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Emotional learning of undergraduate medical students in an early nursing attachment in a hospital or nursing home

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Abstract

Background: Entering medicine for the first time is highly impressive for students, but we know little about the actual emotional learning processes taking place.

Aims: We aimed to get more insight into expectations, experiences and emotions of students during their first clinical experiences in a hospital compared to a nursing home.

Methods: We carried out a qualitative and a quantitative survey by administering questionnaires about expectations, impressive experiences and learning activities within two cohorts of first-year medical students before and after a 4-week nursing attachment.

Results: Despite different expectations, students reported similar experiences and learning activities for the nursing home and the hospital. Most impressive events were related to patient care, being a trainee, or professional identities being challenged. Students in nursing homes most often referred to their own relationships with patients. Students expressed different emotions, and frequently experienced positive and negative emotions at the same time.

Conclusions: Rewarding experiences (not only difficult or stressful events) do matter for medical professional development. Students need to learn how to deal with and feel strengthened by the emotions evoked during clinical experiences, which should be supported by educators. The nursing home and the hospital seem to be equally suited as learning environments.

Introduction

During their clinical training, medical students encounter many different patients and health care professionals. This might elicit feelings such as discomfort during physical care, feelings of helplessness in the confrontation with suffering or death and fear and embarrassment in relationships with supervisors, but also positive feelings from having contact with patients or excitement from ‘being in medicine’ (Kasman et al. 2003; Radcliffe & Lester 2003; Dornan & Bundy 2004; Pitkala & Mantyranta 2004; Dyrbye et al. 2007). Especially, entering the medical workplace for the very first time poses a great emotional challenge on students (Radcliffe & Lester 2003; Dornan & Bundy 2004; Shacklady et al. 2009).

In traditional curricula, medical students entered medical practice only after several theory-based years of study. In modern, vertically integrated, curricula, students are offered their first clinical experiences earlier, starting from the first year of medical training. Early clinical experience is commonly provided by an attachment to a community or to single patients, or a clinical placement, generally with a physician preceptor (Dornan et al. 2006). The first clinical experience of medical students at the Radboud University Nijmegen Medical Centre is a 4-week nursing attachment in hospitals and nursing homes in the first year of medical school. In this attachment, students actively participate in patient care, working as assistant nurses. The main objectives of this attachment are to familiarize students with patients, and to stimulate the development of empathy, communication skills and professional behaviour. The scarce literature reporting on nursing attachments offers little insight into the actual learning experiences of young medical students participating in patient care as a member of the nursing team (Kent 1991; Radford et al. 1993; Scavenius et al. 2006).

Practice points

- Medical students encounter many highly impressive experiences when entering medical practice for the first time.
- Impressive experiences are related to the witnessing of patient recovery or distress (hospital) or students’ own relationships with patients (nursing homes).
- Difficult situations and stressful events often receive most attention, but rewarding experiences also play an important role in medical professional development.
- We should help students, as early in medical education as possible, learn to deal with or feel strengthened by the emotions evoked during their experiences in the medical workplace, in order to enhance the development of a positive state of mind, relationship-building skills and a firm sense of professional identity.
Participation is the central element in the ‘experience-based learning model’ as developed by Dornan et al. (2007). Participation can be hampered or enabled by the educational climate and concrete behaviours of professionals in the workplace. Students should be offered possibilities to interact with nurses and doctors in a positive way, to build social relationships with patients and actively contribute to patient care.

In prior reports though, students were found to be afraid of being humiliated, felt themselves outsiders, felt themselves lacking credibility in front of patients, and experienced intense stress from strong emotional events (Pitkala & Mantyranta 2003; Seabrook 2004). Several studies revealed that medical students were being confronted with a large number of potentially stressful and sometimes even traumatic events or circumstances (Dyrbye et al. 2005, 2006; Haglund et al. 2009). These experiences may elicit feelings of fear, incompetence, helplessness, anger or guilt, and are associated with psychological distress and a higher incidence of depression (Dyrbye et al. 2005, 2006). Stress and distress then, were demonstrated to result in a loss of empathy and integrity in medical students (Dyrbye et al. 2005; Thomas et al. 2007). However, some authors have also described the joy of learning new things (Dyrbye et al. 2007), having rewarding relationships with patients or receiving good supervision (Pitkala & Mantyranta 2004), and the pride or gratitude students may feel in relation to patient care (Kasman et al. 2003).

In the experience-based learning model, a positive state of mind is supposed to be one of the main learning outcomes of real patient learning. Dornan et al. (2007) refer to the building of a sense of identity, becoming more confident, sustaining motivation and feeling rewarded. We suppose that learning to deal with impressive, stressful, difficult, moving or otherwise emotional situations might also be an essential part of this ‘emotional learning process’, which unfortunately is only very sparsely addressed in medical education (Helmich et al. 2011). The emotional learning processes or learning outcomes related to real patient contact are not yet clearly defined within the medical education literature. In our study, we refer to expectations, impressive experiences and emotions as part of the broader concept of ‘emotional learning’.

Benefiting from real patient contact finally, may differ depending on the learning environment, as well as on differences between students. The interpretation of concrete experiences may be influenced by students’ prior experiences and expectations. This was suggested to differ greatly for male and female students during their transition into the clinical curriculum (Babaria et al. 2009). For younger students, this transition might be more stressful than for their more mature colleagues (Shacklady et al. 2009). Hospitals and nursing homes differ with respect to patient population and educational level of nurses, which might influence students’ expectations and experiences as well.

In this research project, we aim to contribute to the ‘experience-based learning model’ by assessing students’ learning activities and differences between the nursing home and the hospital as a learning environment for a first-year nursing attachment. We intend to gain more insight into the experiences of young medical students in a first-year nursing attachment and the emotional learning processes taking place. The main objectives of this article are to describe medical students’ expectations before a first-year nursing attachment in a hospital or nursing home, and students’ most impressive experiences and evoked emotions during the attachment.

We formulated the following research questions:

1. What do first-year medical students expect of a 4-week nursing attachment in a hospital or nursing home?
2. What are the most important learning activities according to medical students during a first-year nursing attachment in a hospital or nursing home?
3. What are the most impressive experiences reported by medical students in a hospital or nursing home?
4. What are the emotions perceived by students during a first-year nursing attachment?
5. Do students’ learning activities, their most impressive experiences and the experienced emotions differ for hospitals and nursing homes?
6. Are there differences related to gender, age or former patient experience?

Methods

Data collection

We carried out two successive studies in two cohorts of first-year medical students entering a 4-week nursing attachment. For this attachment, students were randomly allocated to a nursing home or a hospital. The first study was developed to explore the nature of the expectations and experiences (learning experiences and impressive experiences) of students (research questions 1–3) and to address differences related to age, gender, prior experience and learning environment (research questions 5 (in part) and 6). After having analysed these data, we felt we needed additional data about the emotions that were evoked by the experiences of medical students, which led to the formulation of research question 4 and the development of a second study. Again, we were interested in differences related to age, gender, prior experience, and learning environment (research questions 5 (in part) and 6).

Study 1

We administered a questionnaire to all first-year medical students of the 2007/2008 cohort (N = 347) of the Radboud University Nijmegen Medical Centre before and directly after the nursing attachment. Before the attachment, we asked students to give brief written answers on open questions about their expectations: What are you looking for? What do you fear? How would it be to work in a hospital or in a nursing home? After the attachment, we asked them to indicate their most important learning activities, and to describe their most impressive and most stressful experiences. Students completed the questionnaire following small-group teaching sessions at the beginning and at the end of the attachment that are part of the educational programme. It took them 20–30 min to formulate their answers. No teachers or researchers were present during the completion of the questionnaire.
Early clinical experience: Emotional learning

Study 2. In the second study, students of the 2009/2010 cohort (N=332) completed another questionnaire, again administered during the small-group session directly following the attachment. We asked students to categorize their most impressive experience following the categorization developed in Study 1, and to add a brief written description of the situation. Subsequently, students were asked to indicate, out of a list of 22 emotions, the five main emotions accompanying this experience. For this purpose, we used the Differential Emotions Scale (DES), which was originally developed by Izard et al. (1974) to assess the subjective experiences of 10 discrete fundamental emotions: anger, disgust, contempt, interest, joy, surprise, sadness, fear, shyness and guilt. The original DES was supplemented by Fredrickson et al. (2003) with positive emotions like gratitude, love, pride and sexual desire. Based on Study 1, we slightly extended this modified DES by adding emotions that might be more specific to the patient care situation, such as helplessness, being moved, tenderness, respect, nervousness and irritation. In addition, we asked students to rate the impact of the most impressive event on a 10-point scale and to indicate the intensity of the attachment as a whole, again using a 10-point scale.

Ethical considerations

For both studies, we discussed the aims and design of the study with the main educators in the nursing attachment, and got approval from the education management team of our medical school. Our Institutional Review Board decided that no further measures for ethical approval were necessary. The first author (EH) informed all students at the end of the introductory lecture at the beginning of the attachment. We considered returning a completed questionnaire as informed consent. Participation was fully voluntary, and we made sure that research and student assessment remained strictly separated.

Qualitative data analysis

Two researchers independently carried out a qualitative content analysis of data from the first study. The first researcher (EH) was an elderly care physician and clinical teacher and involved in the current research project as a PhD student. The second researcher (ED) was a registered nurse, experienced in qualitative data analysis.

We started with an open coding process, constantly comparing the emerging categories with each other and with existing literature (Strauss & Corbin 1990). We discussed and refined our interpretations in five consecutive research meetings, in which we primarily sought to reach agreement on content and inclusion criteria.

During this process of constant comparative analysis, we found a great conformity of the emerging categories with existing literature. For medical students’ learning activities, we decided to use an earlier developed categorization: learning by direct experience, learning by social interaction, learning by theory or supervision and learning by reflection (Bolhuis & Simons 2001; Berings et al. 2008).

For medical students’ expectations and the impressive experiences they encountered, we combined and slightly adapted categories previously described by several authors (Kasman et al. 2003; Bennett & Lowe 2008; Haglund et al. 2009) into the following categorization:

1. Patient care: student–patient interaction
2. Patient care: professional–patient interaction
3. Learners’ issues: student–preceptor interaction
4. Personal vulnerability: workload, dirty work
5. Professional identity: conflict in values, ethical aspects, helpfulness
6. (Near-)mistakes by self or others

In the second study, we used this same categorization, but divided the first category into two separate categories: witnessing patient distress or recovery and developing a professional relationship with patients. To verify comparability of the reported incidents in both studies, the first author carefully read all brief descriptions given by students in Study 2 and compared these with the data of Study 1.

Statistics

Differences in learning activities and impressive experiences between students in hospitals or nursing homes, or related to gender, age or prior experience, were analysed using Chi-square tests. We used t-tests for comparing means regarding impact and intensity. We considered $p < 0.05$ as statistically significant. All statistical procedures were performed using SPSS 16.0.

Results

Study 1

Of the 347 students invited to participate in the first study, 316 completed at least one of both questionnaires, before or after the attachment (response rate 91%). We used all these questionnaires for our qualitative analysis. From the 267 students who completed both questionnaires, 142 were allocated to a nursing home (53%). There were no significant differences between the two groups (Table 1).

Expectations of the nursing attachment in general. Before the attachment, students’ hopes and fears regarded patient care, especially their own relationships with patients, the learning environment, personal vulnerability and professional development.

Students were looking forward to real encounters with patients, wanted to help patients and expressed the wish to care for patients. On the other hand, they feared the confrontation with suffering and death.

‘Meeting real patients, and supporting them in being ill.’ (Female, 20, hospital)

‘Difficult conversations, with people who are angry or sad, when you are not able to do something that really helps.’ (Female, 22, nursing home)
Students made some general comments relating to their position as learners. They were looking forward to getting acquainted with the organization of patient care, and liked the idea of teamwork.

‘I would like to get some idea of working in a hospital.’ (Male, 23, hospital)

‘I like the idea of working together in a team.’ (Female, 20, hospital)

Students reported a fear of conflicts and difficult situations in the working environment, and were afraid they ‘would be the ones to clean up everything’. Students feared they would be given too much responsibility. They expected physical care to be distressing and disliked the prospect of having to cope with strange smells and dirty things. Having to get up early and working very hard were also mentioned by students before the attachment.

‘Having to wash patients who are dirty or uncared-for’ (Female, 19, nursing home)

‘Irregular hours and varying supervisors.’ (Female, 18, nursing home)

Expectations of the hospital versus the nursing home as a learning environment. Before the attachment, some students liked the idea of being allocated to a hospital because they thought it would be more interesting and they would be able to learn more than in a nursing home.

‘In a hospital you will see younger and older patients, with different diseases. I think that is interesting.’ (Female, 19, hospital)

Other students considered an attachment in a nursing home to be more attractive and better for their professional development, because according to them, a nursing home offers more opportunities for participation in patient care.

‘I suppose in a nursing home I will be able to do things myself, not only observing how things are going.’ (Female, 18, nursing home)

Working in a hospital was expected to be difficult, while working in a nursing home was considered to be monotonous and boring, but also rewarding. Students expected professionals in a hospital to have less contact with patients, while patient care in a nursing home might be more intense and more personal. Students described hospitals as large institutions, with many different disciplines participating in patient care. Students thought nursing homes would be smaller, and less interdisciplinary. Students reflected on the care versus cure orientation of the nursing home and the hospital respectively. In a hospital, one might witness more medical treatments and it might be easier to identify with one’s future role as a doctor; in the nursing home there is more emphasis on the nursing role. Students thought the content of a nursing attachment in a hospital would be highly interesting, but it might be nice to be in a nursing home as well, because the nursing home is to a high degree unknown to most medical students.

‘I think being in a nursing home will be instructive: dealing with chronic diseases, maybe dementia, will be a new experience to me.’ (Male, 20, nursing home)

Learning activities in a nursing attachment. We did not find any significant differences between the most important learning activities indicated for the hospital or the nursing home (Table 2). For both learning environments, students most frequently mentioned learning by direct experience as their main way of learning (80–85%). Communicating with patients, talking about illness and disease, dealing with emotions of patients and participating in social and practical activities were all considered very important learning experiences.

‘Caring for patients and talking with them.’ (Male, 21, hospital)

Students also learned by the informal social interaction with professionals in the workplace. They engaged in conversations with nurses, observed nurses caring for patients, witnessed the interaction between nurses and doctors, and listened to health care workers talking during coffee breaks, team meetings and consultations.

‘Observing nurses, how they interact with patients.’ (Female, 20, nursing home)

Students exchanged experiences with peers during formal teaching sessions, but also during other (leisure time) activities. When students got into difficult situations and did not know what to do or say, discussing this with peers was found to be helpful. Students found it interesting to discuss experiences with peers who were allocated to the hospital or the nursing home and vice versa. Formal social interaction, such as
Students reflected on their own, positive or negative, relationships with patients.

'A patient cried and I was able to comfort him.' (Male, 21, hospital)

'A woman was so thankful I wanted to help her to get into bed, her eyes were brimming with tears. I had to wash another woman’s hair, but she did not want that, and turned angry and called me a liar.’ (Female, 19, nursing home)

Students observed interactions between nurses or doctors and the patient.

'An argument between the nurse and a patient. The patient became abusive and started to be verbally aggressive. This happened all of a sudden, without the slightest provocation.’ (Female, 22, nursing home)

Being a trainee was sometimes very stressful.

'My supervisor forgot me several times and then I walked about as if lost.’ (Female, 20, hospital)

Students commented on their personal vulnerability, mentioning exhaustion and disgust.

'Having to travel sometimes was tiring. We worked long hours.’ (Female, 19, hospital)

'Dirt everywhere, excrement on the ceiling, motions in bed, everything soiled, the smell and the filth.’ (Man, 18, nursing home)

Several times, students' professional identities were at stake. They reported conflicts in values, ethical aspects, a sense of dissonance and helplessness.

'The way nurses talked about patients during coffee breaks, sometimes almost regardless. I did not feel at ease with it.’ (Female, 19, hospital)

'Being unable to help people. Someone wanted to go home, but I was not able to help him.’ (Male, 21, nursing home)

Few students reported (near-)mistakes by themselves or others.

'When I accompanied a woman to the toilet, she fell to the ground. I could break her fall, but not capture her. I felt somewhat guilty.’ (Female, 18, nursing home)

Table 2. Learning activities in hospitals and nursing homes, Study 1.

<table>
<thead>
<tr>
<th></th>
<th>Hospital (N = 92)</th>
<th>Nursing home (N = 105)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning by direct experience</td>
<td>74 (80%)</td>
<td>89 (85%)</td>
</tr>
<tr>
<td>Learning by social interaction with professionals</td>
<td>44 (48%)</td>
<td>50 (48%)</td>
</tr>
<tr>
<td>Learning by social interaction with peers</td>
<td>7 (8%)</td>
<td>6 (6%)</td>
</tr>
<tr>
<td>Learning by supervision</td>
<td>22 (24%)</td>
<td>31 (30%)</td>
</tr>
<tr>
<td>Learning by reflection</td>
<td>10 (11%)</td>
<td>8 (8%)</td>
</tr>
</tbody>
</table>

(more answers allowed)

having something explained or receiving feedback was also considered instructive by many students. Supervisors helped students to reflect on their performance, but students reported engaging in reflection by themselves as well.

Impressive experiences in a first-year nursing attachment. Students reported many highly impressive experiences during the attachment (Table 3). These experiences were most frequently related to patient care (69–70%). Besides, 15–20% of the students described situations challenging their professional identities. When asked for their most stressful experience, again their own experiences with patients (32–39%) and threats to their professional identities (24–28%) were mentioned. However, in considering stressful experiences, students also mentioned their position as a trainee (18–20%) and their personal vulnerability (10–13%). Only a few students reported (near-)mistakes as their most impressive or stressful experience. Male students more often than females indicated their personal vulnerability as stressful (20% versus 6%; \( \chi^2(1, N = 203) = 8.75, p = 0.003 \)). Younger (34% versus 19%; \( \chi^2(1, N = 203) = 4.44, p = 0.035 \)) and less experienced students (36% versus 20%; \( \chi^2(1, N = 204) = 5.28, p = 0.022 \)) were most likely to mention stressful events related to their interaction with patients. We did not find any other differences related to age, former patient experiences or gender. Frequencies did not differ significantly between students who were allocated to nursing homes or hospitals.

Witnessing suffering and death in patients was very impressive for most students.

'On the same day the admission of a young mother with metastasised breast cancer and the death of a patient I had cared for’ (Female, 23, hospital)

'A mother who did not recognize her daughter because of dementia. This was awful for the daughter.’ (Male, 18, nursing home)

Recovery and happiness were found to be impressive as well.

'Seeing patients (…) walk again with a walking aid.’ (Female, 19, nursing home)

'Eating pancakes at the pancake restaurant. Patients who normally only lie down and say nothing fully revived. It was great to see these people enjoying and having fun.’ (Female, 20, nursing home)

Study 2

Of the 332 first-year students, 270 completed the questionnaire (response rate 81%). One student did not indicate the place of attachment and therefore was excluded from further analysis. Demographics were comparable with those in Study 1 (Table 1).

Impressive experiences. The essay descriptions provided by students closely resembled the descriptions in Study 1.
Students categorized their impressive experiences most frequently as related to patient care, comparable to Study 1 (Table 4). Students allocated to a hospital more often reported having witnessed a patient’s distress or recovery, whereas experiences in the nursing home were more frequently related to students’ own relationships with patients ($\chi^2(1, N=269) = 14.31, p < 0.001$). We found no differences for gender, age or former patient experiences.

**Emotions.** Students mentioned a very broad range of emotions related to the most impressive event encountered during the attachment. The most frequently expressed positive emotions were being moved, tenderness and respect; the most frequently reported negative emotions were powerlessness, sadness and fear. In general, positive emotions were mentioned more often than their negative counterparts (Table 5).

Of the respondents, 50% mentioned three or more positive emotions at the same time; only 29% of the students mentioned three or more negative emotions related to their most impressive experience. In 23% of the cases, students reported exclusively positive emotions; the reporting of exclusively negative emotions occurred in merely 4%. All other students expressed positive and negative emotions at the same time, evoked by one and the same impressive experience.

**Surprise** was more often mentioned as an emotion in hospitals than in nursing homes (39% versus 26%; $\chi^2(1, N=227) = 4.03, p = 0.045$). Students in nursing homes more frequently expressed gladness or joy (28% versus 17%; $\chi^2(1, N=233) = 4.19, p = 0.041$), content (68% versus 18%; $\chi^2(1, N=232) = 6.17, p = 0.013$) and love or closeness (34% versus 19%; $\chi^2(1, N=234) = 6.79, p = 0.009$). This last emotion was also more frequently mentioned by students who did not have any experience in patient care in comparison with their more experienced colleagues (37% versus 20%; $\chi^2(1, N=234) = 8.34, p = 0.004$). Additionally, we found differences for feeling proud or confident (22% in students without experience versus 9% in experienced students; $\chi^2(1, N=233) = 7.00, p = 0.008$), irritation (20% in older versus 6% in younger students; $\chi^2(1, N=238) = 11.37, p = 0.001$) and

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**Table 3.** Impressive and stressful experiences in hospitals and nursing homes, Study 1.

<table>
<thead>
<tr>
<th></th>
<th>Impressive experiences</th>
<th>Stressful experiences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hospital (N = 89)</td>
<td>Nursing home (N = 105)</td>
</tr>
<tr>
<td>Student–patient interaction</td>
<td>61 69%</td>
<td>73 70%</td>
</tr>
<tr>
<td>Professional–patient interaction</td>
<td>3 3%</td>
<td>2 2%</td>
</tr>
<tr>
<td>Learners’ issues</td>
<td>5 6%</td>
<td>2 2%</td>
</tr>
<tr>
<td>Personal vulnerability</td>
<td>0 0%</td>
<td>5 5%</td>
</tr>
<tr>
<td>Professional identity</td>
<td>18 20%</td>
<td>22 20%</td>
</tr>
<tr>
<td>(Near) mistakes</td>
<td>2 2%</td>
<td>3 4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Hospital (N = 78)</th>
<th>Nursing home (N = 96)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25 32%</td>
<td>37 39%</td>
</tr>
<tr>
<td></td>
<td>6 8%</td>
<td>1 1%</td>
</tr>
<tr>
<td></td>
<td>14 18%</td>
<td>19 20%</td>
</tr>
<tr>
<td></td>
<td>8 10%</td>
<td>12 13%</td>
</tr>
<tr>
<td></td>
<td>22 28%</td>
<td>23 24%</td>
</tr>
<tr>
<td></td>
<td>3 4%</td>
<td>4 4%</td>
</tr>
</tbody>
</table>

---

**Table 4.** Impressive or stressful experiences in hospitals and nursing homes, Study 2.

<table>
<thead>
<tr>
<th></th>
<th>Hospital (N = 109)</th>
<th>Nursing home (N = 128)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student–patient interaction/witnessing patients</td>
<td>60 55%</td>
<td>53 41%</td>
</tr>
<tr>
<td>Student–patient interaction/relationships with patients</td>
<td>25 23%</td>
<td>59 46%</td>
</tr>
<tr>
<td>Professional–patient interaction</td>
<td>4 4%</td>
<td>9 7%</td>
</tr>
<tr>
<td>Learners’ issues</td>
<td>8 7%</td>
<td>3 2%</td>
</tr>
<tr>
<td>Personal vulnerability</td>
<td>1 1%</td>
<td>1 1%</td>
</tr>
<tr>
<td>Professional identity</td>
<td>6 6%</td>
<td>0 0%</td>
</tr>
<tr>
<td>(Near) mistakes by self or others</td>
<td>5 5%</td>
<td>2 2%</td>
</tr>
</tbody>
</table>

---

**Table 5.** Emotions related to impressive experiences in hospitals and nursing homes, Study 2. Students had to indicate five emotions, evoked by their most impressive experience.

<table>
<thead>
<tr>
<th>Emotion terms</th>
<th>Frequencies (N = 269)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive emotions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being moved</td>
<td>103</td>
<td>45</td>
</tr>
<tr>
<td>Tenderness</td>
<td>95</td>
<td>37</td>
</tr>
<tr>
<td>Respect</td>
<td>74</td>
<td>28</td>
</tr>
<tr>
<td>Awe/wonder/surprise</td>
<td>72</td>
<td>27</td>
</tr>
<tr>
<td>Love/closeness</td>
<td>63</td>
<td>24</td>
</tr>
<tr>
<td>Content/peaceful</td>
<td>59</td>
<td>22</td>
</tr>
<tr>
<td>Grateful/thankful</td>
<td>54</td>
<td>20</td>
</tr>
<tr>
<td>Glad/happy/joyful</td>
<td>54</td>
<td>20</td>
</tr>
<tr>
<td>Interested/curious</td>
<td>53</td>
<td>20</td>
</tr>
<tr>
<td>Proud/confident</td>
<td>33</td>
<td>12</td>
</tr>
<tr>
<td>Negative emotions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Powerless/helpless</td>
<td>108</td>
<td>41</td>
</tr>
<tr>
<td>Sad/unhappy</td>
<td>65</td>
<td>25</td>
</tr>
<tr>
<td>Fearful/afraid</td>
<td>46</td>
<td>18</td>
</tr>
<tr>
<td>Nervous</td>
<td>37</td>
<td>14</td>
</tr>
<tr>
<td>Disgust/distaste</td>
<td>34</td>
<td>13</td>
</tr>
<tr>
<td>Embarrassed/shy</td>
<td>34</td>
<td>13</td>
</tr>
<tr>
<td>Angry</td>
<td>26</td>
<td>10</td>
</tr>
<tr>
<td>Irritated</td>
<td>23</td>
<td>9</td>
</tr>
<tr>
<td>Guilty</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>Contemptuous/disdainful</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Ashamed/humiliated</td>
<td>7</td>
<td>3</td>
</tr>
</tbody>
</table>
Impact and intensity. The impact of the most impressive event was rated as 8.0 (SD 1.4; range 2–10). This did not differ between the hospital and the nursing home, nor for males or females, older or younger, or more or less experienced students. The intensity of the attachment as a whole was rated as 6.7 (SD 2.0; range: 1–10). Female students considered the students. The intensity of the attachment as a whole was rated for younger patient population and educational level of nursing staff, after

Despite different expectations and objective differences in environments. In the hospital though, most impressive experiences, most often related to the interaction with and caring for patients. Students mention the informal social interaction with professionals in the workplace and learning by supervision as important learning activities as well, but to a lesser extent. Learning activities as reported by students do not differ between the hospital and the nursing home as particular learning environments.

The most important learning activity mentioned by medical students is learning by direct experience, e.g. engaging in the interaction with and caring for patients. Students mention the informal social interaction with professionals in the workplace and learning by supervision as important learning activities as well, but to a lesser extent. Learning activities as reported by students do not differ between the hospital and the nursing home.

In both studies, students report many impressive experiences, most often related to the interaction with patients. These experiences are rated as highly impressive, with a mean of 8.0 on a 10-point scale, which is the same for both learning environments. In the hospital though, most impressive experiences are related to the witnessing of patient recovery or distress, whereas in the nursing home, students place greater emphasis on their own relationships with patients. The intensity of the attachment as a whole is quite similar for nursing homes and hospitals, with female and young students rating the intensity higher than male and more mature students.

Students express a broad variety of emotions related to their experiences in medical practice. Most of these emotions are positive, which we think is a novel and very important finding. In addition, this study reveals that, for the same experience, students refer to positive and negative emotions at the same time.

Discussion

Principal findings

Before starting their first clinical experiences, students are looking forward to meeting real patients, caring for patients, being part of a team, becoming familiar with the organization of patient care and practicing professional behaviour. They fear the confrontation with suffering and death, and dislike the idea of strange smells, dirty things, working hard and being given too much responsibility. Students have a broad variety of expectations regarding the hospital and the nursing home as particular learning environments.

The reinforcement of positive feelings might be helpful in coping with negative or stressful experiences in the workplace. Maybe even more important, awareness of positive
emotions might help students developing relationship-building skills (Dobie 2007) and a positive state of mind. Furthermore, personal well-being was found to have a positive influence on empathy in medical students (Thomas et al. 2007) and residents (Shanafelt et al. 2005).

Therefore, it seems of great importance for medical students to learn to cope with negative feelings, but even more important, to recognize and reinforce positive emotions. Transitions, and maybe working in medical practice in general, always involve feelings of uncertainty, incompetence, powerlessness and fear, as was recently also demonstrated for residents becoming attending physicians (Westerman et al. 2010). We think, in elaborating on the earlier described ‘experience-based learning model’ (Dornan et al. 2007), learning to deal with pleasant and unpleasant emotions is one of the main learning tasks in medical professional development.

Study strengths and limitations

Among the strengths of our study are the large student population and high response rate.

Respondents were confined to one medical school, but were allocated to hospitals and nursing homes in a large educational area. The first researcher, as a university teacher, is involved in the medical curriculum under study, which might be seen as a threat to reliability. However, we think the use of questionnaires instead of interviews will have encouraged students to answer honestly. The involvement of a second researcher in the analysis prevented the first researcher to draw conclusions too easily. Medical students’ descriptions of their emotional experiences in an early nursing attachment in the first study are in line with former literature reports (Kasman et al. 2003; Bennett & Lowe 2008; Haglund et al. 2009), which increases the credibility of our results. In the second study, this categorization appeared to be applicable as well, which further increases its rigor. However, more in-depth qualitative methods are required to get better insight in how distinct experiences trigger distinct emotions and may influence students’ behaviour. With respect to the quantitative results described in this paper, we realize we should be apprehensive of the occurrence of significance by chance, due to multiple comparisons. However, we deliberately made the choice to identify as many potentially interesting associations or differences as possible, because of the highly exploratory nature of our study.

Conclusions and implications

In conclusion, during an early nursing attachment in a nursing home or a hospital, very young medical students have many highly impressive experiences that evoke a broad variety of positive and negative emotions. Students need to learn how to deal with or feel strengthened by the emotions evoked during their (first) clinical experiences, in order to develop a positive state of mind, relationship-building skills and a firm sense of professional identity. As medical educators, we should offer students a positive learning climate and adequate pedagogical support during these emotional learning processes students go through.

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