

How to Rate a Physician?—A Framework for Physician Ratings and What They Mean



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Abstract With the possibility to exchange consumption information over the internet, rating websites have emerged in large quantity. Also, healthcare evaluations, especially physician ratings, are part of this trend. The volume of physician rating websites shows the same quantity of different rating criteria on which patients can evaluate their physician and healthcare service. We adapted patient satisfaction literature to generate a framework how these ratings constitute. A quantitative study in southern Germany was conducted to evaluate the research model using structural equation modelling. Our findings show several implications on how a rating framework should look like and also how patients should interpret physician ratings in terms of their information value. In essence, physician ratings cannot accurately predict the quality of the healthcare service, but are rather a measure how sympathetic the physician appears to the patient.

Keywords Physician rating · Patient satisfaction · eWOM

1 Introduction

In the age of ubiquitous communication, consumers have online access to information about literally every good and service. Information and assessments of products are provided by the producing companies, by professional testers and/or by fellow consumers. The traditional interpersonal word-of-mouth (WOM) is nowadays complemented by its digital companion, the electronic word-of-mouth (eWOM) via multiple internet-enabled channels like Facebook, YouTube etc.

Due to the characteristic that services can show little physical evidence, it is difficult to evaluate them. Especially in the context of physician ratings, patients

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usually do not hold the same knowledge as a doctor in terms of medical skills [1]. It is difficult for patients to evaluate doctors as they cannot assess the quality of the medical service, even after consumption. Symptoms may disappear, but there can be malicious long-time effects, patients do not know about. Objectively spoken it is literally impossible for patients to rate the medical treatment based on common peoples' knowledge. Regardless of this, patients actually do evaluate physicians and rating websites increase in popularity. From 2005 to 2010 the number of ratings on U.S. platforms rose by a factor of more than 100 [2]. In Germany studies showed that 29–74% of the patients are aware of physician rating websites [3]. In 2017 Jameda.de, one of the biggest German physician rating platforms has six million users per month and holds around 480.000 doctor addresses with more than 1.5 million narrative reviews [4].

Helping other people, revenge on the service provider, digital literacy and the effort to submit reviews have been found as determining factors to participate in eWOM [5]. The heterogeneity amongst criteria to rate physicians is as large as the number of rating websites and no commonly accepted framework has yet emerged in the online world. Doctor interaction, treatment, staff, office, waiting times and office times were previously identified as influential towards the rating [6]. However, a research model providing a coherent overview of influential factors of the rating is still missing. Thus, the research question arises: which factors influence the (subjective) rating patients assign to physicians?

A quantitative data collection has been conducted with patients before and after visiting the doctor. The findings show that factors involving human interaction, which are not necessarily medical treatment related, tend to influence the rating the most. Also, the physicians' office and its organizational structure show an impact on the final rating. The paper is structured as follows. Related research is discussed, followed by an explication of the research model and the underlying hypotheses. Subsequently, the research method is described, results presented and implications discussed. Finally, limitations and further research are addressed and the paper closes with a conclusion.

2 Literature Review

2.1 Factors Influencing Patient Satisfaction

Patient satisfaction is described as the personal evaluation of a health care consumer towards the health care services received [7]. It is the patient's personal rating of a physician.

Literature shows that there are multiple influences which are not directly connected to the medical treatment. Möller-Leimkühler et al. [8] found that the relationship between doctor and patient plays a vital role in the patient satisfaction. The authors show that verbal and non-verbal communication between patient and doctor

shape the relationship. Hall et al. [9] investigated the liking of the patient towards the doctor and how it influences the patient's perception of the quality of medical treatment. Ware et al. [7] use the term interpersonal manner to describe how patients perceive their physicians based on their interaction.

The technical quality, which is described as the competency and skills of the physician by Ware et al. [7], was found to contribute to patient satisfaction. A negative perception of the professionals' skills leads to patients' dissatisfaction. Even though it can be argued that the physician has more competency and knowledge regarding medical treatment and diagnosis, so that patients are not able to rate the technical quality, Fitton and Acheson [10] found that patients are able to judge the seriousness of their health condition. Also, Stimson [11] argues that physicians do not have absolute knowledge about every condition.

Accessibility and availability of medical treatment shape patients' satisfaction [7]. Time and effort spent to gain medical treatment involving the wait times and the location influence how patients perceive their medical experience. Waiting time was found to be a key component of patient satisfaction [12, 13].

The assessment of the outcomes of medical treatment is a long term measurement. Jackson et al. [14] investigated patients' satisfaction over a 3 month time-window after the treatment. Similar to physical goods patients need time to evaluate how successful the medical treatment eventually was. Furthermore, the research shows that patients who were asked right after the treatment value human interaction with doctor and staff more, whereas the long-term outcomes gained influence, when patients were asked 3 months later.

The immediate environment, in which medical care is delivered, i.e. the physician's office rooms, showed a strong influence on patient satisfaction [7, 15]. Patients perceive the environment subjectively on how pleasing and comfortable they experience the framework in which treatment is delivered. This influence can reach from the general atmosphere, the degree of cleanliness of the facility to the judgement about whether the right medical equipment is available based on personal perception.

Möller-Leimkühler et al. [8] show moral support from nurses affects satisfaction as well as the doctor-patient relationship. Interaction not only with the physician, but also with the staff on a personal, but also technical level has shown to influence the satisfaction. The evaluation of the staff happens on the same level as the evaluation on the physician. The perceived technical quality as well as the sympathy shows differences in how the patient experiences the medical treatment service. This is in line with Hendriks et al. [16] who evaluated the impact of the atmosphere among nurses as well as their expertise with their impact on patient satisfaction.

An investigation on physician rating websites by Reimann and Strech [6] suggests that there is a distinction between directly doctor related influences and factors which influence the organizational and administrative part of the treatment. The distinction can also be found in the article of Permwonguswa et al. [17] and Camacho et al. [18].

2.2 Physician Rating Websites

On physician rating websites patients can share medical treatment experiences and rate doctors. For the U.S., Kadry et al. [12] and Lagu et al. [19] have shown that 2 out of 3 patient reviews are in favor of the doctors. Also, 82% of U.S. patients seek information on the internet before their first appointment [20]. Emmert et al. [21] showed that one third of the participants of their study in Germany were aware of the existence of dedicated rating platforms for doctors. In addition to that 11% of the respondents already reviewed a doctor on such websites.

Abramova et al. [1] investigated German PRWs and found that rating websites have more female than male users. Also, users of PRW have a positive feeling about the internet and in general a better digital literacy. The study revealed that especially young people in Germany use PRWs.

The research of Reimann and Strech [6] presents different English and German PRWs and the criteria on which patients can rate their physicians. In total 21 physician rating websites in English and German language were analyzed. The results show that each physician rating website has a unique set of criteria to rate a doctor. They conclude that there is no common rating framework.

3 Research Model

Figure 1 depicts the research model. The influences were adapted from patient satisfaction literature and implications from physician rating website research. The structure of the model is based on Permwonguswa et al. [17], who showed how a framework on rating criteria in the context of medical care should look like.

Overall satisfaction mirrors the patient's satisfaction, which is defined by Ware et al. [7] as the personal evaluation of health care services and providers. Satisfaction ratings are subjective and capture the personal evaluation of care the patient received. Williams and Calnan [22] call it general satisfaction with general practice. Patient satisfaction is a multidimensional concept [7] with several heterogeneous influences such as the satisfaction with the physician and the satisfaction with the administration [17, 18]. Thus, we postulate two influences on the overall satisfaction:

H1: *The higher the satisfaction with the physician, the higher (more positive) the overall satisfaction.*

H2: *The higher the satisfaction with the administration, the higher (more positive) the overall satisfaction.*

Satisfaction with the physician is defined as how satisfied patients are with the physician and the medical care delivered by her/him. The construct is shaped by the characteristics of the doctor in terms of perceived technical quality and the doctor-patient relationship [8].

Doctor-patient relationship focuses mainly on how patients perceive their doctor on a personal level, without considering medical aspects. The balance of power

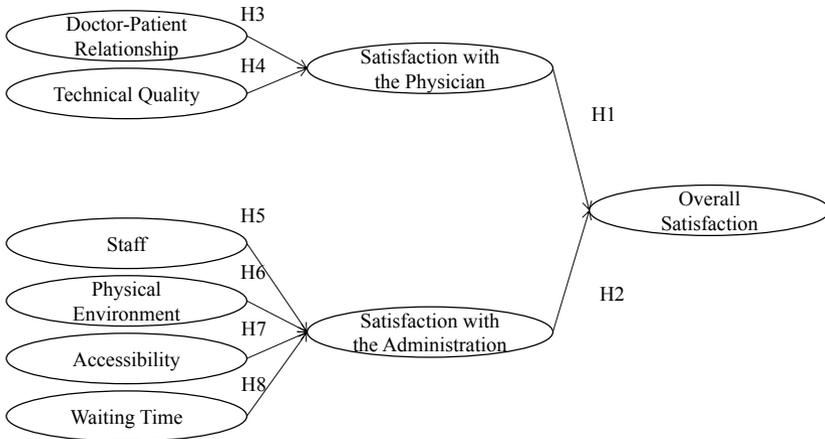


Fig. 1 Research model

between patient and doctor has not been found as influential in the doctor-patient relationship [11]. LaCrosse [23] found that non-verbal communication transmits emotions and attitudes, which are rarely spoken out loud. Leaning forward and nodding while communicating with the patient seem to have an influence on the patient satisfaction. Patients see their doctors warmer and more attractive. The liking of the patient towards their doctor has been found to positively correlate towards the satisfaction with the treatment and the doctor [9, 22]. Thus:

H3: *A high level of doctor-patient relationship positively influences the satisfaction with the physician.*

Technical quality is defined as how patients perceive the competence of the providers and their adherence to high standards [7]. As examples the accuracy of the diagnosis, taking unnecessary risks and medical mistakes are mentioned. Patients usually do not have the same medical knowledge as physicians have. The status of the doctor is not only carried by his social status, but also by his knowledge and perceived competence. Patient satisfaction will suffer greatly if patients have a negative perception concerning the competence of the doctor [24]. Thus:

H4: *A high level of perceived technical quality positively influences the satisfaction with the physician.*

Satisfaction with the administration features the organization in which the medical care is delivered, mainly with respect to the doctor’s office and the staff interaction. Accessibility, staff and the physical environment have been shown as influences for patient satisfaction [7, 25]. Waiting times are also often researched in the case of how satisfied patients are with their medical care experience [16].

Staff describes how patients perceive the staff personnel in the office and how helpful they interact, when there are questions or uncertainties but also the atmosphere

between individual staff members. Staff behavior and nursing care have been found to be an element of patient satisfaction [16, 25, 26]. Thus:

H5: A positive staff attitude positively influences the satisfaction with the administration.

Physical environment is the setting in which the medical care is delivered. Examples are orderly facilities and equipment, clarity of signs and directions. This construct evaluates how the patient perceives the doctor's office in terms of the facility itself without the staff or the practitioners [7, 25]. Therefore, no personnel are involved in the evaluation of the physical environment. Unclean facilities and bad comfort in the waiting rooms have been found to yield a high level of dissatisfaction to patients [22]. Thus:

H6: A positive physical environment positively influences the satisfaction with the administration.

Accessibility expresses how easy or how much effort is needed for the patient to receive medical care, in terms of appointment times and office hours. Ware, Snyder [7] defined it as factors involved in arranging to receive medical care. Williams and Calnan [22] describe this influence on patient satisfaction with the accessibility and availability of the health care services. Thus:

H7: A high level of accessibility positively influences the satisfaction with the administration.

Waiting time is defined by how long patients have to wait in the physicians' facility to receive treatment and how satisfied they are with the duration and the general appointment time. The waiting time includes the time in the waiting room, in the exam room. The satisfaction with the appointment time is the subjective content with the date of the examination [13, 22]. Thus:

H8: A high level of satisfaction with waiting time positively influences the satisfaction with the administration.

4 Research Method

A quantitative survey was conducted in the south of Germany. Based on the available literature and reflecting the research model presented above, a structured questionnaire was developed. Every construct was measured reflectively by three items. Existing measures have been used wherever possible. Items have been adapted and altered to fit the context. All items were translated to German and measured using a five-point Likert-scale.

The questionnaire was delivered in person by the research team to the patient. The physicians allowed the research team to approach patients while these were waiting for their appointment in the waiting area (some physicians provided a separate

Table 1 Sample demographics (n = 115)

Variable	Categories	Sample	Distribution (%)
Gender	Male	49	42.61
	Female	66	57.39
Age	<31	32	27.83
	31–45	30	26.09
	46–60	28	24.35
	>60	25	21.74

room for the interview). The patients were interviewed before the appointment took place and directly after seeing the doctor before leaving the premises. The questions after the treatment aimed towards the satisfaction with the physician and the overall satisfaction.

Data collection took place in the first half of 2017 and 115 completed questionnaires could be gathered.

The characteristics of the sample are given in Table 1. The distribution of responses amongst physicians was: general practitioner 24 (22.22%); otolaryngologists 47 (43.52%); orthopedists 44 (40.74%). The distribution is relatively even among the professions and also among age.

5 Results

Structural equation modelling (SEM) technique using partial least squares (PLS) was used with SmartPLS version 3.2.6 [27]. Even though the sample size of 115 is relatively small, it is sufficient to assess the model based on the rule of ten [28], as the research model would require a minimum of 40 questionnaires. In order to assess the quality of the measurement instrument, tests concerning convergent validity and discriminant validity were performed.

Convergent validity is represented by the loadings of the items to their respective construct. All loadings were significant at the 0.001 level and exceeded the recommended value of 0.7. Construct reliability was tested by examining the composite reliability (CR) and the average variance extracted (AVE). The values exceeded the threshold of 0.6 for CR and 0.5 for AVE.

Discriminant validity has been assessed by observing the cross-loadings of the items. Every item correlates with their respective construct the most. In addition, the Fornell-Larcker criterion shows the highest value for the respective construct and therefore supports discriminant validity. In the next step, the path coefficients have been examined which represent each hypothesis.

The results of the SEM calculation are depicted in Fig. 2.

The path coefficients of satisfaction with the physician ($\beta = 0.459, p < 0.001$) and satisfaction with the administration ($\beta = 0.480, p < 0.001$) towards the overall

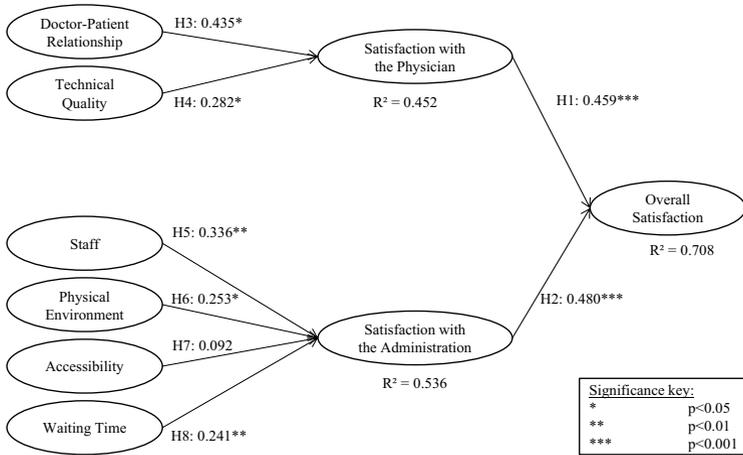


Fig. 2 Research model results

satisfaction are significant with comparatively strong influence on the dependent variable, supporting H1 and H2. Doctor-patient relationship ($\beta = 0.435, p < 0.05$) and technical quality ($\beta = 0.282, p < 0.05$) have been found significant for the satisfaction with the physician, which supports H3 and H4 with a bigger influence of the doctor-patient relationship. Staff ($\beta = 0.336, p < 0.01$), physical environment ($\beta = 0.253, p < 0.05$) and waiting time ($\beta = 0.241, p < 0.01$) have a significant influence on the satisfaction with the administration, with staff as the biggest influence. Therefore, H5, H6 and H7 are supported. Accessibility ($\beta = 0.092, n.s.$) has not been found as a significant influence on the satisfaction with the administration. Therefore, H8 was not supported. The explanatory power of the model has been assessed by the squared multiple correlations (R^2). The explained variance of patient satisfaction ($R^2 = 0.708$) is substantial.

6 Discussion and Implications

6.1 Empirical Findings

The empirical results show evidence that doctor-patient relationship has strong impact on the rating which is in line with the findings of Möller-Leimkühler et al. [8]. Communication and empathy are shown to have great influence on how patients perceive their treatment. Technical quality as an influence shows a weaker influence on the direct satisfaction with the physician. For the satisfaction with the administration, the same characteristics as for the satisfaction with the physician can be found. Interpersonal aspects such as the communication and treatment by the staff have the

highest influence. Physical environment and waiting time show an equally strong impact on the satisfaction with the administration. This is in line with the research of Medway et al. [13] and Ware et al. [7]. However, accessibility has not been found as an influence on the satisfaction with the administration of the office. In literature accessibility for general practitioners is also not mentioned among the most powerful influences [24]. The physicians involved in the study mostly had their offices in rural areas. Patients mentioned that they do not want to reach out to a physician who is a long distance away from their hometown. This suggests that choosing the right physician comes down to convenience if there is no need to see a rare specialist.

6.2 *Theoretical Implications*

This research complements the literature examining how patients' ratings constitute. Patient satisfaction is a well-researched area, without the existence of physician rating platforms. The existing literature of patient satisfaction did not explicitly focus on an overall rating of the doctor in case of recommending the physician to others. This research establishes a link between patients' satisfaction and rating on physicians in the context of rating physicians in a public context like PRWs. Since patients rate their physician mostly positive, the scarce of negative ratings on PRWs can be explained. Patients seem to be biased in the way that they mostly visit doctors with whom they already have good experiences with. Kadry et al. [12] support the finding on patients' rating being favorable on physician rating websites. The strong impact of the doctor-patient relationship on the satisfaction with the physician shows in relation to the technical quality that patients focus more on how they like the doctor instead of how competent they think physicians are. It is also an indicator that physician ratings do not reflect the true quality of the medical treatment, since patients are not able to evaluate the competency of the physician or the medical treatment itself due to the knowledge gap between patient and doctor. Furthermore, the high cross-loadings between the constructs of the doctor-patient relationship and the technical quality show evidence that patients are not able to distinguish between their sympathy towards their doctor and the perceived competency. The data suggests that patients who like their physician automatically are biased in a way that they think the physician is competent enough to decide for the right treatment. It is also an indicator that patients may be more forgiving in case of bad treatment, when they sympathize with their physician. Therefore, additionally to the knowledge gap between doctor and patient, the evaluation of the technical quality is also biased due to the doctor-patient relationship.

6.3 *Practical Implications*

The results provide important insights for physicians to improve their online ratings and for potential patients how to use PRWs. Physicians can improve their reputation and therefore, rating with their patients. The research suggests that physicians should focus on their relationship with their patients. Communication and sympathy have been shown as a key element of patients' ratings. Keeping in touch with patients in the office, but also online on a personal level should increase patients' satisfaction and the reputation of the physician.

Even though PRWs suggest that only doctors are rated, reality shows that the whole office is part of the rating. Staff influences the patients' rating by the same criteria: human interaction. A good atmosphere among the staff and the patients already show great impact on patients' satisfaction. This has to be kept in mind to achieve a good patient rating and online reputation. The doctor alone cannot influence the rating as a whole, since the whole staff is involved. The model shows that patients are able to distinguish these separate influences way better than the single influences.

Comparing the influences of the satisfaction with the physician and the satisfaction with the administration, this research provides evidence, that both are equally relevant for the overall satisfaction. Even though staff has a greater influence than physical environment and waiting time, physicians should consider to get feedback about how patients feel about the appearance of the office and if waiting times are perceived as too long. However, changing the office surrounding and encountering waiting times will imply additional cost for physicians' offices. On a good note, the strongest influence to improve online ratings, the direct human interaction, can be implemented immediately.

The study also has shown that ratings are already overwhelmingly positive. Therefore, physicians should enforce patients to participate on physician rating websites. Past research has shown that physicians are rather skeptical about rating websites [1]. Also, physicians in the study articulated their skepticism on these rating websites, which can be the reason for a more conservative encounter with PRWs. For a better representation of how patients feel and a better online reputation, physicians should find ways to motivate patients to rate online.

For people who are looking for a physician, this research has a clear yet inconvenient message: Laymen who rate physicians' online predominantly rate their subjectively perceived well-being when interacting with the physician. In other words: users of PRWs looking for the technical best specialist will get recommended the most empathic etc. physician but not the best medical expert. As such the whole system of PRWs needs to be taken for what it is: Medical laymen providing their subjective feelings towards the behavior of the physician they met. Unless specific information on the (long term) treatment success is given, the evaluation of the medical quality of the services provided remains doubtful.

7 Limitations and Further Research

This study only focused on patients and physicians situated in a metropolitan area in southern Germany (convenience sampling). The location was of special interest to contribute to the knowledge basis of physician rating platforms in the context of German patients. For further research, the sample size needs to be increased for better results and the items for the patient satisfaction should be altered to make up for the favorable bias of patients towards their doctor to achieve a better fitting model. A suggestion would be to identify a group of patients who were clearly not satisfied with their doctor visit. Another way to overcome the positive bias of patients can be the focus on specialized physicians who are only visited once by the patient. This would exclude general practitioners who are visited more often or even regularly by the same patient.

To fully understand the ratings and what constitutes the perception of the physician, the outcome of the treatment should be considered in further research. The study focused on the short-term satisfaction of the patient immediately after the treatment, at which point the patient is not able to judge whether the treatment will improve the personal condition. Further research should ask patients 2 weeks and 6 weeks after the treatment, to investigate how much the impact of the outcome changes the rating.

8 Conclusion

The main influences of patients' ratings have been examined. The results show that that patient satisfaction and physician rating criteria can be observed on the same level. The direct rating on the physician and the rating of the organizational part have an equally big impact on the final rating. The study has shown that doctor-patient relationship, physician's competency, staff interaction, physical environment and waiting time play key roles in the patient's rating. The emphasis on human interaction as a main role of patients' satisfaction shows potential for further research.

Appendix

See Table 2.

Table 2 Questionnaire

Construct	Indicator
Overall satisfaction	I am satisfied with my doctor and office
	I always visit the same doctors' office
	I would recommend my doctor and office to my friends and family
Satisfaction with the physician	I am satisfied with the medical treatment
	I always visit the same doctor, if I have a problem
	I would recommend my doctor to my friends and family
Satisfaction with the administration	I am satisfied with the procedure until I saw the doctor
	I am satisfied with the organization of the office
	I would recommend my doctors' office to my friends and family due to the good organization
Interpersonal manner	The doctor treats me with respect
	The doctor lets me tell him/her everything that I think is important
	The doctor listens, when I have uncertainties
Technical quality	The doctor is very careful to check everything when he/she is examining me
	The doctor always explains the side effects of the medicine he/she prescribes
	The doctor never exposes me to unnecessary risk
Doctor-patient relationship	I like my doctor as a person
	I feel understood by the doctor
	The doctor is interested in my problem
Staff	The atmosphere among the staff is good
	The staff helped me when I had questions
	I was treated with respect by the staff
Physical environment	The office is modern and up to date
	The waiting area was comfortable
	The treatment area was clean and sanitary
Accessibility	It's hard to get an appointment (–)
	Office hours when you can get medical care are good
	If I have a medical question, I can reach someone for help without any problem
Waiting time	I am satisfied with my appointment time
	I am satisfied with the waiting time in the waiting room
	It takes too long to see the doctor (–)

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