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Helmich, Esther; Bolhuis, Sanneke; Laan, Roland; Koopmans, Raymond

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Early clinical experience: do students learn what we expect?

Esther Helmich,¹ Sanneke Bolhuis,² Roland Laan² & Raymond Koopmans¹

CONTEXT Early clinical experience is thought to contribute to the professional development of medical students, but little is known about the kind of learning processes that actually take place. Learning in practice is highly informal and may be difficult to direct by predefined learning outcomes. Learning in medical practice includes a socialisation process in which some learning outcomes may be valued, but others neglected or discouraged.

OBJECTIVES This study describes students' learning goals (prior to a Year 1 nursing attachment) and learning outcomes (after the attachment) in relation to institutional educational goals, and evaluates associations between learning outcomes, student characteristics and place of attachment.

METHODS A questionnaire containing open-ended questions about learning goals and learning outcomes was administered to all Year 1 medical students ($n = 347$) before and directly after a 4-week nursing attachment in either a hospital or a nursing home. Two confirmatory focus group interviews were conducted and data were analysed using qualitative and quantitative content analyses.

RESULTS Students' learning goals corresponded with educational goals with a main emphasis on communication and empathy. Other learning goals included gaining insight into the organisation of health care and learning to deal with emotions. Self-reported learning outcomes were the same, but students additionally mentioned reflection on professional behaviour and their own future development. Women and younger students mentioned communication and empathy more often than men and older students. Individual learning goals, with the exception of communicating and empathising with patients, did not predict learning outcomes.

CONCLUSIONS Students' learning goals closely match educational goals, which are adequately met in early nursing attachments in both hospitals and nursing homes. Learning to deal with emotions was under-represented as a learning goal and learning outcome, which may indicate that emotional aspects of medical students' professional development are neglected in the first year of medical education.

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¹Department of Primary and Community Care, Radboud University Nijmegen Medical Centre, Nijmegen, the Netherlands

²Department for Evaluation, Quality and Development of Medical Education, Radboud University Nijmegen Medical Centre, Nijmegen, the Netherlands

Correspondence: Esther Helmich, Department of Primary and Community Care, Radboud University Nijmegen Medical Centre, Internal Postal Code 117, PO Box 9101, 6500 HB Nijmegen, the Netherlands. Tel: 00 31 24 3655301; Fax: 00 31 24 3541862; E-mail: e.helmich@elg.umcn.nl

INTRODUCTION

In the medical education literature, there is growing evidence of the perceived benefits of early clinical experience in the professional development of medical students.^{1–3} Early clinical experience offers students an introduction to professional practice and creates opportunities for the development of empathy, as well as communication and practical skills.¹ However, little is known about what students themselves want to learn during their first encounters with patients and professionals, and the kind of learning processes that actually take place.

Learning in educational settings typically involves the setting of educational goals or intended learning outcomes (by preceptors or faculty staff) and the setting of learning goals (by learners). There has been much debate about perceived differences between ‘educational goals’ and ‘learning outcomes’ in terms of their use as a focus for curriculum planning.^{4,5} It has been claimed that the specification and assessment of the intended learning outcomes of medical education increase transparency and accountability.⁴ Learning in practice, however, implies a lot of uncertainty and involves many implicit learning processes.⁶ Implicit or informal learning is often unintentional and the learning outcomes may be difficult to express.⁷ Therefore, learning in practice may not easily be directed by the setting of educational goals or predefined learning outcomes. When considering medical students’ first clinical experiences, evidence directly addressing outcomes of learning in practice remains scarce.⁸

In accordance with the ‘experience-based learning model’ developed by Dornan and colleagues,⁹ we might distinguish at least two broad categories of possible learning outcomes, referred to as ‘practical learning’ and ‘emotional learning’. Practical learning refers to the learning of clinical skills and study skills; emotional learning concerns the development of a positive state of mind, including a sense of identity. We elaborated on this in a prior paper on professional identity development, in which we looked at students’ perceptions of nurses, doctors and themselves as future doctors before and after a Year 1 nursing attachment.¹⁰ As part of the same research project, in the current paper we further explore the learning processes and learning outcomes of experience-based learning, specifically in early clinical experience.

According to social learning theory¹¹ and other socio-cultural learning theories focusing on socialisation and participation in communities of practice,^{12,13} interpersonal relationships and the learning environment play pivotal roles in learning. Although medical schools set formal educational goals for students’ early clinical experiences, what students actually learn in medical practice may differ depending on the learning environment. Behaviours, including emotional reactions and communication patterns, modelled by preceptors and other team members, show what really matters in the clinical context. In this process of professional enculturation, starting with their first clinical experiences, students are implicitly and inevitably ‘taught’ which types of behaviours are valued in practice and which are not. This is also known from the literature on medical education and the informal and hidden curricula.^{2,14–17}

Different contexts may offer different opportunities for participating in patient care and effective learning.^{9,18,19} The nursing home was found to offer equally good opportunities for teaching medical students as the hospital.^{20–22} However, in the context of a Year 1 nursing attachment, medical students’ learning outcomes may differ because patient populations and the education level of nurses differ between nursing homes and hospitals.

In the Netherlands, medical students are still very young when they engage in their first clinical experiences. Former research addressing these very young students after a Year 1 nursing attachment revealed that their most important experiences were strongly patient-related.²³ This focus on patient care is in line with findings in other pre-clinical cohorts.^{24,25} However, reports on early clinical experiences in older students point towards a broader range of learning outcomes, like effects on career choice, and students’ learning and motivation.¹ Thus, age and former patient experiences may influence medical students’ goal setting and their self-reported learning outcomes before and after their first introduction to medical practice. As learning experiences during clerkships are still highly gendered,²⁶ we expect gender to play a role as well.

In this study, we compare the formal educational goals set by the medical school for a 4-week nursing attachment with the learning goals and learning outcomes formulated by Year 1 students themselves, and study their associations with student characteristics and place of attachment.

The following questions are addressed:

- 1 Do learning goals set by medical students correspond with the formal educational goals set by the medical school?
- 2 What are students' perceptions of their main learning outcomes?
- 3 Do students' self-reported learning outcomes correspond with the educational goals?
- 4 Are students' learning goals and learning outcomes related to age, former patient experiences, gender and place of attachment?
- 5 How do students' learning goals relate to their self-reported learning outcomes?

METHODS

Context

At Radboud University Nijmegen Medical Centre, the first clinical experience of medical students is a 4-week nursing attachment in Year 1 of medical school. Students are allocated to a hospital or a nursing home. They participate actively in patient care by working as assistant nurses. Students meet in small-group reflection meetings supervised by faculty staff after 2 weeks and at the end of the attachment. The main educational goal set by the medical school is learning to empathise with patients. Other formal educational goals are entering into conversation with patients, acquiring some practical skills, such as washing and dressing patients, and reflecting on feelings that accompany the provision of physical care. Other important objectives include reflecting on professional behaviour, gaining insight into the organisation of care, reflecting on being a member of a team, and getting to know one's own boundaries (Table 1). These educational goals are based on the Dutch 'Blueprint 1994'²⁷ and are comparable with the educational goals for early nursing attachments in other medical schools in our country.

Data collection

As part of a larger research project on which we have previously reported,¹⁰ prior to and directly after the attachment, students completed questionnaires containing open-ended questions about learning goals and learning outcomes, respectively. Before the attachment we asked students to indicate what they wanted to learn. After the attachment we asked them to briefly describe their main learning outcomes. To validate our categorisation of the answers to the open-

Table 1 Formal educational goals for a Year 1 nursing attachment

'After the attachment, the student is able to ...'

...empathise with patients
 ...independently enter into conversation with patients
 ...assist patients in washing, dressing, eating, getting out of bed
 ...describe and deal with feelings that accompany making physical contact
 ...describe his or her own role in patient care
 ...describe the role of health care professionals in patient care
 ...describe privacy rules
 ...describe the impact of the loss of privacy and the need to respect patients' privacy
 ...stand in a patient's shoes
 ...describe the personal, psychological and social consequences of hospitalisation
 ...describe the organisation of patient care
 ...reflect on being a member of a team
 ...characterise the learning environment
 ...describe the professional behaviour of health care professionals
 ...support patients in dealing with disease
 ...be aware of and respect his or her own boundaries

ended questions, we carried out two confirmatory focus group interviews with five students in each group. We audiotaped these interviews, but, as the main purpose of this was to facilitate member checking, we considered a verbatim transcription unnecessary.

Ethical considerations

Ethical approval of medical education research is not yet required in the Netherlands and therefore our institutional review board did not take this project into consideration. Instead, we discussed the aims and design of the study with the main educators in the nursing attachment and gained approval from the education management team at our medical school. The first author informed students about the study at the end of the introductory lecture for the attachment. The return of a completed questionnaire was considered to indicate the provision of informed consent. The first author randomly asked students to participate in the additional focus groups by sending a personal e-mail explaining the design

and purpose of the interviews. A positive reply was considered to represent the provision of informed consent. The researchers assured students that their participation in the study would have no consequences in the assessment at the end of the attachment.

Data analysis

Two researchers independently analysed the answers to the open questions about learning goals and learning outcomes. For this qualitative analysis, we used data from all respondents. Initial categories were discussed in order to reach agreement on their content and inclusion criteria. After five research meetings, we achieved a preliminary categorisation. At that time we presented our results in the two focus groups.

After we had categorised the learning goals reported by students, we tried to categorise the formal educational goals in the same way in order to be able to compare them with students' answers. As the formal educational goals were qualitative and were represented by a single written text, it was not possible to apply statistical tests to compute the concordance between students' stated learning goals and the formal educational goals.

Next, three researchers independently coded all the learning goals and learning outcomes reported by the students in accordance with the system of categorisation developed previously. We did not estimate inter-rater reliability, but instead used discussions

about the differences we found to refine our coding scheme.²⁸ However, differences in coding occurred only infrequently in approximately 5% of cases.

With this encoding, we conducted a logistic regression analysis. Logistic regression analysis was carried out only for data from questionnaires submitted by students who had completed both surveys. In the analysis of data generated before the attachment, learning goals reported by students were used as dependent variables, and age, gender, former patient experience and place of attachment as independent variables. Learning outcomes reported by students after the attachment were used as dependent variables and the learning goal reported by students before the attachment was entered as an additional independent variable. We used SPSS Version 16.0 (SPSS, Inc., Chicago, IL, USA) for all statistical procedures.

RESULTS

Of the 347 Year 1 medical students, 316 completed at least one of the questionnaires, either before or after the attachment (response rate 91%). Table 2 lists the demographic characteristics of the 267 students who completed both questionnaires. Chi-square tests revealed no differences in characteristics between students in the hospital and students in the nursing home placements. Respondents and non-responders in both groups did not differ with respect to gender, age (17–19 years versus ≥ 20 years) or place of attachment.

Table 2 Characteristics of students assigned to hospitals and nursing homes

	Hospital-based (<i>n</i> = 157; response rate 80%, <i>n</i> = 125)		Nursing home-based (<i>n</i> = 190; response rate 75%, <i>n</i> = 142)	
Female, <i>n</i>	86	69%	94	65%
Young students (aged 17–19 years), <i>n</i>	95	76%	101	71%
Living at home with parents, <i>n</i>	63	50%	65	46%
Straight from pre-university secondary education, <i>n</i>	116	93%	129	91%
Prior patient experience, <i>n</i>	80	64%	98	69%
Patient(s) in family, <i>n</i>	59	47%	78	55%
Patient experience in voluntary job, <i>n</i>	29	23%	43	30%
Patient experience in education, <i>n</i>	7	6%	8	6%
Patient care as a professional, <i>n</i>	3	2%	1	1%

Students' learning goals and formal educational goals

Students' learning goals before the attachment were related to communication with patients, understanding and supporting patients, acquiring practical skills, gaining insight into the organisation of care, working in a team, dealing with emotions and difficult situations, developing professional behaviour, and experiencing an early orientation to their future professional role ('Do I like this job?'). We categorised these learning goals into four broad categories: (i) communicating and empathising with patients; (ii) caring for patients; (iii) coming to know about the organisation of patient care and the roles and responsibilities of nurses, doctors and other professionals, and (iv) dealing with emotions and difficult situations, coming to know one's own boundaries, and respecting one's own and others' boundaries (Table 3). The first three categories were in line with, but did not completely cover, the formal educational goals set by the medical school. A small number of students additionally mentioned learning to deal with emotions and difficult situations as a learning goal, which was not among the formal educational goals.

Self-reported learning outcomes and formal educational goals

After the attachment, students reported learning outcomes related to communication with patients, such as listening and openly talking about diseases, empathising with patients, and realising the impact of admission:

'I learned to communicate with patients who are dependent. It was the first time I had contact with

patients as a professional. For my further study, this is really important to learn.' (Female, 18 years, nursing home placement)

'How to communicate with patients. I think this is important, because it is necessary to have good contact with patients, you should listen to the problems of people, learning to listen is imperative.' (Male, 19 years, nursing home placement)

Students learned to deliver physical care to patients and to deal with the feelings that accompanied the provision of such care:

'Now I am no longer afraid to have intimate, physical contact with patients. I feel much more at ease with it.' (Male, 18 years, nursing home placement)

Students learned about the organisation of patient care, the roles and responsibilities of nurses, and their own roles as members of a team. As part of this category, 13 students explicitly mentioned having experienced an increase in respect for nursing staff. Students reflected on the professional behaviour of themselves and others and on their own future roles as doctors:

'I learned from observing the relationship between nurses and doctors. I think this will help me to improve my own future collaboration with nurses.' (Female, 18 years, hospital placement)

Students reported that they had become aware of their own boundaries and learned to respect their own and others' boundaries. Some students explicitly reported that they had learned to deal with emotions

Table 3 Medical students' learning goals and learning outcomes*

	Hospital-based students (n = 125)				Nursing home-based students (n = 142)			
	Goals		Outcomes		Goals		Outcomes	
Communicating and empathising with patients	106	85%	93	74%	116	81%	92	64%
Caring for patients	18	14%	8	6%	25	18%	16	11%
Gaining insight into the organisation of patient care	29	23%	23	18%	21	15%	17	12%
Dealing with emotions and difficult situations	20	16%	10	8%	23	16%	12	8%
Reflecting on professional behaviour and teamwork	–	–	27	22%	–	–	30	21%
Reflecting on future professional development	–	–	15	12%	–	–	24	17%

* More than one answer was allowed

that accompany working as a health care professional. Students reflected on their future work environment and their own future professional development:

'Dealing with emotions, with sadness and suffering.'
(Female, 20 years, hospital placement)

'My idea that I like working with people is confirmed.'
(Male, 17 years, nursing home placement)

These self-reported learning outcomes were in line with the formal educational goals, although learning to deal with emotions and difficult situations again represented an additional learning outcome mentioned by students.

The answers given by students after the attachment were more concrete and detailed than those given before the attachment and covered more topics. After the attachment, two additional, more reflective, categories emerged: (i) reflecting on one's own performance, on teamwork and on the professional behaviour of oneself and others, and (ii) reflecting on one's own future role as a doctor and future professional development (Table 3). This elaboration

corresponded with the formal educational goals, which also emphasised reflection.

During the focus group interviews students recognised and confirmed our findings about learning goals and learning outcomes. No new themes were mentioned.

Associations between learning goals and outcomes and student characteristics

Before the attachment, the learning goal most frequently reported by both hospital and nursing home students involved communicating and empathising with patients (85–81% respectively) (Table 3). Female students mentioned this more frequently than male students (odds ratio [OR] 2.6) (Table 4). Gaining insight into the organisation of patient care was mentioned less often by students allocated to the nursing home (OR 0.5) (Table 4). Formulating other specific learning goals was not associated with age, former patient experience or place of attachment.

After the attachment, the most frequently mentioned learning outcomes were, again,

Table 4 Medical students' learning goals: associations with student characteristics

Learning goal	Associated characteristic	OR*	95% CI	p-value
Communicating and empathising	Gender (female students; ref.: male students)	2.6	1.3–5.2	< 0.005
	Age (17–19 years; ref.: ≥ 20 years)	0.6	0.2–1.4	NS
	No patient experience (ref.: prior experience)	1.0	0.5–2.0	NS
	Place of attachment (nursing home; ref.: hospital)	0.8	0.4–1.6	NS
Caring for patients	Gender (female students; ref.: male students)	1.1	0.6–2.3	NS
	Age (17–19 years; ref.: ≥ 20 years)	0.5	0.2–1.5	NS
	No patient experience (ref.: prior experience)	0.5	0.2–1.2	NS
	Place of attachment (nursing home; ref.: hospital)	1.3	0.7–2.5	NS
Gaining insight into the organisation of patient care delivery	Gender (female students; ref.: male students)	0.8	0.4–1.6	NS
	Age (17–19 years; ref.: ≥ 20 years)	1.8	0.8–4.2	NS
	No patient experience (ref.: prior experience)	0.9	0.4–1.7	NS
	Place of attachment (nursing home; ref.: hospital)	0.5	0.3–1.0	< 0.05
Dealing with emotions and difficult situations	Gender (female students; ref.: male students)	1.4	0.7–3.0	NS
	Age (17–19 years; ref.: ≥ 20 years)	1.4	0.5–3.4	NS
	No patient experience (ref.: prior experience)	1.2	0.6–2.5	NS
	Place of attachment (nursing home; ref.: hospital)	1.0	0.5–2.0	NS

* Multiple logistic regression analysis
OR = odds ratio; 95% CI = 95% confidence interval; NS = not significant

Table 5 Medical students' self-reported learning outcomes: associations with student characteristics

Outcome	Associated characteristic	OR*	95% CI	p-value
Communicating and empathising	Gender (female students; ref.: male students)	1.0	0.7–2.0	NS
	Age (17–19 years; ref.: ≥ 20 years)	2.9	1.2–7.0	< 0.05
	No patient experience (ref.: prior experience)	0.8	0.4–1.6	NS
	Place of attachment (nursing home; ref.: hospital)	1.0	0.8–2.0	NS
	Communicating/empathising mentioned as a learning goal (ref.: not mentioned by students)	3.0	1.0–8.5	< 0.05
Caring for patients	Gender (female students; ref.: male students)	1.1	0.4–3.0	NS
	Age (17–19 years; ref.: ≥ 20 years)	1.1	0.3–4.1	NS
	No patient experience (ref.: prior experience)	0.8	0.3–2.2	NS
	Place of attachment (nursing home; ref.: hospital)	2.4	1.0–6.3	NS
	Caring for patients mentioned as a learning goal (ref.: not mentioned by students)	0.4	0.2–1.2	NS
Gaining insight into the organisation of patient care delivery	Gender (female students; ref.: male students)	1.5	0.7–3.6	NS
	Age (17–19 years; ref.: ≥ 20 years)	2.0	0.8–5.4	NS
	No patient experience (ref.: prior experience)	1.5	0.7–3.1	NS
	Place of attachment (nursing home; ref.: hospital)	0.7	0.3–1.4	NS
	Gaining insight into the organisation of patient care mentioned as a learning goal (ref.: not mentioned by students)	0.6	0.2–1.5	NS
Reflecting on professional behaviour and teamwork	Gender (female students; ref.: male students)	1.5	0.7–3.1	NS
	Age (17–19 years; ref.: ≥ 20 years)	1.2	0.5–3.0	NS
	No patient experience (ref.: prior experience)	1.5	0.8–2.9	NS
	Place of attachment (nursing home; ref.: hospital)	1.0	0.5–1.9	NS
Dealing with emotions	Gender (female students; ref.: male students)	1.1	0.4–3.2	NS
	Age (17–19 years; ref.: ≥ 20 years)	1.4	0.4–4.4	NS
	No patient experience (ref.: prior experience)	0.5	0.1–1.4	NS
	Place of attachment (nursing home; ref.: hospital)	1.2	0.5–3.0	NS
	Dealing with emotions mentioned as a learning goal (ref.: not mentioned by students)	0.3	0.1–0.9	< 0.05
Reflecting on future professional development	Gender (female students; ref.: male students)	1.4	0.6–3.3	NS
	Age (17–19 years; ref.: ≥ 20 years)	0.8	0.3–2.6	NS
	No patient experience (ref.: prior experience)	0.4	0.2–1.0	< 0.05
	Place of attachment (nursing home; ref.: hospital)	1.4	0.7–3.0	NS

* Multiple logistic regression analysis

OR = odds ratio; 95% CI = 95% confidence interval; NS = not significant

communicating and empathising with patients (74–64% respectively) (Table 3). Younger students mentioned this learning outcome more frequently than older students (OR 2.9) (Table 5). Students with less experience mentioned reflecting on future professional development as a learning outcome less frequently (OR 0.4) (Table 5). No other associations emerged.

Relationships between students' learning goals and learning outcomes

Communication was the only category for which mention as a learning goal before the attachment resulted in more frequent mention as a learning outcome after the attachment (Table 5). No other learning outcomes could be predicted by learning

goals mentioned before the attachment. Remarkably, students who wanted to learn to handle emotions before the attachment were less prone to mention dealing with emotions as one of their main learning outcomes after the attachment (OR 0.3).

Summary of main findings

Students' learning goals and self-reported learning outcomes are in line with the formal educational goals set by the medical school for a Year 1 nursing attachment. Students explicitly mentioned communication and empathy, and reflection on performance, professional behaviour, teamwork and future professional development as their main learning outcomes. Female and younger students more often indicated the development of communication skills and empathy as learning goals and learning outcomes, respectively. Students explicitly mentioned an increase in their respect for the nursing profession. Some students formulated learning to deal with emotions and difficult situations as a separate learning goal and learning outcome. Personal learning goals formulated before the attachment only partially predict self-reported learning outcomes after the attachment.

DISCUSSION

The main learning outcomes mentioned by our students are in line with findings of former studies.^{1,2,8,23} The development of communication skills and empathy are by far the most frequently mentioned learning goals and learning outcomes reported after early clinical experience.^{1,29} The observation that female students emphasise communication and empathy more often than male students do is in line with the more care-oriented attitude of females described previously in the medical education literature.^{30–32} Younger students mention a larger increase in communication skills and empathy, which may reflect age-related differences in life experience and the development of interpersonal skills. Maturity was recently identified as a major predictor of medical students' transition into the clinical environment.³³ Learning outcomes were not related to place of attachment. This supports former reports stating that nursing homes and hospital wards are equally suitable environments for medical student learning.^{20–22}

Apparently, many important elements of professional behaviour, such as communication skills, empathy, reflection and teamwork, are adequately fostered in a Year 1 nursing attachment. Emotional learning, although previously suggested to be one of the main

learning outcomes of experience-based learning,⁹ is not directly addressed. Learning to deal with emotions and difficult situations is not stated as a formal educational goal by our medical school. Given that only a few students formulated this as a learning goal, and even fewer denoted it as a learning outcome, we might also suppose that learning to deal with emotions is not modelled adequately in the workplace. Recently, it was suggested that emotions are still a taboo topic in medical education.³⁴ This is striking because, during their early clinical experience, students will be confronted for the first time with many emotion-laden issues, such as death and dying,^{16,35,36} uncertainties about students' roles,³⁶ powerlessness when facing behavioural conflicts,³⁷ and distress related to medical errors.³⁸ The transition into medical practice may be even more emotionally fraught for less mature, very young students.³³ Therefore, it seems highly important to further study how students learn to deal with emotions in medical practice, and to develop and implement appropriate emotion skills training.³⁹

When we investigated the associations between learning goals and learning outcomes, we found only one direct association. The development of communication skills and empathy seems to be the only learning outcome that might be predicted by declaring it a learning goal before the attachment. Students who mentioned learning to deal with emotions as an important learning goal before the attachment were less likely to mention it as one of their main learning outcomes after the attachment. As stated before, workplace learning is highly informal and involves many implicit learning processes.^{6,7} Our study adds evidence that, even in the context of clear formal educational goals or intended learning outcomes shared by students, directing learning in practice by formulating learning goals or predefined learning outcomes may be difficult.

Strengths and limitations

This study has both strengths and limitations. Our analysis is based on qualitative data sourced from a large student population in a survey with a high response rate. Although it was confined to one medical school, students were allocated to different institutions (hospital wards and nursing homes) in a large educational area. We used self-reports instead of observations and formal evaluations, which might be viewed as a weakness when considering learning outcomes. However, self-reporting may also represent a study strength because it provides insight into students' perceptions of the learning process. Informal learning

processes may be especially difficult to recognise for learners and thus additional in-depth qualitative research, as well as more objective measures of learning outcomes, would be valuable. Although, in general, a more rigorous repeated-measures study might be helpful to assess the results of any intervention, in this case we considered this would be inappropriate. In a repeated-measures study, the same measurements (e.g. questionnaire, scale) should be used both pre- and post-intervention. Because we wanted to explore students' expectations, we asked them to indicate their main learning goal or goals (more than one answer was allowed) prior to the attachment. After the attachment, we asked the students to describe their most important learning outcomes. Again, students were allowed to give more than one answer. Thus, we obtained different numbers of responses, which provided rich insight into students' learning goals and learning outcomes, but which impeded a more rigorous comparison. This may be a suitable subject for further study.

CONCLUSIONS

According to our students, an early nursing attachment in either a hospital or a nursing home offers a substantial contribution to their professional development and serves as a valuable foundation for their further medical education. Many students emphasised the development of communication skills and empathy as important learning goals and learning outcomes during a Year 1 nursing attachment. However, learning in practice seems to be highly informal and difficult to guide by setting learning goals or learning outcomes beforehand. During their first clinical experiences, students may be surprised by unexpected, emotional and difficult situations. As neither faculty staff nor students can accurately predict what students will face during their first introduction to medical practice, it seems necessary to coach students in methods of reflection on this experiential and unplanned learning in order to help them make sense of their embodied experiences. Further research is needed to increase our knowledge of the emotional aspects of learning in practice and of how to tailor supervision, especially when very young students are exposed to their future working environments for the very first time.

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article and all authors contributed to its critical revision. All authors approved the final version of the manuscript.

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