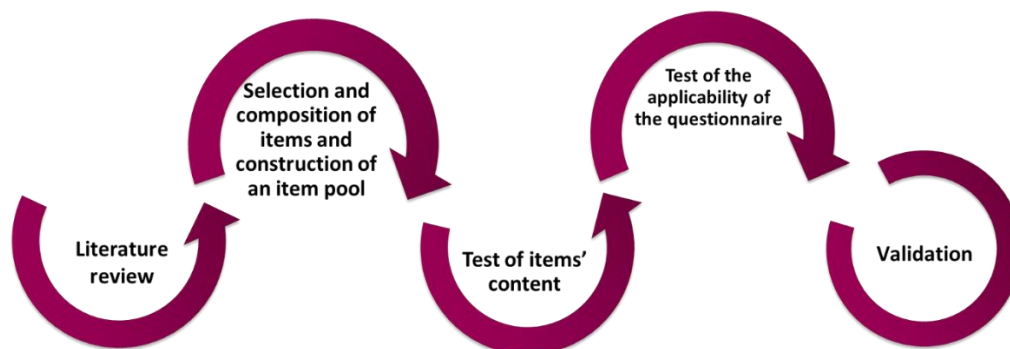


Figure 2. Illustration of the composition and validation processes of the questionnaire.

A) Composition of the questionnaire

The composition of the questionnaire included: (1) *literature review*; (2) *selection and composition of items and construction of an item pool*; (3) *test of items' content*; and (4) *test of the applicability of the questionnaire* (204,205).

Literature review

Initially, a literature review was conducted to identify existing questionnaires designed for patient feedback on communication and patient-centeredness to medical students, residents, and specialists (206). Prior to the literature review, key concepts were defined to target the current models for communication and patient-centeredness with use of the 'Swedish National Patient Survey' (information, involvement, participation, respect, and attitude (181); the National Board of Health and Welfare guidelines for person-centered care (20); Calgary-Cambridge guide (59); the Pendleton model (54); the generic model of doctor-patient communication developed at Maastricht Medical School (61); and the learning goals for Swedish medical education at KI regarding communication and patient-centeredness, and models of learning and training in workplace-based education (147). Thereafter, a literature search was performed on PubMed, Google Scholar and Web of Science. Inclusion and

exclusion criteria for patient feedback questionnaires and aspects of communication and patient-centeredness were determined based on the literature search.

The inclusion criteria for questionnaires were as followed:

- designed for patient feedback to medical students, residents, or specialists
- provide individual performance feedback
- assesses key content regarding communication and patient-centeredness skills; and
- dimensions in alignment with learning goals and Swedish National Patient Survey.

The exclusion criteria were as follows:

- designed for multi-source, peer, or observer feedback
- not used for individual feedback
- does not assess key content regarding communication and patient-centeredness skills; and
- items focused on technicality and organization, e.g., practice setting and administration.

The literature review identified 841 articles that included 68 patient feedback questionnaires, three of which were designed to elicit patients' written feedback to medical students (129,169,180). Twelve of the questionnaires were designed to elicit patients' feedback to specific clinics, doctors, and residents for educational purposes. None of the identified questionnaires had all items aligned with the inclusion criteria.

Selection and composition of items and construction of an item pool

Using a reductive process based on the inclusion and exclusion criteria and content relevant to Swedish medical care and education in the dimensions of, e.g., involvement, information and participation (181), the items from the identified 68 questionnaires were evaluated and selected. The analysis process revealed that all the questionnaires included several items with similar content aligned with the inclusion criteria (178,181). It also revealed that all questionnaires included items that explored both patients' experience and their satisfaction with their consultation. Items with content that provided non-concrete feedback, measured more than one aspect, or included verbs describing emotions were excluded during the reduction process (178). The Swedish National Patient Survey and the learning objectives of the KI medical program (147,181) served as important guideline documents to enable possible comparisons in future studies. The selection process resulted in an analysis of the content of 41 questionnaire items, and a subsequent reduction process yielded seven questionnaires. These seven questionnaire items were reviewed by four content experts. The content experts were clinical lecturers at the Division of Family Medicine and Primary Care,

KI: they were responsible for teaching patient-centered communication techniques at the medical program, KI, and in residency and CPD courses at a national level. The content experts selected and reduced items that they considered best correlated with a certain domain in the intended learning outcomes regarding communication and patient-centeredness. The results were then processed iteratively by the team of authors. The selected items were confirmed by the content experts, hence reaching a consensus.

The process resulted 27 items, selected from the following questionnaires:

- The Swedish National Patient Survey (n = 12) (181).
- The Calgary-Cambridge Guides (n = 11) (59).
- The questionnaire by Brænd et al. (n = 1) (129).
- To achieve items in accordance with inclusion criteria, three complimentary items were developed, e.g., “*Did the student ask if the information you were given was interpretable?*”

The selected items were reframed and modified as the direction towards a subjective perception of the patient encounter and worded as open-ended and direct questions (e.g., “*Did you have the opportunity to tell the student in your own words about your problem?*” was changed to “*Did you have the opportunity to explain, in your own words, the reason for your visit, or what has happened since you last visited the doctor?*”).

Test of items' content

Discussions were held with four content experts to determine the selected 27 items' content to capture the intended aspects of communication and patient-centeredness (face validity) (205) and about the items' ability to allow patients to provide feedback and students receive feedback about the encounter. The content experts also participated in the selection process. At PHC centers, patients were interviewed before or after encounters to explore their experiences of the area in focus in respective item. Results from an initial evaluation indicated that the patients interpreted some items as similar if the patients were interviewed before a consultation. The patients no longer considered these items similar after that they had experienced their consultation and they believed that the items would elicit valuable differential feedback. The students and clinical supervisors also evaluated the items through interviews during the students' clinical rotation at PHC centers (205). All interviews were audio-recorded and transcribed and analyzed using deductive content analysis to receive information to select and include items to the questionnaire (207). During the evaluation process, items were modified and reduced to minimize overlap and directed towards patient-focus during the encounter: e.g., “*Did the student ask if there was something that you were*

worried about regarding your problem?” was changed to “Did you have the opportunity to explain if there were something that worried you regarding your problem?”

The composition process of the items resulted in a 19-item questionnaire:

- Items 1–8, and 14 were derived from the Calgary-Cambridge Guides (59).
- Items 10–12, 15, 16, 18, and 19 were derived from the Swedish National Patient Survey (181).
- Items 1, 3, and 14 were derived from both the Swedish National Patient Survey and the Calgary-Cambridge Guides (59,181).
- Item 17 was derived from the patient evaluation form by Brænd and colleagues (129).
- Items 9 and 13 were formulated during discussions between the research group and with the content experts.

A six-point Likert scale was connected to the items with clarifying text for each scale step (from *strongly disagree* to *strongly agree*), including “*not applicable*” and “*performed by supervisor*” as alternative options. At the end of the questionnaire, space for *free-text feedback* was included.

Test of the applicability of the questionnaire

Data collection tools: written surveys and an interview guide to evaluate the questionnaire during the applicability test

Prior to the applicability test of the PFCP questionnaire, two evaluation surveys were designed that included both free-text questions and questions with a four-point Likert scale (202). The questions in the evaluation surveys were also used as a semi-structured guide for interviews with students and clinical supervisors. The evaluation surveys were also used in the data collection process during the validation of the PFCP questionnaire.

Data collection during the applicability test of the questionnaire

To test the applicability of the PFCP questionnaire as feedback, learning, and teaching tool gave patients feedback to medical students directly after the encounter. The patients were thereafter interviewed using a semi-structured interview guide to explore their experiences of the questionnaire’s ability to capture the patient’s perceived experience and perspectives of a student-led encounter. Evaluation surveys or interviews were used to explore students’ and clinical supervisors’ experience of the questionnaire’s applicability as a tool for students’ learning and clinical supervisors’ tuition. The PFCP questionnaire forms were collected and analyzed, and evaluation surveys were collected, documented, and analyzed using qualitative content analysis (207). The results from the initial analysis in the applicability test showed

that the patients' ratings in the 5–6 range of the Likert scale were often interpreted by the supervisors as an indicator for the overall adequate student performance, disregarding the patient's intention to suggest areas for improvement. Therefore, the Likert scale was changed to a four-point Likert scale to address this concern and reduce the observed ceiling effect. Additionally, after each item, space was included for free-text comments to provide students with further interpretable and useful feedback. Data from the applicability test were chosen to be excluded in the paper.

B) Validation of the PFCP questionnaire

Directly after the student-led encounter, the patients provided written feedback to the students via the PFCP questionnaire. The patients were then interviewed to evaluate their experiences of providing feedback through the PFCP questionnaire. During the patient encounter, the clinical supervisors supervised the students. At the end of the same day, the students and clinical supervisors took part of the patients' written feedback. Evaluation surveys or interviews were used to evaluate the students' and clinical supervisors' experience of the PFCP questionnaire as a tool in medical students' clinical learning. The forms and evaluation surveys were collected and documented, and the interviews were audio-recorded and transcribed for analysis.

6.3.3 Study III

The focus in Study III was to explore medical students' experience of receiving patients' written feedback obtained from the PFCP questionnaire. Data included in Study III are students' evaluation of their learning from the patients' written feedback on the PFCP questionnaire composed in Study II.

Student evaluation of learning

Medical students evaluated their experience of receiving patients' written feedback on the PFCP questionnaire by applying a nine-question evaluation survey (Likert scale $n = 3$ and free-text questions $n = 6$). Complementary interviews with students were performed to obtain in-depth perspectives on the students' learning experiences from the patients' written feedback. The interviews were audio-recorded and transcribed, and the evaluation surveys were collected and documented in an Excel spreadsheet. From the interviews, no new information was obtained, which affected the results from the evaluation surveys.

6.3.4 Study IV

The focus in Study IV was, by use of evaluation surveys to explore the students', peers', and clinical supervisors' experiences of providing feedback by use of adapted forms of the PFCP questionnaire applied in an MSF setting.

The PFCP questionnaire

Before data collection, the PFCP questionnaire developed in Study II was adapted for MSF from peers' and clinical supervisors', and for students' self-evaluations, through interviews with students and clinical supervisors, and through iterated discussions within the authors' team. From the respective participant groups' points of view, all items were linguistically adjusted to receive an objective assessment, focusing on the patient perspective of communication and patient-centeredness during the encounter. The adaptation process resulted in three versions of PFCP questionnaires for multisource use. A four-point Likert scale was supplemented with clarifying text for each scale step (from *strongly disagree* to *strongly agree*). "*Performed by supervisor*" and "*not applicable*" were included as additional options, and space for free-text comments was included after each item and at the end of the questionnaire.

Evaluation survey

Prior data collection evaluation surveys were developed to evaluate students', peers', and clinical supervisors' experiences of the MSF through discussions among the authors. The evaluation surveys included both free-text questions and questions with a four-point Likert scale (202).

MSF and student's self-evaluation

Peers and/or the students' clinical supervisors participated in a student-led patient encounter. After the patient encounter, the patients, peers, and clinical supervisors filled in respective version of the PFCP questionnaire, and the students performed a self-evaluation. During the patient encounter, the clinical supervisors also supervised the students. The students and clinical supervisors took part in the MSF in a feedback session in which the peers did not participate. By filling in the evaluation survey, students, peers, and clinical supervisors evaluated their experiences using the PFCP questionnaire in an MSF setting. All forms and evaluation surveys were collected and documented separately per group in an Excel spreadsheet.

6.4 DATA ANALYSIS

In all studies, both qualitative and quantitative analysis methods were used to explore the different perspectives of the collected data and are presented below.

6.4.1 Quantitative analysis

In Study I, data from the questionnaires were analyzed using STATA14VR (StataCorp, College Station, TX). All statistical analysis was performed by the first author (MF). Of the CSQ-8 questionnaires, 132 (14%) had one or more missing values. For the CLES + T questionnaires, this number was 26 (13%). In the analysis process, missing values were replaced by item-specific mean values (all responders). Data from the CLES + T questionnaire average rating were compared section-wise between student categories, and the highest and lowest-rated items were identified. Data from the CSQ-8 total scores (mean, median, and range) were compared with regard to the total score, type of visit, gender (female, male, and unspecified), and age (< 18 years, 18–64 years, > 65 years, and unspecified). The time periods with the highest and lowest response rates for visits to medical and nurse students were compared, respectively, to estimate whether patient satisfaction was associated with data loss. A Kruskal-Wallis rank test was used to test the differences for statistical significance if more than two groups were compared. A Wilcoxon rank-sum test was used for the pairwise comparisons. Differences were considered statistically significant at a confidence level of 95%.

In Study II, SAS 9.4 (SAS Institute Inc., Cary, NC) software was used for the statistical analyses of data from the PFCP questionnaire from the validation process. Co-author HA performed the statistical analysis to validate the items. Exploratory factor analysis (EFA) was used to explore associations among the items (internal validity) and to assess how well the items in the PFCP questionnaire measured what they were intended to measure (content validity) (205). EFA was also used to control the grouping tendency between the items, reduce items that might be distributed across more than one factor and discern the underlying factors within each factor (205). To clarify the items' grouping tendency oblique rotation was used (205). The ceiling effect was found to be less prominent after the change to the four-point Likert scale. Cronbach's alpha coefficient was used to control the internal consistency of the item construct and test the magnitude of the items in the factor models (201). Acceptable Cronbach's alpha values ranged from 0.6–1.0 (204,205). A multivariate analysis of covariance (MANCOVA) was performed to control for related confounders (patient age and gender and student age, gender, and current semester). No data were missing in the data

analysis process. The results from the MANCOVA were chosen not to be included in the present paper.

SPSS Statistics 26 software (IBM, Armonk, NY) was used to perform the descriptive statistical analysis. The mean, standard deviation (SD) and range for each question that included a four-point Likert scale in the respective evaluation surveys in Studies II—IV were calculated and documented. In Studies III and IV, the mean, SD, and range were calculated for each item score in the original and adapted versions of the PFCP questionnaires (208,209). The results from the items scoring from the PFCP questionnaires in Studies III and IV were chosen to be included as additional material in respective paper.

6.4.2 Qualitative content analysis

All studies included qualitative data, which were analyzed using qualitative content analysis described by Graneheim and Lundman (2004) (207). The analysis process in all studies followed the same stepwise process. The analysis process started with reading the text to obtain an overview and global understanding of the subject area in focus, and notes were taken. Meaning units were identified and condensed according to perceived key content areas and compared to ensure consistency. The units were then sorted into categories, and the underlying meanings of the categories were merged and interpreted, resulting in themes. Finally, all authors established the final themes in the process of reaching a negotiated consensus (207).

Specific information regarding the qualitative content analysis for each study is presented below.

Study I

- Open-ended questions (questions 1 and 2) and the free-text comments from CSQ-8 were analyzed by MF to explore patients' perspectives of the SRC. The focus of the analysis process was to explore the categories related to the two questions, not only those that were frequently expressed.
- Interviews with clinical supervisors were analyzed by the authors MF, CL, and KB to explore the clinical supervisors' experience of the SRC. The results from the analysis were controlled by presenting the results to clinical supervisors separately to each profession at their morning meetings by MF. The participants generally agreed with the outcome of the analysis, and their feedback did not alter the results.

Studies II–IV

- In Study II, data from the transcribed text from the interviews with patients, students and clinical supervisors and free-text answers from the evaluation surveys from students and clinical supervisors were analyzed separately by group and data collection method to explore the participants' experience of the PFCP questionnaire as a feedback tool.
- In Study III, data from the written text from the students' evaluation surveys and transcribed text from the interviews with students were analyzed separately by data collection method to explore the students' experience of their learning from patients' written feedback, obtained from the PFCP questionnaire.
- In Study IV, data from the free-text comments from students', peers', and clinical supervisors' evaluation surveys were analyzed separately by participant group to explore their experience of receiving and providing feedback obtained from the PFCP questionnaire in an MSF setting.
- In Studies II–IV, data were analyzed by two researchers (KB and CL). In the final step, the underlying meanings of the categories from the different data collection methods and groups of participants were interpreted and merged, resulting in three themes per study. The final themes were established through discussions between the authors.

Studies III–IV

- Patients' written free-text comments from the PFCP questionnaires in Study III and patients, peers, clinical supervisors, and students in Study IV were analyzed using qualitative content analysis (207). The results were chosen to be included as additional material in respective paper.

7 ETHICAL CONSIDERATIONS

The studies included patients, students, and clinical supervisors; therefore, it was crucial to receive ethical approval and conduct the research according to the Declaration of Helsinki (2013). The Regional Ethical Review Authority Board granted ethical approval in Stockholm for all studies, divided into two separate ethical applications. Study I was assigned no. 2014-1684-31-5 and Studies II–IV were assigned no. 2017-1574-31-1 and 2020-06201.

Anonymity is one essential ethical aspect to consider in research. In Study I, the patients and students filled in respective questionnaires anonymously. In Studies II–IV, to facilitate student learning, the patients', peers', and clinical supervisors' feedback was provided adjacent to the patient encounter, therefore, the participants were not anonymous while providing feedback via the original and adapted PFCP questionnaires. To ensure that the participants did not experience participation as a breach of privacy, they were clearly informed that the feedback initially provided to the student was not anonymous. The participants were also clearly informed that the data would thereafter be anonymized: only the participants' gender, age range, student study semester and PHC center were noted on the questionnaires templates to ensure confidentiality (i.e., the research team could not identify any participants). The participants were also clearly informed that no personal data would be recorded in the interviews or included in the transcription, ensuring confidentiality (Studies I–IV). In all studies, all data from questionnaires and evaluation surveys were documented in an Excel spreadsheet to protect the individuals' identities and to ensure that the Ph.D. student and research team could not be able to identify individual participants. The interview data were saved on secure servers and the templates of the questionnaires and evaluation surveys were locked in a separate safe cabinet at LIME, KI (Study I) and at the AVC (Studies II–IV). Only the Ph.D. student and research team had access to the data.

Voluntarily participating in a study is another essential ethical aspect to consider in research. In research involving people, the participants should feel free to choose whether to participate in the study. In order for the participants in all studies to be able to take a position on participation and for the research to be conducted in consultation with the participants, the participants must understand what participation means in concrete terms and what they are consenting to (210). All participants were provided with written and oral information before participation regarding what they agreed to, the study aim, the logistics of data collection,

how data would be handled, and how findings would be used and communicated to help the participants to make the decision to participate or not. The participants were also informed that they could withdraw from the study at any time. All participants signed a written consent form to participate; the exception was in Study II, where six students agreed orally to participate in the study but did not sign the written consent form. These students and their patients' responses were excluded from the data. A few patients in Study II declined to participate because, e.g., the patient was in a hurry or too sick to participate (211).

Ethical considerations related to *dependency* is another essential aspect to consider in research with patients, students, and clinical supervisors. Dialogues during patient encounters should be based on trust between the student, patient, and the student's clinical supervisor, meaning there is a dependency relationship between the patient and doctor/clinical supervisor and between the patient and student (135). To minimize the dependency bias in Study I, the patients evaluated their experiences of the SRC through an anonymous standardized questionnaire. In Studies II–IV, the participants could not provide feedback through the PFCP questionnaire anonymously, which may have affected their evaluation of student's performance during the encounter, given their plausible dependability between the different participants and the possibility of this creating an imbalance between them (127,135,136). However, no participants brought up any concerns regarding providing written feedback to students. In student-led encounters, the students' clinical supervisors are the primary providers of care, so participants' feedback could be perceived as questioning the supervisor's ability to guide and/or supervise the encounter. However, the PFCP questionnaire contextualized the written feedback, addressing the students as receivers of the feedback, regardless of the clinical supervisors' participation in care.

In research in which students participate, it is also essential to consider the students' perspectives of dependency regarding how the inherent power relationships that exist in workplace learning can affect the research. Students may find that the researcher or their clinical supervisor wishes them to participate in the study, which can create an addictive relationship that affects the student's choice to participate. To receive information on what participating in the study means and understand that they can withdraw from the study at any time without affecting their clinical learning or eventual future work in PHC can help the students make those decisions.

8 SUMMARY OF FINDINGS

The results from the respective studies are described below.

8.1 STUDY I

The analysis of the clinical supervisors' interviews resulted in four themes: *organization, structure and administration, tuition as a pedagogical entity, control over provided care* and *reflection on professional and pedagogical competence*. The first theme, *organization, structure and administration*, explored the clinical supervisors' experience of how their pedagogical assignment was facilitated within the administration of the SRC, as with practical support and time for supervision. The second theme, *tuition as a pedagogical entity*, explored the clinical supervisors' experience of how their pedagogical role became more visible by supervising in a setting separated from everyday practice, with an increased focus on the student's learning. The third theme, *control over provided care*, visualized that in the SRC setting, clinical supervisors experienced their perceived need for visibility and clarity of the students' knowledge, skills and attitudes became more marked. The clinical supervisors also experienced a need to find a balance between their own control and the students' level of autonomy. The fourth theme, *reflection on professional and pedagogical competence*, explored the clinical supervisors' experience of an increased focus on their pedagogical role, which gave an increased need for continuing professional development and training in clinical supervision.

The overall response rate from the CLES + T questionnaire was 87%. Between the groups of students from the five participating health programs, there were some small but statistically significant differences in the three dimensions: pedagogical atmosphere, premises of care at the unit, and supervisory relationship (mean 4.41–4.92). Overall, the students valued the SRC concept and experienced high satisfaction with the learning environment, especially the pedagogical atmosphere and their relationship with their clinical supervisor.

The overall response rate from the patients' CSQ-8 reflected a high level of satisfaction and was similar between caregiver professions and genders. Small variations in the patients' response rate were seen between the different groups of age. The patients' free-text comments from the CSQ-8 in question one (*what worked well at the student-run clinic*) indicated that the patients experienced that they were well received, that the care was perceived as high-quality, and the SRC was adequately organized. In question two (*what could have been done differently and better*), the results indicated that patients required a

need for further information regarding SRC organization and time perspectives. The results also indicated that some of the students were experienced as being insecure in their role as caregivers.

8.2 STUDY II

Internal consistency, construct validity, and reliability

The analysis from the exploratory factor analysis resulted in two dimensions: the consultational approach (Factor 1 (F1), items 1–5, 7 and 18–19) and transfer of information (Factor 2 (F2), items 6 and 8–17). The internal consistency was interpreted as high. For items 1–10 and 13–16 and 18–19, the mean was 4; for items 12 and 17, the mean was 3; and for item 11, the mean was 2. The SD for each item range was between 0.29 (item 19) and 1.96 (item 11). The Cronbach's alpha coefficients (after consecutive removal of items) ranged from 0.89–0.91, and the items' total correlation ranged from 0.51 (item 7) to 0.92 (item 10). The variance explained by F1 (items 1–5, 7 and 18–19) and F2 (items 6 and 8–17) were 9.72 respective 6.59 after rotation.

Participants' experiences of the questionnaire

The analysis of the data obtained from the students' and clinical supervisors' free-text comments in the evaluation surveys and interviews with patients, students, and clinical supervisors resulted in three themes as presented above: *ability to capture the personal agenda of the consultation, alignment with the consultation and construct and characteristics.*

The first theme, the *ability to capture the personal agenda of the consultation*, the patients' experienced that the PFCP questionnaire provided them with a tool that facilitated their interpretation of the consultation in relation to their own agenda. Important aspects of the patient's own care were also perceived to be clarified by the questionnaire. The results from the students' evaluation survey explored how the student's pedagogical assignments in relation to the patients were visualized through the patients' written feedback (mean 3.5 on a 4-point Likert scale). The patients' written feedback also visualized the medical assignment to recognize and interpret symptoms and to be able to perform an adequate clinical examination. The students also stated that they acquired a better understanding of the necessity to provide patients with clarifying information throughout the entire consultation. The clinical supervisors described that to provide feedback on the students' level of patient-centeredness as part of their overall pedagogical assignment was underpinned by the patients' perspectives obtained from the PFCP questionnaire. The clinical supervisors also considered

that the PFCP questionnaire legitimized dialogue regarding important aspects of patient-centeredness within each part of the consultation. In the second theme, *alignment with the consultation*, the results of the study conclude that the patients experienced the questionnaire's ability to explore the structure and content of the consultation with perceived authenticity to be high. For the students, the questionnaire was believed to concretize and target students' learning objectives and to provide structured feedback throughout the encounter. The patients' feedback also highlighted for the students that it is important to include a patient-centered approach in dialogues to increase patients' participation during the encounter. The clinical supervisors found the items in the PFCP questionnaire to be in alignment with the content and structure of a patient encounter. The items were also perceived to facilitate the identification of the necessity to provide feedback to students regarding patient-centeredness. The third theme, *construct and characteristics*, described that from the patients' perspective, the PFCP questionnaire targeted important content and strengthened the patients' ability to provide relevant feedback to the students. The PFCP questionnaire also visualized which parts of the consultation the students and their clinical supervisors had performed, respectively. To have the opportunity to write free-text comments was regarded as important by the patients. The results from the students' evaluation survey of the PFCP questionnaire indicated that the patients' feedback provided valuable information regarding the students' application of patient-centered communication (mean 3.4 on a 4-point Likert scale) and facilitated guidance for continuing training (3.2 on a 4-point Likert scale). The results from the clinical supervisors' evaluation survey of the PFCP questionnaire indicated that the patients' written feedback provided valuable information regarding students' application of patient-centered communication (3.3 on a 4-point Likert scale). It also provided the clinical supervisors with guidance for students continuing clinical skills training (2.7 on a 4-point Likert scale) and enhanced the need for students' pedagogical competence in the dialogue with patients (3.3 on a 4-point Likert scale). Overall, the clinical supervisors expressed that time spent in using the PFCP questionnaire was well invested.

8.3 STUDY III

The focus of Study III was to explore the students' experience of their learning from the patients' written feedback collected during the validation of the PFCP questionnaire through evaluation surveys and interviews.

Questions containing a four-point Likert scale in the students' evaluation survey of the PFCP questionnaire (mean; SD; range), evaluated whether the patients' written feedback provided valuable information regarding the students' ability to apply patient-centered communication (mean 3.3; SD 0.74; range 2–4). Furthermore, the students evaluated whether the patients' feedback provided guidance for future clinical training (mean 3.2; SD 1.31; range 1–4) and if the patients' written feedback from the PFCP questionnaire underpinned their understanding of their pedagogical assignment during a dialogue with a patient (mean 3.0; SD 1.68; range 1–4).

The qualitative analysis from students' evaluation survey and semi-structured interviews with students about the patients' written feedback on the PFCP questionnaire resulted in three major themes: *increased confidence in clinical practice*; *application of patient-centered communication*; and *identification of learning needs*. Within each theme, two subthemes were identified. Content analysis of students learning from the PFCP questionnaire are presented in Table 2.

Table 2. Content analysis of students learning from the PFCP questionnaire

Theme	Subthemes
Increased confidence in clinical practice	<ul style="list-style-type: none">• Promotion of self-confidence in practice• Facilitation of a self-directed, reflective learning process
Application of patient-centered communication	<ul style="list-style-type: none">• Understanding the value of patient-centeredness• Recognition of collaborative awareness
Identification of learning need	<ul style="list-style-type: none">• Areas for improvement regarding patient-centered communication• Identification of required clinical competencies

The first theme, *increased confidence in clinical practice*, with the subtheme *promotion of self-confidence in practice*: the students described that the patients' written feedback confirmed the adequacy of chosen communication and patient-centeredness strategy and performance during the encounter. This constructive confirmation strengthened the students' confidence in their present level of competence and boosted their overall self-confidence in clinical practice. The student's own experiences of their performance of communication and clinical skills were also supplemented. In the subtheme *facilitation of a self-directed, reflective learning process*, the students described that the patients' written feedback provided tools that facilitated a self-directed and reflective learning process. The students also confirmed that they were perceived as demonstrating respect and empathy for the patients during the encounter. The second theme, *application of patient-centered communication*, with the subtheme *understanding the value of patient-centeredness*, the students stated that the patients' feedback clarified and visualized the benefits of learning and using patient-centered communication techniques to structure their consultations. In the subtheme *recognition of collaborative awareness*, the patients' feedback visualized the importance of the patient as a collaborative partner during the encounter. The patients' feedback added valuable perspectives, enabling the students to understand better the power of integrating the patients' agenda throughout the encounter. It also addressed aspects of patient safety in terms of communication techniques to secure understanding respectively and emphasized the importance of demonstrating respect in secure transfer of information as a health care provider. The third theme, *identification of learning needs*, with the subtheme *areas for improvement regarding patient-centered communication*: the students described that the patients' written feedback aided identification of areas for improvement and for further clinical practice regarding patient-centered communication techniques. The patients' feedback also clarified the students need for adjustment of their professional language to enhance the patients' ability to understand and be able to participate in the dialogue during the encounter. Patients' written feedback visualized the students' pedagogical assignments throughout an encounter to provide the patients with actionable and valuable information. The subtheme *identification of required clinical competencies* described that the students experienced that the patients' feedback provided information regarding the students' level of clinical competencies. The fact that adequate theoretical and clinical knowledge is required to conduct a patient-centered encounter was highlighted in the patients' feedback, as was the importance of combining communication skills and medical expert knowledge as a prerequisite for successful outcomes in clinical practice, which many students described as an eye-opener.

8.4 STUDY IV

The focus of Study IV was to explore the students', peers', and clinical supervisors' experiences of MSF, based on quantitative and qualitative data from evaluation surveys of use of the original and adapted PFCP questionnaires for MSF.

The results in Study IV from the students', peers', and clinical supervisors' evaluation surveys (four-point Likert scale—mean; SD; range) visualized the value of the MSF in the field of:

- patient-centered communication (question 4):
 - students: (mean 3.50; SD 0.67; range 1–4)
 - peers: (mean 2.44; SD 1.33; range 1–4)
 - clinical supervisors: (mean 3.57; SD 0.53; range 1–4)
- guidance for further training (question 6):
 - students: (mean 3.14; SD 0.99; range 1–4)
 - peers: (mean 2.89; SD 1.67; range 1–4)
 - clinical supervisors: (mean 3.00; SD 0.58; range 1–4)
- clarification of pedagogical assignment (question 8):
 - students: (mean 3.14; SD 0.60; range 1–4)
 - peers: (mean 2.89; SD 0.97; range 1–4)
 - clinical supervisors: (mean 3.00; SD 1.00; range 2–4)

The results from the students', peers' and clinical supervisors' free-text comments from the evaluation surveys of use of the original and adapted PFCP questionnaires for MSF resulted in three themes: *applicability of PFCP MSF*; *MSF-collaborative learning process*; and *MSF as a facilitator in the students' clinical skills development*. Within each theme, two subthemes were identified. Content analysis of students, peers and clinical supervisors experience of use of the original and adapted PFCP questionnaires for MSF are presented in Table 3.

Table 3. Content analysis of students, peers and clinical supervisors experience of use of the original and adapted PFCP questionnaires for MSF

Theme	Subthemes
Applicability of PFCP MSF	<ul style="list-style-type: none"> • The MSF setting • The PFCP questionnaire usability for MSF
MSF - collaborative learning process	<ul style="list-style-type: none"> • MSF as a facilitator for students' and peers' self-reflection • MSF as a multi-perspective reinforcement in clinical learning
MSF as a facilitator in the students' clinical skills development.	<ul style="list-style-type: none"> • MSF acknowledging students' clinical performance • MSF as a motivator for further clinical training

The first theme *applicability of PFCP MSF*, with the subtheme *the MSF setting*, in which the students, peers, and clinical supervisors described that they experienced the MSF setting as suitable for providing and receiving feedback by use of the PFCP questionnaires. The students and peers experienced the MSF setting as comfortable to participate in and to provide and to receive feedback using the PFCP questionnaires. In the subtheme, *the PFCP questionnaire usability for MSF*, the PFCP questionnaire's ability to chronologically explore if the participants perceived experience of whether the patients' perspectives were taken into account during the encounter was explored. In the theme the students, peers, and clinical supervisors experienced the adapted PFCP questionnaires to be an adequate feedback and self-evaluation tools. The second theme, *MSF—collaborative learning process*, with the subtheme *MSF as a facilitator for students' and peers' self-reflection*, students and peers experienced that the MSF setting initiated a self-reflective learning process in which the content of the items on the PFCP questionnaires facilitated an awareness of a wider conceptual understanding of clinical performance. The subtheme, *MSF as a multi-perspective reinforcement in clinical learning*, highlighted that the students' performance was scored slightly different by the different groups of participants. The variation in these estimations initiated a reflective discourse. The students, peers, and clinical supervisors experienced that participating in the MSF gave multifaceted perspectives on learning and teaching adjacent to a patient encounter. The peers described that they received valuable perspective about how a patient encounter could be conducted, including patient-centered techniques, by observing a student-led encounter and providing feedback. The peers also experienced that this

information acknowledged their own level of clinical competencies and facilitated their own progress in clinical learning. The clinical supervisors experienced that the patient-focused feedback enhanced the patients' agenda and patient-centeredness throughout the patient encounter. They thereby gained valuable perspectives to include in their feedback to the students. In the third theme, *MSF as a facilitator in the students' clinical skills development*, with the subtheme *MSF acknowledging students' clinical performance*, the students stated that their experience a sense of increased self-confidence in clinical practice through the MSF, which added a contextualized acknowledgement of their performance during the encounter. In the subtheme *MSF as a motivator for further clinical training*, the students described that relating MSF to their self-evaluation visualized and underpinned the interpretation of their performance in clinical practice and showed them how to improve their clinical and communication techniques. In addition, MSF functioned as a reminder for the students of the importance and applicability of patient-centered communication as a working method throughout a patient encounter. By use of MSF the students also stated that their medical and pedagogical assignments as health professionals were enhanced, thereby addressing the necessity of not only being able to explain and communicate information but also theoretically master the discussed subject.

9 DISCUSSION

The overall aim of this thesis was to explore how patients' participation in clinical education facilitates medical students' learning about communication and patient-centeredness. The studies included in the thesis explored experiences of a student-run clinic (SRC) in primary health care (PHC) (Study I), composition and validation of the Patient Feedback in Clinical Practice (PFCP) questionnaire (Study II), students' learning from patients' written feedback obtained from the Patient Feedback in Clinical Practice (PFCP) questionnaire (Study III), and students, peers' and clinical supervisors' experiences of multi-source feedback (MSF) obtained from the original and adapted PFCP questionnaires (Study IV).

9.1 STUDENT-RUN CLINIC: A LEARNING ENVIRONMENT

Study I addressed students', patients' and clinical supervisors' experiences of an SRC in PHC as an arena for workplace learning. As in previous studies, in this study, a real-life, supportive context is important to enhance learning conditions, to secure quality education and clinical activities for students while maintaining the quality of patient care (76,82,108). The results of Study I demonstrated that through the SRC organization and learning environment, students became an integrated part of the workforce at the health care unit. The students could thereby more explicitly take on the role of health care providers, a finding seen in previous studies about students' learning in educational units (77,83,84) (Study I).

The students' active learning was facilitated at the SRC, which confirms results published in previous studies that demonstrated the benefit of student-centered supervision to facilitate student-centered clinical learning (77,81,84,90). In addition, students at the SRC received a clarified understanding of the context in which their clinical and communication knowledge was applied, which has been described in previous research to facilitate future learning (78).

Previous research describes the difficulty of balancing education and health care assignments in ordinary health care settings (213). However, in the SRC, the separate roles as health care provider and clinical supervisor were described to be enhanced. Some clinical supervisors described that they had to adjust their tutorial approach to accommodate a more student-centered tuition. The need for additional pedagogical competency was also stressed as a result of the increased focus on supervision and tuition.

The results of Study I indicate that in PHC, the SRC educational model can provide adequate, active student-centered learning and supervision in an authentic clinical setting. These results are in alignment with the results of previous studies (82,84,86). Even though SRCs are rare learning environments in PHC in Sweden. The experience of the SRCs could, though, be important to acknowledge also in other clinical rotations and settings.

Study I explored patients' perspectives on students' performance during the encounter only to a very limited extent, which led to an interest to further explore patients' role as participants in students' clinical learning.

9.2 PATIENTS' WRITTEN FEEDBACK

Health care quality evaluation surveys for patients have been used at the local, regional, national, and international level since the middle of 1970s to provide feedback to health care professionals, individual health care units, and hospitals (10,175-179,181). However, despite the continual work to collect patients' feedback to improve health care from a patient's perspective, research and reports still describe a need for improve health care in certain dimensions such information, involvement, and participation (2-5,30). The value of including the patients' perspective in doctor-patient dialogues and using a patient-centered approach has been emphasized as a prerequisite for increased patient participation in own health care (1,11,136). An increased focus on the patients' perspective of the dialogue and provided care could be an important tool for including patients as valuable collaborative partners in students' clinical learning. A patient feedback questionnaire can be used to obtain the patients' perspectives regarding communication and patient-centeredness during the encounter.

9.2.1 The Patient Feedback in Clinical Practice questionnaire

One hindrance to improving health care and patients' participation in their own health care could be how applicable feedback from patient questionnaires is to individual health care provider (176,178,179). Furthermore, feedback applicability could be related to factors such as anonymity in evaluation surveys and often-delayed publication of survey results. However, anonymous patient feedback is often preferred in evaluation surveys, as respondents may feel more free to answer openly if their identities are not shared (127,135). Another factor could be that most previously developed evaluation surveys include items that explore patients' overall satisfaction rather than focusing on their concrete experiences of the consultation (178,179,181). In addition, the items on the evaluation surveys often measure more than one

aspect of area in focus (178) or include items that target emotional aspects of patients' perceptions of the care they received (129,178,179,181).

From an educational point of view, nonspecific and general feedback is of restricted value as an actionable learning tool (152-153). It was therefore of interest to compose a patient feedback questionnaire based on theories of self-directed learning (98,101,102,106,112) and feed-forward feedback (152-153). In the literature, a number of patient feedback questionnaires were identified, none of which fulfilled the aim of the questionnaire as an applicable learning tool for patients' feedback to medical students on communication and patient-centeredness (49,54,59,61,143). However, several separate items in pre-existing questionnaires were relevant to include when composing the patient feedback questionnaire (Study II) (147,181), which motivates the composition process of the patients' feedback questionnaire using both pre-existing and additionally designed items.

The results of Study II demonstrated that the final version of the PFCP questionnaire includes items that represent key aspects of communication and patient-centeredness, covers the intended content of each part of the patient encounter, and focuses on the patients' perspectives on the care provided (59,61,143). To the best of my knowledge, a questionnaire with these features has not previously been developed.

9.2.2 Multi-source feedback gathering from the Patient Feedback in Clinical Practice questionnaire

An MSF learning activity was developed to provide additional feedback to medical students with an increased focus on the patients' perspectives. The purpose of the activity was to facilitate clinical training in communication and patient-centeredness during students' workplace learning (Study IV). In the literature, no questionnaires were identified that enabled patients, peers, clinical supervisors, and students to use the same questionnaire to provide feedback targeting the patient's perspective regarding a student's ability to communicate and apply patient-centeredness during a specific encounter. MSF questionnaires were composed by adapting the PFCP questionnaire developed in Study II. The results of Study IV indicated that the original and the adapted PFCP questionnaires could be adequate tools for MSF that explored a student-led encounter targeting the patients' perspective. To the best of my knowledge, no previous study has developed such an MSF questionnaire.

It is difficult to provide an MSF learning activity in which all participants can use the same item content in an MSF questionnaire to evaluate the student's performance in a specific encounter with regards to obstacles, e.g., organization, logistics, time, and educational relationships (171,174). However, to facilitate a self-directed learning process, it was important that the students could relate and interpret provided information from the MSF to their own performance during the encounter. Therefore, the MSF was provided adjacent to the encounter, even though this meant it was not anonymous. Previous studies and patient surveys have often advocated for anonymous feedback as a favorable approach to creating a safe environment for providing feedback and managing relationship dependencies (20,175,176). The results of Study IV indicated that the original and the adapted PFCP questionnaires provided an additive and non-judgmental contextualized substrate that explored the patient encounter with perceived authenticity and thus created an open learning environment. Due to the enhanced transparency of the evaluated items, the MSF learning activity developed in Study IV allowed the participants to manage their educational relationships and creating a safe learning environment with preserved trust among and between the participants. Previous studies have described the need to manage educational relationships as a potential barrier to implementing MSF (123,171). The slight variations in the participants' scoring initiated a reflective discourse. Students and clinical supervisors believed that this discourse addressed the gap between the ideal and current reality and thus facilitated the clinical learning process (Study IV), which is in alignment with previous research (92). The multifaceted feedback added perspectives and balanced the students own often slightly lower items scoring of own performance during the encounter, hence confirming strengths of the student's performance and initiating a constructive planning of future clinical training. Similar results have been seen in peer leaning (165-167), which have also been seen to some extent in previous studies of MSF (170,173,174,183). The results of Study IV also demonstrated that the filling in the PFCP questionnaire specifically facilitated peers' own self-reflective learning process, which also is in alignment with previous research of peer learning (104,106). The students, peers, and clinical supervisors in Study IV experienced the MSF as beneficial and motivational, which prompted increased interest in participating in an MSF learning activity. Learning activities that are considered meaningful to participate in and experienced facilitate learning may reduce obstacles and be easier to implement (171).

The results of Study IV indicated that the MSF setting, using the original and adapted PFCP questionnaires to provide feedback adjacent to a patient encounter, could be feasible to implement in PHC centers as an adequate learning activity to facilitate students' and peers' clinical training during workplace learning in PHC (Study IV).

9.3 PATIENTS' PERSPECTIVES AS A FACILITATOR IN STUDENTS' WORKPLACE LEARNING

During students' communication learning, the students must learn to understand and interpret communication with the patient (49,113,143). The students must learn to adjust and tailor their communication, including content and information, to ensure that the patient can interpret and understand the information also in relation to the patient's own personal agenda (38,39,139,143). The literature describes how students can develop professional communication competence and develop and train their own repertoire of communication skills (139-141). However, how students can develop their communication and patient-centeredness is seldom approached directly from the patient's perspective on the student's performance during the encounter.

By the patients' written feedback, the students experienced that they were acknowledged by the patients in certain aspects and thereby received an increased sense of self-confidence in their competence in clinical practice (Studies III). The results in Study IV demonstrated that not only the students that performed the encounter but also the peers participating in the MSF stated to be acknowledged in their own clinical performance, which strengthened their sense of self-confidence in clinical practice (Study IV). Studies show that an increased sense of self-confidence in students' current level of competence increases the students' motivation to undertake further clinical training (18,136,140).

Although other studies have emphasized anonymous feedback (20,180), as previous research has addressed criticism on the use of non-anonymous patients' feedback, often described as overall and generally encouraging. Non-specific feedback is often experienced as of limited value in students' learning (180,181). In Studies II–IV, to facilitate the students' self-directed learning, the written feedback was targeted and content-specific and was provided adjacent to the patient encounter. This was done to facilitate the students' ability to relate the feedback to their pre-understanding and experience of the particular encounter, in alignment with self-directed learning theory (16,96,98,100,101,111). The results of Studies II–IV are consistent with previous research, which has emphasized self-directed learning as an important tool for

the students to identify their levels of competence and areas for improvement, both of which are essential components of reflective professional practice (70,99,100,127,140,154). The patients' written feedback and MSF could thereby be valuable complements in students' and peers' self-directed clinical training during workplace learning (Studies II–IV). This is in keeping with a social constructivist theoretical framework for designing learning activities that facilitate students' self-directed learning (107,215). The results of Studies III and IV are also consistent with theories of actionable feed-forward feedback, aiming to visualize and reflect the students' performance of a specific task, which previous research has emphasized impacts on students' clinical learning (151-153,156). Specific patients' written feedback to medical students adjacent to a clinical encounter is not well described in the literature (129,180).

The ability to apply solid clinical knowledge and skills and the ability to communicate and apply patient-centeredness has previously been reported as an important integrated professional competence for a future doctor to possess (11,59,143) and for medical students to develop (10-12,61). In Studies III and IV, the extended focus on communication and patient-centeredness during the encounter enhanced the students' understanding of how own lack of theoretical medical knowledge and ability to communicate and apply patient-centeredness affected their ability to adequately communicate with the patients during the encounter (Studies III and IV). Additionally, observing a student-led encounter and performing feedback also visualized peers' own need for medical knowledge and communication skills (Study IV), a finding in alignment with previous research about peer learning in clinical practice (71-74,122,158).

Previous studies have described mastering medical and pedagogical tasks as important integrated parts of communication and patient-centeredness training (48,136). The results of Studies III and IV also underscored the importance for students to master patient-centeredness as a working model, including the patient's perspective throughout the entire encounter, which is in alignment with previous research on patient-centered care (48,59,61,143).

As an overall result of Studies II–III, the patients' written feedback visualized and enhanced the patients' role as an eligible and collaborative partner in medical students clinical learning. The findings are consistent with the results of previous studies (130,143). Progressively including patients as acknowledged partner and feedback providers in medical education

might help counteract students' tendency to adopt a doctor-centered approach later in their medical studies (148,149) (Studies II–IV).

9.4 PATIENTS AS A FEEDBACK PROVIDER

The overall results of Studies II–IV indicated that the PFCP questionnaire gave the patients a tool that enabled them to communicate important information about their subjective experience of provided care to medical students. The results are in alignment with previous studies that describe the importance of including patients' perspectives in students' clinical learning (19,125,132-135,137,144).

By use of the PFCP questionnaire the patients received a tool to express their perceived experience of information from the dialogue during the encounter (Study II-IV). The results could be explained by the structure and content of items in the PFCP questionnaire, where the patients could convey their experiences of students' performance during each part of the encounter with perceived authenticity. The results indicate that patients visiting ordinary PHC centers systematically, by use of the PFCP questionnaire, could be included to provide valuable feedback thereby enabling patients' participation in students' workplace learning (Studies II–IV), which has been discussed as difficult by previous authors (136,175,185).

Over time, the patients' extended participation as feedback providers in medical students' workplace learning might improve and enhance communication and patient-centeredness between patients and future health care providers. This, in turn, could facilitate person-centered, high-quality care (1-6,30).

9.5 PATIENTS' PERSPECTIVES IN CLINICAL SUPERVISION

During clinical rotations, various factors can interfere with supervisors' ability to provide feedback to students, such as the amount of time available to the supervisor and the student (108,160,163). Research has shown that students should receive feedback periodically to demonstrate their understanding and close the gap between current and desired performance (160,167). However, clinical supervisors in a busy workplace, such as PHC, often have little time for dedicated formal and informal feedback processes (160,161). Research has shown that without continuous professional development in the field of education, clinical supervisors tend to stagnate in their pedagogical approaches and may default to roles in which they feel the most comfortable rather than exploring new modes of student/supervisor interaction (71).

Study I show that the clinical supervisors' increased visualization of their own pedagogical assignment at the SRC gave an understanding of their own need for pedagogical education to improve their competencies. The study also showed that clinical supervisors' experiences from the SRC could also facilitate the development of their pedagogical role towards more student-centered tuition, which previous research has shown (71,77). In addition, patients' written feedback could be one way to facilitate clinical supervisors pedagogical learning. The PFCP questionnaire proved to be a valuable source of information on the patients' perspective, as traditionally clinical supervisors are the only interpreters and assessors of students' clinical performance. The clinical supervisors gained contextualized, specific information from the patients' items scored on the PFCP questionnaire and from the participants items scoring on the MSF questionnaires. The clinical supervisors could include this information in their own teachers' perspectives of the students' performance during the encounter (Studies II and IV). The information from the PFCP questionnaire gave the clinical supervisors both content and chronology to give actionable feedback about the encounter to the medical students (Studies II and IV), which is in alignment with previous work (212). For the clinical supervisors, this form of feedback also legitimized and enriched the dialogue with students about important aspects of the students' ability to communicate and apply patient-centeredness in encounters (Studies II and IV). The applicability of the PCFP questionnaire could be explained by the content and structure of the items in the PCFP questionnaire, which provided the clinical supervisors with a pedagogical tool (study II and IV). The students' fulfillment of intended learning outcomes was not explored in the included studies why further research is required.

9.6 METHODOLOGICAL CONSIDERATIONS

All studies included in the thesis were conducted in an authentic clinical context during students' ordinary workplace learning in PHC centers, which strengthens the value of the findings for educational practice.

In Studies I–IV, mixed methods approach was used, including quantitative and qualitative data and analysis methods (205,208). The use of mixed methods made it possible to explore the findings from multiple perspectives and offered opportunities for data triangulation (205,217). The coherence of the results in the studies indicated that mixed methods approach for data collection and analysis were appropriate.

In Study I, data were collected with the CLES + T and CSQ-8 questionnaires and interviews, which is a strength of the study (186,205,217). The CLES + T and CSQ-8 questionnaires were selected because they have demonstrated good psychometric properties, including high reliability (198-200). Two free-text questions were added to strengthen the results of the patients' experiences with the SRC; when compared, these results were found to be consistent, thereby increasing the probability that the results could be considered as trustworthy.

A strength of Study II was that the items included in the PFCP questionnaire were composed in several steps; data were collected from multiple sources (content experts, patients, students, and clinical supervisors) and analyses were conducted to support and confirm the inclusion of each item (content and face validity) (205,208). In addition, during the validation process of the PFCP questionnaire, adequate statistical and qualitative analysis (191,204,205,208), were used to confirm that the items covered core aspects of communication and patient-centeredness (59,61). The COSMIN checklist was used as a guide to ensure the quality of the methodological perspectives used during the process of composing and validating the PFCP questionnaire (203).

Exploratory factor analysis EFA is considered as an adequate statistical method when handling large numbers of observed variables reflecting a smaller number of underlying variables, therefore EFA was used to ensure and confirm the *validity*, *reliability*, and *internal consistency* of the PFCP questionnaire's content (204,205). The items in the PFCP questionnaire were composed to only include aspects of communication and patient-centeredness, which indicated that correlation between the items could be high. Therefore, oblique rotation was selected, whereas the factors could be correlated to each other. By application of oblique rotation *interrater reliability* and *reproducibility* and also the interpretation of the data, and clarifications of the grouping tendency of the items were ensured (204,205). Cronbach's alpha is well described in the literature as an adequate method to measure the items *internal consistency* (205) and was used to describe how well the items measured the same construct and clarified how items in each factor were related and grouped (205). The Cronbach's alpha coefficient level of reliability (0.89–0.91) indicated that the *internal consistency* was high, supporting the *reliability* of the two-factor structure (204,205).

The PFCP questionnaire was composed in a Swedish medical education context; this could be considered a limitation of Study II. However, the content in the questionnaire is based on general models of communication and patient-centeredness from work by the Calgary-Cambridge Guides and Maastricht Medical School (59,61), which are commonly used guides in Western medical education. The results of Study II indicate that the content of the PFCP questionnaire could capture the intended aspects and might ascertain the use and transferability to contexts beyond the study context (191,207). A strength of Study IV was that the items content and structure of the adapted PFCP questionnaires were in alignment with the item content and structure of the original PFCP questionnaire developed for patients' written feedback to medical students. In addition, the face validity of the items in the adapted versions of the PFCP questionnaires (Study IV) was further ensured via interviews with content experts, students, and clinical supervisors. To ensure the validity and reliability of the respective version of the adapted PFCP questionnaires for MSF, additional analysis with larger samples is required (205).

Research describes that in a questionnaire, a four to seven step Likert scale is adequate to obtain a good measurement (205). In the composition of the original and adapted versions of the PFCP questionnaire (Study II) a four-point Likert scale was selected for evaluation of the item's content. Neutral categories (not applicable and performed by supervisor) were added to ensure that the patients could fill in if the student or the clinical supervisor was the main provider of care during each part of the encounter (171,205), which enabled use of the same questions regardless of students' educational level. Despite the application of less amount of scale steps (four-point Likert scale) the participants considered the scale with adding opportunities as interpretable to provide and receive intended feedback (Studies II–IV). The opportunity to add free-text comments not only as an overall final question but also adjacent to each item in the questionnaires enabled the participants to add important information, which is a strength of the PFCP questionnaires (Studies II–IV) (171,205)

The data from the evaluation surveys on the PFCP questionnaire were further strengthened in Studies II and III with additional individual interviews to capture in-depth perspectives on the students' and clinical supervisors' experience of the PFCP questionnaire (Study II), and the students' experiences of their learning from the patients' written feedback (Study III). Data cohesion from the evaluation surveys and interviews with the different groups of participants indicate that the questions in the evaluation surveys covered the intended areas of each study, which is a strength of Studies II–IV.

In Study IV, the full range of participants (students, patients, peers, and clinical supervisors) participated in and provided feedback on only a limited number of encounters, which is a limitation and means that further studies are needed. However, the results indicate that regardless of the constellation of participants, the original and adapted PFCP questionnaires was perceived to capture the students' performance during the encounter with focus on patients' perspective in communication and applied patient-centeredness.

9.6.1 Power considerations

In evaluating if the sample size is large enough to achieve power in the validation of the PFCP questionnaire in Study II, the most important consideration was the relationship between how well the items were loaded on different factors and the study's sample size. Considering these factors in the power calculation in Study II, the sample size of 246 PFCP questionnaires was considered reliable, which is a strength of the study (205,218). In qualitative data, the sample size is considered adequate when additional data no longer add any new information (219,220), this is strength in Studies I–III. In Study IV, the sample size was somewhat low to obtain variability, which can be considered a limitation. However, the domain of inquiry was well defined, and the perspectives from all the participant groups were well-aligned in the results, which were further expressed through quotations presented in the results, which can be considered a strength of that study (219).

9.6.2 Considerations of qualitative analysis

All four studies used qualitative content analysis to explore aspects of the data related to the research aims (207). The method is suitable for managing complex material and exploring perspectives with a reductive iterative process to ensure the identification of key content areas (203).

In qualitative research studies, the trustworthiness, including credibility and dependability, must be considered (191,207,221,222). Clearly describing the study context and setting, data collection, and analytical methods, as well as supporting the findings with quotations helps ensure *transferability* and *dependability* (191,207,220,222). Selecting the most suitable sample and appropriate methodology to achieve each study aim increased confidence in the findings and thus helps ensure *credibility* (207). The themes from the qualitative data in the respective studies were analyzed until consistency was achieved, thereby increasing the probability that these results could be considered *trustworthy* (207,221,222). The

transparency of the qualitative analysis process in each manuscript facilitates the ability for targeted evaluation of the research work (207,220).

To further strengthen the *dependability* and *credibility* (191,220,207) in Study I, students and clinical supervisors from five health care professions and patients participated in the data collection process. This enabled to explore various perspectives of SRCs as a pedagogical learning environment. In addition, the interviews and analysis were conducted by an interprofessional group of researchers (Study I). The students, patients, and clinical supervisors in Studies II–IV, represented a range of ages and genders; the students also represented different semesters of medical education and several PHC centers representing different socioeconomic populations, which increases the *credibility* and *dependability* of each study (191,207,222).

9.6.3 The researcher's position

Reflexivity occurs when researchers critically reflect on and consider their own position and how it influences the research process (188,191,210). The intention is to facilitate researchers' understanding of being an integral part of their research since the researcher cannot remain outside the world or context that they are studying. Researchers can show reflexivity by describing the theoretical framework they used and the steps in their research process (191). Reflecting on my position and my pre-understanding as an occupational therapist and research assistant in several pedagogical projects, mainly with medical students, has influenced and affected me in different ways.

Using a mixed-method, with different data collection and analysis methods, broadened the research process and perspectives of collecting and analyzing data, which offering the possibility of gaining a deeper understanding of the area in focus in each study. During each step in each study, I assured the participants' voluntariness and confidentiality and informed them about the aim and process of the research. During the data collecting processes in each study, I found that my professional background was mainly advantageous; thus, it gave me knowledge and understanding of how to operate in a clinical context at the PHC. To minimize the influence of my pre-understanding during the research process, I analyzed and discussed the data with my supervisors and coauthors during the research process. For the same reason, I also noted what I might neglect and deficiencies in my knowledge of different processes and perspectives.

Initially, I had limited knowledge of how medical students are taught and trained in communication and patient-centeredness during clinical rotations in PHC and I will never fully understand a physician's work during a patient encounter. Through continuous studying, being present during patient encounters, and through discussions and reflections with students, physicians, content experts, and supervisors, I gained knowledge of the research topics. I could apply this knowledge during each part of the research process and add to my pre-understanding.

To further compensate for my limited experience and knowledge in this field of research, I studied the area in focus and analyzed the data several times. Additionally, I discussed questions and considerations and made decisions with my supervisors and coauthors of the studies. Those steps were conducted to enhance reflexivity. I think that my pre-understanding, knowledge, skills, and interest in the research field could be considered a resource rather than a limitation in the studies.

10 CONCLUSIONS

The overall results in the present studies indicate that the increased focus on the patients' subjective experience of provided care visualized the importance of including patients as a valuable resource in students' clinical education regarding communication skills and patient-centeredness.

From Study I, it can be concluded that SRCs in PHC have the potential to enhance student-centered learning and tuition while maintaining high-quality patient care. Students reported high satisfaction with their clinical learning at the SRC, and the patients expressed the perceived level of provided care as high. Supervisors reported that the structure of the SRC supported their pedagogical assignment and facilitated student-centered tuition.

The results of Study II indicated that the Patient Feedback in Clinical Practice (PFCP) questionnaire is a valid, reliable, and internally consistent questionnaire for patients' written feedback to medical students adjacent to a patient encounter.

The results of Study III indicated that the patients' written feedback on the PFCP questionnaire provided the students with concrete and actionable feedback to facilitate the identification of knowledge gaps and areas for further clinical training. The results underscored the importance of patient-centeredness as a working method to apply during the patient encounter. The patients' written feedback also increased the students' awareness of the patient as a collaborative partner throughout the entire encounter.

The results of Study IV indicated that multi-source feedback (MSF) provided via the original and adapted PFCP questionnaires adjacent to a patient encounter was found to be an adequate learning activity for medical students' clinical rotations in PHC. Students and participating peers expressed that both receiving and providing feedback in an MSF learning activity provided multi-faceted information that helped them to navigate in further clinical and communication training. The clinical supervisors experienced that participating in the MSF learning activity added valuable patient's perspectives to include in their clinical tuition. Written MSF provided through the PFCP questionnaires adjacent to a patient encounter was found to be a feasible learning activity during clinical rotation in PHC.

11 IMPLICATIONS AND FURTHER STUDIES

An overall result from the studies was that the patients' perspective could be more systematically included as an important educational resource in students' workplace learning by the application of the patients' written feedback and multi-source feedback in primary health care clinical rotations.

The results of Study I showed that the SRC could be a promising learning model in primary health care. The experience and results achieved from the SRC could be important to acknowledge also in other clinical rotations and settings in order to facilitate student-centered learning and tuition, which is a subject for further studies.

The results of Studies II and III indicated that the PFCP questionnaire could be a suitable and valuable tool for increasing patients' participation in medical students' workplace learning. Further studies are required to explore the PFCP questionnaire as an educational tool in different educational and clinical contexts. The use of the PFCP questionnaire as a summative tool has not been studied in the work included in this thesis.

Within the frame of person-centered care and also mandate inclusion of patient-centeredness in medical education curricula the future inclusion of patients' feedback also for summative decisions is a likely development. Further studies could explore the applicability of the PFCP questionnaire as progressive learning tool to include in, e.g., portfolios and summative judgments on fulfillment of intended learning outcomes of clinical competence. It could also be interesting to explore whether patients' improved participation in students' workplace learning by use of the PFCP questionnaire could, over time, increase patients' participation and collaboration in their own care, thereby further contributing to the development of person-centered care.

The results of Study IV indicated that the MSF, which provided feedback through the original and adapted PFCP questionnaires adjacent to a student-led encounter, could be a feasible learning activity in students' and peers' workplace learning in PHC. However, further studies are needed to explore the value of the MSF as an integrated part in undergraduate medical education.

In future studies, it could also be interesting to explore the use of patients' perspectives and feedback not only as a source of information to facilitate the clinical supervisors' pedagogical assignments but also as an influence on clinical supervisors' own practice (Studies II and IV).

12 SWEDISH SUMMARY—SVENSK SAMMANFATTNING

Ett kontinuerligt arbete för att förbättra hälso- och sjukvården samt att öka patienternas deltagande i egen vård betraktas som nyckelkomponenter för att uppnå en personcentrerad vård av hög kvalitet. Personcentrerad vård, med beaktande av den enskilda patientens autonomi och delaktighet i vården har även medfört ett bättre hälsoreultat, en högre patientnöjdhet och en bättre följsamhet i behandling. Kommunikation mellan patient och vårdgivare, som stöder ett patientcentrerat arbetssätt kan påverka utfallet av patientens vård och hälsotillstånd och är därför en viktig faktor i hälso- och sjukvårdsutbildningar. Under medicinsk utbildning har utbildning förlagd till sjukvårdsverksamhet (verksamhetsintegrerat lärande) en viktig funktion i studentens professionella utveckling där studenten bla, under handledning, i mötet med patienten har möjlighet att träna och utveckla kliniska- och kommunikationsfärdigheter.

Patientens roll i undervisning har traditionellt ofta varit passiv och objektifierad där patienten t.ex. visat kliniska fynd förenliga med en specifik sjukdom/diagnos. Numera återfinns dock patienten i en ökande andel av medverkan i undervisning, t.ex. som studentmentor och vid träning av specifika undersökningsmoment. Evidens saknas dock avseende vilken form av patientmedverkan som har störst effekt i studentens lärande.

I studenters kliniska undervisning ges återkoppling angående studentens förmåga avseende kliniska färdigheter, kommunikation och patientcentrerat arbetssätt oftast av studentens handledare. Utöver återkoppling från handledare ges ibland återkoppling av medstudent, samt att studenten gör en egen självvärdering av ett moment. Däremot sker återkoppling från patient till student mera sällan. Samtidigt efterfrågar ofta studenter mera återkoppling för att stödja det kliniska lärande under verksamhetsförlagd utbildning.

Ett sätt att åstadkomma ökad patientmedverkan är genom återkoppling och formulär för skriftlig återkoppling från patient till läkarstudent har identifierats, dock saknas validerat formulär för direktåterkoppling från patient till läkarstudent avseende kommunikation och patientcentrerat arbetssätt under ett patientbesök. Det saknas också återkopplingsformulär där medstudent, klinisk handledare och student kan använda ett formulär, innehållande samma innehåll som patientens, med fokus på patientens perspektiv under patientbesökets respektive del.

Tidigare studier visar att patienter upplever sig ha värdefull kunskap att förmedla till studenter. Vidare har forskning visat att samband mellan god kommunikation och vårdutfall föreligger, varför det är av stort värde att patienten mera systematiskt görs delaktig i undervisning av läkarstudenter, tex genom återkoppling.

Det övergripande syftet med denna avhandling var att undersöka hur patienters deltagande i klinisk utbildning kan underlätta läkarstudenters lärande avseende kommunikation och patientcentrerat arbetssätt.

I Studie I analyserades patienters, studenters och kliniska handledares erfarenheter av en studentdriven mottagning (SRC) på en vårdcentral genom patientutvärderingar (Client Satisfaction Questionnaire-8, CSQ-8), studentutvärderingar (Clinical learning environment, supervision and nurse teacher evaluation scale, CLES + T) och genom individuella intervjuer med kliniska handledare. Data från formulär och intervjuer analyserades statistiskt- och med kvalitativ innehållsanalys. KB medverkade i analys av intervjuer och sammanställning av artikel. I studien framkom att studenter rapporterade hög tillfredsställelse i det kliniska lärande och patienter uppgav hög nöjdhet med given vård. Vidare framkom att handledare uttryckte att SRC:s struktur stödde deras pedagogiska uppdrag och underlättade en studentcentrerad undervisning. Resultaten visar att en SRC i primärvården har en hög potential för en förbättrad studentcentrerad inläring och undervisning med bibehållen hög kvalitet på patientens vård.

I Studie II komponerades och validerades ett återkopplingsformulär. Komponeringsprocessen genomfördes i fyra steg; litteraturgenomgång, val av och komponering av frågor till en frågepool, test av frågornas innehåll med sakkunniga, patienter, läkarstudenter och kliniska handledare samt ett tillämplighetstest avseende värdet av patientåterkopplingen som en del i läkarstudenternas kliniska lärande. Data analyserades inom varje steg med kvalitativ innehållsanalys. I nästa steg validerades frågorna genom att patienter gav återkoppling till läkarstudent via återkopplingsformuläret direkt efter besöket. Patienter, studenter och kliniska handledare utvärderade sina erfarenheter av medverkan genom att antingen bli intervjuade eller att fylla i ett utvärderingsformulär. Resultatet analyserades statistiskt och med kvalitativ innehållsanalys, vilket resulterade i ett patientåterkopplingsformulär med 19 frågor, inkluderande en fyrgradig svarsskala (Likert-skala) med två tilläggsval ("inte aktuellt" och "handledare genomfört") samt möjlighet till fritextsvar. I studien framkom att patienter, läkarstudenter och kliniska handledare upplevde att återkopplingsformuläret möjliggjorde

återkoppling med hög autenticitet och god återgivning av klinisk situation, inom för patienten viktiga områden i analogi med studentens lärandemål.

I Studie III erhöll läkarstudenter skriftlig återkoppling från patienter från det framtagna återkopplingsformuläret (PFPC questionnaire). Efter erhållande av skriftlig patientåterkoppling utvärderades aktiviteten genom ett utvärderingsformulär eller via intervjuer. Data från utvärderingsformulär analyserades deskriptivt samt att fritextkommentarer från utvärderingsformulär och transkriberad text från intervjuer analyserades med kvalitativ innehållsanalys. I studien framkom att studenterna upplevde att patienternas skriftliga återkoppling från återkopplingsformuläret underlättade en reflekterande självstyrd inlärningsprocess, t.ex. genom att ge ökat självförtroende i klinisk praktik och underlättade identifikation av områden för utveckling och vidare klinisk träning. Vidare framkom att studenterna identifierade patientcentrerat arbetssätt som en viktig arbetsmetod genom hela patientbesöket, samt att studenterna upplevde en ökad medvetenhet om patienten som en viktig samarbetspartner under patientmötet.

I Studie IV studerades läkarstudenters upplevelse av att efter ett patientbesök få skriftlig återkoppling från patienten, medsittande medstudent och/eller medsittande kliniska handledare samt att även göra en självutvärdering efter patientbesöket, så kallad multi-source feedback (MSF). I studien undersöktes också medstudenters upplevelse av att ge återkoppling samt kliniska handledares upplevelse av att ge återkoppling och använda MSF som underlag i handledning till studenter. I studien anpassades det tidigare framtagna patientåterkopplingsformuläret (Studie II) för återkoppling från medstudent och kliniska handledaren samt för läkarstudents egna självutvärdering. I processen för framtagande av adapterade återkopplingsformulären företogs intervjuer med läkarstudenter och kliniska handledare samt iterativa diskussioner inom författargruppen. Processen resulterade i tre versioner av återkopplingsformuläret, vilka sedan användes för återkoppling efter ett studentlett patientbesök. Studenter, medstudenter och kliniska handledare utvärderade därefter sina upplevelser av MSF genom utvärderingsformulär. Data från utvärderingsformulären analyserades med deskriptiv statistik och kvalitativ innehållsanalys. Inom studien framkom att studenter, medstudenter och kliniska handledare upplevde att MSF gav mångfacetterad återkoppling vilket bidrog till studentens och medstudentens utveckling av kliniska- och kommunikationsfärdigheter. Vidare framkom att MSF medvetandegjorde för såväl student som medstudent värdet av att beakta och inkludera patientens unika erfarenheter av patientbesöket som viktig del i det egna kliniska lärandet. Kliniska handledare angav att patientåterkoppling var ett värdefullt pedagogiskt verktyg och bidrog till en fördjupad dialog

avseende patientcentrerat arbetssätt. Deltagarna upplevde att MSF kan vara en viktig och genomförbar lärandeaktivitet i studenternas verksamhetsförlagda utbildning i primärvård.

Övergripande resultat av denna avhandling visar att genom ett ökat fokus på patienters perspektiv av given vård, genom patienters skriftliga återkoppling avseende kommunikation och patientcentrerat arbetssätt, kan stödja läkarstudenter i utveckling av klinisk kompetens under verksamhetsförlagd utbildning i primärvård.

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