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Patients' Reaction to the Disclosure of Rare Dreaded Adverse Events

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Abstract

Background—Physicians must frequently inform their patients of the risks of rare, but serious, adverse events (AEs).

Objective—To examine how patients react to the disclosure of rare AEs.

Methods—Outpatients viewed a video of a physician describing a medication associated with a rare AE. Subjects then rated their worry, perceived chance of developing the AE, and willingness to take the medication.

Results—Non-White men were more likely to perceive a greater chance of developing the AE compared to White men [Adjusted odds ratio (95% CI) = 3.37 (1.09 – 10.45)]; White women were more likely to be worried [2.00 (0.95 – 4.24)] and to perceive a greater chance of developing the AE [6.22 (2.50 – 15.50)], perceive a greater chance of developing the AE [6.27 (2.43 – 16.15)], and be less willing to take the medication [0.23 (0.09 – 0.59)], compared to White men.

Conclusions—Gender and ethnicity influence how patients react to disclosure of rare, but serious, AEs.

Practice Implications—An improved understanding of patients' risk perceptions is required to inform the development of best practices to improve risk communication.

Keywords

Rare adverse event; risk communication; risk perception; ethnic disparities

1. Introduction

While disclosure of risk information has long been a component of clinical care, improvements in post marketing surveillance have led to an increasing awareness of rare adverse events (AEs). Notable examples include the risk of progressive multifocal

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leukoencephalopathy reported in patients receiving biologics and osteonecrosis of the jaw in patients receiving bisphosphonates.

The FDA's and medical societies' responses to reports of rare, but serious, AEs frequently includes publishing a "Dear Doctor" letter or posting a "hotline" on the internet recommending that physicians inform their patients of newly recognized AEs. There are no data, however, describing how patients react to this information and the consequences of disclosing dreaded, albeit rare AEs, on treatment planning are not known. The objective of this study was to examine how patients who differ in gender and race react to the disclosure of rare AEs associated with two medications that have received substantial attention because of their association with an extremely rare AE.

2. Methods

We created two videos (A and B) of a female, White physician (LF) seated at a desk describing the availability of a new medication associated with a rare risk of an AE. Video A included a new medication to prevent heart disease (with an associated AE of osteonecrosis of the jaw) and Video B a new medication to treat chronic pain (with an AE of progressive multifocal leukoencephalopathy). In both videos, the medication was described as being a very effective small pill taken once a day, that does not interfere with any other medications, is completely covered by the subject's insurance, and is very well tolerated except for the extremely rare risk of a serious AE. The scripts for the videos are included in the Appendix.

Eligibility criteria for Video A included being 50 years or older and currently taking at least one prescription medication for a chronic disease. Patients with known heart disease, osteoporosis or osteopenia, and those currently taking a bisphosphonate were excluded. For Video B, subjects had to be 18 years or older and currently taking at least one prescription medication for a chronic painful condition.

Subjects were recruited from general medicine outpatient clinics. Following their clinical consultation, subjects viewed Video A or B depending on their eligibility criteria. Subjects eligible for both were randomly assigned to view one of the videos. After viewing the video, subjects rated their willingness to take the medication, as well as their worry and perceived chance of developing the rare AE on 11-point numeric rating scales. Willingness, worry, and perceived chance were not normally distributed and therefore were dichotomized at the median for all analyses ($\leq$ median versus $>$ median). We examined the association of demographic variables with patients' reactions using logistic regression. Self-reported health status and health literacy measured by the Short-Form Rapid Estimate of Adult Literacy in Medicine (SF-REALM) (1) were included as covariates. The latter asks patients to read a list of 9 words. Subjects were classified as able to read 9 words versus able to read 8 words or less. Level of pain over the past week and perceived risk of developing a heart attack were measured for subjects viewing Videos A and B respectively using 11-point numeric rating scales.

3. Results

A total of 832 subjects were approached of whom 418 were eligible. Of these, 11 refused to enroll, 191 could not stay after their appointment to be interviewed because of time constraints, and 216 participated. Subject characteristics are presented in Table 1. 102 subjects viewed Video A and 114 viewed Video B. Using 11-point numeric rating scales, the median (interquartile range) willingness to take the medication was 5 (0–8). The median level of worry was 8 (3–10), and the median perceived chance of developing the AE was 3

(1–5). There were no significant differences in median willingness (8 versus 7, $p=0.1$), worry (3 versus 2, $p=0.4$) or perceived chance (5 versus 5, $p=0.4$) across videos.

In bivariate analyses (chi-square statistics) where worry, perceived chance and willingness to take the medication were treated as dichotomous variables, older age was not associated with worry about the AE (33% versus 43% ($p=0.2$), perceived chance of developing the AE (45% versus 41%, $p=0.6$), or willingness to take the medication (35 versus 38%, $p=0.7$). Subjects with fair or poor health status were more likely to be worried about the AE compared to those reporting good, very good or excellent health (49% versus 36%, $p = 0.05$); however, we found no significant relationships between health status and willingness to take the medication (39% versus 37%, $p = 0.8$) or perceived chance of developing the AE (51% versus 40%, $p = 0.1$). Subjects with lower health literacy perceived a greater chance of developing the AE compared to subjects with higher health literacy (63% versus 39%, $p = 0.003$). Health literacy was not associated with willingness to take the medication (38% versus 38%) or worry (48% versus 39%, $p = 0.3$). In contrast, gender, ethnicity and education were associated with patients' reactions to the dreaded AE presented on the videos (Table 2). For example, 49% of women were worried about the AE compared to 28% of men ($p = 0.003$). Adjusted odds ratios are presented in Table 3.

Table 4 illustrates risk perceptions by gender and ethnicity, where White men were treated as the referent group. In this study, non-White men were more likely to perceive a greater chance of developing the AE compared to White men; White women were more likely to be worried and to perceive a greater chance of developing the AE compared to White men; and non-White women were significantly more likely to be worried about the AE, perceive a greater chance of developing the AE, and be less willing to take the medication, compared to White men, after adjusting for education, age, health status and health literacy.

4. Discussion and Conclusion

4.1 Discussion

Gender and ethnicity influence how patients react to disclosure of rare, but serious, AEs. We found that women were more risk averse than men, and that non-White women were especially concerned about the risk of rare, albeit dreaded, AEs. Although we did not measure actual behavior, our results indicate that behavioral intention also differs by ethnicity with non-White women being less willing to take a medication with a serious rare AE compared to White men. These results are consistent with previous papers demonstrating that sociodemographic factors are strong determinants of peoples' attitudes towards risks whether they be health related, environmental or financial (2–6). An alternate possibility, not tested in these data, is that White males could be higher in the skills necessary for effective risk understanding compared to others (7); this is unlikely to explain all of the data, however, given that the discrepancies observed persist after controlling for education and the associations between risk perceptions and sociopolitical factors have been documented in other fields (8).

Strengths of this study include the use of a video format that more closely resembles an actual patient-physician encounter than the usual paper-and-pencil format used in most studies to study risk perception. However, this format cannot control for other factors expected to influence risk perceptions and behavioral intentions in clinical practice, such as the patient-physician relationship, patients' beliefs in medications and illness perceptions, and the specific context of the treatment decision. A further limitation is the participation rate. Although few patients refused to participate, many could not remain after their appointment due to time constraints.

4.2 Conclusion

To develop best practices to inform patients of rare dreaded risks, further research is required to understand the reasons underlying the differences observed in this study. Perceived social roles, feelings of power and status, cultural norms, and trust in institutions have all been found to influence risk perceptions (2,4–6,9). If such sociopolitical factors underlie, even in part, patients' risk perceptions, current efforts to improve risk communication, which focus primarily on improved methods of presenting numerical information, are likely to be inadequate.

4.3 Practice Implications

To develop best practices to inform patients of rare dreaded risks an approach based on improved understanding of the differences underlying patients' risk perceptions may be a fruitful adjunct to the more traditional provision of information (10).

I confirm all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of the story.

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Appendix

Script for Video A

Hello, my name is Dr. Smith and I know we have never met before, but for the next few minutes try and pretend that I am your regular doctor. For this exercise you need to pretend that you are a patient with a high risk for heart disease. In this video I am going to be telling you about a new medication. Ok let's start:

- As you know heart disease is the number one cause of death in the US.
- Your heart beats 100,000 times every day and so taking care of your heart is extremely important.
- There is a medication available that dramatically decreases your risk of developing heart disease.
- This medication is completely covered by your insurance.
- It is a small pill taken once a day and it does not interfere with any of your other medications.
- The medication is very well tolerated and it does not cause any side effects except:
- 1 in 100,000 people develop a severe form of damage to the jawbone that is very difficult to treat. This jaw problem is painful and potentially disfiguring. It can be associated with a jaw infection and portions of the jawbone may become exposed inside the mouth. But it is important to remember that of the thousands of patients taking this medication, only 1 in 100,000 people will develop this complication.

Script for Video B

Hello, my name is Dr. Smith - and I know we have never met before, but for the next few minutes try and pretend that I am your regular doctor. In this video I am going to be telling you about a new medication. Ok let's start:

- I understand that you have a condition that causes pain that is severe enough to interfere with the quality of your life so you can still make it through your day but you can't always do the things you used to do.
- There is a new medication available that dramatically reduces pain. It works quickly and provides lasting relief.
- This medication is completely covered by your insurance.
- It is a small pill taken once a day and it does not interfere with any of your other medications.
- The medication is very well tolerated and it does not cause any side effects except:
- 1 in 100,000 people develop a brain disorder that can cause confusion, dizziness, difficulty talking or walking, and vision problems. This disorder gradually destroys a person's memory, ability to learn, and ability to carry out daily activities. But it is important to remember that of the thousands of patients taking this medication, only 1 in 100,000 people will develop this complication.

Table 1

Baseline Characteristics of Study Population

Characteristic	Number (Total 216)
Mean age (SD)	58.6 (13.3)
African-Americans (%)	30
Women (%)	62
College graduate (%)	39
Married (%)	54
Health status (%)	
Excellent	7
Very good	21
Good	35
Fair	29
Poor	8
Currently Employed (%)	41
Number of comorbidities (%)	
0	16
1–3	74
4–7	10
REALM perfect score (%)	82
Mean perceived risk of heart attack* (SD)	4.2 (2.9)
Mean pain** (SD)	6.2 (2.6)

* Among the 102 subjects viewing Video A

** Among the 114 subjects viewing Video B.

Table 2

Bivariate associations (chi-square statistics) between demographic characteristics and reactions to the disclosure of a dreaded adverse event.

	Percent more worried	Percent with greater perceived chance	Percent more willing to take the medication
Women vs Men	49 vs 28, $p = 0.003^*$	54 vs 28, $p = 0.0002$	32 vs 48, $p = 0.02$
Non-White vs White	60 vs 32, $p = 0.0002$	62 vs 36, $p = 0.0006$	26 vs 43, $p = 0.02$
< College Graduate vs ≥ College Graduate	48 vs 29, $p = 0.004$	55 vs 27, $p < 0.0001$	35 vs 43, $p = 0.20$

* Results should be interpreted as 49% of women compared to only 28% of men had worry scores greater than the median score.

Table 3

Associations between demographic characteristics and reactions to the disclosure of a dreaded, adverse event

Characteristic	Unadjusted Odds Ratios (95% CI)	Adjusted Odds Ratios (95% CI)	Unadjusted Odds Ratios (95% CI)	Adjusted Odds Ratios (95% CI)	Unadjusted Odds Ratios (95% CI)	Adjusted Odds Ratios (95% CI)
Female vs Male	2.41 (1.34 – 4.35)	2.47 (1.31 – 4.66)	2.97 (1.65 – 5.37)	3.99 (2.04 – 7.80)	0.52 (0.29 – 0.91)	0.49 (0.27 – 0.89)
Non-White vs White	3.12 (1.71 – 5.70)	2.54 (1.29 – 4.99)	2.79 (1.53 – 5.08)	1.83 (0.92 – 3.67)	0.46 (0.24 – 0.88)	0.45 (0.22 – 0.92)
< College Graduate vs ≥ College Grad	2.35 (1.31 – 4.21)	2.02 (1.05 – 3.87)	3.18 (1.76 – 5.73)	2.561 (1.35 – 5.07)	0.71 (0.40 – 1.25)	0.76 (0.40 – 1.42)

Adjusted model for each dependent variable (worry, perceived chance, and willingness) includes gender, ethnicity, education, health status, health literacy, and age.

Table 4

Associations between demographic group and reactions to the disclosure of a dreaded, adverse event

Independent variables*	Worry		Perceived Chance		Willingness	
	Unadjusted Odds Ratios (95% CI)	Adjusted Odds Ratios (95% CI)	Unadjusted Odds Ratios (95% CI)	Adjusted Odds Ratios (95% CI)	Unadjusted Odds Ratios (95% CI)	Adjusted Odds Ratios (95% CI)
Black men	2.27 (0.80 – 6.43)	1.71 (0.57 – 5.12)	5.34 (1.84 – 15.48)	3.35 (1.08 – 10.41)	0.69 (0.25 – 1.86)	0.68 (0.24 – 1.92)
White women	2.05 (0.98 – 4.27)	2.02 (0.96 – 4.29)	4.14 (1.92 – 9.02)	5.10 (2.24 – 11.60)	0.62 (0.32 – 1.20)	0.64 (0.33 – 1.25)
Black women	7.58 (3.13 – 18.35)	6.35 (2.52 – 16.00)	8.31 (3.36 – 20.57)	6.43 (2.47 – 16.72)	0.22 (0.09 – 0.57)	0.23 (0.09 – 0.61)

* Reference group is White men.

Covariates include education, health status, health literacy, age, and video.