

Patient Satisfaction, Needs and Preferences Concerning Information Dispensation at the Emergency Department; A Cross-Sectional Observational Study

Marank de Steenwinkel (✉ m.desteenwinkel@erasmusmc.nl)

Erasmus Medical Centre: Erasmus MC <https://orcid.org/0000-0002-3250-0777>

Juanita A Haagsma

Erasmus Medical Centre: Erasmus MC

Esther C.M. van Berkel

Erasmus Medical Centre: Erasmus MC

Lotte Rozema

Erasmus Medical Centre: Erasmus MC

Pleunie P.M. Rood

Erasmus Medical Centre: Erasmus MC

Marna G Bouwhuis

Erasmus Medical Centre: Erasmus MC

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Abstract

Background

Patient satisfaction is an important indicator of emergency care quality and has been associated with information dispensation at the Emergency Department (ED). Optimal information dispensation could improve patient experience and expectations. Knowing what kind of information patients want to receive and the preferred way of information dispensation are essential to optimize information delivery at the ED. The purpose of this cross-sectional observational study was to evaluate patient satisfaction concerning information dispensation (including general, medical and practical information), the need for additional information and preferences with regards to the way of information dispensation at the ED of a teaching hospital in the Netherlands.

Results

423 patients (patients ≥ 18 years with Glasgow Coma Scale 15) were enrolled (response rate 79%). The median patient satisfaction score concerning the overall information dispensation at the ED was 7.5 on a rating scale 0-10. Shorter length of ED stay was associated with higher patient satisfaction in multivariate analysis ($P < 0.001$). The majority of respondents was satisfied regarding medical (N=328; 78%) and general information (N =233; 55%). Patients were less satisfied regarding practical information (N =180; 43%). Respondents who indicated that they received general, medical and practical information were significantly more often satisfied compared to patients who did not receive this information ($P < 0.001$). Two thirds (N=260; 62%) requested more general information. Half of the respondents (N=202; 48%) requested more practical information and a third (N=152; 36%) requested more medical information. The preferred way for receiving information was orally (N=189; 44.7%) or by leaflets (N=108; 25.5%).

Conclusion

The majority of respondents were satisfied concerning information dispensation at the ED, especially regarding medical information. Respondents requested more general and practical information and preferred to receive the information orally or by leaflets.

Background

Patient satisfaction is one of the important indicators of emergency care quality, outcomes of health care services and patient treatment adherences (1–3). Proper information dispensation has been associated with patient satisfaction (4). Patients who received additional information were more satisfied at the Emergency Department (ED) (3, 5–9). Welch et al. showed that a lack of information, explanation of patient progress and delays, had a greater effect on patient satisfaction than perceived waiting times (5). These studies evaluated overall patient satisfaction, but did not focus on patient satisfaction concerning information dispensation during the ED visit.

Optimal information dispensation could improve patient experience and expectations at the ED. Improvement of information delivery requires a patient-centered approach, meaning information that is respectful and responsive to individual patient preferences, needs and values. Therefore knowing what kind of information the patient wants to receive is essential. Only a few studies described that patients wanted to receive more general information; e.g. waiting times, triage, identifying staff, the progress during an ED visit, or practical information; e.g. parking, Wi-Fi, or about common medical emergencies (10–12). These studies were all conducted in non-European hospitals. However, information concerning patients' needs for receiving medical information during the ED visit (e.g. information regarding invasive and non-invasive procedures or medication), is currently lacking.

There is a growing number of studies in the ED population, introducing different ways of information dispensation, also including more modern techniques such as videos, websites and apps (8, 13–15). Nevertheless, there is little evidence regarding the preferred way of information dispensation at the ED and only based on non-European studies. These studies showed that patients preferred information dispensation by video, leaflets or information screen in the waiting room (11, 12, 16).

In order to optimize patient information dispensation during the ED visit, the primary objective was to evaluate patient satisfaction concerning overall patient information. The secondary objectives included patient satisfaction concerning the delivery of general, medical and practical information, the needs and preferred way of information dispensation in the ED population.

Methods

Study design and procedures

This study was a cross-sectional observational single center study at the ED of the Erasmus MC Rotterdam. The Erasmus MC is an urban university teaching hospital with approximately 26,000 ED visits per year. Ethical approval was obtained from the research ethics board before start of the study (MEC-2018-1577).

During the study period, 16 January 2019 to 10 March 2019, all patients ≥ 18 years who visited the ED with a Glasgow Coma Scale 15 were eligible for inclusion. Patients were approached for informed consent after completing treatment at the ED before discharge or admission to hospital to prevent information bias. Exclusion criteria included no informed consent, not able to understand Dutch or red-triaged patients (Manchester Triage System) or who were considered too ill by attending nurses and the emergency physician. Patients were recruited with equal distribution during different days of the week and different shifts to ensure a good reflection of the ED population. Initially, patients were also recruited during night shifts. However, only a few patients were eligible for recruitment during these shifts and therefore recruitment was only continued during day- and evening shifts. After obtaining informed consent a written questionnaire was distributed by an independent researcher. Patients independently filled out the survey to prevent biases by attending physicians or nurses. The questionnaire was handled

anonymously. Patients could leave the study at any time without any consequences. There was no follow up in this study.

Questionnaire

The questionnaire was developed in Dutch by emergency physicians and an epidemiologist and was validated for face and content validity. For this purpose, four selected experts in patient education, ten emergency nurses and emergency physicians or residents, ten laypersons and ten patients were asked to review the questionnaire. The results were used to improve the questionnaire. The questionnaire consisted of questions about patient satisfaction, needs and preferences regarding patient information delivery at the ED. The questionnaire contained questions about patient characteristics (age, sex, highest attained education, migration background and previous ED visits in Erasmus MC) and patient satisfaction regarding information dispensation. Patient satisfaction was subdivided in satisfaction concerning overall information dispensation grading on a rating scale of 0–10 (0 extremely dissatisfied – 10 extremely satisfied) and satisfaction regarding general, medical and practical information delivery grading on a 5-point Likert scale (very unsatisfied - very satisfied). Additionally, patients were asked to indicate whether or not they received additional information. General information included information about logistics of the ED visit; waiting times, triage, identification and function hospital staff, privacy and costs. Medical information represented information about non-invasive procedures (electrocardiogram, X-ray), invasive procedures (blood samples, intravenous system, computed tomography scan, epidural), medication (pain-, provided - and discharge medication), information regarding monitoring vital parameters of the patients and access to patient files. Practical information included information about parking, restrooms, Wi-Fi, food and drinks, taxi/public transport and pharmacy availability.

The questionnaire also included questions regarding patients' needs for additional information regarding general, medical and practical information. Patients were able to give multiple answers.

Finally, patients were asked about their preferred way of information delivery at the ED subdivided in orally, leaflets, poster, video, website and mobile app. Multiple answers were allowed.

Primary and secondary outcomes

The primary outcome of this study was the patient satisfaction score concerning the overall patient information dispensation. Secondary outcomes included patient satisfaction concerning the delivery of general, medical and practical information, needs and preferred way of information delivery during the ED visit in percentages.

Statistical analysis

The responses on the completed questionnaires were collected into a database in IBM SPSS Statistics version 25. This database was supplemented by baseline characteristics (day and shift of ED visit, self-referral or referral by medical specialist or general practitioner, arrival by own transport or ambulance, triage category, length of stay of the ED visit and destination after ED visit) from the electronic patient files. Uncompleted questions were coded as missing data. The baseline characteristics and secondary

outcomes have been analyzed by descriptive statistics given as average including 95% confidence intervals (95% CI). The primary outcome has been given as median including 95% CI.

Based on an estimated eligible study population of 17,846 patients (patients under 18 years, red-triaged and 50% of the orange-triaged adult patients excluded because of Glasgow Coma Scale < 15), with margins of error of 5% min and a confidence interval of 95%, a representative sample size of 377 patients was calculated. Mann-Whitney U tests were conducted to test for differences in patient satisfaction concerning overall patient information dispensation in patients who did and did not receive information. Uni- and multivariate analyses were used to determine associations between patient characteristics and patient satisfaction score concerning overall patient information dispensation. Patient characteristics with a significance less than 0.5 were applied for multivariate logistic linear forward regression analysis. A statistically significant correlation was defined by p-value less than 0.05.

Results

In this study 535 eligible patients were approached to participate of which 423 patients completed the questionnaire (response rate 79%) (Fig. 1.). In total 251 patients (59%; 95% CI 55–64%) of the study population were male and mean age of the respondents was 53.7 years (SD ± 18.3). The majority (64%) of the respondents did not have a migration background. Approximately half (48%) of the study population had never visited the ED of the Erasmus MC before. 208 respondents (49%) were referred by a general practitioner or medical specialist. The baseline characteristics are summarized in **table 1**.

Table 1. Baseline characteristics of the study population

| Variable | N = 423 patients (%) | 95% Confidence Interval |
|---|----------------------|-------------------------|
| Age, mean in years | 53.7 | 51.7–55.3 |
| Sex | | |
| Male | 251 (59.3) | 0.55–0.64 |
| Female | 172 (40.7) | 0.36–0.46 |
| Education* | | |
| Low | 159 (37.6) | 0.33–0.42 |
| Middle | 124 (29.3) | 0.25–0.34 |
| High | 133 (31.4) | 0.27–0.36 |
| Missing | 7 (1.7) | |
| Migration background** | | |
| Native Dutch | 272 (64.3) | 0.60–0.69 |
| No native Dutch | 145 (34.3) | 0.30–0.39 |
| Missing | 6 (1.4) | |
| Previous ED visits in last 3 years | | |
| 0 | 201 (47.5) | 0.43–0.52 |
| 1–2 | 121 (28.6) | 0.25–0.33 |
| ≥3 | 98 (23.2) | 0.19–0.27 |
| Missing | 3 (0.7) | |
| Referral | | |
| Self-referral | 215 (50.8) | 0.46–0.56 |
| Referral by general practitioner/specialist | 208 (49.2) | 0.44–0.54 |
| Arrival | | |
| Own transportation | 306 (72.3) | 0.68–0.76 |
| Ambulance | 117 (27.7) | 0.24–0.32 |
| Shift | | |
| Day | 241 (57.0) | 0.52–0.62 |
| Evening | 146 (34.5) | 0.30–0.39 |
| Night | 36 (8.5) | 0.06–0.12 |
| Day | | |
| Monday - Friday | 313 (74.0) | 0.70–0.78 |
| Weekend | 110 (26.0) | 0.22–0.30 |
| Triage category | | |
| Orange | 61 (14.4) | 0.11–0.18 |
| Yellow | 262 (61.9) | 0.57–0.66 |
| Green | 98 (23.2) | 0.19–0.27 |
| Missing | 2 (0.4) | |
| Length of stay ED visit, mean in minutes | 253 | 253–271 |
| Destination after ED visit | | |
| Discharged | 265 (62.6) | 0.58–0.67 |
| Admission | 130 (30.7) | 0.26–0.35 |
| Transfer to other hospital | 26 (6.1) | 0.04–0.09 |
| Left against medical advice | 2 (0.5) | |

* Low education: no education, pre-primary, primary, lower secondary education, compulsory education. Middle education: upper secondary general education, basic vocational education, secondary vocational education, post-secondary education. High education: specialized vocational education, university/college education, (post-) doctorate and equivalent degrees.

** Native Dutch: both parents were born in the Netherlands. No Native Dutch: one or both parents were not born in the Netherlands

Primary outcome

The median patient satisfaction score concerning overall patient information delivery was 7.5 (95% CI 7.13–7.47). A total of 224 respondents (77%) scored patient information dispensation 7 or higher in contrast to 53 respondents (13%) who scored 5 or lower.

Univariate linear logistic regression showed that referral by medical specialist or general practitioner (95% CI -0.671 - -0.011; $P = 0.04$) and longer length of ED visit (95% CI -0.003 - -0.001; $P < 0.001$) were significantly associated with a lower patient satisfaction score concerning overall patient information delivery. In multivariate analysis only longer length of ED visit was significantly associated with lower patient satisfaction concerning overall information dispensation (95% CI -0.003 - -0.001; $P < 0.001$).

Secondary outcomes

Patient satisfaction concerning general, medical and practical information dispensation

The majority of respondents were satisfied or very satisfied, on a 5-point Likert scale, regarding medical information (N = 328; 78%) and general information (N = 233; 55%). Patients were less satisfied concerning triage (N = 166; 39% of respondents satisfied or very satisfied), waiting times (N = 151; 36% of respondents satisfied or very satisfied) and practical information (N = 180; 43% of respondents satisfied or very satisfied). Respondents who indicated that they received information concerning triage, waiting times and general, medical or practical information were significantly more satisfied compared to patients who did not received that information ($P < 0.001$) (Fig. 2.).

Patients' needs concerning information dispensation

The results are summarized in Table 2. Of 423 respondents, 260 respondents (62%) wanted more general information, of which the most frequently registered needs were information concerning waiting times (N = 194; 75%) and triage (N = 110; 42%). In univariate linear logistic regression analysis lower age (OR 0.99; 95% CI 0.975–0.997; $P = 0.01$) and migration background (OR 0.50; 95% CI 0.32–0.77; $P = 0.002$) were significantly associated with a greater need for general information.

In regard to medical and practical information, respectively 152 respondents (36%) and 202 respondents (48%) indicated a need for more information. Regarding medical information respondents wanted to receive more information about invasive procedures (N = 87; 57%), medication (N = 79; 52%) and non-

invasive procedures (N = 63; 41%). In univariate analysis migration background was significantly associated with increasing need for medical information (OR 0.46; 95% CI 0.30–0.70; P < 0.01). Moreover, 103 respondents (51%) requested more information about food and drinks, followed by 88 respondents (44%) about parking and 66 respondents (33%) about Wi-Fi concerning practical information.

Table 2
Patients' needs with regards to general, medical and practical information

| Variable | N (%)* - N total = 423 | 95% Confidence Interval |
|---|------------------------|-------------------------|
| General Information [°] | 260 (61.5) | 0.57–0.66 |
| Waiting times | 194 (74.6) | 0.69–0.80 |
| Triage | 110 (42.3) | 0.36–0.48 |
| Name/function medical staff | 54 (20.8) | 0.16–0.26 |
| Medical Information [°] | 152 (35.9) | 0.32–0.41 |
| Invasive procedure ^{**} | 87 (57.2) | 0.49–0.65 |
| Medication | 79 (52.0) | 0.44–0.60 |
| Non-invasive procedure ^{***} | 63 (41.4) | 0.34–0.50 |
| Practical information [°] | 202 (47.8) | 0.43–0.53 |
| Food and drinks | 103 (51.0) | 0.44–0.58 |
| Parking | 88 (43.6) | 0.37–0.51 |
| Wi-Fi | 66 (32.7) | 0.27–0.39 |
| [°] Missing total study population: general information 7 (1.7%), medical information 18 (4.3%), practical information 11 (2.6%) | | |
| [*] Patients had the option to choose more answers for desires in the general, medical and practical information group. For that reason, the percentages are not equal to 100 percent. | | |
| ^{**} Invasive procedure: blood sample, iv system, CT and epidural | | |
| ^{***} Non-invasive procedure: X-ray and electrocardiogram | | |

Preferred way of information dispensation

The preferred way for receiving patient information was orally (N = 189; 44.7%) or by leaflets (N = 108; 25.5%) (Table 3.). Seven respondents did not indicate their preferences in information dispensation. The less preferred way of information delivery was by website (N = 36; 8.5%) and poster (N = 20; 4.7%). Univariate analysis showed that lower age (OR 0.98; 95% CI 0.974–0.995; P = 0.004) was significantly associated with the preference for oral information delivery. Migration background (OR 0.60; 95% CI

0.38–0.94; P = 0.03) and increased length of stay at the ED (OR 1.001; 95% CI 1.000-1.002; P = 0.04) were significantly associated with the preference for information delivery by leaflets.

Table 3
Patient preferences in the way of information delivery

| Variable | N (%)* - N total = 423 | 95% Confidence Interval |
|--------------------------|------------------------|-------------------------|
| Oral information | 189 (44.7) | 0.40–0.49 |
| Leaflets | 108 (25.5) | 0.22–0.30 |
| App | 76 (18.0) | 0.15–0.22 |
| Video | 69 (16.3) | 0.13–0.20 |
| Website | 36 (8.5) | 0.06–0.12 |
| Poster | 20 (4.7) | 0.03–0.07 |
| No preferences indicated | 7 (1.7) | 0.01–0.03 |

* Patients were able to choose more answers for preferences in the way of information delivery

Discussion

Our study shows that respondents were satisfied concerning patient information dispensation at the ED. Respondents who indicated that they received information concerning general, medical and practical information were more satisfied. A longer length of stay at the ED was associated with a lower patient satisfaction concerning overall patient information delivery. Respondents indicated that they would like to receive more general information, especially about waiting times and triage. Younger age and migration background were associated with increased needs for information. The preferred way of receiving patient information was orally in younger respondents or by leaflets in respondents with a longer length of ED stay or migration background.

This is the first study that investigated patient satisfaction concerning overall information dispensation at the ED. In multivariate analyses longer length of the ED visit was associated with a lower patient satisfaction score concerning overall patient information delivery, which is consistent with studies regarding overall patient satisfaction concerning the ED visit (9, 17). Additionally, the most frequently requested information concerned waiting times (75%), which is in line with 14–75% reported in previous studies (10–12). Information dispensation regarding waiting times was associated with a higher overall patient satisfaction (1, 3, 7, 17–19). Seibert et al. and Alhabadan et al. showed that respondents preferred an update concerning waiting times every 41 minutes and 30 minutes respectively (11, 12).

In this study the need for general information dispensation at the ED was associated with lower age, which was also observed in a systematic review in the German population (20). Likewise, patients with a migration background requested more frequently general and medical information. Although this was

previously described, it remains unclear why patients with a migration background prefer to receive more information during the ED visit (10, 12). The current study does not answer this question. Nevertheless, it is important to take age and migration background into account when optimizing patient information dispensation during the ED visit.

Recent literature showed multiple studies introducing different ways of information dispensation at the ED (8, 13–15). However, the preferred way of information dispensation at the ED was only based on non-European studies with varying results. The preferred way of information delivery was by leaflets (32–60%), video (25–50%) or speaking with an expert (24%) (11, 12, 16). The option for modern techniques such as apps on personal devices or tablets provided by the hospital were not studied before. Interestingly, this study did not show preferences for modern techniques, yet half of the respondents preferred to receive the information orally.

There were multiple strengths to this study. The first strength was the high response rate leading to a representative reflection of the ED population at the Erasmus MC. Also more patients were enrolled than the sample size calculation of 377 patients to mitigate unexpected missing data. Furthermore, patients were included after completing treatment at the ED before discharge or admission to hospital to prevent information bias. Thirdly, the developed questionnaire concerned many questions about patient characteristics and many aspects of patient satisfaction, needs and preferences regarding patient information delivery at the ED. This allowed us to determine which patient characteristics were associated with the different aspects of patient satisfaction, needs and preferences regarding patient information dispensation. Finally, face and content validity was applied to optimize the non-validated questionnaire by feedback from experts, medical staff, patients and laypersons.

There are limitations to this study. The first limitation was the single center study design. The Erasmus MC is an academic urban hospital with certain patient characteristics, therefore the results could be less applicable to rural hospitals. Secondly, due to differences in health care system between the Netherlands and other countries the results of this study may be less applicable to other countries. Lastly, there were missing data concerning the secondary outcomes, which could have introduced potential bias and reduced generalizability of the results.

Based on the study results, we recommend that in daily practice attention must be paid to patient information dispensation during the ED visit, especially regarding waiting times, triage and food and drinks. The preferred way of information dispensation is person dependent and might change over time. At this time, implementation of more general and practical information by leaflets could be a good and low-cost improvement. Nevertheless, when implementing modern techniques, this should be evaluated to ensure that it meets the expectations of the ED population.

Conclusions

This study showed that respondents were satisfied with overall information dispensation during the ED visit. However, there was a need for more patient information regarding general and practical information.

The preferred method to receive the information was orally or by leaflets.

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the research ethics board of the Erasmus MC before start of the study (MEC-2018-1577).

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

MdS - Drafted the study protocol, statistical analysis and interpretation of the data, drafted the article

JH - Revised the study protocol, statistical analysis and interpretation of the data, revised the article

EvB - Data collection, revised the article

LR - Data collection, revised the article

PR - Revised the study protocol, revised the article

MB - Drafted the study protocol, interpretation of the data, revised the article

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Figures

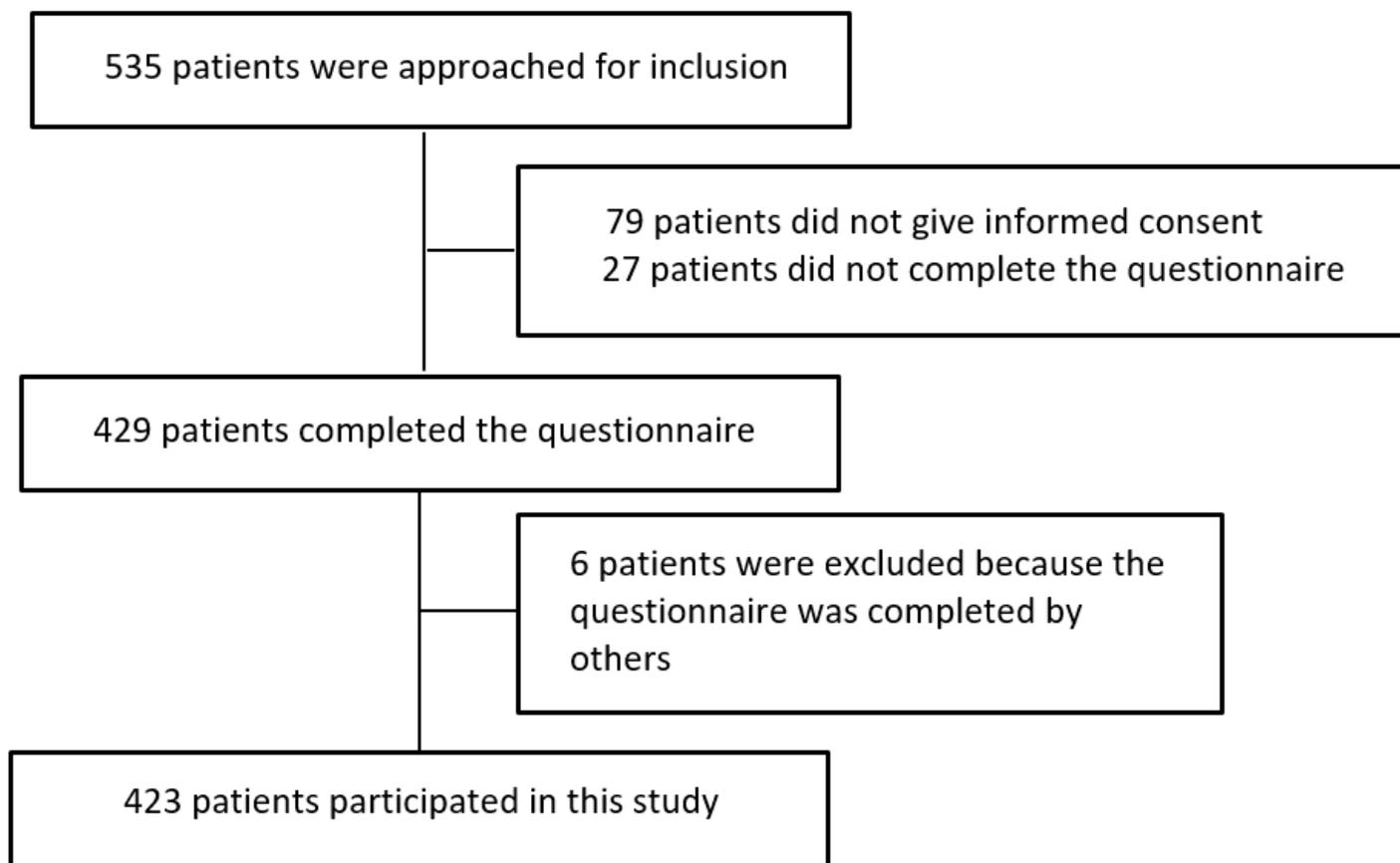


Figure 1

Patient enrollment

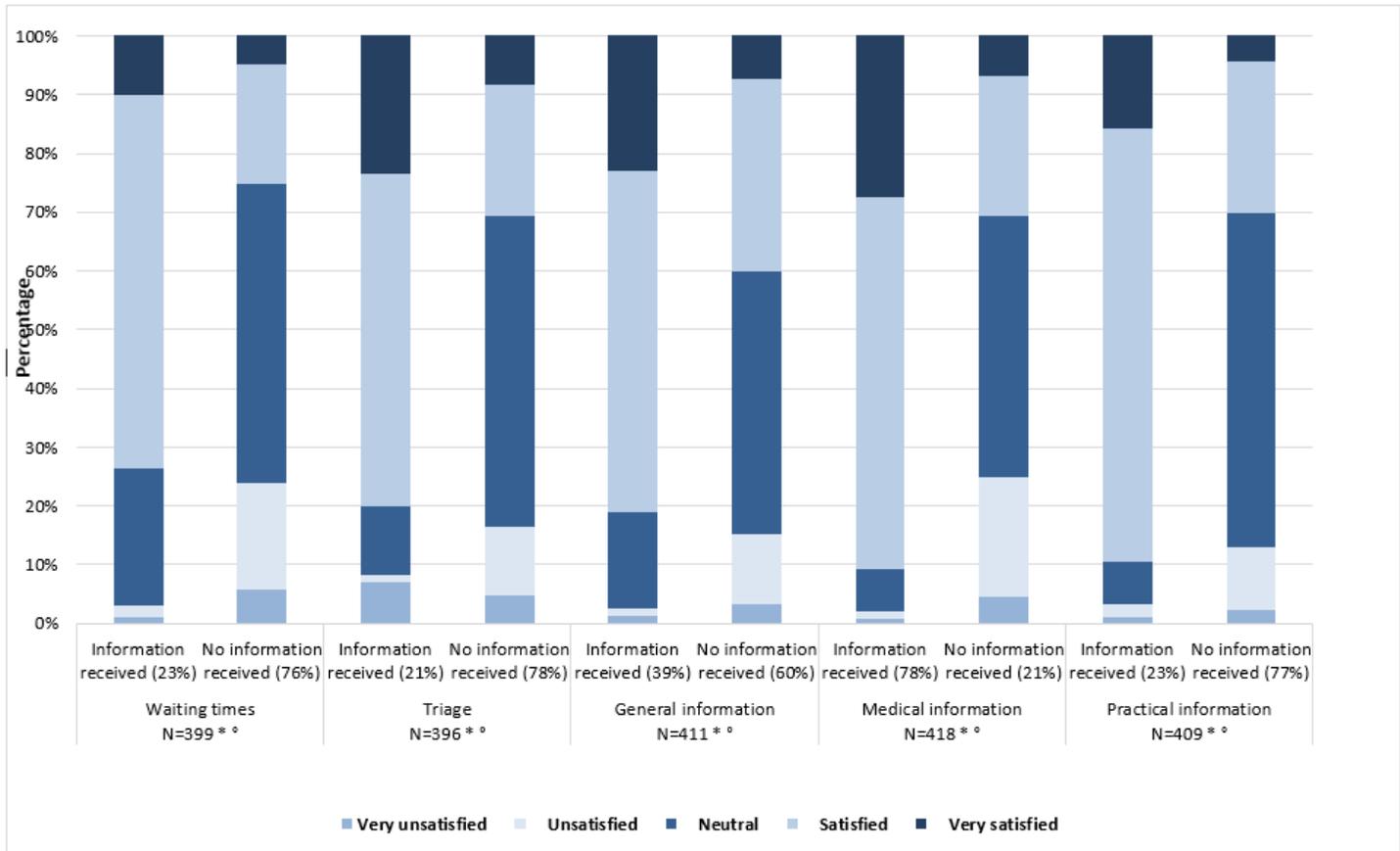


Figure 2

Patient satisfaction concerning general, medical and practical information dispensation Patient satisfaction concerning waiting times, triage, general (e.g. logistics, costs), medical (e.g. medical procedures) and practical (e.g. Wi-Fi, food and drinks) information dispensation at the ED on a 5-point Likert scale. The results in each information dispensation group were subdivided into patients who indicated that they received information vs. patients who indicated that they did not receive information. * Missing data: waiting times N=27, triage N=24, general information N=12, medical information N=5, practical information N=14. ° Respondents who indicated that they received information concerning triage (P<0.001), waiting times (P<0.001) and general (P<0.001), medical (P<0.001) or practical information (P<0.001) were significantly more satisfied compared to patients who did not received that information.