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Information Presentation Features and Comprehensibility of Hospital Report Cards:
Design Analysis and Online Survey Among Users

Background

Improving the transparency of information about the quality of health care providers is one way to improve health care quality. However, users find it difficult to understand the formats in which information is presented.
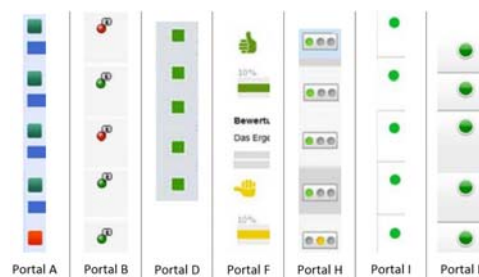
Objective

We analyzed the presentation of risk-adjusted mortality rate (RAMR) for coronary angiography in 10 German public report cards to analyze the impact of information presentation features on their comprehensibility. We wanted to determine which information presentation features were utilized, were preferred by users, led to better comprehension, and had similar effects to those reported in evidence-based recommendations described in the literature.

Methods

(1) identification of best-practice evidence about the presentation of information on hospital report cards; (2) selection of a single risk-adjusted quality indicator; (3) selection of a sample of designs adopted by German public report cards; (4) identification of the information presentation elements used and (5) an online panel completed an online questionnaire.

Results

Recommendations were made about: see table. When investigating the RAMR in a sample of 10 hospitals' report cards, 7 of these information presentation features were identified. Of these, 5 improved comprehensibility in a manner reported previously in literature.

Bar chart presentation taken from 5 portals

Symbols used by 7 of the 10 portals

Conclusion

This is the first study to systematically analyze the most commonly used public reporting card designs used in Germany. Best-practice evidence identified in international literature was in agreement with 5 findings about German report card designs: (1) avoid tables without symbols, (2) include bar charts with symbols, (3) state explicitly whether high or low values indicate good performance or provide a "good quality" range, (4) avoid incomplete data (N/A given as a value), and (5) rank hospitals by performance. However, ranking hospitals by performance may present substantial difficulties.

Information presentation feature	Feature included			Feature not included			Choice of lowest RAMR		Comprehensibility	
	Respondents, n	Selected hospital with the lowest RAMR, n (%)	Comprehensibility,[a] mean (SD)	Respondents, n	Selected hospital with the lowest RAMR, n (%)	Comprehensibility,[a] mean (SD)	χ^2 (df)	P	t (df)	P
Table without symbols	1245	575 (46.18)	3.07 (1.85)	4836	3119 (64.50)	3.77 (1.92)	139.2 (1)	<.001	-11.657 (6079)	<.001
Table with symbols	1787	928 (51.93)	3.58 (1.84)	4294	2766 (64.42)	3.65 (1.96)	82.5 (1)	<.001	-1.300 (6979)	.19
Bar chart without symbols	608	392 (64.47)	2.99 (1.84)	5473	3302 (60.33)	3.70 (1.92)	3.9 (1)	.047	-8.626 (6079)	<.001
Bar chart with symbols	2441	1799 (73.70)	4.11 (1.92)	3640	1895 (52.06)	3.31 (1.86)	286.9 (1)	<.001	16.289 (6079)	<.001
Bar chart with traffic light symbols	1814	1341 (73.93)	4.25 (1.93)	4267	2353 (55.14)	3.36 (1.86)	188.3 (1)	<.001	16.774 (6079)	<.001
Bar chart with thumb symbols	627	458 (73.05)	3.70 (1.83)	5454	3236 (59.33)	3.62 (1.94)	44.4 (1)	<.001	1.030 (6079)	.30
Providers ranked by performance	1221	883 (72.32)	4.29 (1.91)	4860	2811 (57.84)	3.46 (1.89)	85.8 (1)	<.001	13.620 (6079)	<.001
Explicit statement about whether higher or lower values indicate better performance	3017	2079 (68.91)	3.85 (1.97)	3064	1615 (52.71)	3.41 (1.86)	167.3 (1)	<.001	9.112 (6079)	<.001
No statement about scale direction, but range for good quality presented	1220	884 (72.46)	4.04 (1.91)	4861	2810 (57.81)	3.52 (1.92)	87.8 (1)	<.001	8.440 (6079)	<.001
*Incomplete data (N/A labels)	2445	1212 (49.57)	3.32 (1.88)	3636	2483 (68.30)	3.84 (1.93)	214.2 (1)	<.001	-10.436 (6079)	<.001

[a] Based on a 7-point Likert scale with a range of 1=not at all comprehensible to 7=very comprehensible.

Choice of the hospital with the lowest risk-adjusted mortality rate (RAMR).