



ORIGINAL ARTICLE

# A Patient- and Family-Centered Care Approach to Orthodontics: Assessment of Feedbacks from Orthodontic Patients and Their Families

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## ABSTRACT

**Objective:** This study aimed to evaluate orthodontic patients and their families' clinical satisfaction and their perception of dentists in the framework of the Patient and Family Centered Care (PFCC) concept.

**Methods:** The study population comprised patients treated at the Orthodontics clinic and their families. A mixed method research with quantitative and qualitative components was employed by conducting questionnaires with 62 patients and 65 parents. Collected data were recorded on the computer, and analyses were performed.

**Results:** A majority of the patients who received treatment at our clinic were high school graduates, while their parents were university graduates. The patient's and their parents' overall satisfaction were similar. We also found that the patients and their parents expected doctors to have ethical perception and professional behavior in the treatment process.

**Conclusion:** According to the results obtained from the survey questionnaires, the patients and their parents expect a dentist to have the following qualities: courtesy, friendliness, respect, punctuality, communication skills, and knowledgeableness. Dentists can optimize clinical and patient satisfaction by providing care and attention based on the principles of patient centered care (PCC) and PFCC and shaped in accordance with the expectations of the patients and their parents.

**Keywords:** PCC, PFCC, patient satisfaction, orthodontics

## INTRODUCTION

In recent years, social and behavioral scientists have placed increasing emphasis on the doctor-patient-family relationship in their attempts to define the role of human affairs in the field of medicine, and orthodontics is no exception (1). Patient satisfaction is regarded as an important measure of quality for both clinics and hospitals and is sometimes even more important than clinical success itself. The concept of patient satisfaction places the patient at the center of healthcare services and is defined as "a measure of quality that shows the degree to which a patient's desired goals and expectations are met" (2) In addition to its increasingly significant role in the evaluation of the quality of healthcare services, patient satisfaction has become a major factor in calculating the cost of healthcare services and in the optimal use of existing sources (3).

In patient centered care (PCC), doctors have an important role in achieving patient satisfaction as they are the ones who deal with patients most of the time (4). In the literature, a patient's confidence in a dentist is usually associated with the quality of his/her oral health (5). Recent studies, however, have clearly shown that patients admire dentists who listen to them, respect them, and do not blame them for their dental problems (6).

There is still widespread criticism of dentists who perform dental check-ups and treatments in the traditional doctor-centered approach, mainly focusing on the condition rather than the patient. Disease- or doctor-centered approaches are being replaced with PCC. The concept of PCC studied three key concepts: clinical effective-

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ness, safety, and patient experience (7). Patient and family-centered care (PFCC) is a concept that refers to a treatment process in which a patient’s relatives are directly or indirectly involved throughout the treatment. The traditional image of doctors as experts who tell patients what to do is being replaced with a new image where doctors respect patients’ thoughts and cooperate with them in the treatment process (8).

Within this theoretical framework, the PCC has been adopted with significant success. Several studies have been conducted to assess patient satisfaction in the field of dentistry and orthodontics in particular. However, there is very little information available on PCC studies (7).

In the present study, we employed a set of qualitative and quantitative questionnaires to explore the views of entreated orthodontic patients and their parents. The results obtained from the PFCC questionnaires were used to assess our clinic services according to the criteria based on PCC and PFCC principles (7) and the existing literature.

**METHODS**

A mixed method research with quantitative and qualitative components was employed. The present study mainly makes use of quantitative methods, but qualitative data are also utilized to determine orthodontic patients and their families’ perception of “an ideal orthodontic dentist.”

In the quantitative part, to evaluate the orthodontic patients and their families’ views on the treatment process in terms of the doctor–patient relationship, a questionnaire with 15 questions and “yes,” “no,” and “partly” options was used. The received responses were evaluated by frequency analysis. Furthermore, the possible link between the respondents’ views on healthcare services and their education level was analyzed.

We aimed to determine the orthodontic patients and their families’ perception of “an ideal orthodontic dentist” using a quantitative approach. Content analysis was used to analyze the responses to the open-ended questionnaires; themes and subthemes were then formed with frequencies.

The study population comprised patients treated at the Department of Orthodontics (School of Dentistry at İnönü University, Malatya, Turkey) and their families. We reached 375 patients at the end of their orthodontic treatment and informed them about our survey. In total, 155 patients and their parents agreed to participate in the survey. The questionnaires were posted to 50 patients and their parents and were e-mailed to 105 patients and their parents. Seventeen replies were received via mail and 22 via e-mail one month later. Not satisfied with the number of respondents, we called the participants one more time and received 62 patient questionnaires in total (27 via mail and 35 via e-mail) and 65 family questionnaires (27 via mail and 38 via e-mail). Collected data were recorded on the computer, and statistical analyses were performed. This work was planned and conducted in accordance with the Helsinki Declaration.

**RESULTS**

Regarding the demographic characteristics of a total of 62 participants, there were 34 female and 28 male participants. There were a total of 65 patients’ parents; of these, 15 were females and 50 were males (Table 1). A majority of the patients were high school graduates, while most of the families were university graduates. Parents with university degrees were more willing to participate (Table 2).

Evaluating the pre-orthodontic dental treatment history of the patients, we found that the majority of patients (69.4%) had not undergone any dental treatment prior to our study, while approximately one-third of the patients (29%) had undergone dental treatment before. More than half of the parents (56.9) had not undergone any dental treatment before; however, almost half of them (43.1) had a history of dental treatment (Table 3).

Examining the participants’ assessment of the orthodontic services they received and the overall process presented in Table 4, most of the patients had decided to undergo the treatment themselves (64.5%); similarly, a majority of the patients (87.1%) were informed about the treatment by their orthodontists. A

**Table 1.** Gender distribution of the patients and their parents

Sex	Patient		Parents	
	Frequency	%	Frequency	%
Female	34	54.8	54.8	23.1
Male	28	45.2	50	76.9
Total	62	100.0	65	100.0

**Table 2.** Education level of the patients and their parents

Education Level	Patient		Parents	
	Frequency	%	Frequency	%
Primary school	0	0	4	6.2
Secondary school	6	9.7	5	7.7
High school	34	54.8	18	27.7
University	18	29.0	32	49.2
Postgraduate	4	6.5	6	9.2
Total	62	100.0	65	100.0

**Table 3.** Patients’ and their parents’ conditions of having undergone or not having undergone oral treatment before

Conditions of having undergone or not having undergone oral treatment before	Patient		Parents	
	Frequency	%	Frequency	%
Yes	18	29.0	28	43.1
No	43	69.4	37	56.9
Missing data	1	1.6	0.0	0.0
Total	62	100	65	100.0

**Table 4.** Ethical assessment of healthcare services by the patients

Questions	Yes		Partly		No	
	f	%	f	%	f	%
Did you decide to undergo the orthodontic treatment yourselves?	40	64.5	14	22.6	8	12.9
I have been informed about the treatment by the orthodontists at the Department of Orthodontics.	54	87.1	5	8.1	3	4.8
I have been informed about the adverse effects of orthodontic treatment.	52	83.9	1	1.6	9	14.5
I have been informed about the alternative methods of orthodontic treatment.	48	77.4	2	3.2	12	19.4
My approval was asked prior to the treatment	58	93.5	3	4.8	1	1.6
Dentists' communication with me was good in the Department of Orthodontics	50	80.6	9	14.5	3	4.8
Dentists at the Department of Orthodontics were polite and respectful toward me	53	85.5	6	9.7	3	4.8
My privacy was taken into consideration during orthodontic treatment	60	96.8	2	3.2	0	0
The necessary hygienic environment was provided during orthodontic treatment	60	96.8	2	3.2	0	0
I aptly benefited from the medical resources at the facility	56	90.3	6	9.7	0	0
I think that dentists at the Department of Orthodontics provided equal health services	55	88.7	5	8.1	2	3.2
Dentists at the Department of Orthodontics were polite and respectful toward other colleagues and auxiliary staff	60	96.8	1	1.6	1	1.6
I found the orthodontist who performed the treatment sufficient	54	87.1	6	9.7	2	3.2
I trust the dentists at the Department of Orthodontics	56	90.3	5	8.1	1	1.6
I think that the orthodontic treatment I received was beneficial	58	93.5	3	4.8	1	1.6

large number of patients declared that they were also informed about the adverse effects and alternative methods of treatment (83.9% and 77.4%, respectively).

A vast majority of the patients (93.5%) stated that their approval was asked for prior to the treatment and that their privacy was taken into consideration (96.8%). The patients were also content about the polite and respectful attitude of the orthodontists toward themselves (85.5%), other orthodontist colleagues, and auxiliary staff (96.8%). Similarly, a majority of the patients (80.6%) stated that the orthodontists were very good in communicating with the patients.

The patients stated that they trusted the dentists at the Department of Orthodontics (90.3%), that they agreed that the Department provided equal health services (88.7%), that they aptly benefited from the medical resources at the facility (90.3%), and that they claimed that the treatment environment was hygienic (96.8%).

Correspondingly, a majority of the patients found the orthodontist who performed the treatment sufficient (87.1%), and they thought that the orthodontic treatment they received was beneficial (by 93.5% who said yes; 4.8% thought that this was partly true). As shown in Table 5, the patients' and their parents' opinions were parallel to each other.

The last question of the questionnaire was an open-ended question and asked the patients and their parents to describe the qualities of "a good dentist" in their own words. Table 6 shows the themes and frequencies that have been drawn from the contents of the given answers. As shown in Table 6, the top 5 list of

the characteristics of "a good dentist" by order of importance as put forward by the patients are as follows: politeness-geniality, successful treatment, respectfulness, punctuality, and informative attitude.

## DISCUSSION

Patient centered care is a measure of the quality of healthcare services and patient satisfaction (7). To provide better healthcare services, it is necessary to measure the quality of service through satisfaction surveys (9). However, there are no set standards to define measuring criteria.

Care services need to be consistent, safe, and feasible as the perception of success and patient satisfaction change according to one's background and experience and so does the definition of PCC (7). The principles of patient-centered medicine dates back to the ancient Greeks (10). However, patient-centered medicine, as well as care and attention that accompany this concept, has not been put into practice at an optimum level from the past to the present. In addition, they stated that patient experience is a fundamental part of PCC and listed patient satisfaction indicators as follows (7):

1. Patients reporting that they are able to speak and eat comfortably
2. Patients satisfied with the cleanliness of the dental practice
3. Patients satisfied with the helpfulness of the practice staff
4. Patients reporting that they felt sufficiently involved in decisions about their care
5. Patients who would recommend the dental practice to a friend

**Table 5.** Ethical assessment of healthcare services by the patients' parents

Questions	Yes		Partly		No	
	f	%	f	%	f	%
Did your patient decide to undergo the orthodontic treatment themselves?	32	49.2	19	29.2	14	21.5
I have been informed about the treatment by the orthodontists at the Department of Orthodontics.	59	90.8	4	6.2	2	3.1
I have been informed about the adverse effects of orthodontic treatment	50	76.9	6	9.2	9	13.8
I have been informed about the alternative methods of orthodontic treatment	47	72.3	3	4.6	15	23.1
My approval was asked prior to the treatment	64	98.5	0	0	1	1.5
Dentists' communication with me was good in the Department of Orthodontics	55	84.6	7	10.8	3	4.6
Dentists at the Department of Orthodontics were polite and respectful toward me	57	87.7	6	9.2	2	3.1
My patient's privacy was taken into consideration during orthodontic treatment	62	95.4	1	1.5	2	3.1
The necessary hygienic environment was provided to my patient during orthodontic treatment.	63	96.9	0	0	2	3.1
My patient aptly benefited from the medical resources at the facility	59	90.8	4	6.2	2	3.1
I think that dentist at the Department of Orthodontics provided equal health services.	55	88.7	4	6.2	4	6.2
Dentists at the Department of Orthodontics were polite and respectful toward other colleagues and auxiliary staff	63	96.9	1	1.5	1	1.5
I found the orthodontist who performed the treatment sufficient	56	86.2	8	12.3	1	1.5
I trust the dentists at the Department of Orthodontics	61	93.8	3	4.6	1	1.5
I think that the orthodontic treatment that my patient received was beneficial	61	93.8	4	6.2	0	0

**Table 6.** Assessment of the patients' and their parents' views on the definition of "an ideal dentist"

"An ideal dentist"	Patients	Parents
Politeness-geniality	17	15
Successful treatment	16	18
Respectfulness	12	12
Punctuality	12	11
Communication skills	8	10
Informative attitude	10	9
Concern for hygiene	7	5
Equal treatment	3	7
Love the job	3	6
Self-development	3	9
Relieve the patient psychologically	3	4
Attention to patient privacy	1	1

6. Patients reporting satisfaction with the National Health Service (NHS) dentistry received
7. Patients satisfied with the time taken to get an appointment

In the USA, the importance of PCC has been recognized, and thereby, certain progress in patient satisfaction has been achieved by taking into account the needs and expectations of individuals (11).

Despite the fact that the importance of family involvement is recognized, it is not taken into consideration in PCC (12). Hence,

a new concept, namely PFCC was developed (12). The core concepts of PFCC were defined by the Institute for Patient- and Family-Centered Care in the USA as follows:

1. **Respect and dignity:** Healthcare practitioners listen to and honor patient and family perspectives and choices.
2. **Information sharing:** Healthcare practitioners communicate and share complete and unbiased information with patients and their families in ways that are affirming and useful.
3. **Participation:** Patients and their families are encouraged and supported in participating in care and decision-making at the level they choose.
4. **Collaboration:** Patients and their families are included in an institution-wide basis (12).

One of the objectives of PFCC is to optimize family involvement. To this end, patient and family experiences are identified through observations (12). In the literature review, we identified a few articles related to the application of PCC in dentistry (9). These studies were generally based on doctors' views and literature reviews. In other words, patients' feedbacks were not taken into consideration in these studies. In our literature review, we could not identify any study conducted on the concept of PFCC in the field of dentistry. Therefore, our findings are discussed in the framework of the conceptual definitions of PCC and PFCC in the literature (9).

There are qualitative or quantitative studies conducted on patient satisfaction and the quality of healthcare in the field of orthodontics (13). However, there is no study conducted with the objective of assessing the quality of orthodontic treatment and patient satisfaction in the context of PFCC or PCC. We also could not identify a mixed study where a combination of quantitative

and qualitative research was performed in the literature on these concepts; however, we conducted our study using the mixed method research approach.

Orthodontic treatment is related to procedures and methods. There are certain procedures to be followed when applying a given technique at the clinic. However, the same is not true for human relations (1). Orthodontic treatment processes last longer than other branches of dentistry (dentures, surgery, pedodontics, etc.) (14). It is a process where the patient's and doctor's active involvement are required.

In previous studies, patient satisfaction levels were found to vary between 34% (15) and 95% (16). It is stated that this wide range may be because of the differences in methods and statistical analysis related to the difficulty in employing the necessary means to reflect patient satisfaction and health benefits (16).

Studies on doctor-patient communication have shown that although patients find doctors' communication skills adequate, even perfect, they are still dissatisfied (17). The survey Tongue et al. (18) conducted among orthopedic surgeons has shown a satisfaction rate of 75% among practitioners in terms of communication with the patients, while this rate was 21% among patients.

Most of the patients who were treated in our clinic based on PCC (7) and PFCC (19) stated that they were treated with respect (96.2%), that their consent had been taken at the beginning of the treatment process (98.3%), that they were kept informed throughout the treatment process (95.2%), that they actively participated in their treatment, that they were satisfied with hygiene (100%), and that they received the treatment they were officially entitled to (100%). Moreover, they stated that they trusted doctors (98.4%), who were competent enough (96.8%), worked cooperatively with their colleagues and assistant personnel (98.4%), and respecting the patients' privacy (100%). The survey results of the parents were similar to those of the patients. When considered within the framework of the PFCC concept (7,12), our clinic can be argued to have reached the optimum level in terms of success and patient satisfaction.

We need to replace the concept of conformity with that of compliance to ensure that patients help us at the beginning, during, and at the end of orthodontic treatment (20). We need to leave aside the view where the patient is expected to be complaisant and adopt the approach that entails cooperation and harmony. We believe that this concept of conformity can be applied in the core of PCC and PFCC. Furthermore, we believe in the importance of the perception of "good doctor" as understood by patients and their families with regards to patient-family satisfaction. In this context, if doctors follow ethical principles (autonomy, effectuality, nonmaleficence, fairness) (21), they can create a significant effect on patients and their families.

Abiding by the ethical principles helps us differentiate right and wrong, good and bad, moral and immoral (22). Research conducted in the USA has shown that "a doctor's values affect his/her competency in diagnosis and treatment and therefore s/he should be aware of his/her own values, not letting them affect his/her professional decisions (23). In a study conducted by the

Canadian Medical Faculty, it has been underscored that a doctor should be aware of his/her values and that these values are effective in his/her professional decisions related to clinical, educational, and managerial issues (24). Competency in treatment has been determined as the essential element in the concept of a "good doctor" in a study conducted on children, their parents, and their doctors in Canada (25). In this light, we argue that a good doctor needs to have the following principles stated in the literature: "respecting autonomy, effectuality, nonmaleficence, loyalty, freedom, honesty, privacy, and equality" (21).

According to the patients and their parents, the most desired qualities to be found in a dentist are politeness and friendliness. They are followed by treatment success, respectfulness, punctuality, good communication skills, and knowledgeableness. Equality in the treatment process is stated more by parents than patients themselves. Moreover, they emphasized the fact that a good dentist should keep abreast with recent developments in the field of dentistry and improve his/her professional skills (Table 6). Our findings are compatible with those of other studies conducted on the ethical principles that a doctor needs to have (21).

Behavior is a function of personality traits and situational forces, and people tend to blame others for failure, instead of themselves. If information about the treatment process is given prior to treatment, negligence may be patient-oriented. The doctor is responsible for monitoring the course of treatment to create the best possible opportunities for the patient (26). A dentist is expected to lead his/her team like a conductor leads the orchestra; for this to happen, it is necessary to define certain group rules (27). All clinical staff (including faculty members, assistants, undergraduate students, and staff) are a team, and everyone has a duty and responsibility. The systems work as long as people fulfill their responsibilities, which eventually results in perfection. Treatment process may be prolonged in orthodontics. Hence, an accurate estimation of the treatment period is accepted as an indication of a good doctor. Patients' and their parents' perceptions and expectations during the process of orthodontic treatment have been found to be in parallel with their satisfaction (PFCC) at the end of orthodontic treatment.

Health-related quality of life is an individual's satisfaction or happiness with domains of life insofar as they are affected by their health (e.g., disease and its treatments) (28). In this context, physicians, orthodontists in particular, may increase the quality of life for patients by applying a PCC-PFCC-based clinical approach. Besides, patient-family satisfaction leads to the practitioner's and clinic's success, while also ensuring that doctors encounter fewer problems, as they are highly motivated. Considering the fact that orthodontic treatment, an arduous job in itself, takes longer than other dental treatments (such as prosthesis treatment and surgery), PFCC-based clinical maintenance and interest have become a necessity).

Health science is an art as much as a science. We are currently in a confused state of mind when it comes to measuring the relative goodness of our art. Then who is a "good" dentist or orthodontist? What makes a dentist or orthodontist "good" or "average"? This distinction is dangerously objective. We have tests that measure the limits of our knowledge in our experimental world,

but what scale is valid to measure the degree of our empathy (29)? Today, as we are seeking answers to similar questions, scientists are attempting to develop new concepts to increase patients' and their families' satisfaction and clinical success.

Ultimately, patient trust and satisfaction rest with us. In other words, patients' and their families' (PFCC) trust and satisfaction depend on dentists' professionalism.

Further studies are needed to be conducted to standardize the PCC and PFCC concepts.

## CONCLUSION

According to the results obtained from the survey questionnaires, the patients and their families expected a dentist to have the following qualities: courtesy, friendliness, respect, punctuality, communication skills, and knowledgeableness. These expectations seem to be reasonable and can be met by dentists. In care service, care processes should be described with their positive and negative aspects in a factual manner by not blaming the patient, and an opportunist approach should be adopted to ensure patients' compliance and satisfaction (26).

In our study it has been found that in the process of long-term orthodontic treatments, dentists have difficulty in establishing cooperation and coordination in clinical and ethical terms to ensure 100% patient and family satisfaction. Dentists can optimize clinical and patient satisfaction by providing care and attention based on the principles of PCC and PFCC and shaped in accordance with the expectations of the patients and their families. Our PFCC-based healthcare services have been found to be successful, but are not a 100%. Patients' and their parents' perceptions and expectation during the process of orthodontic treatment have been found to be in parallel with their satisfaction (PFCC) at the end of orthodontic treatment.

**Ethics Committee Approval:** Authors declared that the research was conducted according to the principles of the World Medical Association Declaration of Helsinki "Ethical Principles for Medical Research Involving Human Subjects", (amended in October 2013).

**Informed Consent:** Written informed consent was obtained from the patients who participated in this study.

**Peer-review:** Externally peer-reviewed.

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## REFERENCES

- Jaffe PE. The impact of the doctor-patient/parent relationship on the practice of orthodontics. *Angle Orthod* 1967; 4: 323-4.
- Carr-Hill RA. The measurement of patient satisfaction. *J Public Health Med* 1992; 3: 236-13.
- Williams B. Patient satisfaction: a valid concept? *Soc Sci Med* 1994; 4: 509-7. [CrossRef]
- Feldmann I. Satisfaction with orthodontic treatment outcome. *Angle Orthod* 2014; 4: 581-6. [CrossRef]
- Muirhead VE, Marcenes W, Wright D. Do health provider-patient relationships matter? Exploring dentist-patient relationships and oral health-related quality of life in older people. *Age Ageing* 2014; 3: 399-405. [CrossRef]
- Sbaraini A, Carter SM, Evans RW, Blinkhorn A. Experiences of dental care: what do patients value? *BMC Health Serv Res* 2012; 1: 177. [CrossRef]
- Mills I, Frost J, Moles DR, Kay E. Patient-centred care in general dental practice: sound sense or soundbite? *Br Dent J* 2013; 2: 81-4. [CrossRef]
- Kaidonis JA, Skinner VJ, Lekkas D, Winning TA, Townsend GC. Reorientating dental curricula to reflect a minimally invasive dentistry approach for patient-centred management. *Aust Dent J* 2013; 58(Suppl 1):70-5. [CrossRef]
- Mills I, Frost J, Cooper C, Moles DR, Kay E. Patient-centred care in general dental practice-a systematic review of the literature. *BMC Oral Health* 2014; 14: 64. [CrossRef]
- Stewart M, Brown JB, Donner A, McWhinney IR, Oates J, Weston WW, et al. The impact of patient-centered care on outcomes. *J Fam Pract* 2000; 49: 796-8.
- Glick M. A home away from home: the patient-centered health home. *J Am Dent Assoc* 2009; 2: 140-2. [CrossRef]
- Shaw J, Pemberton S, Pratt C, Salter L. Shadowing: a central component of patient and family-centred care: Joanne Shaw and colleagues explain how an NHS trust incorporates the use of shadowing to improve the care experiences of patients and their families. *Nurs Manag (Harrow)* 2014; 3: 20-3. [CrossRef]
- McNair A, Gardiner P, Sandy JR, Williams AC. A qualitative study to develop a tool to examine patients' perceptions of NHS orthodontic treatment. *J Orthod* 2006; 33: 97-9. [CrossRef]
- Fisher MA, Wenger RM, Hans MG. Pretreatment characteristics associated with orthodontic treatment duration. *Am J Orthod Dentofacial Orthop* 2010; 137: 178-86. [CrossRef]
- Al-Omiri MK, Abu Alhajja ES. Factors affecting patient satisfaction after orthodontic treatment. *Angle Orthod* 2006; 3: 422-31.
- Birkeland K, Bøe OE, Wisth PJ. Relationship between occlusion and satisfaction with dental appearance in orthodontically treated and untreated groups. A longitudinal study. *Eur J Orthod* 2000; 5: 509-18. [CrossRef]
- Stewart MA. Effective physician-patient communication and health outcomes: a review. *CMAJ* 1995; 9: 1423-33.
- Duffy FD, Gordon GH, Whelan G, Cole-Kelly K, Frankel R, Buffone N, et al. Assessing competence in communication and interpersonal skills: the Kalamazoo II report. *Acad Med* 2004; 6: 495-507. [CrossRef]
- Levine RS, Stillman-Lowe CR. The scientific basis of oral health education. *Br Dent Assoc* 2009.
- Marinker M, Shaw J. Not to be taken as directed. *BMJ* 2003; 326: 348-9. [CrossRef]
- Beauchamp TL, Childress JF. Principles of biomedical ethics. New York: Oxford University Press; 2001.
- Veatch RM. The basics of bioethics 2nd edition 2003.
- Fortenberry JD, Kaplan DW, Hill RF. Physicians' values and experience during adolescence: their effect on adolescent health care. *J Adolesc Health Care* 1988; 1: 46-51. [CrossRef]
- Neumann JK, Olive K. Physician values and medical decisions. *South Med J* 2004; 97: 793. [CrossRef]
- Kramer MS, Etezadi-Amoli J, Ciampi A, Tange SM, Drummond KN, Mills EL, et al. Parents' versus physicians' values for clinical outcomes in young febrile children. *Pediatrics* 1994; 93: 697-702.
- Richards W. Patient-centred dental practice: A behavioural approach. *Dent Nurs* 2012; 7: 443-4. [CrossRef]
- Milsom KM, Jones C, Kearney-Mitchell P, Tickle M. A comparative needs assessment of the dental health of adults attending dental access centres and general dental practices in Halton & St Helens and Warrington PCTs 2007. *Br Dent J* 2009; 206: 257-61. [CrossRef]
- Sprangers MAG, Cull A, Bjordal K, Groenwold M, Aaronson NK. The European Organization for Research and Treatment of Cancer approach to quality of life assessment: guidelines for developing questionnaire modules. EORTC Study Group on Quality of life. *Qual Life Res* 1993; 4: 287-95. [CrossRef]
- Bhadula R. A piece of my mind. The good physician. *JAMA* 2013; 310: 909. [CrossRef]