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Waiting in the Accident and Emergency Department: Exploring Problematic Experiences

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ABSTRACT

Objectives: To investigate the relation between perceived waiting times and patients' overall ratings of accident and emergency departments (A&Es) and to explore which patients view waiting times as problematic.

Methods: A cross-sectional survey was held in 21 A&Es in the Netherlands. From each A&E, a random sample of patients was investigated. Patients younger than 18 years and patients who had arrived by ambulance were excluded. Respondents' perceived waiting times and overall quality ratings of their A&E visit were collected and correlated. Respondents were divided into a "no problem" or "problem" group on the basis of the perceived waiting time before treatment. Logistic regression analyses were performed to explore factors potentially related to problematic waiting experiences, such as the amount of information received while waiting and perceived pain and acuity.

Results: The study included 3483 patients. Longer perceived waiting time was associated with a decrease in overall rating and increased reports of problematic experiences. Multivariate analysis showed that problematic waiting experiences were significantly associated with perceived pain (odds ratio [OR] 1.1), higher perceived acuity (emergency/urgent/nonurgent ORs: 2.7/2.2/1.0) and limited information before treatment. The OR for patients who did not receive any information about what to expect during a visit to the A&E versus patients who were completely informed was 3.3. For uninformed versus completely informed patients, the OR for information about how quickly patients needed to be helped with their health problem was 3.4.

Conclusions: Providing information before treatment, controlling the perception of pain, and managing perceived acuity not only reduced problematic experiences concerning perceived waiting time but also improved experienced

quality of care.

METHODS

Study Population and Data Collection

To obtain information about patients' experiences related to healthcare performance in Dutch A&Es, a cross-sectional survey was conducted with the use of the Consumer Quality Index for the A&E, which is a questionnaire with 78 items.^{12,13} Of a total of 100 Dutch A&Es, 21 participated in the survey. These A&Es varied in terms of patient throughput, geographical area (urban or rural areas), their function as a trauma center or a nontrauma center, and their function as a teaching or nonteaching hospital. Data were collected in April 2010 and September 2010. Variables such as the patient's name, postal address, sex, age, triage code, and time of attendance were obtained from the hospital systems. For the surveys and per A&E, 600 to 800 patients were randomly selected from all patients attending the A&Es during 3 subsequent weeks. This was done with a computer-generated numbers table. Patients whose postal address was known and who had not been reported as deceased were eligible. Patients transported by ambulance were ineligible because most of these were treated immediately, without waiting. The paper questionnaire and the cover letter with information about the study were sent by postal mail. No information was given about the study in the A&Es themselves; this was done only in the cover letter. To minimize recall bias and the influence of intervening healthcare contacts, questionnaires were sent between 2 and 4 weeks after the A&E visit. Nonrespondents received up to three reminders after 1, 4, and 6 weeks. The recipients were invited to return the questionnaire in a postage-paid envelope. The study protocol was approved by the medical ethical review committee of the University Medical Center Utrecht.

[TABLE 1]

[TABLE 2]

Data Analysis

Data analysis included questionnaires of respondents who were not transported by ambulance and who were aged 18 years or older. Table 1 provides an overview of the questionnaire items with the corresponding response categories as used in our analyses. The central question covering the perceived duration of waiting time was divided into two parts: waiting time until triage (wait_triage, question 1) and waiting time after triage and before the start of diagnostics or treatment (wait_treatment, question 2).

For the question whether the total waiting time was experienced as problematic (question 3), we grouped respondents included in the categories "a big problem" and "a small problem" because these two groups showed the same results (Table 2). We also grouped responses in the category "emergency or life-threatening" with respect to the fourth question; this was done in view of the small number of respondents in the life-threatening category (5.5%).

The amount of information provided was determined with the help of questions 7, 8,

and 9. In the analyses, these were used to represent the following variables: information 1, information 2, and information 3. The final question (question 10), a global rating of experience, was the final outcome variable.

The data collection systems registered patients' triage codes used for determining the severity of their health problem. All A&Es used either the Manchester Triage System or the Emergency Severity Index.^{14–16} Both systems assign patients to five categories according to the severity of their health problem. In our analysis, we did not distinguish between the two systems and grouped the categories as follows: red/1, orange/2, yellow/3, green/4, and blue/5. This article uses the color codes without the numbers. Because the number of patients triaged in the red and blue categories was limited, respondents of the red and orange categories and respondents of the blue and green categories were grouped in the analysis.

Time of attendance was classified into three categories: day (8:00 AM–5:00 PM), evening (5:00 PM–12 AM), and night (12 AM–8:00 AM). With annual patient numbers used as a proxy, the size of the A&Es was categorized as small (<20,000 annual attendances), medium (20,000–30,000 annual attendances), or large (>30,000 annual attendances).

For each category of perceived waiting time, global rating was estimated as the mean value of the respondents. The association between perceived waiting time and global rating was tested using analysis of variance. To determine which factors were related to experiencing waiting time as problematic, univariate logistic regression analyses were performed. With respect to their perceived waiting times, the “problem” and “no problem” groups were entered as dependent variables. Age, sex, perceived acuity, triage code, referral, pain, information 1, information 2, information 3, A&E size, and time of attendance were entered as independent variables.

The variables that were found to be significant predictors in the univariate analyses were entered in a multivariate logistic regression analysis using backward selection. Analysis of variance was used to test whether pain scores and self-perceived acuity were significantly related. To study this interaction effect, the interaction term was added to the multivariate model. The results of the univariate and multivariate logistic regression analyses are reported as crude and adjusted odds ratios (OR) with 95% confidence intervals, respectively.

All of the statistical analyses were performed with the statistical package SPSS version 20.0 (SPSS IBM Statistics, Armonk, NY). P values were based on two-sided tests with a cutoff level for statistical significance of 0.05.

RESULTS

The eligible sample consisted of 9796 patients. Of these, 1163 respondents returned an empty questionnaire or checked the box “I don't want to participate.” A total of 5159 patients responded (53%), but 290 questionnaires were not self-completed or insufficiently completed; these were therefore excluded from our analyses. Overall, 3483 (36%) completed questionnaires could be included in the analyses. The mean age of the respondents was 53.3 years (standard deviation 17.9), and 49% were men. Nonrespondents were significantly younger (48.3 years; standard deviation 21.8) and significantly more often men (51%)

[TABLE 3]

Perceived Waiting Times

Table 3 shows the distributions of first perceived waiting times before triage and second perceived waiting times after triage until the start of treatment. Almost half (44%) of the patients reported to have been triaged within 10 minutes. According to 7% of the patients, they had to wait ≥ 1 hour before they were triaged. After triage, more than half of the patients (60%) reported to have been treated within 30 minutes. One of five patients (21%) reported a second perceived waiting time of at least 1 hour before treatment began. Only 1383 patients reported having to wait a second time.

Global Ratings and Perceived Waiting Times

The global rating of the A&E was negatively associated with perceived waiting time before triage as well as with waiting time after triage and before treatment (Figs. 1 and 2). The mean global rating for the categories of the first waiting time ranged from 6.0 for the longest waiting time to 8.3 for the shortest waiting time. The global rating for the categories of the second waiting time had comparable ratings with a minimum mean value of 6.3 for the longest waiting time and a maximum mean value of 8.3 for the shortest waiting time. Both waiting times were significantly associated with global rating ($P < 0.05$).

Of the patients who were triaged within 10 minutes after their arrival in the A&E, 19% experienced a problem with waiting time duration. This percentage increased to 80% of the patients who had to wait 2 to 4 hours before they were triaged. The same pattern was found for the second waiting time.

[FIGURE 1]

[FIGURE 2]

Factors Related to Problematic Experiences During Total Waiting Time Pretreatment

Table 4 shows the baseline characteristics of patients who experienced a problem with total waiting time before treatment and those who experienced no problem. Patients who reported problems were generally younger (50 years) and more likely to be women (53%) compared with those who experienced no problem with their waiting time (54 years; 49% women). Female sex was associated with a greater risk of problematic waiting experience (OR 1.22). Patients indicating a problematic waiting time experience reported to be in greater pain before treatment than their counterparts who did not experience their waiting time as problematic (OR 1.15; pain score 5.7 vs 4.5). Furthermore, they more often considered their health problem to be an emergency or life-threatening event (15% vs 9%). Perceived acuity appeared to be a significant predictor for a problematic waiting time experience, with ORs of 2.36 for emergency or life-threatening perceived acuity and 1.86 for urgent perceived acuity compared with patients who did not rate their health problem as urgent. With an OR of 1.72, waiting times in large A&Es were more often considered problematic compared with waiting times perceived by patients treated in small A&Es.

[TABLE 4]

The provision of information was found to be the strongest predictor for problems during waiting times. ORs for problematic waiting experiences reported by patients who did not receive any information on the three information items were 4.3 (information 1), 4.8 (information 2), and 3.9 (information 3) compared with those patients who were completely informed. Of the patients with a problematic waiting time experience, only 12% were completely informed regarding what to expect during their stay in the A&E, 10% were completely informed on how quickly help was needed, and 7% were completely informed on the order of treatment of waiting room patients. Of the group of patients that did not experience problems with waiting times, 32%, 30%, and 20%, respectively, reported to have been fully informed concerning the issues covered by the three information items. Triage code, time of attendance, and referral status were not significantly related to problematic waiting time.

In the multivariate logistic regression analysis, the variables that were found to be predictors for problematic waiting experiences were pain, perceived acuity, information 1, and information 2. Again, information 1 and 2 were the strongest predictors (Table 5). ORs for fully informed patients compared with uninformed patients were 3.3 and 3.4, respectively. The mean pain scores for the three perceived acuity categories were 6.1 for “emergency or life-threatening,” 5.1 for “urgent,” and 4.1 for “not urgent.” These scores were significantly different ($P < 0.01$). Interestingly, information regarding the order of treatment of the patients in the waiting room was not found to be a predictor in this multivariate model. Adding the interaction term of perceived acuity and pain in the multivariate regression model did not increase the model’s predictive value.

[TABLE 5]

DISCUSSION

Our study confirmed the relation between A&E patients’ perceived waiting time and their global rating of the A&E. Longer perceived waiting times were associated with more negative global ratings. This is consistent with results reported in previous studies 7–11,17–19; however, our results also demonstrate that as perceived waiting time increases, more patients rate their waiting times as a problem. This association was found not only for waiting time before triage but also for perceived waiting times between triage and treatment.

From a professional perspective, waiting time until triage as reported by the Dutch patients in our study is too long. Less than half of the patients reported to have been triaged within 10 minutes. Still, according to Dutch guidelines, patients should be triaged within 5 minutes after arrival in the A&E because the most urgent patients need to be treated within 10 minutes.²⁰ It should, however, be borne in mind that perceived waiting time is not necessarily the same as actual waiting time. Patients easily overestimate the passing of time and may have inaccurate perceptions of waiting time.²⁰ In addition, another study has demonstrated that actual waiting times are becoming longer.²¹ As a consequence of possible overestimations of perceived waiting times or longer actual waiting times, more patients are expected to experience problems while waiting. That being said, a comparison with National

Health Service data from the United Kingdom shows that A&E patients in the Netherlands reported a shorter wait before they first spoke to a nurse or doctor. Of the Dutch patients involved, 80% reported that they were able to speak with a nurse or a doctor within 30 minutes; of the patients in the United Kingdom, this was 71%.²²

Overall, we found that one-third of the A&E patients rated their perceived total waiting time as a problem. Patients' pain and self-perceived acuity were strongly related to negative ratings with respect to patients' waiting times. Pain and self-perceived acuity were also strongly related to each other. This is consistent with findings from previous research.²³ Clearly, patients in pain and patients with an urgent, emergent, or life-threatening health problem want to be treated quickly. The rating of pain is part of both the Manchester Triage System and the Emergency Severity Index triage systems, in which a higher pain score corresponds with a more urgent triage code. A previous study carried out in the Netherlands demonstrated that pain is not always measured and taken into account during triage, however.²⁴ If pain had been taken into account, patients in pain may have had a more urgent triage score and may have been treated more quickly. It would be interesting to know whether the patients in pain who rated their total waiting times as problematic received any pain relief medication during triage. If they did, then these patients may have felt less negative about having to wait. Experiencing pain and a strongly perceived urgency could explain the responses given by the 20% of the patients who reported short waiting time durations (0 to 10 minutes) but who nevertheless reported having problems with waiting time.²⁵

Patients with high levels of self-perceived acuity are likely to be in distress. Information about their health condition and explanations about the urgency of their health problem as offered by a health professional may lower patients' distress and make them feel that they are being taken seriously. In turn, this may result in fewer problems with waiting times. The extent to which patients received information was the strongest predictor of experiencing problematic waiting times. Overall, upon their arrival at the A&E, only one-fourth of the patients were told what to expect or how quickly they needed to be helped with their health problem (information was usually given by the triage nurse). It would seem that the provision of information is an important area for improvement. The survey we used did not include a question about whether the patients were told how long they would have to wait; however, previous studies on the topic have indicated that information on the expected duration of waits increases satisfaction with the A&E.^{8,9,17,18,26} Clearly, it is important that the estimated waiting time is realistic and consistent with the actual waiting time.¹⁹

In summary, our study has revealed that managing perceptions of waiting time and self-perceived acuity and pain are likely to have a positive effect on patients' experiences with respect to the quality of care and that this therefore should be given a strong focus in A&E management.^{18,27} Another management strategy that influences waiting time, and thus patient experience, is the improvement of processes to improve flow and eliminate unnecessary steps in A&Es.²⁸ Jensen and colleagues present several suggestions for managing (experiences about) waiting times, including setting (and meeting) expectations, appropriate waits and keeping people occupied.¹⁹ Furthermore, future studies should examine the univariate association

we found between waiting time that is experienced as problematic and the size of the A&E. Having large numbers of patients in the waiting rooms of large A&Es may influence the perception of waiting times. The negative effects of crowding and waiting time on patient satisfaction have been assessed previously and may occur more often in large A&Es.^{29–31}

The main strength of our study lies in the availability of survey data of multiple A&Es. We measured perceived waiting time and whether patients experienced their waiting times as problematic. To our knowledge, the latter topic has not been studied previously. The present study also had some limitations. First, nonrespondents were significantly more often men and younger patients, which may have caused a nonresponse bias resulting in an overestimation of the ORs for sex and age in the univariate analysis. These effects disappeared in the multivariate analysis because sex and age were not predictive variables in the model. Second, because patients completed the questionnaire at least 2 weeks after they had visited the A&E, their ratings may have been affected by recall bias. Third, perceived waiting time before treatment was measured by means of two questions, but in relation to overall rating, similar patterns were found for both questions. In a future study, one question may be sufficient to determine the total perceived waiting time. This could avoid possible misinterpretation by the respondents and overcome the problem of low response rates for the second waiting time. Fourth, patients who are dissatisfied about one issue may continue to complain about multiple issues in addition, although these issues themselves were not problematic. Such behavior obscures the primary issue. Lastly, measuring additional waiting times during A&E visits may reveal problematic waiting experiences that correlate with dissatisfaction. Examples include time spent while awaiting laboratory or imaging results, time needed for discharge processing, admission and movement to an inpatient bed, or time spent on other processing tasks. This should be studied in future research.

CONCLUSIONS

A longer perceived waiting time before and after triage in the A&E was associated with a decrease in the overall rating and increased reports of problematic experiences. Less than half of the patients involved reported to have been triaged within 10 minutes. Only one-fourth of the patients, upon their arrival at the A&E, were told what to expect or how quickly they needed to be helped with their health problem.

Patients in pain and patients who perceived their health problem as urgent, emergent, or life threatening reported problems with their waiting times. Moreover, patients who remained uninformed pretreatment reported more problems with waiting times. Listening to patients and proactive management of their perceptions about waiting time and self-perceived acuity and pain may have a positive effect on patients' experiences with respect to the quality of care. The provision of information would seem to be another important area for improvement.

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TABLES AND FIGURES

Table 1. Variable names and questionnaire items plus response categories

Variable	Question and response categories
1. Wait_triage	“How long did you have to wait before you first spoke to a care provider?” a) 0–10 min; b) 11–30 min; c) 31–60 min; d) 1–2 h; e) 2–4 h; f) I don’t know (anymore)
2. Wait_treatment	“How long did you have to wait this second time in the waiting room before your treatment started?” a) I was helped directly; b) 5–10 min; c) 11–30 min; d) 31–60 min; e) 1–2 h; f) 2–4 h; g) >4 h; h) I don’t know (anymore)
3. Problems with the total waiting time	“Was the total waiting time before you started treatment in the treatment room a problem?” a) a big problem; b) a small problem; c) no problem
4. Perceived acuity	“According to you, how quickly should you have been seen?” a) not quickly (had no haste); b) urgent (aid necessary within some hours); c) emergency (aid necessary within 30 min); d) life threatening (each second counts)
5. Pain	“Can you indicate on a scale of 0 to 10 how much pain you had on entry to the A&E?” 0 means no pain; 10 means the most terrible pain conceivable
6. Referral	“Who referred you to the A&E?” a) my general practitioner; b) the General Practitioner Cooperatives; c) I was brought by an ambulance; d) a specialist told me I had to go to the A&E; e) someone else (eg, a friend, family member, colleague) decided I had to go to the A&E; f) I decided myself that I had to go to the A&E
7. Information 1	“Did the reception staff give you information on what to expect during your visit to the A&E?” a) no, not at all; b) a bit; c) a great deal; d) yes, completely
8. Information 2	“Did the nurse tell you how quickly you needed to be helped with your health problem?” a) no, not at all; b) a bit; c) a great deal; d) yes, completely
9. Information 3	“Did the nurse tell you the order you and the other patients in the waiting room would be helped?” a) no, not at all; b) a bit; c) a great deal; d) yes, completely
10. Global rating	“What score would you give the A&E?” 0 means very bad A&E; 10 means excellent A&E

A&E, accident and emergency department.

Table 2. Waiting times and problems experienced

	0–10 min, %	11–30 min, %	31–60 min, %	1–2 h, %	>2 h, %
Wait_triage					
Big problem	4.5	9.0	18.3	34.5	54.4
Small problem	15.2	29.3	47.4	44.4	29.1
No problem	80.3	61.7	34.3	21.1	16.5
Wait_treatment					
Big problem	1.8	8.8	18.0	30.0	43.1
Small problem	15.2	32.0	45.6	47.4	41.6
No problem	83.0	59.2	36.5	22.6	15.3

Table 3. Frequency distribution of the two perceived waiting times

	1st waiting time		2nd waiting time	
	N	%	N	%
0–10 min	1371	44.4	356	26.4
11–30 min	1099	35.6	452	33.6
31–60 min	400	12.9	263	19.5
1–2 h	158	5.1	159	11.8
>2 h	62	2.0	119	8.8
Missing ^a	72		34	

A&E, accident and emergency department. 1st waiting time, waiting time before triage; 2nd waiting time, waiting time between triage and treatment. ^aMissings are reported without the respondents of the two A&Es that did not use a triage system, and without the respondents, who did not wait a second time.

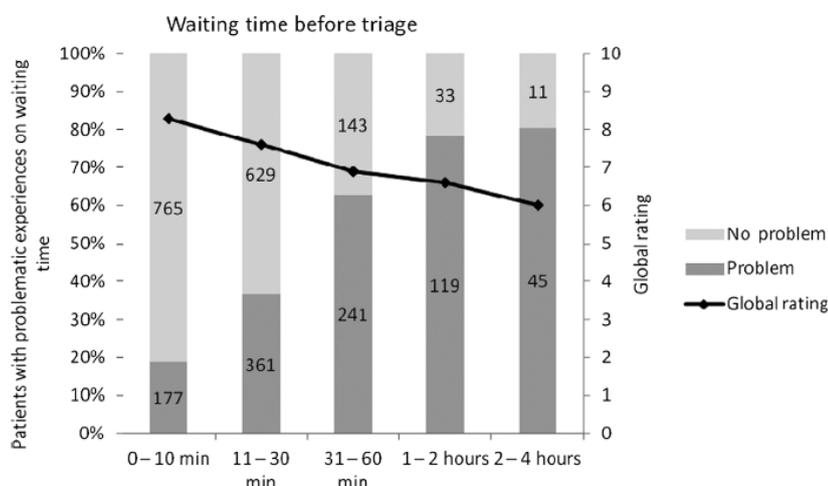


Fig. 1. Waiting time before treatment. Patients are classified according to the five waiting time categories expressed on the horizontal axis. The left vertical axis presents patients with problematic experiences concerning waiting times. Data are presented in percentages; absolute numbers are shown in the bars of each waiting time category. The right vertical axis presents global rating on a scale ranging from 0 to 10.

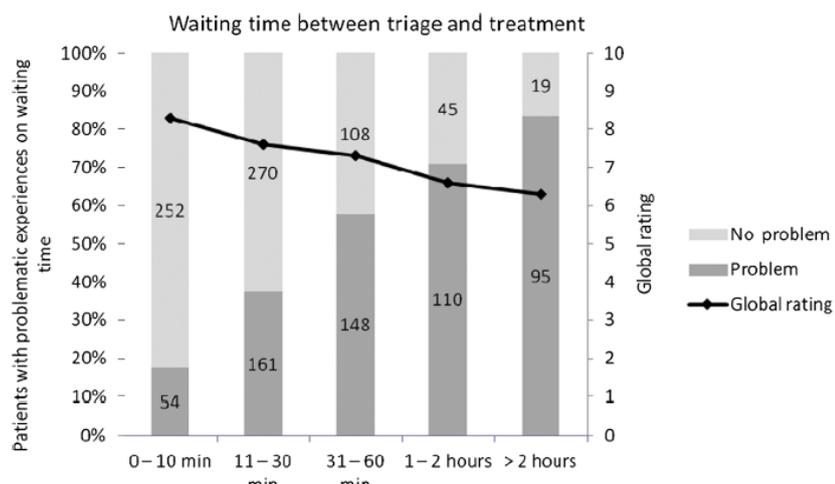


Fig. 2. Waiting time triage and treatment. Patients are classified according to the five waiting time categories expressed on the horizontal axis. The left vertical axis presents patients with problematic experiences concerning waiting time. Data are presented in percentages; absolute numbers are shown in the bars of each waiting time category. The right vertical axis presents global rating on a scale ranging from 0 to 10.

Table 4. Odds ratios and 95% confidence intervals of related factors among patients who experienced no problems with the waiting time and patients who experienced problems with the waiting time

	Total waiting time before treatment				Odds ratio (95% CI)
	No problem‡		Problem		
	Mean (SD)	N	Mean (SD)	N	
Age (years)	53.7 (17.4)	1758	49.9 (18.1)	1034	0.99 (0.98–0.99)*
Pain	4.5 (3.1)	1726	5.7 (3.0)	1013	1.15 (1.12–1.18)*
	%	N	%	N	
Sex					
Female	48.5	852	53.4	552	1.22 (1.04–1.42)*
Male	51.5	906	46.6	482	1.00 (reference)
Perceived acuity					
Emergency/life-threatening	9.0	156	14.8	151	2.36 (1.83–3.04)*
Urgent	36.8	635	47.5	484	1.86 (1.57–2.20)*
Not urgent	54.2	936	37.7	384	1.00 (reference)
Referral					
General practitioner	42.7	734	39.1	398	0.86 (0.71–1.03)
Self-referral	30.1	518	31.9	325	0.99 (0.81–1.21)
Other	27.2	467	29.0	296	1.00 (reference)
Information 1 (reception: expectations)					
No, not at all	25.2	321	41.4	343	4.29 (3.29–5.60)*
A bit	19.3	245	26.8	222	3.63 (2.73–4.83)*
A great deal	24.0	305	19.7	163	2.14 (1.60–2.86)*
Yes, completely	31.5	401	12.1	100	1.00 (reference)
Information 2 (nurse: urgency)					
No, not at all	29.0	220	44.6	283	4.81 (3.45–6.71)*
A bit	18.6	141	25.2	160	4.24 (2.95–6.09)*
A great deal	22.3	169	20.5	130	2.88 (2.00–4.14)*
Yes, completely	30.1	228	9.6	61	1.00 (reference)
Information 3 (nurse: order)					
No, not at all	59.4	438	76.0	475	3.85 (2.67–5.55)*
A bit	9.4	69	9.0	56	2.89 (1.76–4.71)*
A great deal	11.0	81	8.3	52	2.28 (1.40–3.71)*
Yes, completely	20.2	149	6.7	42	1.00 (reference)
Triage code					
Red/orange	8.0	100	8.1	61	1.01 (0.72–1.42)
Yellow	37.7	472	37.5	284	1.00 (0.82–1.20)
Green/Blue	54.3	681	54.4	412	1.00 (reference)
Time of attendance					
Evening	29.6	516	32.4	337	1.13 (0.96–1.34)
Night	4.4	77	3.4	35	0.79 (0.52–1.19)
Day	66.0	1153	64.2	663	1.00 (reference)
Size A&E					
Large (>30,000)	21.8	370	29.8	295	1.72 (1.37–2.17)*
Medium (20,000–30,000)	54.3	923	51.2	507	1.19 (0.97–1.45)
Small (10,000–20,000)	24.0	408	19.1	189	1.00 (reference)

*The odds ratio is significantly different from the reference group.

‡No problem with the waiting time is the reference group.

Information 1 'Did the reception staff give you information on what to expect during your visit to the A&E?'; Information 2 'Did the nurse tell you how quickly you needed to be helped with your health problem?'; Information 3 'Did the nurse tell you the order you and the other patients in the waiting room would be helped?'
SD, standard deviation; OR, odds ratio; CI, confidence interval; A&E, accident and emergency department.

Table 5. Adjusted odds ratios and 95% confidence intervals of related factors among patients who experienced no problems with the waiting time and patients who experienced problems with the waiting time in a multivariate model

	Total waiting time before treatment	
	Odds ratio (95% CI)	<i>P</i>
Pain	1.12 (1.07–1.17)	<0.01
Perceived acuity		
Emergency	2.68 (1.64–4.36)	<0.01
Urgent	2.22 (1.68–2.92)	<0.01
Not urgent	1.00 (reference)	<0.01
Information 1		
No, not at all	3.30 (2.34–4.87)	<0.01
A bit	2.95 (1.98–4.40)	<0.01
A great deal	1.87 (1.26–2.78)	<0.01
Yes, completely	1.00 (reference)	<0.01
Information 2		
No, not at all	3.42 (2.29–5.11)	<0.01
A bit	2.75 (1.79–4.22)	<0.01
A great deal	2.20 (1.44–3.35)	<0.01
Yes, completely	1.00 (reference)	<0.01

N = 1033; Nagelkerke R^2 = 0.224.

No problem with the waiting time is the reference group.

Information 1 'Did the reception staff give you information on what to expect during your visit to the A&E?; Information 2 'Did the nurse tell you how quickly you needed to be helped with your health problem?'

CI, confidence interval; A&E accident and emergency department.