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What Most Dissatisfies Emergency Department Patients?

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Novometric analysis[1,2] is used to determine aspects of care which induce greatest dissatisfaction among Emergency Department (ED) patients. Data were obtained from a satisfaction survey on which responses were obtained using five-point Likert-type scales. The first analysis discriminated 131 strongly dissatisfied and 114 moderately dissatisfied patients, and the second analysis discriminated 182 patients who were very unlikely and 92 patients who were moderately unlikely to recommend the ED to others. Maximum dissatisfaction was associated with perceived inadequacy of physician explanation of one's illness or injury, and minimum likelihood of recommending the ED to others was associated with extreme dissatisfaction with time spent in the treatment area waiting to see the physician.

This study identifies aspects of medical care which maximize overall dissatisfaction of ED patients, and which minimize the likelihood of a patient recommending the ED to others. Patients seen in an urban 800 bed university-based level 1 Trauma center were mailed a survey assessing their satisfaction with care received one week after discharge.[2] The survey elicited ratings of overall satisfaction with care received, likelihood of recommending the ED to others, and satisfaction with various aspects of administration, nurse, physician, laboratory, and care of family and friends.

Maximum Dissatisfaction

A total of 2,198 surveys with a rating of overall satisfaction were returned over a six-month period. The survey is completed using a five-point Likert-type response scale. Analysis included a total of 245 patients responding with satisfaction ratings of 1 (very poor, N=131) or 2 (poor, N=114).

Structural decomposition analysis[1] (SDA) identified two attributes for inclusion in CTA[3]: ratings of physician explanation of the patient's illness/injury, and time spent waiting in the treatment area before being seen by the physician. The minimum denominator search algorithm (MDSA) identified a descendant family of three unique models within which the globally optimal (GO) model resides.[1,2] Exact discrete 95% confidence intervals (CIs) were computed for both model and chance.[1] Model 1 used both ratings; model 2 used rating of physician explanation; and model 3 used rating of waiting time (Table 1).

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Table 1: Summary of MDSA Procedure for Discriminating Patients who are Very versus Moderately Dissatisfied

Step	Strata	MinD	ESS	Efficiency
1	4	40	42.6	10.6
			27.9-57.1	6.98-13.5
			0.38-13.3	0.10-3.32
2	2	100	41.5	20.8
			26.5-55.9	13.3-28.0
			0.25-13.6	0.12-6.80
3	2	110	30.3	15.1
			15.4-44.8	7.71-22.4
			0.56-12.8	0.28-12.8

Note: There were three steps in this MDSA. Strata is the number of partitions identified by the CTA model. MinD is the smallest number of observations (patients) in any of the strata (i.e., the smallest model endpoint N). ESS is a normed index of classification accuracy on which 0 represents the level of accuracy expected by chance and 100 represents perfect (errorless) classification. By rule-of-thumb: ESS<25 is a relatively weak effect; ESS<50 is a moderate effect; ESS<75 is a relatively strong effect; and ESS>75 is a very strong effect.[4] Efficiency, an index of parsimony, is ESS/number of strata. Under the ESS and Efficiency point estimates, the first row is the exact discrete 95% CI for the model, and the second row is the corresponding 95% CI for chance.

Comparison of 95% CIs for model and error performance indicates all three models achieved statistically reliable classification. Comparison of model 95% CIs reveals the ESS (accuracy) and Efficiency (parsimony) was statistically comparable across all three models. For model 1 the ESS CIs for two pairs of two model endpoints overlapped indicating redundancy. For models 2 and 3 there was no redundancy. A theoretically ideal model[1] would correctly classify all the data using a minimum number of strata. If perfect accuracy was obtained by a 2-strata model the efficiency would be 50: the efficiency of model 2 is 41.6% of theoretical ideal, and of model 3 is 30.2% of theoretical ideal. Model 2 is thus selected as the GO model for this analysis.

Figure 1 presents the elemental two-strata UniODA[4,5] model 2. As seen, in order to increase the number of patients likely to be moderately dissatisfied, and to reduce the number of very dissatisfied patients, physicians should maximize the number of patients rating the explanation of the patient's illness/injury as being "Fair" or better, and minimize the number of patients rating the explanation as being "Poor" or "Very Poor".

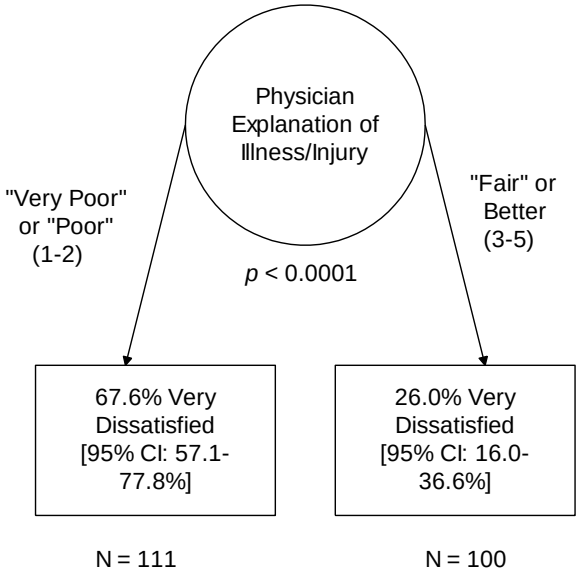

Figure 1: Two-Strata Model for Discriminating Patients Who Are Strongly versus Moderately Dissatisfied

This finding is consistent with recent research which determined that the identical attribute is the GO discriminator between patients who are extremely dissatisfied versus extremely satisfied.[2]

Minimum Recommendation Likelihood

A total of 2,109 surveys with a rating of likelihood of recommending the ED to others were returned over a six-month period. Analysis included a total of 274 patients responding with satisfaction ratings of 4 (moderately unlikely to recommend ED to others, N=92) or 5 (very

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unlikely, N=182). SDA identified two attributes for inclusion in CTA: ratings of waiting time in the treatment area before being seen by the physician, and waiting time before being brought to the treatment area. MDSA identified a descendant family of four unique models, and exact discrete 95% CIs were computed for model and chance classification performance. Model 1 used both ratings; models 2 and 4 used rating of lobby waiting time; and model 3 used rating of treatment waiting time (see Table 2).

Table 2: Summary of MDSA Procedure for Discriminating Patients who are Very versus Moderately Unlikely to Recommend the ED

Step	Strata	MinD	ESS	Efficiency
1	4	33	36.0	8.99
			21.0-50.6	5.24-12.6
			0.07-13.3	0.02-3.32
2	3	42	32.9	11.0
			18.1-47.6	6.04-15.9
			0.24-12.7	0.08-4.23
3	2	115	30.6	15.3
			16.7-44.3	8.34-22.2
			0.07-12.0	0.04-6.00
4	2	117	27.1	13.5
			11.7-41.9	5.86-20.9
			0.59-13.5	0.30-6.75

Note: See Note to Table 1. There were four steps in this MDSA.

Comparison of 95% CIs for model and error performance indicates models 1-3 yielded statistically reliable classification, but for model 4 the model and chance CIs overlapped. Comparison of model 95% CIs reveals that ESS (accuracy) and Efficiency (parsimony) was statistically comparable across all four models. For model 1 the ESS CIs for two pairs of two model endpoints overlapped indicating redundancy. For model 2 the ESS CIs for two endpoints overlapped and were redundant. By the process of elimination, model 3 is selected as the GO model for this analysis: the efficiency of model 3 is 30.6% of theoretically ideal.

Figure 2 presents the elemental two-strata UniODA model 3. As seen, in order to increase the number of patients moderately unlikely to recommend the ED to others, and to reduce the number of patients strongly unlikely to recommend the ED, the model indicates staff should maximize the number of patients rating waiting time in the treatment area as being either “Poor” or better, and minimize the number of patients rating waiting time in the treatment area as being “Very Poor”.

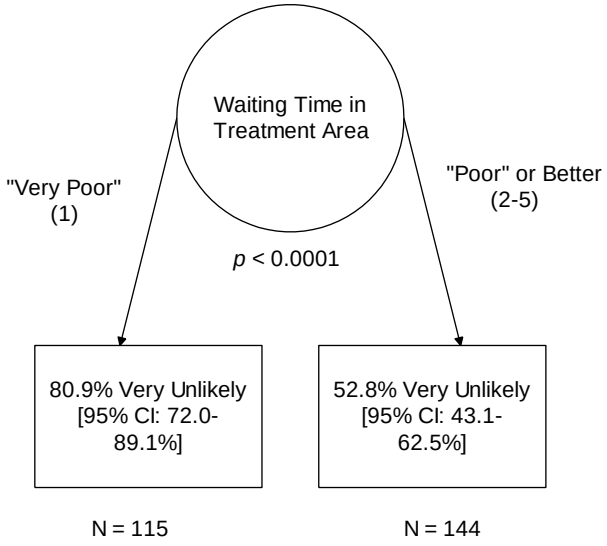

Figure 2: Two-Strata Model for Discriminating Patients Who Are Very versus Moderately Unlikely to Recommend the ED to Others

This finding is consistent with recent research which determined that the identical attribute is the primary GO discriminator between patients who are extremely unlikely versus extremely likely to recommend the ED to others.[6]

Conducting an analysis using the ordered 5-category class variable for satisfaction or for likelihood of recommending the ED to others is complicated by the large number of missing values for aspects of care received. Future research in this area should thus shorten

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the survey by selecting a subset of attributes to employ in the survey, thereby reducing the patient workload and reducing the number of missing data.[7]

References

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