The mediating role of patient satisfaction and perceived quality of healthcare in the emergency department

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Abstract

The purpose of this research was to identify whether a certain set of drivers of satisfaction/perceived quality of healthcare (PQHC) could indirectly affect patients' confidence/trust in the emergency department (ED).

Patients were seen at an ED in the public hospital in Lisbon, Portugal between January and December 2016. Data were collected between May and November 2017, using a questionnaire, by mail or e-mail. The total sample size comprised 382 patients. The data analysis included structural equation modeling to test the conceptual model with specific drivers of satisfaction/PQHC (privacy; accessibility and availability; doctors; meeting expectations; waiting time for triage [perception]; waiting time to be called back by the doctor following examinations and/or tests [perception]; information about possible delays in receiving treatment/waiting times) and with the main outcome (confidence/trust in the ED) using path analysis.

The analysis of the coefficients revealed that all the mediated paths are statistically significant ($P \leq .05$). Although, altogether, the direct paths did not prove statistically significant ($P > .05$), the overall satisfaction with doctors ($P \leq .01$) and meeting expectations ($P = .01$) can still directly explain the confidence/trust in the ED without the mediating role of satisfaction and PQHC. Hence, overall satisfaction with doctors and meeting expectations can influence, both directly and indirectly, confidence/trust in the ED. All other variables can only indirectly affect confidence/trust in the ED, either through PQHC or through satisfaction.

Even though there are more variables that influence confidence/trust in the ED through PQHC (1)waiting time to be called back by the doctor following examinations and/or tests [perception]; 2) privacy; 3) accessibility and availability; 4) doctors; 5) meeting expectations than through satisfaction (1)waiting time for triage [perception]; 2) information about possible delays in receiving treatment/waiting times; 3) doctors; 4) meeting expectations), we observe the strongest contribution in the mediation model through satisfaction, which reveals its dominant role over PQHC.

Abbreviations: AIC = Akaike Information Criterion, BIC = Bayesian Information Criterion, CFI = comparative fit index, ED = emergency department, PQHC = perceived quality of healthcare, RMSEA = root mean square error of approximation index, SEM = structural equation modeling, SRMR = standardized root mean square residual index, TLI = Tucker-Lewis Index.

Keywords: emergency department, patient satisfaction, perceived quality of healthcare, trust

1. Introduction

Patient satisfaction with emergency care is 1 of the most important indicators reflecting the quality of services.[1] Even though patient satisfaction has been considered an indicator of the quality of healthcare, the relationship between the 2 constructs is not clear.[2] Several researchers have demonstrated

that quality and satisfaction are distinct concepts, and they have emphasized the importance of satisfaction as a mediator, in contrast to perceived quality.[3]

Patient satisfaction plays an important mediating role, influenced by patient perception of healthcare quality, and significantly impacts patient trust.[4] Trust is considered to be an important outcome,[5] and has been associated with health outcomes,[6–8] Perceived Quality of Healthcare (PQHC),[8] and satisfaction.[6–10] However, trust is distinct from satisfaction, as satisfaction looks backward while trust looks forward, and the latter has a strong emotional component.[11] Thus, satisfaction antecedes trust.[12] Ng and Luk (2019) have emphasized several important attributes of patient satisfaction, such as accessibility and efficacy, provider attitude, and technical competence.[2] In turn, trust incorporates four dimensions: competence, confidentiality, honesty and fidelity.[10,13–15]

Due to a high demand for high-quality health services, hospital providers constantly attempt to improve service quality by identifying patients' expectations and their needs.[16] Expectations of the quality of healthcare have an effect on patients' experiences;[17] patients tend to compare the service quality with expectations. In turn, this assessment shows the gap between perceptions and expectations, which may contribute to the improvement of service quality.[18]

Meeting patient expectations may permit an understanding of patient satisfaction to a certain extent.[19] Marimon et al (2019) have stressed that the fulfilment of patients' expectations is a mediator between satisfaction and quality.[20] Taking into account patients' growing needs, one important basis of medical service quality is the comparison between feelings during the medical service and prior expectations.[21] In addition, patients' expectations may differ according to previous experiences, which can serve as a comparison.[22] Trust can also be related to prior/ past experiences[23,24] and expectations concerning the future actions of others.[25] There are three phases of building trust in provider-patient relationships: naïve initial trust with high expectations; unmet expectations with a certain level of mistrust; and reconstructed trust with revised expectations.[26]

Expectations may vary depending on time and circumstance.[19] Adhikari and Acharya (2019) have emphasized a gap between mental patients' expectations and actual behaviour.[27] Barth et al (2019) have found that higher expectations were associated with higher pessimism and higher sensitivity to medication. Expectations were also relevant for treatment outcomes[28]; patients' expectations, attitudes, and beliefs may influence their response to treatment and the outcome.[29] Brunner et al (2019) have shown that, before treatment begins, patients' expectations were mainly related to functional areas, such as daily functional performance, social environment, problems of everyday life, and family relationships.[30] Toyone et al (2005) have found that meeting expectations does not always lead to patient satisfaction. Some patients were dissatisfied even though expectations were met; this may happen due to unrealistic expectations that patients express.[31] Lucas et al (2019) have also noted that some cases may lead to a 'mismatch of expectations' and hence be related to the number of complaints.[32] Schaad et al (2019) have emphasized some reasons for the complaints physicians considered which were related to communicational and relational difficulties, physicians' attitudes, medical malpractice, the lack of a coherent treatment plan, and unrealistic patient expectations.[33]

High levels of distrust may have negative consequences for various aspects of medical care.[14] People with low levels of trust more often do not follow medical advice, treatment recommendations, or medication prescription.[34–36] Lack of trust was also found to be associated with poorer self-rated state of health.[37,38] An important mediating link in this association can be insufficient access to health care, which in turn can lead to delays in seeking health care.[38]

Confidence/trust may encompass not only the procedures and processes for patient treatment, but also the staff. Physicians' behavior (competency, communication, caring, honesty) was found to be associated with trust.[39] Confidence/trust in the clinical team has been associated with higher overall satisfaction (doctors $P = .002$, nurses $= .008$).[40] In addition, trust in physicians has been found to be positively correlated with trust in healthcare organizations.[41]

We should note that most of the research on patient trust has focused on the patient-provider interaction.[34] However, researchers have stressed that there is a need to pay attention to trust of the larger health care system.[34] The point is that mistrust can be more related to a general mistrust of health care than to a specific aspect or individual of the health care system; namely, mistrust in one aspect can lead to general mistrust.[34]

The key focus of this study, therefore, is to identify and distinguish the mediating role of satisfaction and PQHC in the context of Emergency Department (ED), as well as their relationship with confidence/trust in the ED as the main outcome, as influenced by a set of drivers of satisfaction/PQHC, including accessibility and availability; meeting expectations; doctors; privacy; information about possible delays; waiting time for triage; and waiting time to be called back by the doctor following examinations and/or tests.

According to the results from our previous research, both satisfaction and PQHC are subjective and distinct concepts.[42] Therefore, these two concepts could possibly play different mediating roles. Although the mediating effect of patient satisfaction has been studied to an extent in the scientific literature,[3,4] we believe that more detailed research is needed for an improved understanding of this effect in the ED context.

2. Methods

Patients were seen at an ED in the public hospital in Lisbon, Portugal between January and December 2016, and the data were collected between May and November 2017. The total sample size comprised 382 patients, with a 5% margin of error and a 95% confidence interval. The questionnaire was developed using various measurement scales, consisted of 75 questions and was sent either by mail or e-mail, depending on the respondent's preference.[42] Eventually, 1,553 patients agreed to participate and gave permission for the questionnaire to be sent by mail. Only 506 questionnaires were sent due to the study's financial constraints. We received 143 questionnaires back, and 363 were not returned. With respect to the e-mail distribution, 959 patients agreed to participate and gave permission to send the questionnaire by e-mail. Among them, 340 responded to the questionnaire online, and 619 did not.[42]

We followed a rigorous methodological approach that consisted of an in-depth, step-by-step statistical procedure. First of all, in an attempt to understand the differences and/or similarities between satisfaction and PQHC in our statistical analysis, we decided to run bivariate correlations between all relevant variables. Then, in order to perform a preliminary analysis of the determinants of satisfaction and PQHC, we

decided to conduct a multiple regression analysis, including either satisfaction or PQHC as the dependent variables. In this analysis we used 18 predictors (only those with a strong, moderate, or weak correlation with satisfaction and the PQHC). Based on the results obtained in the multiple regression analysis identified in our previous research,[42] we chose the variables to include in the mediation models. For the given analysis, we selected only the main predictors (antecedents) of satisfaction/PQHC that we considered as having statistically significant conditions ($P \leq .05$), and some other predictors that had a statistically significant (marginal effects) relationship with satisfaction/PQHC ($P \leq .10$) as identified in multiple regression analysis. Thus, regarding satisfaction, we used the following set of variables: doctors ($r = 0.14$, $P \leq .01$); qualitative perceived waiting time for triage ($r = 0.08$, $P \leq .05$); meeting expectations ($r = 0.53$, $P \leq .01$); and information about possible delays ($r = 0.06$, $P \leq .10$).[42] Regarding PQHC, we used the following set of variables: doctors ($r = 0.43$, $P \leq .01$); meeting expectations ($r = 0.26$, $P \leq .01$); qualitative perceived waiting time to be called back by the doctor following examinations and/or tests ($r = 0.10$, $P \leq .10$); privacy ($r = 0.09$, $P \leq .10$); and accessibility and availability ($r = 0.09$, $P \leq .10$).[42]

Initially, we tested our conceptual model through various mediation models. These mediation models were computed using stepwise multiple linear regression analysis with different combinations of the selected variables regarding satisfaction and regarding PQHC. Then, as a final step, the data analysis included Structural Equation Modeling (SEM) to test the complete mediation model (regarding SEM, we used the software package lavaan). More specifically, we used a variation of SEM called "path analysis," which allows different constructs to be related without any specifications involving measurement models.[43] Besides testing the relevance of the mediated paths, we also tested the relevance of the direct paths, the non-mediated relationship within the mediation model, namely seven direct paths between seven independent variables (information about possible delays; qualitative perceived waiting time for triage; doctors; meeting expectations; qualitative perceived waiting time to be called back by the doctor following examinations and/or tests; privacy; and accessibility and availability), and one dependent variable (confidence/trust in the ED). This type of test was implemented to understand whether the direct paths' relationship can still explain confidence/trust in the ED within the mediation model.

We should note that variables that measured more than one item were simplified into a single composite measure by using an exploratory factor analysis, namely here regarding:

(1) accessibility and availability; and
(2) doctors.[42]

The exploratory factor analysis was conducted using the principal axis factoring method for extraction, the scree plot for selecting the number of factors, and the oblimin rotation to interpret the factor loadings. The internal consistency analysis showed a Cronbach's alpha of, respectively, 0.87 (accessibility and availability) with 54.50% of explained variance and 0.98 (doctors) with 88.79% of explained variance. Thus, high alpha coefficients reinforce the conclusion that the items have good internal consistency, which gives us confidence that our measures are reliable and correct. In addition, we used only qualitative perceived waiting times because qualitative perceptions (with a 1 to 10 scale evaluation) had a stronger correlation with

satisfaction and PQHC than quantitative perceptions of waiting time (with an exact time scale evaluation).[42]

3. Results

3.1. Descriptive analysis

The participants were mostly from Lisbon (96%) and were grouped into persons with dual nationality (2.1%), other nationality (2.6%), and Portuguese (95.3%), with the proportion of females to males at 61.3%: 38.7%. The age distribution of the participants across age groups was almost uniform: 18 to 30 years (14.9%), 31–40 (19.1%), 41–50 (14.4%), 51–60 (17.6%), 61–70 (9.2%), 71–80 (9.8%), and 80+ (14.7%). The descriptive statistics of the main variables used in the mediation models are represented in Table 1.

3.2. The mediation model

The mediation model with direct paths is represented in Figure 1.

A general overview of the coefficients of the model with the mediated and direct effects is represented in Table 2, below.

The results show that this model (with direct paths) has an overall acceptable fit: Chi-square $(5) = 17.15$, $P < .00$, root mean square error of approximation index (RMSEA) = 0.10 [0.05, 0.14], standardized root mean square residual index (SRMR) = 0.02, comparative fit index (CFI) = 0.99, Tucker-Lewis index (TLI) = 0.95.

As is evident from Table 2, the strongest relation and effect in our mediation model is meeting expectations, which influences confidence/trust in the ED through satisfaction ($r = 0.28$), followed by meeting expectations and overall satisfaction with doctors through perceived quality of healthcare identically, which influence confidence/trust in the ED ($r = 0.16$), and overall satisfaction with doctors, which influences confidence/trust in the ED through satisfaction ($r = .10$). In general, the overall contribution of the direct paths is not statistically significant ($P > .05$). There are only 2 direct paths that are statistically significant: doctors ($P \leq 0.01$) and meeting expectations ($P = .01$). Importantly, the summed contribution of the direct paths is not statistically significant in the mediation model; therefore, we decided to test the model without them, removing the direct paths.

The mediation model without direct paths is represented in Figure 2.

A general overview of the coefficients of the model with the mediated effects is represented in Table 3, below.

The results reveal that the given complete mediation model has an overall acceptable fit: Chi-Square $(12) = 36.45$, $P < .00$, RMSEA = 0.08 [0.06, 0.12], SRMR = 0.02, CFI = 0.98, TLI = 0.96.

As is evident from Table 3, the analysis of the coefficients reveals that all the mediated paths are statistically significant. Among these mediated paths, the mediated effect of overall satisfaction with doctors and of meeting expectations are those with the strongest effects (coefficients > 0.10). Hence, the strongest relationship and effect in this mediation model is meeting expectations that influence confidence/trust in the ED through satisfaction ($r = 0.23$); followed by overall satisfaction with doctors through PQHC ($r = 0.20$); meeting expectations that influence confidence/trust in the ED through PQHC ($r = 0.19$); and overall satisfaction with doctors through satisfaction ($r = 0.10$). All other mediated paths make a less significant contribution in the mediation model.

Table 1

Means, minimum, maximum, standard deviations.

	n	Mean	Min	Max	SD
Accessibility and availability					
Location of the hospital and emergency department within the city	379	8.20	1	10	1.96
Orientation within the emergency department	374	7.44	1	10	2.05
Distance between the different areas of the emergency department	363	7.46	1	10	1.92
Availability of equipment and of specialist staff to conduct tests, blood tests	366	7.32	1	10	2.19
Overall, accessibility and availability	375	7.49	1	10	2.08
Privacy					
The way the privacy was safeguarded	372	7.27	1	10	2.41
Waiting time for triage (perception)					
Waiting time for triage in view of the severity of the condition	362	7.35	1	10	2.37
Doctors					
Friendliness and helpfulness of the doctor(s)	379	7.74	1	10	2.17
Competence and professionalism of the doctor(s)	374	7.90	1	10	2.15
The way the doctor explained a health problem (diagnosis) during the examination	378	7.78	1	10	2.30
The explanations given by the doctor on the exams performed and the objectives of the treatment to be undertaken	366	7.77	1	10	2.39
The information provided on precautions to be taken, recommendations, and how to take or apply the medications prescribed (written or oral) after leaving hospital	370	7.95	1	10	2.23
Overall, the performance of the doctor(s)	378	7.89	1	10	2.26
Waiting time to be called back by the doctor (perception)					
Waiting time to be called back by the doctor after the examinations and/or tests in view of the severity of the condition	314	5.58	1	10	2.71
Expectations					
Meeting expectations	375	6.65	1	10	2.39
Confidence/trust in the ED					
Confidence/trust in the emergency department the next time it is necessary	374	8.11	1	10	2.42
Satisfaction					
Considering the entire experience in the ED, the level of satisfaction	380	7.10	1	10	2.38
Perceived quality of healthcare					
Overall, evaluation of the quality of healthcare	373	7.65	1	10	2.10
	n	%	–	–	–
Information about possible delays in receiving treatment or waiting times					
Yes	59	16.6	–	–	–
No	297	83.4	–	–	–
Total	356	100.0	–	–	–

ED = emergency department, SD = standard deviation.

Thus, a comparison of the coefficients in Tables 2 and 3 shows some minor differences in the mediation models with and without direct paths. We also decided to compare the relative fit of the two models using the Akaike information criterion (AIC) and the Bayesian information criterion (BIC) as model-selection criteria, for which a lower AIC value or BIC value indicate a better fit.[44–46] Our conceptual model with direct paths had the following values: AIC = 2597 and BIC = 2677. Our model without direct paths had the following values: AIC = 2602 and BIC = 2656. We can notice that Satisfaction and PQHC play distinct mediating role in strengthening the effect of a certain set of drivers on confidence/trust in the ED.

4. Discussion

Trust is considered an important indicator of a health care system's performance.[47] High levels of trust may lead to lower health care costs, and better health outcomes.[48] Both of our models had an overall acceptable fit. Our SRMR, CFI and TLI were within the specified criteria, which indicated a good model fit in our case.[49–52] However, we need to mention some

deviations regarding RMSEA values. In some research, RMSEA values of between 0.08 and 0.05 are indicators of moderate model fit.[51,52] According to Browne and Cudeck (1993),[53] RMSEA values of between 0.08 and 0.10 are considered to be a mediocre fit. In other research, RMSEA values of between 0.10 and 0.06 are considered to be acceptable.[54] In our case, the model without direct paths had slightly better RMSEA values (0.08) than the model with direct paths (0.10). However, given that there is a debate in the scientific literature regarding AIC and BIC as model-selection criteria, we decided to compare the models using both and identified some slight differences. According to the AIC value, the model with direct paths is slightly better than the model without direct paths. However, according to the BIC value, the model without direct paths is slightly better than the model with direct paths. We need to pay attention to the BIC as it is considered to perform better than the AIC in finding the best true model, having the most accurate model-selection statistic and being generally preferable in all cases in simulation experiments.[55–57] In turn, the AIC often, indeed almost always, selects more complex or overly complex models than the BIC does, revealing an overall poor perfor-
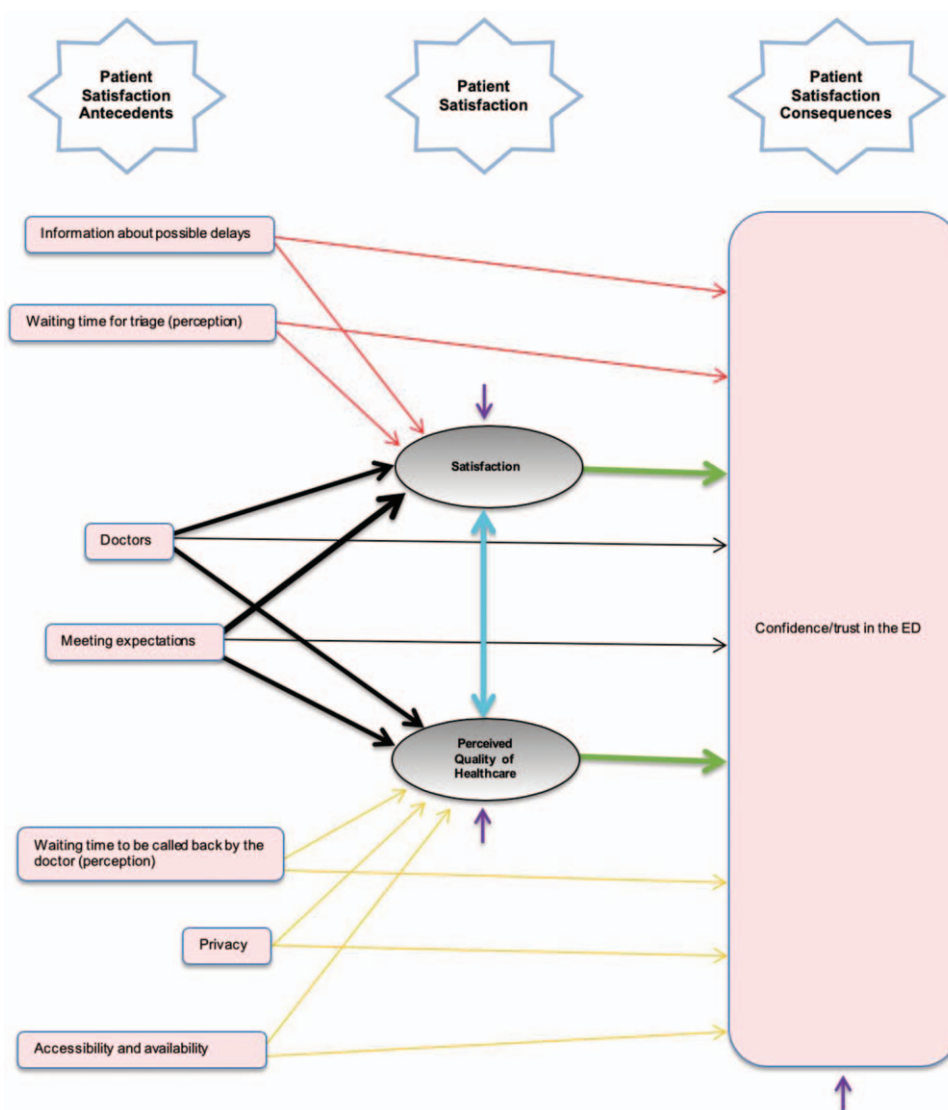
Figure 1. Conceptual model with direct paths.

mance.[56,58] Hence, using the BIC as a model-selection criterion, our conceptual model without direct paths has a better fit than the model with direct paths.

The paradigm of the key factors of a positive patient-doctor relationship in the ED is primarily based on trust. Doctors in EDs are prone to high levels of work-related stress for multiple reasons, including dealing with patients with different problems, most of which are urgent, and the urgency expressed by patients in EDs who feel they should receive immediate and adequate care.[59] Doctors play a significant role in reassuring patients and enhancing their overall experience through communication. Physicians' communication skills significantly influence the level of trust,[60] as it is an important dimension on which patients base their trust.[5] In one study, convenience and confidence/trust in the ED doctors was one of the primary reasons why patients visited the ED.[61] Researchers emphasized that the interviewed patients offered reasons for visiting the ED such as "*The doctors here are better*" and "*I trust the doctors here*."[61] Physicians' behaviors, thoroughness, competence, respect and caring were found to be more important to building trust than eye contact, privacy, and necessary procedures and tests.[62]

According to our results, there is an association between physicians' communication attributes and confidence/trust involving the manner in which the doctor explains a health problem (diagnosis); explanations provided by the doctor concerning the exams performed and the objectives of the treatment to be undertaken; and information provided on precautions to be taken, recommendations, and how to take or apply the medications prescribed. Moreover, friendliness and helpfulness, as well as the competence and professionalism of the doctor(s), were also associated with confidence/trust. Researchers have emphasized the importance of improving trust as an aspect of healthcare quality.[11] In our mediation model, we found that overall satisfaction with doctors can better explain confidence/trust in the ED through PQHC than through satisfaction; however, conversely, meeting expectations can better explain confidence/trust in the ED through satisfaction than through PQHC.

Table 2

Coefficients of the model with the mediated and direct effects.

			Path name	Coefficients	*t* value	*P* value
Direct paths						
Information about possible delays	~	*Confidence/Trust*	C1	−0.04	−1.14	.26
Qualitative perceived waiting time for triage	~	*Confidence/Trust*	C2	−0.03	−0.87	.39
Doctors	~	*Confidence/Trust*	C3	0.15	3.17	.00
Meeting expectations	~	*Confidence/Trust*	C4	−0.16	−2.47	.01
Qualitative perceived waiting time to be called back by the doctor after the examinations and/or tests	~	*Confidence/Trust*	C5	0.03	0.86	.39
Privacy	~	*Confidence/Trust*	C6	0.01	0.14	.89
Accessibility and availability	~	*Confidence/Trust*	C7	0.06	1.29	.20
			Sum of direct paths	0.03	0.30	.76
Decomposed mediated paths						
Information about possible delays	~	*Satisfaction*	X1	0.08	2.97	.00
Qualitative perceived waiting time for triage	~	*Satisfaction*	X2	0.09	3.13	.00
Doctors	~	*Satisfaction*	X3	0.21	5.74	.00
Meeting expectations	~	*Satisfaction*	X4	0.66	21.52	.00
Doctors	~	*PQHC*	X5	0.37	8.40	.00
Meeting expectations	~	*PQHC*	X6	0.36	7.65	.00
Qualitative perceived waiting time to be called back by the doctor after examinations and/or tests	~	*PQHC*	X7	0.08	2.03	.04
Privacy	~	*PQHC*	X8	0.12	3.36	.00
Accessibility and availability	~	*PQHC*	X9	0.10	2.21	.03
Satisfaction	~	*Confidence/Trust*	M1	0.42	5.95	.00
PQHC	~	*Confidence/Trust*	M2	0.44	7.31	.00
Mediated paths						
→			X1*M1	0.03	2.65	.01
→			X2*M1	0.04	2.77	.01
→			X3*M1	0.10	4.18	.00
→			X4*M1	0.28	5.70	.00
→			X5*M2	0.16	5.53	.00
→			X6*M2	0.16	5.27	.00
→			X7*M2	0.03	1.95	.05
→			X8*M2	0.05	3.05	.00
→			X9*M2	0.04	2.12	.03

PQHC = Perceived Quality of Healthcare.

Unmet expectations were found to be associated with lower patient satisfaction and were observed more frequently among patients who lack trust in their physicians.[63] Physicians play an important role in meeting various types of expectations and in influencing satisfaction.[64] Information and communication play an important role in the context of patient satisfaction.[65] Blackburn et al (2019) have emphasized several key themes, such as explanations regarding care and treatment (including triage explanations), communication (including waiting time information and feeling informed), written communication, and expectations of the ED.[65] Zebiene et al (2004) have identified the most important expectations, such as 'understanding and explanation,' 'emotional support,' and 'getting information;' thus, a higher satisfaction level was associated with a greater number of expectations met.[64] Houwen et al (2019) have provided an example of a definition regarding expectations and experiences; in the case of expectations, patients attach a certain importance to communication aspects, and experiences are related to the reception of communication aspects from the GP.[66]

Patients have been found to appreciate high-quality information and a pleasant communication upon arrival and discharge.[67] Mäkinen et al (2019) have stressed the importance of the discharge process, namely, discharge instructions.[68] One half of patients who received discharge instructions were satisfied with the communication at discharge, while the other half of unsatisfied patients felt that ED staff was not aware enough of their background to give instructions. Among other aspects, patients emphasized a lack of opportunities to ask questions, ambiguous instructions, and guidance sessions that were too restricted and short.[68] Indeed, satisfactory communication can contribute to better patient-doctor relationships.[67] Furthermore, follow-up support after discharge can contribute to improved recuperation.[67] All of this is reflected in patient-centered care. Patients who get patient-centered care tend to trust the health care system more.[36] In turn, patient satisfaction is one of the key terms in patient-centredness.[69] A positive patient-centered care approach is associated with a higher satisfaction level, a reduced symptom burden, and a lower rate of referrals.[70] Patients' preferences and values constitute an important basis for management practice, which is likewise a crucial issue in patient-centredness.[69] Patient-centered care and patient satisfaction reflect the quality of healthcare that involves patients in decision-making.[67] Thus, trust can be promoted by effective communication with patients, namely by providing clear answers and the necessary information, listening carefully, and involving them in medical decisions.[24,71]

Given the fact that patient-centered communication was found to be positively associated with healthcare quality evaluation and trust in the healthcare provider,[72] patients' perceptions of
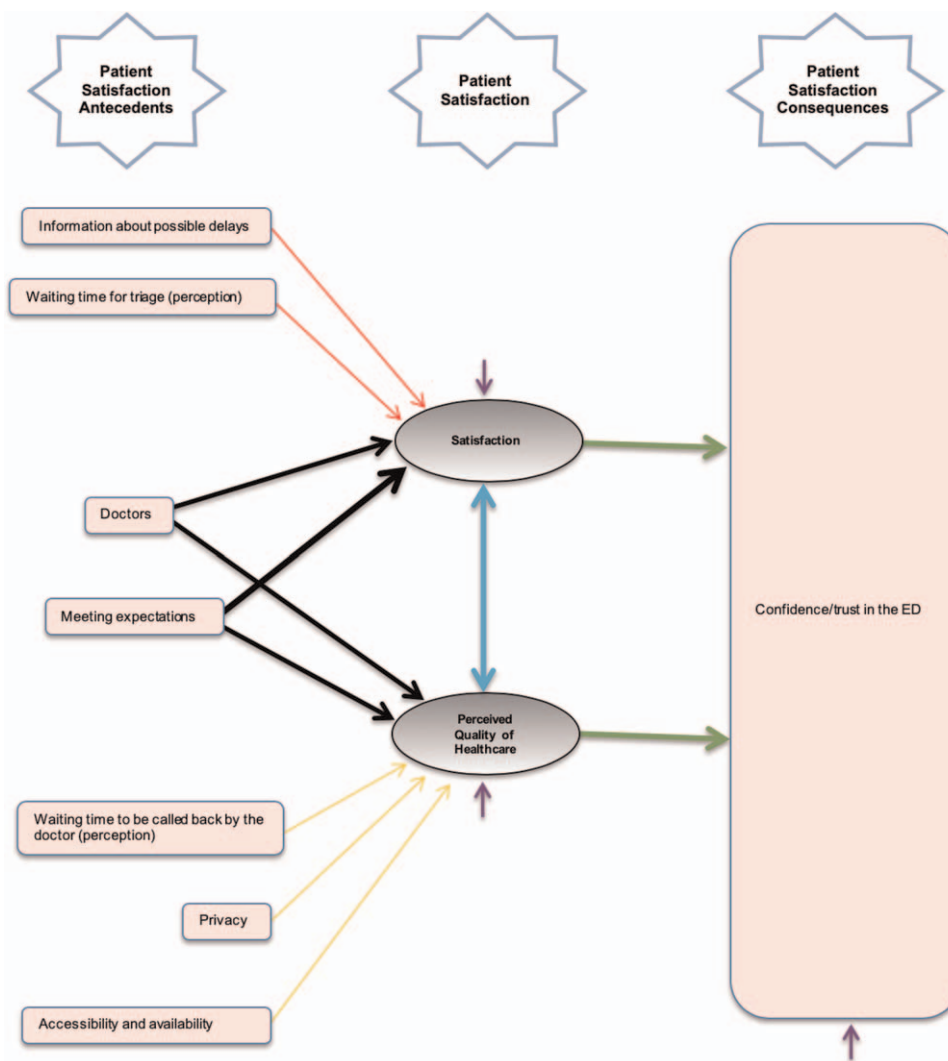
Figure 2. Conceptual model without direct paths.

service quality are an important target point in the pursuit of delivering better healthcare services.[16] Elements of patients' perceptions (health promotion, communication and partnership, personal relationships, prognosis and diagnosis approach, and interest in the impact on life) may help identify various outcomes.[70] Skolasky et al (2009) have emphasized the correlation between satisfaction, expectations, and outcomes.[19] Satisfaction levels depend on the way patient expectations meet outcomes.[19] Licina et al (2013) have noted that patient expectations do not have a strong impact on patient satisfaction and the final outcome.[73] Regardless of whether expectations were exceeded or were not met, most patients in this study were satisfied, including with their outcome.[73]

One study that investigated patient expectations of ED care emphasizes that patients value effective communication and expect short waiting times, and this is similar across all triage levels.[74] Long waiting times may create problems such as overcrowding, which turns into an important patient safety issue.[75] Moskop et al (2019) have investigated the problem of overcrowding and noted its adverse consequences, such as

increased medical errors, provider moral distress, compromises in communication and confidentiality, patient physical privacy, and poorer patient outcomes.[76] In order to avoid negative perceptions, it is important to understand that various factors influence waiting time perceptions. Spechbach et al (2019) have noted some of the most important ones, such as respect for privacy, the feeling of being forgotten, emergency-level assessment by health professionals, and a lack of information regarding the precise waiting time.[77] The difference between expected and actual waiting time should also be noted; this difference is called 'waiting confirmation,' and it determines the extent to which reality and expectations differ. Hence, waiting perceptions are directly related to their duration and can be influenced by the difference between the expected and actual waiting time.[77]

Patient expectations have continued to evolve and increase, and this is something that emergency care providers need to understand to improve patient outcomes and reduce the likelihood of liability.[78] However, patients might have unrealistic expectations, which might not be met and, thus, negatively affect their perceived quality of care.[79] While some patients'

Table 3

Coefficients of the model with the mediated effects.

			Path name	Coefficients	t-value	P-value
Decomposed mediated paths						
Information about possible delays	~	Satisfaction	X1	0.08	2.97	.00
Qualitative perceived waiting time for triage	~	Satisfaction	X2	0.09	3.13	.00
Doctors	~	Satisfaction	X3	0.21	5.74	.00
Meeting expectations	~	Satisfaction	X4	0.66	21.52	.00
Doctors	~	PQHC	X5	0.37	8.40	.00
Meeting expectations	~	PQHC	X6	0.36	7.65	.00
Qualitative perceived waiting time to be called back by the doctor following examinations and/or tests	~	PQHC	X7	0.08	2.03	.04
Privacy	~	PQHC	X8	0.12	3.36	.00
Accessibility and availability	~	PQHC	X9	0.10	2.21	.03
Satisfaction	~	Confidence/Trust	M1	0.35	6.52	.00
PQHC	~	Confidence/Trust	M2	0.53	10.15	.00
Mediated paths						
→			$X1^*M1$	0.03	2.70	.01
→			$X2^*M1$	0.03	2.82	.00
→			$X3^*M1$	0.10	4.33	.00
→			$X4^*M1$	0.23	6.21	.00
→			$X5^*M2$	0.20	6.43	.00
→			$X6^*M2$	0.19	6.15	.00
→			$X7^*M2$	0.04	1.98	.05
→			$X8^*M2$	0.06	3.18	.00
→			$X9^*M2$	0.05	2.16	.03

PQHC = Perceived Quality of Healthcare.

expectations are realistic and others unrealistic, managing them can be challenging.[78]

Trust and expectations play an important role in the doctor-patient relationship.[80] Several researchers have pointed out that trust is more complex than expectations as older adults could be satisfied but not trust providers, or they could trust providers but not be satisfied.[81] Other researchers have emphasized that patients may be satisfied with the visit but may not have a sense of trust, and vice versa.[11] In our research, we considered confidence/trust to be an outcome; thus, our results indicate that a certain set of variables (overall satisfaction with doctors; meeting expectations) can bypass satisfaction and PQHC and have a direct influence on confidence/trust, while other sets of variables (qualitative perceived waiting time for triage; information about possible delays) cannot bypass satisfaction, and still others (qualitative perceived waiting time to be called back by the doctor following examinations and/or tests; privacy; accessibility and availability) cannot bypass PQHC without any chance of a direct influence on confidence/trust.

5. Limitations

The data collection had some limitations as it was confined to one ED in one country. In addition, we only considered the Portuguese-speaking population who could answer the questions. We chose a sample distribution with a 5% margin of error rather than a lower margin of error due to time and financial constraints. A longitudinal study would be a preferable choice, as some of the effects may present temporal lags.

6. Conclusion

Satisfaction and PQHC play important but distinct mediating roles in strengthening the effect of patient satisfaction antecedents

on patient satisfaction consequences. Thus, depending on the desired outcome, it is necessary to determine the sequence of priorities for improvement in the context of ED, and to differentiate the mediating role of patient satisfaction and PQHC.

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