



Patient Satisfaction With Emergency House Calls

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Study objectives: To identify determinants of patient satisfaction with emergency house calls and to assess the properties of a satisfaction measurement questionnaire.

Design: Patient survey, combined with routinely collected information on the circumstances of the house call.

Setting: Emergency house calls provided by an independent emergency care organization (ECO) in Geneva, Switzerland.

Participants: Consecutive sample of 389 patients (67% response rate).

Main outcome measure: Patient satisfaction. Predictor variables: patient age and sex, type of medical problem, time of visit, waiting time, duration of visit, perceived effectiveness of treatment.

Results: The satisfaction questionnaire was easy to administer. Factor analysis identified 3 separate dimensions of satisfaction, which pertained to the visit itself, to access and to general attitude toward the ECO. Validation tests were consistent with expectations. In multivariate analysis, older patient age and greater perceived treatment effectiveness predicted independently all satisfaction scales. Presence of a mixed physical and mental problem reduced satisfaction with the visit itself only, a delay between the phone call and the visit exceeding one hour reduced satisfaction with access and worsened the attitude toward the ECO.

Conclusion: The instrument used to measure patient satisfaction with emergency house calls performed well. Overall levels of satisfaction were high. Perceived effectiveness of treatment was the strongest correlate of patient satisfaction. Monitoring of patient satisfaction in emergency settings may contribute to improvements of quality of care. © 1997 Elsevier Science Ltd.

Key words: Patient satisfaction, emergency medical services, house calls, treatment effectiveness, reliability and validity.

INTRODUCTION

Patient satisfaction is a useful indicator of the performance of health services [1]. Little is known about specific aspects of patient satisfaction in emergency care

settings. Emergency care differs from scheduled medical care in several aspects which may affect patient satisfaction: patients are often in acute distress, providers work in stressful conditions, no established relationship exists between the patient and the provider and the patient often has little choice when selecting a particular provider. In Britain, patients tend to be less satisfied with out-of-hours care provided by a substitute physician who stands in for their usual physician [2-6].

This paper examines patient satisfaction with emergency house calls provided by physicians affiliated with an independent emergency care organization (ECO) in Geneva, Switzerland. Provision of emergency medical home care is the organization's only activity. All patients who use its services are referred for follow-up to their own physician, so that all visits are isolated encounters. The purpose of this study was to elicit patients' assessments of these health care services, and to identify patient- or visit-related risk factors for (dis)satisfaction. A secondary aim was to document the psychometric properties of a brief satisfaction questionnaire developed for use in this setting.

METHODS

Study design

Data from a patient satisfaction survey were combined with prospectively collected data regarding the consultation. To maintain confidentiality, databases were stripped of personal identifiers and transmitted to an independent researcher (TVP) for analysis.

Study setting

The privately owned ECO was established in 1987 in Geneva, Switzerland. The organization provides emergency house calls every day, 24 hours per day. The organization supplies the infrastructure (telephone lines, receptionists, planning of physician work hours, emergency vehicles, medical equipment, information management, billing services, medical supervision) and contracts with independent physicians, who are paid fee-for-service, after deduction to cover the organization's expenses, according to customary rates for outpatient

visits. Some physicians work full-time for the ECO, others part-time. House calls are reimbursed by health insurance companies after deduction of a 10% copayment (health insurance is mandatory in Switzerland; the state subsidizes persons with low income). The organization provided 30 000 house calls in 1995 (to a population of about 350 000). The average duration of the consultation was 20 minutes, the mean delay between the call and the visit was 57 minutes. As well as the ECO involved in this study, the Geneva Medical Association also provides an emergency house call service to the same population.

Study variables

The outcome measure was patient satisfaction with the house call, measured with a 14-item closed-format questionnaire. Items were selected from published instruments [7–10] and adapted to the circumstances of an emergency visit. An additional item addressed the perceived effectiveness of the prescribed treatment. Open questions asked about the best and worst aspects of the visit; responses were coded by one of the authors (MV) as positive, neutral, or negative with regard to each domain of satisfaction represented in the closed-format questionnaire.

Independent variables included patient age and sex, the time of the house call (coded as business hours: 8 am to 5 pm on weekdays, or after-hours), the interval between the call and the arrival of the physician (in minutes), the duration of the consultation (in minutes), the number of consultations received from the ECO in the past year and the type of medical problem (somatic excluding trauma, mental, both somatic and mental, trauma) that motivated the consultation. Variables other than patient satisfaction were extracted from routine records, except the type of medical problem, which was determined by one of the authors (BG), based on the medical report issued for each consultation.

Study population and survey procedure

All patients who consulted the ECO during preselected days in September 1995 and who lived in Geneva were eligible. Physicians were not warned that a satisfaction survey would be conducted. Patients received a letter which explained the purpose of the survey, the questionnaire and a stamped return envelope. If the patient was less than 16 years old, the questionnaire was addressed to the patient's parents. Returns were monitored continuously, and nonrespondents were sent up to two reminders.

Analysis

To assess the performance of the satisfaction questionnaire, each item was examined for acceptability (proportion of missing answers) and ceiling and floor effects (proportions of respondents choosing extreme

response options). A factor analysis on the 14 items was used to identify independent dimensions of satisfaction [11]. Summative satisfaction scores were computed, based both on factor analysis results and on item content. Items were allocated to the dimension on which their loading was highest; when the 2 highest loadings were close to each other (difference < 0.2), the item was allocated to the scale which best fit the intended item content. Each score was a simple mean of relevant items, scaled between 0 and 100 (lowest and highest possible scores), computed whenever half or more of contributing items were present. To estimate scale reliability, we computed internal consistency coefficients [11].

We tested three construct validity hypotheses:

(1) The factorial structure of the 14 items would identify the following dimensions of patient satisfaction: a global assessment of visit (items 1 and 10), medical aspects of visit (items 4–9), access to care (items 2 and 3), cost of visit (item 11), and general attitude toward provider organization (items 12–14).

(2) Items measuring a general attitude toward the ECO (12–14) would correlate with the sum of visit-specific items (items 1–11).

(3) Closed-format satisfaction scores would correlate with open comments (positive, negative, or absent). The amount of variation in a score that was explained by open comments was estimated by partial eta-squared statistics from ANOVA models [11].

To assess the potential impact of nonresponse on study results, we compared survey respondents and nonrespondents using all routinely collected data for this analysis.

To identify predictors of patient satisfaction, we examined satisfaction scores across subgroups of patients, using regression methods: ANOVA [12] (for subgroup comparisons and for multivariate models) or linear regression [12] (for continuous covariates). Multivariate modelling was conducted in a stepwise manner, starting with the strongest univariate predictor; additional covariates were added if the change significantly improved the fit of the model, or removed if their contribution became nonsignificant. The same level of statistical significance ($p < 0.05$, based on the corresponding F-statistic) was used as criterion for adding and for removing a predictor. Analyses were conducted using SPSS [13].

RESULTS

Enrolment

During the enrolment period, 594 patients consulted the ECO, 581 (98%) were eligible for the study (5 names were duplicates, 4 patients died, 3 had left Geneva, and 1 was too sick to respond), and 389 (67% of the eligibles) responded to the survey (158 did not respond to mailings, 26 refused to participate, and 8 failed to respond for other reasons). Participants responded on

average 41 days after the consultation (standard deviation (SD) 19 days).

Respondents and nonrespondents differed little (Table 1). Response rates were somewhat lower among men, young adults and patients who consulted for other than somatic health problems. Waiting time between the telephone call and the house call and the duration of the consultation were similar in the 2 groups. Nonrespondents had had on average more consultations with the ECO in 1995 than did respondents (4.4 versus 2.3, $P = 0.09$). For descriptive purposes only, all consultation reports were reviewed by one of the authors (BG) to assess the degree of emergency, rated as "low" (293 visits, 50%), "intermediate" (185 visits, 32%), "high" (60 visits, 10%) or uncodable (43 visits, 7%). The degree of emergency was not related to participation (because of the presumed limited reliability of assessments of emergency carried out after the fact, we did not use this variable as a predictor of satisfaction).

Properties of questionnaire

Because we used an instrument developed specifically for this study, we had to verify its psychometric properties. The proportion of missing answers was low (Table 2). All questions (except the item about the amount of the bill) had strong "ceiling" effects, negligible "floor" effects and distributions strongly skewed toward the most desirable response. Response options between "excellent" and "poor" (items 1, 2, 4-6) produced the least skewed distributions.

Factor analysis identified 3 principal components, which accounted for 66% of total variance in the 14

items (Table 2). Although there were fewer independent dimensions than we anticipated, the structure of the instrument was generally consistent with theory. The global assessment items loaded on the same factor as medical items (first dimension), and the cost item was grouped with access items (second dimension). The three general attitude items constituted the third dimension. Only the item regarding whether the doctor fulfilled expectations about treatment had to be allocated according to theory, and not using the highest loading rule. Based on this analysis, 4 scales were constructed by summing corresponding items: a "summary" scale (all 14 items), a "visit" scale (items 1 and 4-10), an "access" scale (items 2, 3 and 11), and a "general attitude" scale (items 12-14). These 4 scores were used in further analyses.

All scores were skewed toward high values (Table 3). However, ceiling effects were minimal for the "summary" (1.3%) and "access" (2.1%) scales, moderate for the "visit" (17.2%) scale, and problematic only for the "general attitude" scale (68.4%). Internal consistency coefficients (Cronbach α) were high for 3 of the scales (Table 3), but modest for the "access" scale. Correlations between the 3 independent scores were in the 0.5 to 0.7 range, suggesting that each conveyed sufficiently independent information.

Items measuring "general attitude" were not visit-specific; i.e. they did not refer directly to the house call performed. We hypothesized that the general attitude towards the ECO would be strongly determined by the patient's opinion of the house call, which was measured by the remaining 11 items. As predicted, the correlation between the 3 attitude items and the sum of the visit-

TABLE 1. Participation rates in satisfaction survey of patients who requested an urgent house call, Geneva, Switzerland, 1995

		Eligible sample N (%)	Responded N (%)	Did not respond N (%)	P-value
Sex:	Men	203 (35)	129 (33)	74 (39)	0.23
	Women	378 (65)	260 (67)	118 (61)	
Age:	8-16 years	80 (14)	59 (15)	21 (11)	0.06
	17-29 years	96 (17)	55 (14)	41 (21)	
	30-49 years	171 (29)	114 (29)	57 (30)	
	50-69 years	90 (15)	68 (17)	22 (11)	
	70-97 years	144 (25)	93 (24)	51 (27)	
Time of call:	8am to 5pm on weekdays	178 (31)	122 (31)	56 (29)	0.63
	After hours or weekends	403 (69)	267 (69)	136 (71)	
Type of medical problem:	somatic	386 (66)	278 (71)	108 (56)	0.006
	mental	65 (11)	40 (10)	25 (13)	
	somatic and mental	44 (8)	25 (6)	19 (10)	
	trauma	42 (7)	23 (6)	19 (10)	
	unknown or other	44 (8)	23 (6)	21 (11)	

TABLE 2. Distributions of answers to satisfaction questionnaire, and results of factor analysis, among 389 patients who requested an emergency house call, Geneva, Switzerland, 1995

Abbreviated item content	Percent responding*						Factor analysis†		
	missing	best	2	3	4	worst	visit	access	general attitude
1 Overall quality of care received during visit	1.5	34.4	37.0	23.7	2.6	0.8	0.57	0.28	0.27
2 Attitude of receptionist who took the call	1.5	37.8	38.6	19.8	1.8	0.5	0.48	0.51	0.06
3 Waiting time between phone call and visit	0.3	41.1	44.5	4.1	8.2	1.8	0.31	0.66	0.08
4 Doctor's professional competence	0.0	41.9	33.4	22.1	1.5	1.0	0.30	0.12	0.30
5 Doctor's relational skills	3.1	48.6	29.8	15.9	2.1	0.5	0.51	0.14	0.16
6 Doctor's ability to listen	0.8	39.3	37.8	19.3	1.3	1.5	0.52	0.14	0.20
7 Doctor's explanations about health problem	1.5	59.4	31.6	4.6	1.0	1.8	0.51	0.09	0.39
8 Doctor met expectations about treatment	2.8	64.3	24.4	4.4	1.3	2.8	0.51	-0.07	0.63
9 Duration of consultation	3.3	51.2	34.2	6.9	3.1	1.3	0.50	0.29	0.37
10 General satisfaction with house call	2.1	57.1	35.5	2.1	1.8	1.5	0.54	0.05	0.52
11 Amount of bill	5.7	0.0	0.5	49.4	35.2	9.3	-0.09	0.56	0.36
12 Would call ECO again for urgent care	2.6	79.2	10.8	5.9	1.0	0.5	0.25	0.25	0.52
13 Fully trusts services provided by ECO	1.5	70.4	23.7	2.8	1.0	0.5	0.30	0.20	0.31
14 Would recommend ECO to family or friends	2.3	77.4	14.1	4.9	0.8	0.5	0.23	0.25	0.32

* Response options:

Items 1, 2, 4, 5, 6: excellent; very good; good; fair; poor

Items 3, 9: very satisfactory; rather satisfactory; indifferent; not very satisfactory; not satisfactory at all

Item 7: very clear; rather clear; don't know; rather confusing; very confusing

Item 8: yes, completely; rather yes; don't know; rather not; not all

Item 10: very satisfied; rather satisfied; indifferent; rather dissatisfied; very dissatisfied

Item 11: too low; rather low; appropriate; rather high; too high

Items 12-14: yes, certainly; probably yes; don't know; probably not; certainly not

†Item loadings on 3 principal components, after varimax rotation. Items included in a given scale are shaded.

TABLE 3. Distributions, internal consistency coefficients and correlations among 4 summary satisfaction scores, among 389 patients who requested an emergency house call, Geneva, Switzerland, 1995

Satisfaction scale	Mean (standard deviation)	Percentiles			Internal consistency coefficient	Pearson correlation coefficients between satisfaction scales		
		25	median	75		Visit	Access	General attitude
Summary (14-item)	80.8 (14.5)	75.0	83.9	91.1	0.92	0.96*	0.71*	0.81*
Visit (8-item)	82.4 (17.2)	75.0	87.5	94.8	0.91		0.54	0.68
Access (3-item)	65.1 (15.5)	58.3	66.7	75.0	0.46			0.50
General attitude (3-item)	92.3 (15.1)	91.7	100	100	0.92			

* Not corrected for overlap

specific items was strong and approximately linear (example: Fig. 1); all 3 linear trends were statistically significant (P -values for linear trend < 0.001).

Overall, 277 respondents (71%) contributed 603 written comments: 257 (66%) gave 449 positive comments, and 104 (27%) gave 143 negative comments (the remaining 11 comments were not value-laden). Comments predicted summary satisfaction scores: mean scores increased progressively in those who gave 0 (76.9), 1 (78.9), 2 (84.0) or 3 (89.3) positive comments ($p < 0.001$), and decreased progressively in those who gave 0 (83.7), 1 (78.0), 2 (66.8), 3 (40.2) or 4 (22.3) negative comments. Negative comments explained a greater proportion of the variance in global satisfaction scores than did positive comments (partial eta-squared 0.36 for negative comments, 0.13 for positive comments).

In addition, the validation by open comments was domain-specific: comments related to medical aspects explained a greater part of variability in "visit" scores (eta-squared 0.42) than in "access" scores (0.10), while comments related to issues of access or cost explained more variation in "access" scores (0.09) than in "visit" scores (0.01).

Predictors of satisfaction

The summary satisfaction score was higher among participants who responded to the first mailing (mean 81.8) than in those who responded after the first (79.9) and second (77.6) reminder (test for linear trend, $P = 0.053$).

Satisfaction scores differed little by sex; men were

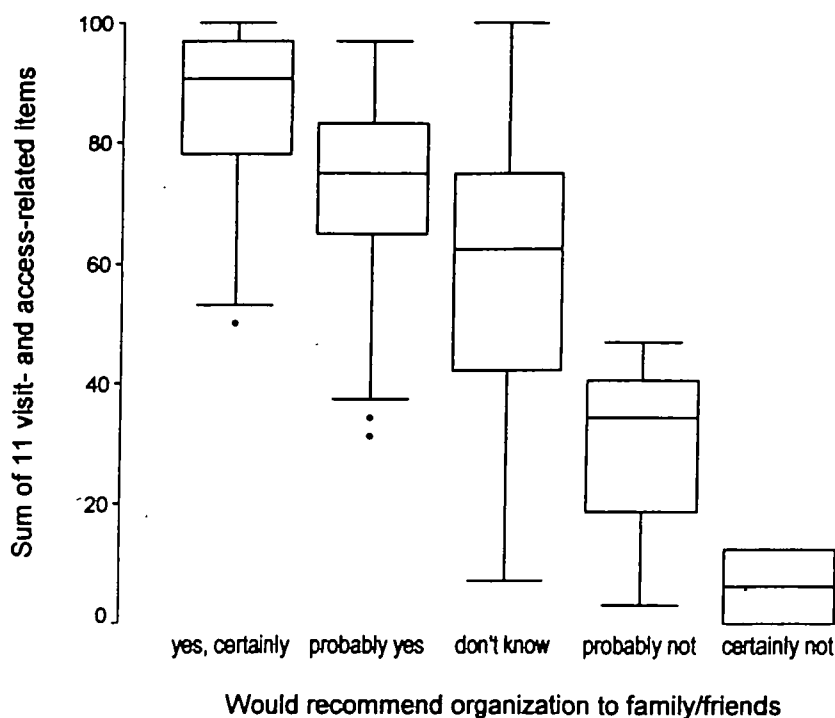


FIGURE 1. Boxplots of satisfaction scores (sum of 11 visit-related and access-related items) for patients who would and who would not recommend the emergency care organization to family or friends, among 389 patients who requested an emergency house call, Geneva, Switzerland, 1995.

slightly more satisfied with access to care (Table 4). Young adults were least satisfied and the increasing trend in satisfaction with age among adults was statistically significant for all dimensions. Parents of children attended to by the ECO were about as satisfied as middle-aged patients. Differences between patients who were seen during and after usual business hours were small. Visit satisfaction decreased only when the delay between the telephone call and the consultation exceeded one hour, but the "access" score decreased more gradually with increasing delay. All patient satisfaction scores increased (but not significantly) with the duration of the consultation. Patients seen for somatic medical problems or for injuries were the most satisfied, and those who suffered from mixed somatic and mental health problems were the least satisfied. By far the strongest predictor of satisfaction was the patient's opinion of treatment effectiveness: associations with all satisfaction scores were strong and highly statistically significant (summary score: Fig. 2). Overall, 41% of respondents rated the treatment they received as "very effective", 31% as "rather effective", 5% had no opinion, 4% as "rather ineffective", 2% as "totally ineffective", and 14% had not received any treatment.

Time-related items

The two time-related items were also analysed separately. Satisfaction with the delay between the telephone call and the consultation was examined for association with actual delay (in minutes, recorded routinely). A

longer delay predicted a lower level of satisfaction with the delay ($P < 0.001$). Satisfaction with the duration of the consultation was weakly associated with actual duration ($P = 0.30$).

Multivariate models

Only two variables remained as independent predictors of patient satisfaction in all multivariate models: patient age and perceived effectiveness of treatment (Table 5). In addition, patients who consulted for mixed physical and mental problems were less satisfied with the visit itself and had less favorable general attitudes toward the ECO and when delays between the initial phone call and the arrival of the doctor exceeded one hour, ratings of access to care were lower.

Open comments

Open comments provided many useful insights about patients' perceptions of strengths and weaknesses of the organization that could not be captured by closed-format items. Many comments stressed the importance of human factors in the patient-physician relationship, such as a sensitivity to psychological distress and a good ability to listen to the patient. Other patients gave practical advice. For instance, some respondents suggested that pediatricians should be available to deal with pediatric emergencies. Others felt that the best thing about the ECO was its existence and the reassurance this provided. Others appreciated the convenience of house

TABLE 4. Patient and house call characteristics in relation to 4 satisfaction scores: summary score, visit score, access score and general attitude score, among 389 patients who requested an emergency house call, Geneva, Switzerland, 1995

		Summary score (14-item)		Visit score (8-item)		Access score (3-item)		General attitude score (3-item)	
		Mean	P-value	Mean	P-value	Mean	P-value	Mean	P-value
Sex:	Men	81.7	0.37	83.2	0.51	66.7	0.14	92.9	0.60
	Women	80.3		82.0		64.2		92.0	
Age:	8-16 years*	80.9	0.047	83.2	0.23	63.6	<0.001	92.4	0.15
	17-29 years	77.0	0.003‡	78.0	0.03‡	60.8	<0.001‡	90.3	0.02‡
	30-49 years	79.3		81.6		62.6		90.2	
	50-69 years	81.9		84.0		64.9		94.1	
	70-97 years	83.8		84.3		71.7		94.9	
Time of call:									
	8am to 5pm on weekdays	80.2	0.59	80.9	0.26	67.4	0.047	91.2	0.32
	After hours or weekends	81.0		83.1		64.0		92.8	
Duration of delay:									
	1-19 minutes	80.7	0.45	81.1	0.54	68.1	0.02	92.8	0.36
	20-39 minutes	81.2	0.49†	82.6	0.70†	65.7	0.002†	92.7	0.27†
	40-59 minutes	82.3		84.6		65.0		93.8	
	60-162 minutes	78.9		81.5		61.2		90.0	
Duration of consultation:									
	1-19 minutes	80.0	0.49	81.6	0.65	63.7	0.24	92.3	0.45
	20-29 minutes	80.3	0.16†	82.0	0.26†	65.1	0.054†	91.3	0.60†
	30-39 minutes	82.8		84.5		66.1		95.0	
	40-67 minutes	82.8		84.2		70.2		91.7	
Type of medical problem									
	somatic	81.8	0.008	83.8	0.004	65.3	0.19	92.9	0.051
	mental	79.2		80.7		63.2		91.5	
	somatic and mental	70.8		70.0		59.0		83.7	
	trauma	81.3		81.7		68.5		92.8	
	unknown or other	81.5		82.1		67.9		95.5	

* Response given by parents † Test for linear trend ‡ Test for linear trend among adults (age ≥17)

calls, which suggests that perceived medical emergency may not be the only criterion for using emergency house call services.

DISCUSSION

This study indicates that reliable and valid measurements of patient satisfaction with emergency house calls can be obtained, that general levels of satisfaction are high even in the emergency setting and that several factors influence the patient's rating of the consultation, including patient's age and the perceived effectiveness of treatment.

Measurement of patient satisfaction

We encountered few practical problems with the survey. The response rate of 67% after two reminders was acceptable, especially given that information routinely collected by the organization did not reveal major differences between participants and nonparticipants. Satisfaction scores decreased progressively with each

reminder mailing. This suggests that dissatisfied patients may be harder to convince to fill the questionnaire; alternatively, respondents may become more critical of the care they have received as time goes by, or they may feel more free to voice discontent. Similar evidence of moderate selection bias has been observed elsewhere [14].

The survey questionnaire had adequate psychometric properties. The proportion of missing answers was low, but ceiling effects for individual items were important. Internal consistency coefficients were > 0.9 for 3 of 4 summary scales, exceeding the minimum reliability of 0.7 recommended for between-group comparisons [11]. Internal consistency of the "access" scale was lower, both because of its brevity and because its items addressed unrelated aspects of patient experience (satisfaction with the receptionist, with waiting time, and with the bill). The reliability of this scale should be examined by a test-retest procedure.

Tests of validity also yielded favorable results. Factor analysis identified fewer dimensions of satisfaction than were initially postulated, as it often does [15,16], but the factorial structure appeared logical, separating visit-

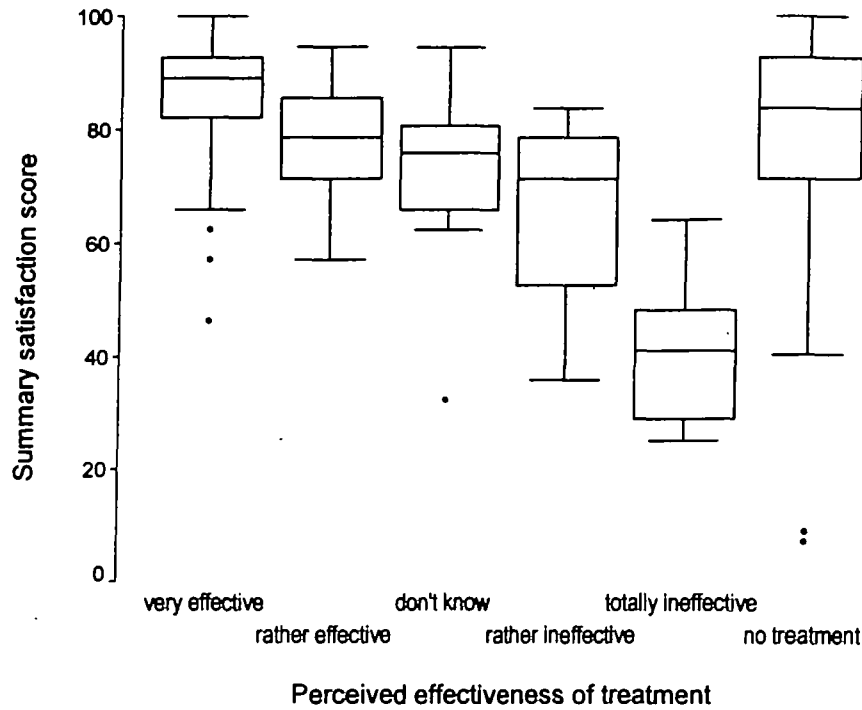


FIGURE 2. Boxplots of summary satisfaction scores (14-item scale), according to patient perceptions of the effectiveness of treatment, among 389 patients who requested an emergency house call, Geneva, Switzerland, 1995.

related, access-related and general-attitude items. All but one item could be allocated to their postulated dimension using the highest loading rule. The lack of independence of the items probing various aspects of physician behavior may correspond to reality (doctors who are good at explaining things may also be the ones who are technically competent), or may result from the patient's inability to distinguish separate components of physician behavior. The latter hypothesis is somewhat unlikely in view of experimental research suggesting that patients

can differentiate between technical and emotional aspects of physician behavior [17].

Open comments were in agreement with satisfaction scores, which provides further evidence of construct validity. In addition, open comments revealed specific areas deserving improvement in the ECO, such as the lack of trained pediatricians on the staff, which would have been missed by a closed-format questionnaire. The proportion of participants who wrote in comments (71%) was greater than is usually seen in satisfaction

TABLE 5. Multivariate predictors of patient satisfaction among 389 patients who requested an emergency house call from SOS-Médecins, Geneva, Switzerland, 1995

	Summary score			Visit score			Access score			General attitude score		
	Δ*	95% CI†	P	Δ*	95% CI†	P	Δ*	95% CI†	P	Δ*	95% CI†	P
Age: 8-16 years‡	4.0	-0.3 to 8.2	.002	4.6	-0.7 to 9.8	.02	2.4	-2.8 to 7.6	<.001	-2.7	-7.5 to 2.1	0.013
17-29 years	-	reference		-	reference		-	reference		-	reference	
30-49 years	3.2	-0.6 to 6.9		4.1	-0.5 to 8.7		2.8	-1.8 to 7.4		-1.5	-5.6 to 2.6	
50-69 years	7.4	3.3 to 11.6		8.5	3.5 to 13.6		5.5	0.4 to 10.6		3.8	-0.8 to 8.4	
70-97 years	6.8	2.8 to 10.8		5.7	0.9 to 10.5		10.0	5.2 to 14.8		2.6	-1.7 to 7.1	
Effect of treatment:												
very effective	-	reference	<.001	-	reference	<.001	-	reference	<.001	-	reference	<.001
rather effective	-8.8	-11.6 to -6.1		-10.3	-13.6 to -6.9		-7.9	-11.3 to -4.6		-4.2	-7.3 to -1.2	
don't know	-13.0	-18.4 to -7.6		-17.7	-24.2 to -11.2		-5.2	-11.8 to 1.2		-8.0	-14.0 to -2.0	
rather ineffective	-23.8	-30.2 to -17.5		-26.1	-33.8 to -18.4		-19.5	-27.2 to -11.8		-18.7	-26.0 to -11.4	
totally ineffective	-46.8	-55.6 to -38.1		-54.2	-64.8 to -43.5		-28.6	-39.2 to -18.0		-43.1	-53.7 to -32.7	
no treatment	-10.0	-13.5 to -6.4		-12.0	-16.3 to -7.6		-5.2	-9.5 to -0.9		-9.1	-13.1 to -5.1	
Mixed physical and mental problem				-6.2	-12.2 to -0.2	.044						
Delay > 1 hour							-4.1	-7.4 to -0.8	0.006	-3.5	-6.6 to -0.4	.026

* Difference in scores † Confidence interval ‡ Response given by parents

surveys, indicating that respondents took completion of the questionnaire seriously.

Predictors of patient satisfaction

Even though no norms exist for the instrument we used, patient satisfaction appeared high in this emergency care setting: typically, about half of the respondents selected the best response option to any given item, which is similar to results obtained in surveys of ambulatory patients [18] and higher than in some previous surveys of out-of-hours care [4]. The general mean we observed (80 on a scale 0–100) is close to the mean (76) derived from a systematic review of 221 satisfaction studies [19]. Thus the emergency setting needs not preclude an appropriate response to patients' needs. Whether these apparently good results would apply to other house call providers is uncertain. For instance, the ECO we studied never refuses a house call, which is likely to satisfy patients, whereas in other health care systems, a variable proportion of patients are given telephone advice only, or are sent to an emergency room [2,4,20]. Patient satisfaction may be a useful criterion for choosing among alternative ways of organizing out-of-hours health care, a matter of current debate [21,22].

Perceived effectiveness of treatment was strongly related to satisfaction. This finding has several possible explanations. The first is causality: successful treatments satisfy patients. "Curing", not "caring", may be the main reason why a patient seeks emergency care and fulfilling patient expectations is a strong determinant of patient satisfaction [23]. Expectations may be different in chronic care encounters, in which the quality of the patient-provider relationship may have a greater influence on satisfaction. But reverse causality is another possibility: patients who were satisfied with the consultation may perceive their treatment to be more effective than dissatisfied patients. A plausible intervening variable in this scenario could be higher compliance with treatment in satisfied patients [24,25]. Last, this association may be due to confounding by a nonspecific tendency of the patient to give favorable answers. Such a tendency has been noted in some [26,27], but not all [28], studies of patient satisfaction.

Several other results confirm previous research. Older age was associated with higher satisfaction, in a progressive fashion. This has been reported previously [29,30]. It is unclear whether older people are easier to satisfy, less likely to express dissatisfaction, or whether the ECO services were better adapted to the needs of older patients. The modest (and nonsignificant) differences between men and women also concur with a previous meta-analysis [29]. The impact of waiting time [4,5] and the importance of interpersonal relationships [25,31–33] for patient satisfaction was also confirmed, either by the analysis of satisfaction scores, or by open comments. Our finding of a moderate (but nonsignificant) association between the duration of the visit and patient satisfaction

concur with a previous meta-analysis [32] which suggested that the amount of patient-doctor communication increases patient satisfaction.

A more intriguing finding was that patients who suffered from mixed somatic and mental health problems were less satisfied with the house call than other patients. Perhaps complex health problems could not be fully solved during an isolated emergency house call, which resulted in patient dissatisfaction. Another possibility is that some physicians may have medicalized the cause of a poor patient-doctor relationship (itself a cause of patient dissatisfaction) by assigning a psychiatric diagnostic label to the patient. Each hypothesis would call for a different quality improvement approach within the ECO.

In conclusion, measurement of patient satisfaction with emergency house calls proved both feasible and potentially beneficial for quality improvement interventions in the emergency care setting.

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