Communication and empathy skills: Essential requisites for patient-centered radiology care

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\section*{ABSTRACT}

\textbf{Purpose:} To investigate how patients value radiologists, using data from the Dutch healthcare assessment website.

\textbf{Method:} The Dutch healthcare assessment website was searched for patient reviews about radiologists in The Netherlands. The scores (scale of 1–10) assigned to the most recent review of each radiologist were extracted. All written reviews were assessed using standardized coding taxonomy, in the domains "clinical competencies" (including quality and safety of clinical care) and "relationships" (including communication with patients and humaneness/caring). For each category, it was assessed whether the review was positive or negative with regard to the performance of the radiologist.

\textbf{Results:} 217 of 941 radiologists (23\%) had been reviewed between 2017 and 2021. The total number of institutions to which these radiologists were affiliated was 75 (6 academic and 69 non-academic institutions). Median score assigned to each review was 9.6 (interquartile range 1.3, range 1–10). 74 of 217 radiologists (34\%) were given a maximum review score of 10. 29 of 217 radiologists (13\%) were given a review score of 5 or lower. The far majority of reviews concerned the categories communication (36\% of all positive patient reviews and 30\% of all negative patient reviews) and humaneness/caring (45\% of all positive patient reviews and 49\% of all negative patient reviews).

\textbf{Conclusion:} Radiologists are generally highly valued by patients, although there is room for improvement to decrease the number of negative patient experiences. Communication and empathy appear to be the most important skills on which radiologists are judged from a patient’s perspective.

\section{1. Introduction}

Radiology is a rapidly changing medical specialty and radiologists should be proactive in this process to thrive [1]. Radiologists have a responsibility to many stakeholders, including governmental bodies, health insurance companies, colleagues from other medical specialties, and, first and foremost, patients, to deliver high-quality care. The European Society of Radiology has launched the Patient Advisory Group in 2013, acknowledging patients as the most important stakeholder in radiology [2]. In this regard, it is important to know how patients value radiologists and how radiologists can maintain and improve patient satisfaction. To our knowledge, however, there is a paucity of studies related to this topic. Most previous studies [3–6] have been focussing on patients’ experiences in radiology departments rather than on the performance of individual radiologists. Therefore, more research is needed to understand how patients value their radiologist.

The Netherlands, with a current population of approximately 17.5 million [7], is thought to have one of the best healthcare systems in the world [8]. The Dutch healthcare assessment website [9] was launched in 2009. This website is managed by the Dutch Patient Federation, an independent, government-supported, non-profit organization [9]. Individual medical doctors, including radiologists, can be assessed by patients on this publicly accessible website. By providing information about individual healthcare providers, the website aims to enable a patient to chose a health care provider that meets one’s needs [9]. Furthermore, healthcare providers can use the patient evaluations on this website as a quality tool that gives them insight into what patients think is going well and what can be improved [9].

Therefore, the objective of our study was to investigate how patients value radiologists, using data from the Dutch healthcare assessment

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2. Methods

The online database of the Dutch healthcare assessment website "ZorgkaartNederland" [9] is publicly available and all patient reviews are anonymous. Therefore, approval of the ethics committee was not required for this study.

2.1. Patient reviews

All patient reviews at the Dutch healthcare assessment website [9] include an overall rating of the patient’s satisfaction with his or her radiologist (scale of 1–10, with 1 being the worst score and 10 being the best) and a written explanation in free text format. All reviews are checked by independent editorial staff of the Dutch healthcare assessment website before they were posted online. In principle, only reviews about recent experience and reviews that complied with the code of conduct (i.e., reviews with swear words or unnecessary hurtful comments are not allowed) are authorized for online publication. The e-mail address and IP address of the patient are checked to prevent improper use. Approved reviews are posted on the Dutch healthcare assessment website within a maximum of five working days.

2.2. Data extraction and analysis

The Dutch healthcare assessment website was searched for patient reviews about radiologists in The Netherlands, published between January 17, 2017 and January 17, 2021. If a radiologist had been reviewed multiple times, we only included the most recent review. This was done to obtain the most recent information and to avoid cluster bias. The affiliations (i.e. academic vs. non-academic institution) of the radiologist who had been reviewed by patients, and the overall satisfaction scores assigned by the patients (ranging from 1 to 10) were extracted from the Dutch healthcare assessment website. Differences in scores between radiologists affiliated to academic institutions and radiologists affiliated to non-academic institutions, and differences in scores between diagnostic radiologists and interventional radiologists, were assessed using the Mann-Whitney U test. All written reviews, which were in non-standardized format, were assessed using standardized coding taxonomy as adopted from Reader et al. [10] and adjusted to our study purpose. This standardized coding taxonomy [10] is a systematic, scientifically-based categorization for analysing patient complaints. This coding taxonomy uses a total of three domains: "clinical competencies", "management", and "relationships", which are further subdivided into categories and subcategories [10].

For the purpose of this study, the following two domains related to the performance of the individual radiologist were assessed:

1) ‘Clinical competencies’, which includes the categories quality and safety of clinical care [10] (Table 1).
2) ‘Relationships’, which includes the categories communication, humanness/caring, and patient rights [10] (Table 1).

For each of these domains, it was assessed whether the content of the review was positive (i.e. the patient was satisfied) or negative (i.e. the patient was dissatisfied) with regard to the performance of the radiologist. If no or unclear information was provided in the review with respect to any of the categories, that category was not included in the analysis. Assessments were independently performed by two radiologists (initials blinded for review). Any discrepancies were solved by consensus.

Data were summarized using descriptive statistics. Microsoft Excel was used to compose graphs. Statistical analysis was performed using IBM SPSS version 26.0 (IBM Corporation).

3. Results

217 of 941 radiologists (23 %) who were registered at the Dutch healthcare assessment website had been reviewed between 2017 and 2021. The total number of institutions to which these 217 radiologists were affiliated was 75 (6 academic and 69 non-academic institutions, from all parts of the country), with a median of 3 radiologists per institution range 1–9), and they involved 190 diagnostic radiologists and 27 interventional radiologists. The distribution of scores per radiologist is displayed in Fig. 1. Median score assigned to each patient review was 9.6 (interquartile range 1.3, range 1–10). 74 of 217 radiologists (34 %) were given a maximum review score of 10, 29 of 217 radiologists (13 %) were given a review score of 5 or lower. Scores between radiologists affiliated to academic institutions and radiologists affiliated to non-academic institutions were not significantly different (median score 9.4, interquartile range [IQR] 1.4 vs. median score 9.8, IQR 1.3; \( P = 0.144 \)). Scores between diagnostic radiologists and interventional radiologists were not significantly different either (median score 10, IQR 1.1 vs. median score 9.5, IQR 1.5; \( P = 0.073 \)). The number and percentage of positive and negative reviews in the domains "clinical competencies" and "relationships" are displayed in Figs. 2 and 3. The far majority of positive reviews concerned the categories communication (36 %) and humaneness/caring (45 %). The far majority of negative reviews also concerned the categories communication (30 %) and humaneness/caring (49 %). The proportion of patient reviews (either positive or negative) in the domain relationships (81 %) was higher than that in the domain clinical competencies (19 %). Examples of written reviews by patients are displayed in Tables 2 and 3.

Table 1: Patient assessment taxonomy as adopted from Reader [16].

| Domains         | Categories                  | Subcategories                                      | Description                                                                 |
|-----------------|-----------------------------|---------------------------------------------------|-----------------------------------------------------------------------------|
| Clinical competencies | Quality                     | Examination                                       | Quality of patient examination by clinical staff                           |
|                  |                             | Patient journey                                   | Quality of coordination of treatment in different services by clinical staff |
|                  |                             | Treatment                                         | Quality of clinical treatment or procedure                                  |
|                  |                             | Diagnosis                                         | Adequacy of diagnosing                                                      |
|                  | Safety                      | Medication                                        | Adequacy of prescribing or administering medication                         |
|                  |                             | Safety incidents                                  | Non-occurrence of events or complications that threatened the safety of patients |
|                  | Communication               | Skills and conduct                                | Adequacy of technical and non-technical skills of staff that are related to safety |
|                  |                             | Communication process                             | Adequacy and timelines of communication with patients                       |
|                  | Humaneness/caring           | Patient-staff dialogue                            | Communication of correct, adequate, and non-conflicting information to patients |
|                  |                             | Respect, dignity, and caring                      | Listening to patients, shared decision-making, and no conflict              |
|                  | Patient rights              | Staff attitudes                                   | Kind, respectful, and sensitive behaviors to patients                       |
|                  |                             | Abuse                                             | Good attitudes towards patients or their families                           |
|                  |                             | Confidentiality                                   | No physical, sexual, or emotional abuse of patients                         |
|                  |                             | Consent                                           | Maintenance of patient confidentiality                                      |
|                  |                             | Equality                                          | Obtaining patient consent without coercion                                   |
|                  |                             | All patient reviews at the Dutch healthcare assessment website [9] include an overall rating of the patient’s satisfaction with his or her radiologist (scale of 1–10, with 1 being the worst score and 10 being the best) and a written explanation in free text format. All reviews are checked by independent editorial staff of the Dutch healthcare assessment website before they were posted online. In principle, only reviews about recent experience and reviews that complied with the code of conduct (i.e., reviews with swear words or unnecessary hurtful comments are not allowed) are authorized for online publication. The e-mail address and IP address of the patient are checked to prevent improper use. Approved reviews are posted on the Dutch healthcare assessment website within a maximum of five working days.

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Fig. 1. Distribution of patient review scores (y-axis, scale of 1 to 10) for all 217 radiologists (x-axis), ranked from high to low. The highest score was 10 and the lowest score was 1.

Fig. 2. Total number and percentage of positive patient reviews (i.e. the patient was satisfied) in the domains "clinical competencies" (which includes the categories quality and safety of clinical care) and "relationships" (which includes the categories communication, humaneness/caring, and patient rights).

Fig. 3. Total number and percentage of negative patient reviews (i.e. the patient was dissatisfied) in the domains "clinical competencies" (categories quality and safety of clinical care) and "relationships" (categories communication, humaneness/caring, and patient rights).
Table 2
Examples of written reviews (translated from Dutch to English) of ten radiologists who were assigned a score of 10.

| Radiologist | Written review |
|-------------|----------------|
| A           | Very nice doctor. Gives all attention to the patient. |
| B           | Routine follow-up of the liver, approached with full appreciation and right tact. Pleasant communication and taking into consideration why the ultrasound examination was performed. Routine examination is performed with personal attention. Because of a good description of the first impressions of the examination, I left with a good feeling. |
| C           | I am so grateful that Dr. C coiled an aneurysm in my head. It was risky because I have weak vessels due to a vascular disease. Dr. C explained the problem very clearly to me and I was given every opportunity to ask questions. He also showed real confidence, which reassured me. Dr. C really is a very knowledgeable doctor. |
| D           | Helped me well and correctly, I was reassured. Nice and calm approach. |
| E           | Dr. E is a great doctor who is compassionate and a great radiologist. His enormous experience in dealing with patients and his skills are clearly noticeable. |
| F           | I was handled very correctly, with care and compassion. I felt treated personally and not like a number. |
| G           | Dr. G was friendly, told what he did and observed. He was very communicative. |
| H           | Friendly, knowledgeable man who is also nice to the employees. A pleasant atmosphere during an unpleasant examination. |
| I           | Very friendly doctor, explains everything well and tells exactly what is going to happen. Shows compassion. |
| J           | Very friendly and knowledgeable radiologist. Took the time to answer all the questions, explanations were very clear. |

4. Discussion

Patient-centered care encompasses health care which is not only oriented to the best interests of patients but which also fulfills the patients’ values and preferences in an optimal way [11,12]. In this regard, patient valuation is an important performance indicator for medical doctors, including radiologists. Our study, using recent data from the Dutch healthcare assessment website, shows that radiologists in the Netherlands are generally highly valued by patients, with a median score of 9.6 on a scale of 0–10. Our study also shows that patients particularly appreciate radiologists with communication and empathic skills, whereas the lack of these skills is the major source of patient discontent with the service provided by radiologists. In addition, communication and empathic skills by far outnumbered clinical competencies as reasons for patient (dis)satisfaction (81 % vs. 19 %).

A recent survey by the European Society of Radiology (ESR) showed that 76 % of practising radiologists in Europe regularly communicate directly with patients [13]. However, only 25 % of radiologists had undergone formal communications training and 82 % felt that this would be beneficial [13]. The results of our study corroborate that it may be desirable that communications training is incorporated in radiology residency and continuing medical education programs, as patients attach a high degree of importance to this aspect of radiological care. In the renewed Dutch radiology residency program (Curriculum Opleiding Radiologie en Nucleaire Geneeskunde, abbreviated as CORONA), which was launched in 2015, communication has been listed as one of the key professional competencies of the radiologist [14]. Because the first residents completed this new curriculum only very recently (2020), it remains to be seen whether the program has a positive effect on communicative skills of radiologists. Of interest, it has been shown that radiology residents feel more comfortable to communicate with patients after pursuing communication skills training [15]. Physician empathy and compassion, vital components of healthcare quality, can also be enhanced by training [16]. In this regard, national radiological societies may stimulate radiologists to participate in communication skills training as part of their continuing medical education. However, it is still unknown if training actually improves the communication, empathy and compassion of radiologists that is experienced by patients, and whether these effects are long-lasting. More research is needed in this area.

Interestingly, the number of reviews concerning either appreciation or concern regarding clinical competencies of radiologists (i.e. quality and safety of clinical care) was relatively low (around 20 % of all extractable positive and negative reviews). The relatively low number of positive reviews in this domain may be perhaps be explained by patients taking high clinical competencies of radiologists for granted or because patients may not be aware of the role and responsibilities of the radiologist [1,17,18]. The relatively low number of negative reviews in this
domain (which included error in diagnosis, the most common medical allegation according to previous studies [19,20]) may perhaps be explained by an overall high quality of radiology practice in The Netherlands or because of the general unfamiliarity of patients with the radiologist’s profession [1,13,17,18]. The relatively low frequency of patient dissatisfaction reviews with regard to clinical competencies of radiologists is in line with the low number of malpractice allegations against radiologists in The Netherlands [20].

The percentage of included radiologists (23 %) was relatively low. This may be due to the fact that many patients are not aware of radiologist’s profession [1,13,17,18]. Professional visibility of radiologists could be improved by radiology-led research and teaching [13]. Many medical institutions and healthcare insurance companies assign value to the Dutch healthcare assessment website, because it is regarded as an important quality indicator of patient care. As such, it can be anticipated that they will more actively promote the use of the Dutch healthcare assessment website by patients, which may result in a large percentage of radiologists being included. The results of our study may serve as a benchmark for future studies.

There are only a few studies which have investigated patients’ experiences with individual radiologists. In a study among 781 interventional radiologists in the United States, it was shown that patient satisfaction scores generally range from very good to excellent [21]. Level of trust in decisions, explanation of medical condition(s), listening to and answering patients’ questions, and amount of time spent with patients were all rated very good to excellent, and no physician-related factors emerged that could be improved [10]. In another study among diagnostic radiologists who were working in two German private radiology practices, it was shown that patients are generally satisfied when CT or MRI findings are discussed with them in a brief, understandable explanation, complemented by instructive next necessary steps [22]. However, a non-negligible minority (7.8 %) experienced the discussion of radiological findings inappropriate, with the radiologist lacking empathy [22]. This is in part consistent with the results of the current study and underlines the necessity of good communication skills. Literature in other clinical specialties also shows that most complaints about physicians are related to issues of communication, and not clinical competency [23].

Our study has some limitations. First, only the minority of radiologists who were registered at the Dutch healthcare assessment website (217 of 941 radiologists, 23 %) had been reviewed. However, these radiologists were from 75 different medical institutions throughout the country and, as such, they can be considered a nationally representative sample of radiologists. Second, all patient reviews on the Dutch healthcare assessment website were on a voluntary basis, which may have introduced selection bias. Although the patient reviews are selective, the (rising) influence of physician-rating websites should not be underestimated by physicians and healthcare policy makers [24]. They play an important role in helping patients decide on an appropriate physician [24]. Third, although all patient reviews have been verified for authenticity, it is not certain whether the patient reviews were “justified”. Fourth, our study was limited to The Netherlands. There are cultural differences between European countries, which may affect the importance attached by patients to different aspects of doctor–patient communications [25]. Furthermore, radiologists across Europe have a different training background [26,27]. Therefore, it remains to be investigated whether our results can be generalized to the radiological colleagues across Europe. Fifth, the patient reviews on the Dutch healthcare assessment website did not provide data on radiologic subspecialty (except for diagnostic vs. interventional radiology) and imaging modality involved. Therefore, it was not possible to perform corresponding subgroup analyses to investigate which radiologic subspecialties or imaging modalities perform well from the perspective of the patient and which may need more attention to improve patient satisfaction.

In conclusion, radiologists are generally highly valued by patients, although there is room for improvement to decrease the number of negative patient experiences. Communication and empathy appear to be the most important skills on which radiologists are judged from a patient’s perspective.

CRediT authorship contribution statement

Robert M. Kwee: Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing - original draft, Writing - review & editing, Visualization, Project administration. Thomas C. Kwee: Conceptualization, Methodology, Formal analysis, Investigation, Writing - original draft, Writing - review & editing, Visualization.

Declaration of Competing Interest

The authors report no declarations of interest.

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