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Assessing validity and reliability of a new tool: the ECSQ (Endoscopy Customer Satisfaction Questionnaire) in Italian for customer satisfaction in digestive endoscopy

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Key words: Customer satisfaction, Endoscopy, ECSQ, Survey, Quality, Validation
Parole chiave: Customer satisfaction, Endoscopia, ECSQ, Questionario, Qualità, Validazione

Abstract

Background. *The European Society of Gastrointestinal Endoscopy and the American Society for Gastrointestinal Endoscopy recommend the identification of quality indicators for endoscopy services, including patient satisfaction. Patients happy with the treatment received will be more willing to participate in screening programs and more adherent to the indications received from the doctor. The aim of this study is to validate the Endoscopy Customer Satisfaction Questionnaire in Italian, in order to have a valid and reliable tool that can allow each patient to fully describe their experience in digestive endoscopy services.*
Methods. *The validation of the questionnaire was carried out through a a monocentric cross-sectional study, in the endoscopy service of the Campus Bio-Medico University Hospital in Rome between August and September 2020.*
Results. *A total of 155 patients underwent an endoscopy. The mean age of the sample was 56.21 years (SD ± 14.136) with 46.5% male and 53.5% female. The analysis of the validity and reliability of the questionnaire was ensured through the finding of an average value of 0.944 for Cronbach's α.*
Conclusion. *From the analysis of the results, we can therefore believe that the Italian version of the Endoscopy Customer Satisfaction Questionnaire is to be considered valid and reliable for measuring patient satisfaction, allowing them to express their point of view.*

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Introduction

Customer satisfaction is commonly considered a quality indicator which, in the healthcare sector, can be conceived as the final result of healthcare (1), representing the way each hospital responds to the needs and expectations of patients (2). For this reason, a high-quality healthcare system needs to be patient-centred (3).

Quality improvement is recognized to have an important impact on patient satisfaction (4). Parasuraman et al. in 1988 defined quality as the measure of customer perception. The patient's opinion can therefore allow stakeholders to improve the services offered (5).

The nurse is the most suitable figure to evaluate the healthcare offer, given their central role in the care process, thus allowing to improve the services provided to customers in this setting (6). In order to do this, it is necessary to investigate the patient's opinions (7).

The most appropriate screening tool for obtaining customer feedback is a questionnaire that allows to assess the degree of satisfaction and dissatisfaction (8).

To achieve consumer satisfaction, it is essential to examine their opinions, subsequently understanding which characteristics and aspects are particularly important to them (9).

Today, accreditation agencies involved in implementing the quality of health care, such as the Joint Commission International (JCI), require their accredited facilities to assess customer satisfaction (10). Similarly, in the United States, the introduction of a health policy that also provides reimbursement for hospitals based on the quality of care instead of the quantity of the service provided, has focused attention on patient satisfaction (11). Knowing the users' judgment can support healthcare management in organizing services in the logic of quality and improvement (12).

The European Society of Gastrointestinal Endoscopy (ESGE) (13) and the American Society for Gastrointestinal Endoscopy (ASGE) (14) recommend the identification of quality indicators for endoscopy services, including patient satisfaction.

In Italy, the Italian Society of Digestive Endoscopy (SIED) which deals with the implementation of quality and innovation in endoscopy, includes, among the requirements for accreditation, the periodic measurement of patient satisfaction (15). Patients happy with the received care will be more willing to participate in screening programs and more adherent to the indications received from the doctor (16).

In order to do this in the best possible way, it is important that nurses analyse customer satisfaction thanks to sensitive, specific, valid and reliable tools (17).

The aim of this study is to validate the Italian version of the Endoscopy Customer Satisfaction Questionnaire (ECSQ), in order to create a valid and reliable tool that can allow each patient to fully describe his/her experience of digestive endoscopy services.

Methods

The Italian validation of the ECSQ questionnaire **(Annex 1)**, designed to assess the satisfaction level of the patient who performs a digestive endoscopy, was carried out through a prospective single-centre cohort observational study.

The survey tool was built thanks to an accurate review of the literature with the aim of researching which sections and items allow to explore, in the most effective way, the customer satisfaction of the patient in endoscopy.

The pilot study and the validation of the questionnaire were carried out in the endoscopy service of the Campus Bio-Medico University Hospital of Rome between

August and September 2020 after having submitted all the necessary documentation to request the opinion of the Ethics Committee and after their positive feedback.

The study population consisted of the outpatient clients, who understand the Italian language, of any age, even under 18, as long as the legal tutor has signed the consent and in any case the minor is not under the age of 16. To be eligible for participation in the study, the patient must have performed at least one gastroscopy, colonoscopy or endoscopy. The population includes patients who undergo the exam: in agreement with the National Health Service, in agreement with insurance services, or through the payment of a fee. Those who were hospitalized in any hospitalization regime (ordinary and day-hospital) and patients undergoing procedures other than those mentioned above, were excluded from participation in the survey. Hospitalized patients were excluded from the survey, because they follow a different path than outpatients: they do not come into contact with admission services; they do not deal directly with exam preparation; they do not use the changing rooms; they do not receive the report at the end of the exam.

All examinations were performed under deep sedation administered by an anaesthetist. For this reason, participation in the study was proposed to the patient once the effect of sedation completely vanished. Each patient received instructions to complete the questionnaire in paper form at the time of discharge from the digestive endoscopy service and, after completing it, returned it to an admission officer.

The population was recruited using a non-probabilistic sampling method. There were no follow-up procedures.

The pilot study provided that each patient, in addition to having received the instructions to fill in the questionnaire in paper form at the time of discharge from the digestive endoscopy service, had participated in a semi-structured interview in order to identify ambiguities and any missing questions.

Incomplete questionnaires were classified as "invalid" and excluded from the inferential statistical analysis.

Statistical analysis

Following the data collection, these were transcribed and processed using the SPSS software version 22.0.

The descriptive analysis was carried out taking into consideration the frequencies and percentages of the variables.

The validity of the questionnaire was analysed using Cronbach's Alpha. Its value has been interpreted with the following cut-offs: <0.6: unreliable; 0.6-0.65: undesirable; 0.66-0.70: barely reliable; 0.71-0.80: respectable; 0.81-0.90: very reliable; >0.90 excellent reliability. To assess the internal consistency, each item was considered separate from the others; the average correlation between all items was estimated and a coefficient of reliability estimation derived from it.

Finally, the Kaiser-Meyer-Olkin (KMO) and Bartlett's sphericity tests were performed to evaluate whether a principal component analysis (PCA) could be performed on the dataset.

Results

From the analysis of the 30 questionnaires and from the semi-structured interviews carried out after completing the questionnaires, relating to the pilot study, no ambiguity or need to introduce other items into the questionnaire emerged, for this reason the validation study was started.

During the study period, a total of 155 patients underwent an endoscopy: 39 (25.2%) gastroscopy, 67 (43.2%) colonoscopy, 40 (25.8) both gastroscopy and colonoscopy in the same day and 9 (5, 8) ultrasound endoscopy. For 53 patients (34.2%) it was the first time they underwent a procedure while the remaining 102 (65.8) had already

Table 1 - Demographic characteristics of the respondents

Variables		n	(%)
Age	<30	7	4.5
	31-40	15	9.7
	41-50	29	18.7
	>51	104	67.1
Gender	Male	72	46.5
	Female	83	53.5
Education	No education	1	0.6
	Primary education	21	13.5
	Secondary education	83	53.5
	University education	50	32.3
Endoscopies Performed	Gastroscopy	39	25.2
	Colonscopy	67	43.2
	Gastroscopy and Colonscopy	40	25.8
	Ecoendoscopy	9	5.8
First endoscopy	Yes	53	34.2
	No	102	65.8

performed an endoscopy. The mean age of the sample was 56.21 years old (SD ± 14.136) with 46.5% males and 53.5% females. Overall, 32.3% of the sample had a degree, 53.5% a high school diploma and 13.5% had completed primary education. Four questionnaires were found to be incomplete and therefore treated as invalid. Patient demographic data are presented in Table 1.

Pre-procedure

Most of the sample (51.6%) considered the information received in preparation for the exam to be excellent. Just almost half of the sample (49.0%) felt that the information about the risks of the procedure and the reasons why it was recommended was excellently communicated.

Almost all (79.3%) agreed on the comfort of the waiting room, while the time spent in the same, before taking the exam, was considered excellent by less than half of the sample (45.2%), even if only 5 patients gave the minimum satisfaction score on the Likert scale (3.2%).

The changing rooms, wardrobes and lockers were rated between very good and excellent by the majority of the sample (79.3%).

The reception staff was considered courteous, showing a noteworthy behaviour in the various phases: 114 patients (73.5%) evaluated them excellently. These results are summarized in Table 2.

Procedure

The attitude of the staff in answering patients' questions and concerns before performing the exam was recognized as excellent by over half of the sample (64.5%). The operators who were in the endoscopy room were judged to be able to accurately explain the sensations and discomfort that patients might have experienced during the examination by evaluating them between very good and excellent on 136 questionnaires (87.7%). The methods used to increase comfort and reduce pain during the examination were considered excellent (70.3%). Similarly, the courtesy and behaviour of all staff in the

Table 2 – Pre-procedure

Pre-procedure	Poor	Average	Good	Very good	Excellent
Clarity of information received in preparation for the exam	0 (0.0%)	1 (0.6%)	19 (12.3%)	55 (35.5%)	80 (51.6%)
Clarity of information about the risks of the procedure e the reasons why it was recommended to you	1 (0.6%)	2 (1.3%)	20 (12.9%)	56 (36.1%)	76 (49.0%)
Time spent in the waiting room before performing the exam	5 (3.2%)	19 (12.3%)	22 (14.2%)	39 (25.2%)	70 (45.2%)
Comfort of the waiting room of the endoscopy service	2 (1.3%)	2 (1.3%)	28 (18.1%)	47 (30.3%)	76 (49%)
Dressing room, cloakroom and lockers (safety and comfort)	1 (0.6%)	4 (2.6%)	27 (17.4%)	60 (38.7%)	63 (40.6%)
Courtesy and behavior at the reception	1 (0.6%)	1 (0.6%)	8 (5.2%)	31 (20.0%)	114 (73.5%)

endoscopy room was also considered excellent and therefore of great value (83.2%). These results are summarized in Table 3.

Post-procedure

The comfort and privacy offered by the recovery room were recognized as excellent by the majority of the sample examined (54.2%), as was the post-procedural pain control during the observation period in the recovery room (65.2%).

The item "courtesy and behaviour of the staff employed for observation in the recovery room" was judged excellent by over 3 out of 4 patients (75.5%).

The clarity and timing of the information provided regarding the outcome of the examination are also in line with the other results that emerged in the survey: 82 patients (52.9%) considered this aspect excellent.

As for the information provided after the exam about how they might feel at home and what they might need to do in case of an emergency (telephone contact to call), just less than half of the sample (49.4%) rated this as excellent, but overall 46.1% rated it between Good and Very good, and only 2 questionnaires (1.3%) found it to be poor. These results are summarized in Table 4.

Table 3 – Procedure

Procedure	Poor	Average	Good	Very Good	Excellent
Staff attitude in answering your questions and concerns before taking the exam	0 (0.0%)	1 (0.6%)	12 (7.7%)	42 (27.1%)	100 (64.5%)
Completeness of the information provided on what you might experience during the examination (sensations, discomfort, etc.)	1 (0.6%)	3 (1.9%)	15 (9.7%)	51 (32.9%)	85 (54.8%)
Efficiency of the methods used to increase comfort and reduce pain during the examination	0 (0.0%)	0 (0.0%)	7 (4.5%)	39 (25.2%)	109 (70.3%)
Courtesy and behaviour of the staff in the endoscopy room	0 (0.0%)	1 (0.6%)	2 (1.3%)	23 (14.8%)	129 (83.2%)

Table 4 – Post-Procedure

Post-procedure	Poor	Average	Good	Very good	Excellent
Comfort and privacy of the recovery room	1 (0.6%)	4 (2.6%)	12 (7.7%)	52 (33.5%)	84 (54.2%)
Pain control in the recovery room was ...	1 (0.6%)	1 (0.6%)	11 (7.1%)	41 (26.5%)	101 (65.2%)
Courtesy and behaviour of the staff in the recovery room	0 (0.0%)	0 (0.0%)	6 (3.9%)	32 (20.6%)	117 (75.5%)
Information on the outcome of the exam (timing, clarity)	0 (0.0%)	4 (2.6%)	12 (7.7%)	56 (36.1%)	82 (52.9%)
Completeness of the information provided after the procedure regarding how you might feel once at home and what you may need to do if there is an emergency (telephone contact to call in case of emergency).	2 (1.3%)	5 (3.2%)	17 (11.0%)	54 (35.1%)	76 (49.4%)

General assessment

The whole sample felt that they were satisfied with the treatment received during their stay in the endoscopy service, only one patient reported that a problem had occurred the day of the exam. The same patient described in the comments and suggestions section of the questionnaire how the problem that arose (confusion about his identity) had in no way caused him any problems and that the operator, acknowledging the misunderstanding, had informed all the staff of the correct identity of the patient.

Finally, the totality of the sample examined expressed the opinion that if in the future they were to redo an endoscopy, they would do it in the same hospital where the investigation was conducted. The results are summarized in Table 5.

The KMO value was 0.925 and the Bartlett's sphericity test was significant ($\chi 2$ = 1,806.591, df = 105, p <0.001), indicating that the factorial analysis of the data is appropriate. The results are described in Tables 6, 7.

According to Williams et al. (2010), *p* value should be less than 0.05 and KMO value should exceed ,50.

Table 7 shows the results of the EFA analysis. Factors were defined by the level of association of the variables found in the analysis of factor load and their subjectivity. The initial solution identified a one-factor solution, with 59,46% of the variance explained.

Internal validity of the questionnaire

The analysis of the validity of the questionnaire was ensured through the finding of an average value of 0,944 of Cronbach's α between the Pre-procedure, Procedure and Post-procedure sections calculated on 15

Table 5 - General assessment

General assessment	Yes	No
I was satisfied with the treatment (attention, care, services, etc.) received by the endoscopy staff.	155 (100%)	0 (0.0%)
There was a problem on the day of the exam (confusion about my identity or documentation, allergic reaction to drugs or materials used, trauma, etc.).	154 (99.4%)	1 (0.6%)
If in the future I had to do an endoscopy again, I would do it in this facility.	155 (100%)	0 (0.0%)

Table 6 - Kaiser-Meyer-Olkin and Bartlett's Test

Kaiser-Meyer-Olkin measure of sampling adequacy		.925
Bartlett's sphericity test	Approx. Chi-square	1806.591
	Df	120
	Sign	.000

items with a minimum score of 0.938 and a maximum of 0.943.

Table 8 shown the Item-Total Statistics that presents the Cronbach's Alpha if Item Deleted.

Discussions

The present study validated a survey tool that allows to explore patient satisfaction in digestive endoscopy.

At the moment, the lack of reliable validated scales in Italian that measure patient satisfaction within an endoscopy unit has led us to create one adapted to our reality, as questionnaires translated from another language could have potential cultural limitations related to the type of healthcare system (18-21).

Patient satisfaction measurement tools in endoscopy have often mainly focused on collecting overall satisfaction rather than analysing specific aspects of the experience (22, 23).

From the review of the literature, items were included within the questionnaire in order to allow each patient to be able to describe their personal experience in the endoscopy service in the most complete way.

The ECSQ questionnaire contains 18 items organized into 4 main sections: before the procedure, during the procedure, after the procedure and a general assessment, in order to guide the compilation.

The patient, capable of expressing his or her opinion, is given the opportunity to go beyond the figure of a mere passive user of

Table 8 - Internal consistency results

Item	Scale Mean if Item Deleted	Scale variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PE1	62,05	65,738	,751	,940
PE2	62,12	66,266	,619	,943
PE3	62,48	61,758	,639	,946
PE4	62,20	62,960	,795	,938
PE5	62,28	64,109	,740	,940
PE6	61,78	68,145	,580	,943
E1	61,89	66,042	,775	,939
E2	62,06	64,630	,752	,939
E3	61,79	67,111	,805	,939
E4	61,64	69,511	,653	,943
DE1	62,05	64,331	,776	,939
DE2	61,90	66,023	,718	,940
DE3	61,74	67,756	,779	,940
DE4	62,05	64,691	,804	,938
DE5	62,18	63,894	,725	,940

healthcare services and to be even more at the centre of care: this data could explain the fact that patients willingly submitted to the compilation of the questionnaires.

The literature describes how the time of administering the questionnaire to patients undergoing endoscopy should be carefully evaluated (24-26). The written method, chosen to validate the questionnaire, was found to be able to minimize the potential risk of recall bias and it turned out to be fast, simple and intuitive in the same way (supported by the low rate of missing items).

Overall, a positive experience was observed, with a high level of satisfaction, perception of safety and willingness to return to the same centre for subsequent checks. Results confirmed by studies in the literature describe how patients who present complications after an endoscopy, being less satisfied with the procedure, are less likely to return for a subsequent examination (26-29).

All the items in the various sections, except one, were judged with an average score between very good and excellent on a five-point Likert scale. The only item that showed an average score between good and very good was the waiting time, one of the most frustrating aspects for patients, therefore a potential cause of significant dissatisfaction (30-34).

There were no evident differences in evaluation between female and male patients, between the different types of tests they had undergone as regards the rate of completion, patient satisfaction and between the various items.

Similarly, the other factors (age, education, previous experience) had no impact on the scores in this study, consistent with the results reported in a previous study (35, 36).

The questionnaire shows high validity and reliability, with a Cronbach coefficient value of 0.944.

In addition, the various items showed similar values, with a minimum of 0.938 that is associated with items 4 and 14 and a maximum of 0.946 associated with item 3, characterizing a good structure and internal consistency of the questions.

The Kaiser-Meyer-Olkin tests, the Bartlett sphericity test and the execution of the Varimax on the various items, confirmed the adequacy of the sampling and that the total variance between the questionnaires completed by the patients is closely linked to the answers given to the first and second item.

Limitations of this study are related to the lack of evidence for reproducibility by test-retest reliability, because it would require patients to undergo the same endoscopic examination twice under the same conditions. Second, the entire study was conducted in a single institution and therefore may reflect the views of a particular segment of the population.

Conclusions

The questionnaire investigating patient satisfaction in endoscopy, built on the results of a review of the literature and on a pilot study with semi-structured interviews, showed a Cronbach's α ranging from a minimum of 0.938 to a maximum of 0.943: values that demonstrate high validity. The level of customer satisfaction and compliance is certainly guaranteed as evidenced also by the answers provided by patients to the final questions of the questionnaire.

Providing information before, during and after each procedure is essential to promote patient compliance. We hope that the study will be able to provide healthcare organizations that want to use it, a tool that allows first of all to evaluate the quality of the service offered and subsequently modify those aspects whose quality requires to be implemented in order to offer citizens a service in which they can feel at the centre.

Thanks to this study, in order to increase

the quality of the patient's experience, some clinical practices have been modified in the facility where the investigation was carried out, with the aim of reducing the time spent in the waiting room and improving the dressing rooms, increasing the number and placing of lockers with an identification bracelet, thus eliminating the problem of key management.

This is only the beginning of a multicentre study that the authors would like to conduct in different settings in Northern, Central and Southern Italy, to assess the level of satisfaction, the adequacy of the information received before the endoscopic investigation, the attention and care offered by the endoscopy team to the patients.

From the analysis of the results, we can therefore believe that the ECSQ, also in its italian version, can be considered valid and reliable for measuring patient satisfaction, allowing them to express their points of view.

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No funding was received for this study.
The research ethics committee of the Campus Bio-Medico University of Rome approved the study (PR Code: 75/20 OSS ComEt CBM). All patients provided written informed consent to participate in the study.

Riassunto

Validazione di un nuovo strumento in Italiano per valutare la customer satisfaction in endoscopia digestiva: ECSQ (Endoscopy Customer Satisfaction Questionnaire)

Premessa. La European Society of Gastrointestinal Endoscopy e l'American Society for Gastrointestinal Endoscopy raccomandano l'identificazione di indicatori di qualità dei servizi di endoscopia, tra cui la soddisfazione del paziente (customer satisfaction). Pazienti contenti delle cure ricevute saranno maggiormente disposti a partecipare ai programmi di screening e più aderenti alle indicazioni ricevute da medico. Obiettivo di questo studio è di validare l'Endoscopy Customer Satisfaction Questionnaire in italiano, al fine di poter disporre di uno strumento valido ed affidabile che possa permettere ad ogni paziente di descrivere in maniera completa la sua esperienza nei servizi di endoscopia digestiva.

Materiali e Metodi. La validazione del questionario è stata effettuata tramite uno studio trasversale monocentrico, nel servizio di endoscopia del Policlinico Universitario Campus Bio-Medico di Roma tra agosto e settembre 2020.

Risultati. In totale 155 pazienti si sono sottoposti ad un'endoscopia. L'età media del campione era di 56,21 anni (DS ± 14,136) con 46,5% di maschi e 53,5% di femmine. L'analisi della validità e affidabilità del questionario è stata assicurata attraverso il riscontro di un valore medio di 0,944 dell'α di Cronbach.

Conclusioni. Dall'analisi dei risultati rilevati si può quindi ritenere che la versione italiana dell'Endoscopy Customer Satisfaction Questionnaire sia da considerarsi valido e affidabile per misurare la soddisfazione dei pazienti permettendo loro di esprimere il proprio punto di vista.

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