Exploring patient safety culture in primary care

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Abstract

Objective. To explore perceptions of safety culture in nine different types of primary care professions and to study possible differences.


Setting. Three hundred and thirteen practices from nine types of primary care profession groups in the Netherlands.

Participants. Professional staff from primary care practices. Nine professions participated: dental care, dietetics, exercise therapy, physiotherapy, occupational therapy, midwifery, anticoagulation clinics, skin therapy and speech therapy.

Main Outcome Measure(s). Perceptions of seven patient safety culture dimensions were measured: ‘open communication and learning from error’, ‘handover and teamwork’, ‘adequate procedures and working conditions’, ‘patient safety management’, ‘support and fellowship’, ‘intention to report events’ and ‘organizational learning’. Dimension means per profession were presented, and multilevel analyses were used to assess differences between professions. Also the so-called patient safety grade was self-reported.

Results. Five hundred and nineteen practices responded (response rate: 24%) of which 313 (625 individual questionnaires) were included for analysis. Overall, patient safety culture was perceived as being positive. Occupational therapy and anticoagulation therapy deviated most from other professions in a negative way, whereas physiotherapy deviated the most in a positive way. In addition, most professions graded their patient safety as positive (mean = 4.03 on a five-point scale).

Conclusions. This study showed that patient safety culture in Dutch primary care professions on average is perceived positively. Also, it revealed variety between professions, indicating that a customized approach per profession group might contribute to successful implementation of safety strategies.

Keywords: primary care, patient safety, safety culture, survey

Introduction

The establishing of an open, constructive patient safety culture is believed to be important for improving patient safety. Culture refers to the shared values, attitudes, norms, beliefs, practices, policies and behaviours about safety issues in daily practice [1]. Several safety culture surveys were developed to assess safety culture in healthcare [1–4]. Until recently, patient safety research mostly addressed hospitalized care whereas a major part of health care is delivered in primary care settings. Although the risk for patient harm is lower in primary care, due to the high numbers of patient contacts, absolute numbers seem significant [5]. Few studies have assessed patient safety culture in a primary care setting [6–11]. Some studies adapted and validated existing questionnaires developed for hospitals, others developed own questionnaires. Also, the Manchester Patient Safety Framework (MaPSaF), a discussion tool, was customized [12, 13].

In the Netherlands, primary care is easily accessible, and for medical care, it serves as a gatekeeper to hospital care. Most practices consist of staff members stemming from several different disciplines, but practice sizes are relatively small. When primary care gained more attention in patient safety research, the Dutch hospital version of the HSOPS [14, 15] was first adapted for general practice [16]. Subsequently, other primary care professional associations expressed their interest in this
assessment tool and patient safety culture as a topic. The ambition of one questionnaire for all professions in primary care was voiced because primary care professions increasingly collaborate and work together in one health centre. A generic questionnaire would be in line with these developments and enhance exchange of lessons learned.

Following this need, the questionnaire for general practice was modified to a generic primary care version, the SCOPE-PC [17]. SCOPE is a Dutch acronym for systematic culture inquiry on patient safety in primary care. The aim of the current study was 2-fold: first, to explore primary care professionals’ perceptions of patient safety culture and, second, to examine whether there are differences between the primary care professions and in which area.

**Methods**

**Setting, participants and data collection**

The SCOPE-PC was administered to practices in nine primary care profession groups from March until May 2011. Professions that participated were as follows: dental care (which consists of both dentists and dental hygienists), dietetics, exercise therapy, physiotherapy, occupational therapy, midwifery, anticoagulation clinics, skin therapy and speech therapy. Anticoagulation clinics monitor coagulation markers in patients’ blood and ensure correct anticoagulant medication dosage. Skin therapy is professional care for the treatment of diseased or damaged skin.

In primary care, teams are generally multidisciplinary. In this study, we aimed to compare professions as whole teams. Therefore, within each profession, we also included supporting staff, for instance healthcare assistants and nurses. We did not study individual professional disciplines.

Per profession a random sample of 200 professionals was drawn from their national professional association member database. The research team invited professionals to participate and also to invite their colleagues at their practice location to complete an individual questionnaire. Only for physiotherapy, professionals were approached by the national physiotherapy association itself, in return asking them to contact the research team for an invitation and login keys. Anticipating on a lower response by this invitation procedure, a sample of 400 physiotherapists was drawn. Practices could participate if they consisted of at least two staff members, and the questionnaire was to be completed by staff that worked at the practice location at least half a year. We chose to keep the minimum number of employees low so that also small practices could take part in our study. Primary care consists of many small practices, and the sample would not be representative if these were excluded. The reasoning to set the limit at two was because also two people in one practice create a way of working and collaborating; in essence, a culture will therefore be present even in such a small quantity. For collection and storage of data, an online system was used [18].

**Measurements**

The SCOPE-PC questionnaire has been validated and showed sound properties with Cronbach alpha’s ranging from 0.70 to 0.90 [17]. It consists of 41 items divided over 7 dimensions: ‘open communication and learning from error’ (i), ‘handover and teamwork’ (ii), ‘adequate procedures and working conditions’ (iii), ‘patient safety management’ (iv), ‘support and fellowship’ (v), ‘intention to report events’ (vi) and ‘organizational learning’ (vii). Items were rated on a five-point Likert scale, ranging from ‘strongly disagree’ to ‘strongly agree’ or from ‘never’ to ‘always’. In addition, in dimensions ii, iii and iv, some questions had the answer option ‘not applicable’. Respondents were also asked to rate the level of patient safety in their own practice between ‘poor’ and ‘excellent’ (Patient Safety Grade, PSG).

**Data analysis**

Questionnaires from single-handed practices, from respondents working less than half a year at the practice or responses with >50% missing values in patient safety items were excluded from further analyses. Also, per dimension, respondents scoring ‘not applicable’ on >50% of the items were excluded.

First, the average of the scaled items was computed per profession. Second, for each dimension, a grand mean was calculated over all professions. While calculating the mean score, one missing item per dimension was allowed. When respondents indicated that there was no formal management layer in their practice, items concerning patient safety management were disregarded in the missing count (concerning items in dimensions i, iii and iv).

To assess perceptions of patient safety culture, we examined the mean scale scores of the seven dimensions per profession group and the PSG. A score of four or higher represents a positive attitude. Next, to examine whether professions differed from each other, we compared the mean of each profession to the grand mean of the dimension using multilevel analyses in order to adjust for clustering of respondents in practices. A linear mixed model with a random intercept was used for the analyses. To interpret differences and their relevance, we adhered to the size of a difference of a half standard deviation (SD) [19]. All statistical analyses were conducted using SPSS 20.0.

**Results**

In total, 906 individual questionnaires were returned from 519 practices, the response rate was 23.6%. From these, 281 questionnaires were excluded from analysis: 200 from single-handed practices (mainly exercise therapy, speech therapy and dietetics), 11 from respondents with less than half a year experience and 70 respondents with >50% missing values in the patient safety culture items. This resulted in a total of 625 questionnaires (313 practices) eligible for analysis (see Fig. 1).
The distribution varied over the seven dimensions due to the fact that some respondents had >50% of the dimension items answered with not applicable. The low number of subjects in dimension iv resulted from the majority of respondents not having formal management and therefore not able to answer the items in this dimension.

Respondents characteristics

Table 1 shows characteristics of the participating practices sorted by profession. The largest groups to respond were physiotherapists (n = 150), midwives (n = 125) and anticoagulation clinics (n = 99). The smallest numbers of respondents were for dietetics (n = 19) and skin therapy (n = 26). The high percentage of female respondents stands out (82.6%); only in physiotherapy practices, the percentage of male and female employees were equal. With regard to practice size, skin therapy, exercise therapy and speech therapy practices were small, whereas anticoagulation clinics were large. Working experience was shortest in skin therapy, anticoagulation clinics and midwifery practices and longest in exercise therapy.

Patient safety culture

The mean dimension scores, SD and PSG, are presented in Table 2. At the bottom of Table 2, the grand mean of each dimension is presented. In general, primary care professions perceived dimensions positively. There were two dimensions that scored below four: (vi) ‘intention to report events’ scored the lowest (3.73) and (iv) ‘patient safety management’ (3.79). The highest dimension scores were for (i) ‘open communication and learning from error’ (4.25) and (v) ‘support and fellowship’ (4.26). Dimension (vi) ‘intention to report events’ showed the largest variation within the profession groups itself. In addition, the PSG was rated positively (four or higher) with a mean of 4.03 (range 3.62–4.16). Two professions, occupational therapy (3.62) and anticoagulation therapy (3.83), scored <4 on the PSG.

Differences between professions

When comparing each profession to the grand mean, in general, deviations were small. Differences larger than half an SD are underlined in Table 3. Two professions showed only negative deviations from the overall mean: occupational therapy and dietetics. These professions also had the largest deviations overall. In addition, anticoagulation therapy also perceived safety culture more negatively on most dimensions when compared with the other professions. In contrast, physiotherapy was the only profession that showed solely positive deviations on all dimensions. However, none of these differences were larger than half a SD. Dental care deviated slightly positive on all dimensions but (i) ‘open communication’, where they deviated negatively. With regard to the dimensions, largest deviations were found for (vi) ‘intention to report events’, which showed two large negative deviations, 0.84 (occupational therapy) and 0.63 (dietetics), respectively.
In exploring perceptions of patient safety culture in nine Dutch primary care professions, we found that all professions perceived safety culture fairly positive and graded patient safety in their practice as very well. Differences in perception of patient safety between the professional groups were small.

Comparison with literature
Real comparison with other studies on perceived safety culture in primary care was difficult because of heterogeneity both in the applied questionnaires and the reporting of outcomes. In addition, almost all were focused on family practice, only one study reported separately on the results of midwifery [9]. Compared with these results, it seemed that the midwives in our study perceived safety culture more positively. In a previous study conducted in family practice in the Netherlands, using a slightly different version of the SCOPE-PC questionnaire, means of the eight dimensions ranged between 3.8 and 4.1 [20]. This corresponds with our results and indicates that primary care professionals, although not exposed as much as general practitioners to the concept of patient safety yet, still experience patient safety quite similarly. Other studies also found generally positive results in family practice [7, 8]. In our study, the intention to report was perceived the least positive of all dimensions. This is in line with other studies that found similarly low scores on the frequency of events reported in primary care professionals [19].

Strengths and limitations
The strength of this study is that we have gained insight in patient safety culture in several primary care professions that have not been examined before. Also, we used one generic questionnaire to assess perceptions of patient safety culture in all professions. Hereby, we could not only describe the current state of affairs but also make comparisons. A limitation was the low response of 24%, and in turn asked them to involve their colleagues. The degree of interest and position of the contact person might have determined the participation in the study. Third, because we initially contacted one professional and in turn asked them to involve their colleagues, the degree of interest and position of the contact person might have determined the participation variability. In line with this, some questionnaires may have been completed by participants who were less inclined to participate in our study. Fourth, because we initially contacted one professional and in turn asked them to involve their colleagues, the degree of interest and position of the contact person might have determined the participation variability. In line with this, some questionnaires may have been completed by participants who were less inclined to participate in our study. Fifth, because we initially contacted one professional and in turn asked them to involve their colleagues, the degree of interest and position of the contact person might have determined the participation variability. In line with this, some questionnaires may have been completed by participants who were less inclined to participate in our study. Sixth, because we initially contacted one professional and in turn asked them to involve their colleagues, the degree of interest and position of the contact person might have determined the participation variability. In line with this, some questionnaires may have been completed by participants who were less inclined to participate in our study.

Table 1 Characteristics of respondents and practices

<table>
<thead>
<tr>
<th>Profession</th>
<th>Respondents (n)</th>
<th>Practices (n)</th>
<th>Professionals per practice</th>
<th>Age of respondents (median (range))</th>
<th>Gender (% women)</th>
<th>Working experience in years (median (range))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dietetics</td>
<td>19</td>
<td>13</td>
<td>2–4</td>
<td>43 (24–56)</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Physiotherapy</td>
<td>150</td>
<td>52</td>
<td>5–9</td>
<td>37.5 (22–64)</td>
<td>50.3</td>
<td>50.3</td>
</tr>
<tr>
<td>Dental care</td>
<td>61</td>
<td>46</td>
<td>10–14</td>
<td>42 (24–63)</td>
<td>75.9</td>
<td>11.5 (0–40)</td>
</tr>
<tr>
<td>Skin therapy</td>
<td>26</td>
<td>22</td>
<td>≥15</td>
<td>12 (29–63)</td>
<td>100</td>
<td>13 (0.5–25)</td>
</tr>
<tr>
<td>Exercise therapy</td>
<td>36</td>
<td>27</td>
<td></td>
<td>44 (25–58)</td>
<td>97.1</td>
<td>20 (3–33)</td>
</tr>
<tr>
<td>Occupational therapy</td>
<td>39</td>
<td>28</td>
<td></td>
<td>43 (27–56)</td>
<td>93.8</td>
<td>16 (1–35)</td>
</tr>
<tr>
<td>Anticoagulation therapy</td>
<td>99</td>
<td>14</td>
<td></td>
<td>50 (24–63)</td>
<td>87.8</td>
<td>7 (0.5–36)</td>
</tr>
<tr>
<td>Midwifery</td>
<td>125</td>
<td>70</td>
<td></td>
<td>35 (22–61)</td>
<td>96.8</td>
<td>8 (0.5–40)</td>
</tr>
<tr>
<td>Speech therapy</td>
<td>70</td>
<td>41</td>
<td></td>
<td>37 (22–61)</td>
<td>100</td>
<td>13 (1–38)</td>
</tr>
</tbody>
</table>

Table 1 Characteristics of respondents and practices

*The distribution of age and gender is representative for Dutch primary care professionals.

Discussion
In exploring perceptions of patient safety culture in primary care, we found that all professions perceived safety culture fairly positive and graded patient safety in their practice as very well. Differences in perception of patient safety in their practice were small.
Table 2  Mean scores per dimension and PSG, presented by profession

<table>
<thead>
<tr>
<th>Professional Field</th>
<th>(i) Open communication and learning from error (mean, SD)</th>
<th>(ii) Handover and teamwork (mean, SD)</th>
<th>(iii) Adequate procedures and working conditions (mean, SD)</th>
<th>(iv) Patient safety management (mean, SD)</th>
<th>(v) Support and learning from error (mean, SD)</th>
<th>(vi) Intention to report events (mean, SD)</th>
<th>(vii) Organizational learning grade (mean, SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dietetics</td>
<td>4.00 (0.67)</td>
<td>3.78 (0.28)</td>
<td>4.06 (0.39)</td>
<td>3.86 (0.28)</td>
<td>4.23 (0.37)</td>
<td>3.24 (1.22)</td>
<td>3.98 (0.45)</td>
</tr>
<tr>
<td>Physiotherapy</td>
<td>4.20 (0.56)</td>
<td>4.11 (0.49)</td>
<td>4.22 (0.49)</td>
<td>3.93 (0.59)</td>
<td>4.29 (0.49)</td>
<td>3.72 (0.81)</td>
<td>4.07 (0.52)</td>
</tr>
<tr>
<td>Dental care</td>
<td>4.13 (0.66)</td>
<td>4.03 (0.56)</td>
<td>4.20 (0.42)</td>
<td>4.05 (0.61)</td>
<td>4.34 (0.42)</td>
<td>3.92 (1.03)</td>
<td>4.03 (0.50)</td>
</tr>
<tr>
<td>Skin therapy</td>
<td>4.28 (0.58)</td>
<td>3.86 (0.23)</td>
<td>4.20 (0.26)</td>
<td>3.95 (0.62)</td>
<td>4.50 (0.35)</td>
<td>3.67 (0.86)</td>
<td>3.92 (0.57)</td>
</tr>
<tr>
<td>Exercise therapy</td>
<td>4.38 (0.33)</td>
<td>3.98 (0.31)</td>
<td>4.40 (0.57)</td>
<td>4.27 (0.31)</td>
<td>4.13 (0.23)</td>
<td>3.55 (0.31)</td>
<td>3.67 (0.33)</td>
</tr>
<tr>
<td>Occupational therapy</td>
<td>3.57 (0.51)</td>
<td>3.74 (0.33)</td>
<td>3.90 (0.37)</td>
<td>3.55 (0.71)</td>
<td>3.96 (0.40)</td>
<td>2.84 (1.02)</td>
<td>3.55 (0.35)</td>
</tr>
<tr>
<td>Anticoagulation therapy</td>
<td>3.90 (0.54)</td>
<td>3.38 (0.72)</td>
<td>3.68 (0.63)</td>
<td>3.69 (0.54)</td>
<td>3.86 (0.56)</td>
<td>3.76 (0.84)</td>
<td>3.99 (0.43)</td>
</tr>
<tr>
<td>Midwifery</td>
<td>4.44 (0.43)</td>
<td>4.09 (0.55)</td>
<td>4.01 (0.65)</td>
<td>4.02 (0.77)</td>
<td>4.07 (0.93)</td>
<td>4.02 (0.93)</td>
<td>3.82 (0.97)</td>
</tr>
<tr>
<td>Speech therapy</td>
<td>4.35 (0.64)</td>
<td>4.08 (0.23)</td>
<td>4.24 (0.24)</td>
<td>4.00 (0.23)</td>
<td>4.29 (0.27)</td>
<td>3.79 (0.75)</td>
<td>3.88 (0.38)</td>
</tr>
<tr>
<td>Grand mean (SD)</td>
<td>4.25 (0.59)</td>
<td>3.98 (0.62)</td>
<td>4.14 (0.54)</td>
<td>3.79 (0.65)</td>
<td>4.26 (0.56)</td>
<td>3.73 (1.01)</td>
<td>3.98 (0.58)</td>
</tr>
</tbody>
</table>

Interpretation of the results

Notable was the dimension 'Intention to report', as it perceived both the least positive but also varied the most within the profession groups itself. This finding reflects the early stage of development of incident reporting as part of safety management in primary care. Nationally and within profession groups, incident reporting procedures have been developed. Whilst these tools are easily available, actual implementation is still being developed. Hence, these tools have contributed to a larger response rate and more comprehensive findings.

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To account for the populations of different professions with different expectations, we used a grand mean per dimension as comparing nine professions with each other led to uninterpretable results because of the amount of missing values which might limit the strength of the results. In addition, we cannot exclude that the responders differences in outcome by imputing the mean dimension scores when <50% of dimension items were missing. Original results from the literature, it is known that leadership is an important part of patient safety management in primary care. Nationally and within profession groups, incident reporting procedures have been developed. Hence, these tools have contributed to a larger response rate and more comprehensive findings.

From the literature, it is known that leadership is an important part of patient safety management in primary care. Nationally and within profession groups, incident reporting procedures have been developed. Hence, these tools have contributed to a larger response rate and more comprehensive findings.
Three professions showed negative deviations on this dimension, i.e. occupational therapists, dieticians and dentists. While the first two professions perceived their culture more negatively overall, we considered the result of dental care on this dimension as more striking. Whereas overall dental staff perceived most patient safety culture aspects as positive as the other professions, in open communication, they seem to deviate negatively from their primary care peers. This may indicate that open communication is a sensitive subject in dental care that requires specific attention when targeting patient safety issues in this profession.

Implications and conclusions
This study showed that primary care professionals in the Netherlands are rather positive in their opinion of their patient safety culture. In addition, our study indicated differences between professions that may demand a tailored approach of patient safety management per profession. However, given the low response rate, we cannot draw firm conclusions nor specifically inform on directions of improvement strategies. Primary care is a key factor in the whole healthcare system. Not only a large proportion of health care is provided in this setting, it also contributes to healthcare outcomes [24, 25]. Furthermore, primary care is a key factor in the whole healthcare system. Not only a large proportion of health care is provided in this setting, it also contributes to healthcare outcomes [24, 25].

Acknowledgements
We thank the primary care professionals who contributed to the study by completing the survey, and the Dutch Practice Accreditation (NHG Praktijkaccreditering), for their commitment to the data collection. Also, we thank Dr N.P. A. Zuithoff for his expertise and contribution to the statistical analyses.

Funding
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References

Table 3 Deviations from the grand mean presented by profession

<table>
<thead>
<tr>
<th>Profession</th>
<th>Open communication and learning from error</th>
<th>Handover and teamwork</th>
<th>Adequate procedures and working conditions</th>
<th>Patient safety management</th>
<th>Support and fellowship</th>
<th>Intention to report events</th>
<th>Organizational learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dietetics (n = 19)</td>
<td>-0.35*</td>
<td>-0.21</td>
<td>-0.05</td>
<td>-0.19</td>
<td>-0.03</td>
<td>-0.63*</td>
<td>-0.34*</td>
</tr>
<tr>
<td>Physiotherapy (n = 150)</td>
<td>0.08</td>
<td>0.22**</td>
<td>0.16*</td>
<td>0.13</td>
<td>0.12*</td>
<td>0.08</td>
<td>0.11</td>
</tr>
<tr>
<td>Dental care (n = 61)</td>
<td>-0.26**</td>
<td>0.04</td>
<td>0.08</td>
<td>0.05</td>
<td>-0.03</td>
<td>0.19</td>
<td>0.11</td>
</tr>
<tr>
<td>Skin therapy (n = 26)</td>
<td>0.17</td>
<td>-0.05</td>
<td>0.25*</td>
<td>0.17</td>
<td>0.31**</td>
<td>-0.02</td>
<td>0.10</td>
</tr>
<tr>
<td>Exercise therapy (n = 36)</td>
<td>0.17</td>
<td>0.10</td>
<td>0.28*</td>
<td>0.52</td>
<td>0.30**</td>
<td>0.13</td>
<td>-0.01</td>
</tr>
<tr>
<td>Occupational therapy (n = 39)</td>
<td>-0.43**</td>
<td>-0.18</td>
<td>-0.16</td>
<td>-0.39*</td>
<td>-0.13</td>
<td>-0.84**</td>
<td>-0.37**</td>
</tr>
<tr>
<td>Anticoagulation therapy (n = 99)</td>
<td>-0.25*</td>
<td>-0.57**</td>
<td>-0.35**</td>
<td>-0.23</td>
<td>-0.27**</td>
<td>0.10</td>
<td>0.08</td>
</tr>
<tr>
<td>Midwifery (n = 125)</td>
<td>0.22**</td>
<td>0.13</td>
<td>-0.03</td>
<td>0.14</td>
<td>0.03</td>
<td>0.06</td>
<td>0.00</td>
</tr>
<tr>
<td>Speech therapy (n = 70)</td>
<td>-0.05</td>
<td>0.18</td>
<td>0.17*</td>
<td>0.07</td>
<td>0.04</td>
<td>-0.22</td>
<td>-0.20*</td>
</tr>
</tbody>
</table>

Multilevel analyses of professions in relation to the grand mean of the SCOPE-PC dimensions, adjusted for clustering in practices. Differences larger than half an SD are underlined. *P < 0.05 and **P < 0.01.


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