

RESEARCH NOTE

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# The role of confidence/trust in the emergency department

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## Abstract

**Objective** The aim of this research is to identify the main determinants of patients' confidence/trust in the emergency department (ED), the effects of these determinants on confidence/trust in the ED and potential mediators in this regard.

**Results** Through satisfaction, the effect of doctors, perceived waiting time for triage, information about possible delays in receiving treatment or waiting times, and meeting expectations lead to confidence/trust in the ED by 66%, 61%, 61%, and 61% of the variation, while through perceived quality of healthcare (PQHC), the effect of privacy, doctors, accessibility and availability, perceived waiting time to be called back by the doctor after the examinations and/or tests, and meeting expectations lead to confidence/trust in the ED by 64%, 64%, 65%, 63%, and 65% of the variation, with statistically significant results ( $p < 0.01$ ).

**Keywords** Trust, Confidence, Emergency department, Perceived quality of healthcare, Patient satisfaction

## Introduction

Patient trust involves a complex series of relationships based on behaviors and specific expectations [1]. Trust can influence behavioral outcomes and privacy concerns. Researchers have emphasized that trust and privacy concerns are influenced by previous experiences of privacy or security breaches [2].

Patient trust is a multifactorial, psychologically conditioned feeling [3]. Patient trust refers to patients' willingness to rely on medical staff and hospitals after comparing their perceptions of the professional ethics of

medical staff, medical institutions, and professional competence with their own psychological expectations in the diagnosis and treatment process [4].

As a sociological construct, trust refers to people's expectations, typically regarding advocacy, goodwill, and competence [5]. It is, thus, future-directed. Expectations placed specifically on healthcare organizations are also future-directed; although other forms of knowledge and past experiences influence the degree of current trust [5].

Previous studies have found that patient trust is influenced by many factors, including medical situation and social background and other individual characteristics of both doctors and patients [6]. Patient trust is a key element in the relationship between a patient and a healthcare provider; more specifically, the patient's confidence that doctors will provide effective treatment [7]. Trust in healthcare providers has been linked to the quality of the doctor-patient relationship [1]. When patients' feelings of trust are lower, they are less likely to follow doctors' instructions and recommendations [8].

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Doctor-patient communication has a significant impact on patient satisfaction and trust [6, 9]. Effective communication between doctors and patients helps regulate the patients' emotions, facilitates the exchange of medical information, and allows the physician to understand perceptions, needs, and expectations and reach agreements regarding healthcare services [10].

Overall, trust in physicians is critical to patient satisfaction and effective medical care [11]. In general, patients who are highly satisfied are more likely to trust their physicians [6]. Among the factors that influence trust in doctors, researchers have highlighted organizational aspects of care, including continuity, accessibility and availability, as well as physicians' empathy, competence, communication skills, responsible prescribing, and transparency [12].

Another important issue that can affect public confidence in health facilities and worsen patient's health conditions is long waiting times [13]. A high proportion of patients with long-term hospital stays (>21 days) has been associated with longer patient waiting times in the ED [14]. Moreover, longer waiting times in EDs are associated with overall negative patient outcomes and increased patient mortality [14]. For patients, uncertainty is one of the most significant factors that leads to anxiety and other negative emotions. Accurate information about waiting times can reduce the pressure on patients, reduce waiting time uncertainty, increase patient trust in healthcare providers, and improve patient satisfaction [13].

Identifying factors that build trust or help reduce distrust is critical to effective healthcare governance [11]. It is also important to consider patient satisfaction and PQHC. This is because a higher PQHC may result in higher patient satisfaction and trust in a hospital [3].

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

In one study using structural equation modeling ("path analysis"), confidence/trust in the ED was considered to be an outcome. The results indicated that a certain set of variables (meeting expectations; doctors) can bypass PQHC and satisfaction and have a direct influence on confidence/trust, while other sets of variables (information about possible delays in receiving treatment or waiting times; perceived waiting time for triage) cannot bypass satisfaction, and still others (accessibility and availability; privacy; perceived waiting time to be called back by the doctor after the examinations and/or tests) cannot bypass PQHC without any chance of a direct influence on confidence/trust [15].

However, we believe that stepwise multiple linear regression analysis through various mediation models may be particularly useful in showing the contribution of

the mediators, the effect of the predictors on confidence/trust without mediators, and the entire models with interaction effects in terms of percentage.

## Methods

To calculate our random probabilistic sample size, we used a list of 55,903 patients who entered the ED at the public hospital in Lisbon, Portugal at least once between January 1 and December 31, 2016. All responders were at least 18 years old, able to answer the questions, residents of Portugal, and Portuguese-speaking. We excluded respondents under 18 years old, who were unable to answer the questions, who resided outside Portugal, or who had psychiatric illnesses. When a chosen individual had more than one ED admission in the year under study, we chose the last admission according to the date of admission. A 5% margin of error and a 95% confidence interval were used. The representative sample size comprised 382 patients. The data were collected between May and November 2017.

A sample distribution by age and gender was calculated using several steps. First, we calculated the distribution of the universe with a total number of 55,903 patients. Second, we calculated an ideal distribution from the random, probabilistic sample selection of 382 individuals. Our gender distribution was ultimately sufficiently close to an ideal distribution, with a female prevalence. Our age distribution was harder to control, and here we observed a prevalence of the 31–40 group of patients in our case and the 18–30 group of patients in the case of ideal distribution, while the 41–50 age group and the 80+ age group were sufficiently close to an ideal distribution.

Before sending the questionnaire, we contacted all patients by telephone to obtain their permission to send the questionnaire and consent to participate in the survey. We made telephone calls three times during the day at different times of the day. If our attempts to reach a patient were unsuccessful, the patient was classified as not responsive. During the data collection period, we made a total of 4,413 telephone calls, just including the first-call attempts and excluding all repeat calls afterwards. Those who did not have a telephone number on our list were excluded prior to the initiation of the calls.

Our modified-elaborated questionnaire was partly based on the questionnaire used by Pereira et al. [16] and was partly based on the Instruments for Evaluating Hospital Quality - Adult Emergency, which was designed, developed, and tested by the Center for Studies and Research in Health of the University of Coimbra [17]. In addition, we took into consideration the fourth national health survey (Portugal) prepared by the National Institute of Health Dr. Ricardo Jorge/National Institute of Statistics, [18] as well as the survey used to investigate the aging process in Portugal [19]. The questionnaire was

developed using various measurement scales and consisted of 75 questions. It was sent either by post office or e-mail, depending on the respondent's preference.

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, 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 ( $p \leq 0.05$ ), and some other predictors that had a statistically significant (marginal effects) relationship with satisfaction/PQHC ( $p \leq 0.10$ ) as identified in multiple regression analysis. Thus, regarding satisfaction, we used the following set of variables: doctors ( $r = 0.14$ ,  $p \leq 0.01$ ); perceived waiting time for triage ( $r = 0.08$ ,  $p \leq 0.05$ ); meeting expectations ( $r = 0.53$ ,  $p \leq 0.01$ ); and information about possible delays in receiving treatment or waiting times ( $r = 0.06$ ,  $p \leq 0.10$ ). Regarding PQHC, we used the following set of variables: doctors ( $r = 0.43$ ,  $p \leq 0.01$ ); meeting expectations ( $r = 0.26$ ,  $p \leq 0.01$ ); perceived waiting time to be called back by the doctor after the examinations and/or tests ( $r = 0.10$ ,  $p \leq 0.10$ ); privacy ( $r = 0.09$ ,  $p \leq 0.10$ ); and accessibility and availability ( $r = 0.09$ ,  $p \leq 0.10$ ).

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.

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 (including the location of the hospital and ED within the city, the orientation within the ED, the distance between the different areas of the ED, and the availability of equipment and specialist staff to conduct tests, blood tests); and (2) doctors (including the doctor's friendliness and helpfulness, the doctor's competence and professionalism, how the doctor explained a health problem (diagnosis) during the examination, the explanations provided by the doctor on the exams performed and the objectives of the treatment to be undertaken, the information provided by the doctor on the precautions to be taken, and the doctor's

recommendations and instructions on how to take or apply the medications prescribed, written or oral, after leaving the hospital). 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).

## Results

### Effect on confidence/trust (with satisfaction)

Four mediation models with satisfaction were statistically significant, as shown in Fig. 1.

The first, second, third, and fourth models, which represent doctors, perceived waiting time for triage, information about possible delays, and meeting expectations, show that the contribution of satisfaction in the given models is 21%, 48%, 59%, and 18% of the explained variance; thus, it explains the effect of doctors, perceived waiting time for triage, information about possible delays, and meeting expectations on confidence/trust in the ED through satisfaction by 21%, 48%, 59%, and 18%, with statistically significant results ( $p < 0.01$ ).

Without satisfaction as a mediator, the effect of doctors on confidence/trust in the ED is explained by 45%. The model without satisfaction as a mediator has an  $r = 0.67$  correlation level. Adding satisfaction as a mediator in the model reduces the direct correlation level to  $r = 0.28$ , showing a partial mediation in the model through satisfaction. In this case, confidence/trust is explained by both a mediation relation and a direct relation with the predictor.

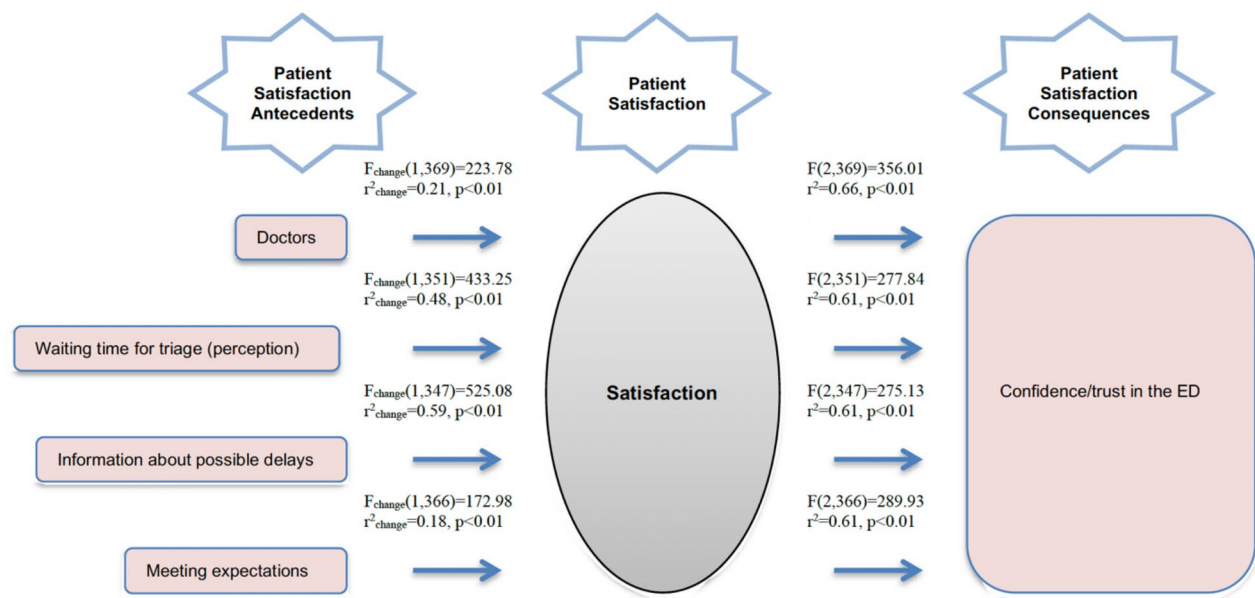
Without satisfaction as a mediator, the effect of perceived waiting time for triage, information about possible delays, and meeting expectations on confidence/trust in the ED is explained by 13%, 2%, and 43%. The models without satisfaction as a mediator have correlation levels of  $r = 0.37$ ,  $r = 0.17$ , and  $r = 0.66$ . Adding satisfaction as a mediator in the models reduces the direct correlation level to  $r = -0.00$ ,  $r = -0.02$ , and  $r = 0.02$ , thus showing a complete mediation in the model through satisfaction.

Analyzing the entire models with interaction effects, we can conclude that, through satisfaction, the effect of doctors, perceived waiting time for triage, information about possible delays, and meeting expectations lead to confidence/trust in the ED by 66%, 61%, 61%, and 61% of the variation, with statistically significant results ( $p < 0.01$ ).

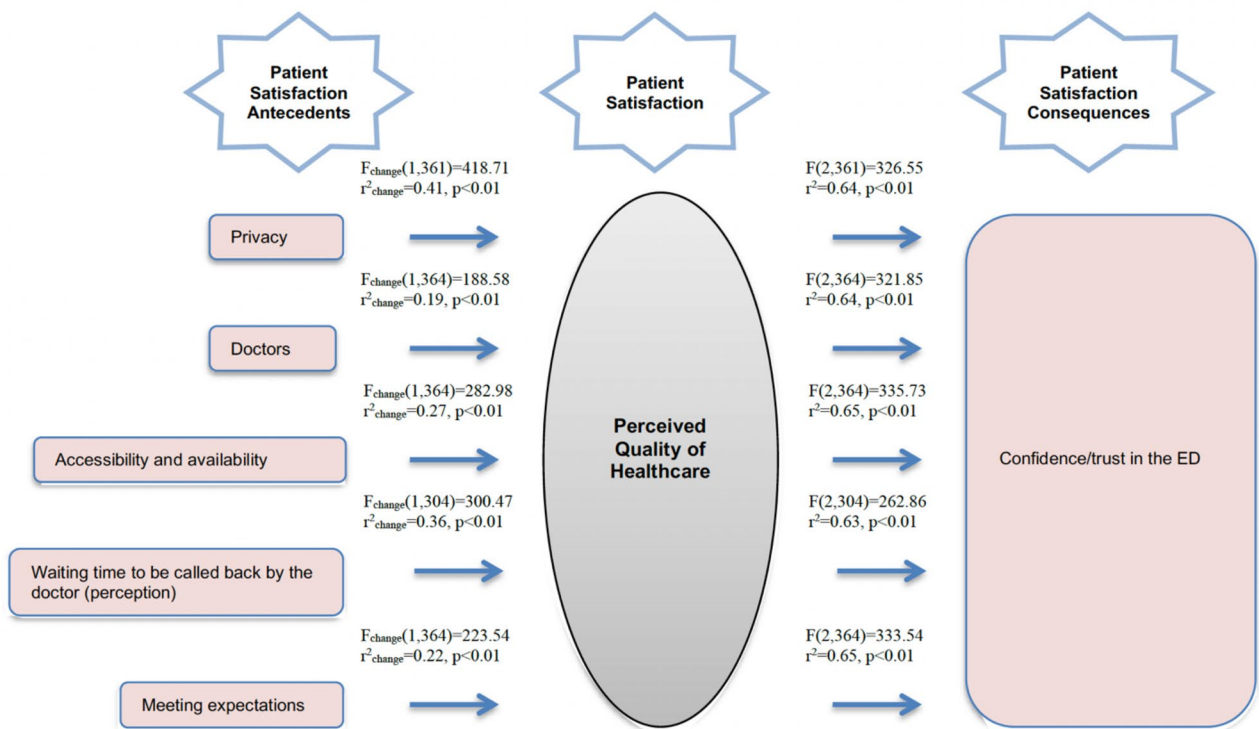
### Effect on confidence/trust (with PQHC)

Five mediation models with PQHC were statistically significant, as shown in Fig. 2.

The first, second, third, fourth, and fifth models, which represent privacy, doctors, accessibility and availability,



**Fig. 1** Effect on confidence/trust (with satisfaction)



**Fig. 2** Effect on confidence/trust (with PQHC)

perceived waiting time to be called back by the doctor, and meeting expectations, show that the contribution of PQHC is 41%, 19%, 27%, 36%, and 22% of the explained variance; thus, it explains the effect of privacy, doctors, accessibility and availability, perceived waiting time to be called back by the doctor, and meeting expectations on

confidence/trust in the ED through PQHC by 41%, 19%, 27%, 36%, and 22%, with statistically significant results ( $p<0.01$ ).

Without PQHC as a mediator, the effect of privacy, doctors, accessibility and availability, perceived waiting time to be called back by the doctor, and meeting



**Table 1** Comparison between satisfaction and PQHC (mediation models)

Patient Satisfaction Antecedents	Satisfaction		Perceived Quality of Healthcare		Patient Satisfaction Consequences
	$r^2_{\text{change}}$ (%)	$r^2$ (%)	$r^2_{\text{change}}$ (%)	$r^2$ (%)	
Accessibility and availability			27%	65%	Confidence/Trust
Privacy			41%	64%	Confidence/Trust
Doctors	21%	66%	19%	64%	Confidence/Trust
Information about possible delays in receiving treatment or waiting times	59%	61%			Confidence/Trust
Waiting time for triage (perception)	48%	61%			Confidence/Trust
Waiting time to be called back by the doctor after the examinations and/or tests (perception)			36%	63%	Confidence/Trust
Meeting expectations	18%	61%	22%	65%	Confidence/Trust

expectations on confidence/trust in the ED is explained by 23%, 45%, 38%, 27%, and 43%, respectively. The models without PQHC as a mediator have correlation levels of  $r=0.48$ ,  $r=0.67$ ,  $r=0.61$ ,  $r=0.52$ , and  $r=0.67$  respectively. Adding PQHC as a mediator in the models reduces the direct correlation level to  $r=0.15$ ,  $r=0.17$ ,  $r=0.19$ ,  $r=0.11$ , and  $r=0.20$ , thus showing a partial mediation in the models through PQHC. In this case, confidence/trust in the ED is explained by both a mediation relation and a direct relation with the predictor.

Analyzing the entire models with interaction effects, we can conclude that, through PQHC, the effect of privacy, doctors, accessibility and availability, perceived waiting time to be called back by the doctor, and meeting expectations lead to confidence/trust in the ED by 64%, 64%, 65%, 63%, and 65% of the variation, with statistically significant results ( $p<0.01$ ).

**Comparison between satisfaction and PQHC (mediation models)**

Table 1 presents a comparison of the contribution of PQHC and satisfaction as mediators in the models.

Comparing the results of the mediation models, we must note that separately, among all mediation models, the greatest contribution of satisfaction is related to information about possible delays, thus explaining the effect of information about possible delays on confidence/trust in the ED through satisfaction by 59% of the explained variance. The greatest contribution of PQHC is related to privacy, thus explaining the effect of privacy on confidence/trust in the ED through PQHC by 41% of the explained variance.

The smallest contribution of satisfaction is related to meeting expectations, thus explaining the effect of meeting expectations on confidence/trust in the ED through satisfaction by 18% of the explained variance. The smallest contribution of PQHC is related to doctors, thus, explaining the effect of doctors on confidence/trust in the ED through PQHC by 19% of the explained variance.

**Discussion**

Researchers have emphasized that an important aspect of healthcare quality is improving trust, [20] and considering trust as an outcome, there is a correlation between outcomes, satisfaction, and expectations [21]. Other researchers have noted that the mediator between quality and satisfaction is the fulfilment of patients' expectations [22]. However, trust is a more complex issue than expectations, as patients may be satisfied but may not trust their providers, or they may trust their providers but may not be satisfied [20, 23].

Expectations and trust play a significant role in the relationship between patient and doctor [24]. Physicians, in turn, play an important role in influencing satisfaction and meeting different types of expectations [25]. In one study, unmet expectations were associated with lower patient satisfaction and were more common among patients who lack trust in their doctors [26]. Convenience and confidence/trust in the ED doctors was one of the main reasons patients visited the ED [27]. Trust was found to be associated with physicians' behavior (honesty, competency, caring, communication) [28]. Physicians' behavior, respect, thoroughness, caring and competence were found to be more important in building trust than necessary tests and procedures, privacy, and eye contact [29].

According to our results, we can conclude that both PQHC and satisfaction play important roles as mediators in understanding confidence/trust in the ED with different predictors. Nevertheless, there are only two common predictors that we can observe in the mediation models with both satisfaction and PQHC, namely, doctors (which has a greater effect on confidence/trust through satisfaction (21%) than through PQHC (19%)) and meeting expectations (which has a greater effect on confidence/trust through PQHC (22%) than through satisfaction (18%)). Without satisfaction/PQHC as a mediator, the effect of doctors and meeting expectations on confidence/trust in the ED is explained by 45%/45% and 43%/43%. Hence, there is something that unites these

two mediators (PQHC and satisfaction) in understanding confidence/trust in the ED.

### Limitations

The data collection had some limitations, as it was confined to one ED in one country. We only considered the Portuguese-speaking population who could answer the questions. In addition, the Portuguese healthcare system is characterized by the Beveridge model. Other countries with different healthcare systems may have different results. We chose a sample distribution with a 5% margin of error and a 95% confidence interval rather than a lower margin of error due to time and financial constraints.

### Abbreviations

ED Emergency Department  
PQHC Perceived Quality of Healthcare

### Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s13104-025-07266-4>.

Supplementary Material 1

Supplementary Material 2

### Acknowledgements

Not applicable.

### Author contributions

Conceptualization: Alina Abidova. Data curation: Alina Abidova. Formal analysis: Alina Abidova, Sérgio Moreira. Investigation: Alina Abidova. Methodology: Alina Abidova, Pedro Alcântara da Silva. Project administration: Alina Abidova. Resources: Alina Abidova. Supervision: Alina Abidova, Pedro Alcântara da Silva. Validation: Alina Abidova. Visualization: Alina Abidova. Writing—original draft: Alina Abidova. Writing—review & editing: Alina Abidova, Pedro Alcântara da Silva, Sérgio Moreira.

### Funding

The study received no funding.

### Data availability

The data are available on reasonable request from the corresponding author.

### Declarations

#### Ethics approval and consent to participate

We obtained authorization to administer our study from the Ethics Committee and the Board of Directors and Administration of the Centro Hospitalar de Lisboa Ocidental E.P.E. (CHLO). Our study was conducted in compliance with the ethical principles set out in the Declaration of Helsinki. Informed consent to participate was obtained from all of the participants in this study. All interviewed patients were asked to provide verbal and written consent to participate in the research. Patients were given a form to sign that would confirm their consent to participate in the research along with the questionnaire sent by mail or e-mail. Patients were informed that all gathered data were to be confidential and anonymous and would be used only in the framework of the research. Participation was voluntary and each participant had the right at any time to interrupt or stop filling in the survey without any explanation and penalties.

#### Consent for publication

Not applicable.

### Competing interests

The authors declare no competing interests.

Received: 17 January 2025 / Accepted: 23 April 2025

Published online: 29 April 2025

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