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What contributes to internists' willingness to disclose medical errors?

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ABSTRACT

Background: The release of the report 'To err is human' put medical safety and the disclosure of errors to the forefront of the health care agenda. Disclosure of medical errors by physicians is vital in this process. We studied the role of background and social psychological factors in internists' willingness to report medical errors.

Methods: Survey among a random sample of internists from five teaching hospitals in the Netherlands, all internists and internists in training at the Departments of Internal Medicine of the participating hospitals.

Results: Questionnaires were received from 115 participants (response 51%). The willingness to disclose was related to the severity of the error, with the majority of near misses not reported to the head of department or the hospital error committees. Errors were more often reported to colleagues. Positive factors in favour of disclosing were reported more often than negative ones prohibiting disclosure. Motivation, behavioural control and social barriers were related to the disclosure of errors.

Conclusion: Personal and social issues contributing to the willingness to report medical errors should be identified and addressed properly to stimulate disclosure. The creation of an atmosphere where disclosing errors is routine seems vital. In addition, it is essential to create a departmental culture where medical errors are discussed in a non-judgmental, safe environment. In order to improve reporting of medical errors, more emphasis should be placed on the individual barriers that preclude adequate reporting.

KEYWORDS

Errors, medical education, disclosure of errors

INTRODUCTION

In the past, medical errors were often hidden behind closed doors. The release of the report 'To err is human' put medical safety and the disclosure of errors to the forefront of the agenda.[1] Subsequently, studies on (handling) medical errors have been conducted. One relevant aspect is the disclosure thereof by physicians.

Adequate disclosure of medical errors is of importance for patients, physicians and society as a whole. Patients' preference for openness has often been reported.[2-5] Those having suffered from a medical error reported that openly disclosing an error afterwards can be more important than the error itself.[5,6] In addition, these studies demonstrated that acceptance of errors by patients and/or relatives is eased if they are convinced that doctors learn from them.[2]

Physicians, on the other hand, may be reluctant to openly confess a mistake. Several factors can play a role, for example guilt may be important, but also fear of consequences, from either the department, disciplinary actions or both.

In addition, systems to report errors are sometimes confusing and may differ across hospitals. Still, physicians broadly acknowledge that disclosing errors is vital to improve patient care.[7]

Despite the initiatives by hospitals, professional societies or governmental agencies, it is believed that many errors remain unreported.[7] In order to improve the disclosure of medical errors a change of attitudes and the creation of an open atmosphere within the health care setting is suggested to be vital. However, such an attitude change is not easily accomplished. It is not fully clear what factors, whether negative or positive, contribute to the willingness to report errors. Thus, to improve the disclosure of medical errors in clinical practice, it should be established what factors help or hamper doctors to report an error. By understanding these factors supportive measures can be

proposed. Such factors may be related to the clinicians' background. We wondered, for example, if older doctors would be more willing to report their errors than younger, less experienced ones. In addition, social psychological theories distinguish factors predicting whether persons are likely to display certain types of behaviour. These assert that behaviour is predicted by intention. Intention, in turn, is influenced, first, by attitudes or motivation, secondly, by self-efficacy or behavioural control, and thirdly, by social or cultural factors.[8,9] Consequently, we expect that whether or not errors are reported depends on the physicians' motivation, their perceived ability and skill to report an error ('behavioural control') and the culture they work in, i.e., their perception of the social or cultural openness to error disclosure within their department.

The aim of the current study was to investigate to what extent physicians working in internal medicine are willing to report medical errors and what factors relate to their willingness to disclose such errors.

METHODS

Participants

All internists and internists in training from the Departments of Internal Medicine at five teaching hospitals in the Netherlands were invited to participate in the study. The sample thus included doctors from different internal medicine subdisciplines such as cardiology, gastroenterology and from general internal medicine. One of the participating departments was organising a monthly meeting where an error was openly disclosed to the entire staff.

Procedures

Together with handing out the paper-based questionnaires and a pre-stamped envelope, a short introduction to the study was given at each hospital by two senior internists (GL, JH). Surveys were completed during a four-month period.

Survey questionnaire

The questionnaire covered three domains.

First, background characteristics included age, gender, clinician's position in the department, having previously made an error and having prior experience with reporting an error. For the last two variables, we distinguished between three error types: i) a near miss, having no consequence for the patient, ii) a minor error, having minor consequences for the patient, iii) a major error, having major consequences for the patient, as proposed by Blendon *et al.*[10] Dutch law requires serious errors to be reported to the responsible governmental agency (e.g. amputation of the wrong leg) and were therefore not addressed here.

Secondly, the items covering motivation, behavioural control and the departmental culture were developed for the current study based on i) qualitative interviews with senior internal medicine staff members held by one the senior authors (JdH) (n=4), ii) the questionnaire developed by Kaldjian and colleagues[11] assessing a taxonomy of Factors Affecting Physicians' Willingness to Disclose and iii) the Dutch version of the Hospital Survey on Patient Safety Culture.[12] All answers to these items were given on a five-point Likert-type scale (ranging from 'totally agree' to 'totally disagree'). Items were recoded so that higher scores indicate a higher motivation to report an error, greater behavioural control and/or perceived departmental support.

Motivation: 26 items addressed negative and positive motives to report errors (for example, negatively, "It is important to not disclose an error as it may arouse negative publicity"; or positively "It is important to disclose to prevent future errors".)

Behavioural control: 20 items related to the extent to which the clinician felt able and had the skills to report an error (for example, "If I had to report an error, I would feel stressed beforehand", or: "If I had to report an error, I would have to prepare carefully").

Departmental culture: 21 items addressed whether the clinicians perceived their department's culture as conducive or, on the contrary, creating barriers to disclosing an error (for example: "A person reporting an error is treated respectfully" or "In my department people would not treat cases confidentially").

Thirdly, we considered the clinicians' intention to report errors. As described above, we distinguished: i) near misses, ii) minor errors, and iii) major errors. Respondents were asked how probable it was that they would report such an error to four different parties: i) colleagues, ii) the head of the department, iii) the responsible hospital committee and iv) patients. They responded on five-point Likert-type scales (range 'certainly' to 'certainly not'). Higher scores indicate a greater probability to report an error.

Statistical analysis

First, descriptive statistics were used to investigate the background characteristics of respondents, to understand the patterns of intentions to report medical errors, and to investigate response patterns in the items pertaining to Motivation, Behavioural Control and Departmental Culture.

Second, based on exploratory factor analyses we created subscales to explore the relationships between the items for Motivation, Behavioural Control and Departmental Culture. Their internal reliability was assessed by calculating Cronbach's alpha (α).

Third, in relation to the willingness to report errors, sum scores for each type of error were created and a sum score for intention to report all types of error.
Finally, we ran bivariate linear regressions to investigate respondents' background characteristics, experience with previously reporting errors and scores on the motivation, behavioural control and departmental culture subscales in relation to their intentions to report different error types. Based on the results of these analyses, we ran a multivariate linear regression including all variables with a p value <0.25. Five blocks were used, with background characteristics entered first, and experience with previously reporting errors entered second. In the third block we entered Motivation subscales, in the fourth block we entered Behavioural Control subscales and in the fifth block we entered Departmental Culture. All analyses were conducted using Stata 11.1

RESULTS

Sample characteristics

A total of 226 questionnaires were distributed among internists and internists in training. Responses were received from 115 participants (response rate 50.9%). One questionnaire was omitted from analysis given the large number of missing values (>50%). Sample characteristics are given in *table 1*. Of the respondents 52% were male, 53% were staff members, and 54% came from an academic hospital. The demographics of the non-responders are unknown. However, since half of the respondents were male and half practised at an academic institution, it is suggested that the respondents are a representative study group. Under half (43%) of the respondents belonged to the department where a monthly error reporting meeting took place. With regard to experience with errors, 94% of the respondents reported having made earlier near misses of which 64% reported the error, 88% had made a minor error of which 76% had reported the error, 35% said they had made major errors of which 88% reported such error and 6% were involved in a serious accident (that all had reported on).

Table 1. *Sample characteristics (n=115)*

Background characteristics	
Age (mean ±SD)	40.57±10.67
Gender (male)	52.2%
Academic / teaching hospital	53.9%
Internists (staff) / internists in training	53.0%
Monthly meeting about errors (yes)	42.9%
Earlier experiences made / of which reported a	
Near miss	93.9% / 64.1%
Minor error	87.7 % / 76.0%
Major error	35.4% / 82.5%
Serious incident	6.2% / 100%

Intention to report

As shown in *table 2*, in most cases physicians intend to report near misses (87%) to a colleague, in one third of cases to the head of the department (35%) and/or the hospital's error and near accident committee (32%) and in about one quarter of cases to the patient (27%). Minor errors would be reported to a colleague in most cases (86%), to the head of the ward in less than half of the cases (41%), to the hospital's error and near accident committee in half (53%) and to patients in almost two-thirds of the cases (61%). Respondents indicated they would report a major error to a colleague in almost all cases (98%), to the head of ward in most cases (86%), to the hospital's error and near accident committee in most cases (90%) and to the patients in almost all cases (94%).

There is a trend for internists' willingness to report errors to increase when the error has more serious consequences.

Table 2. *Willingness to report errors (probably / certainly)*

I would report a	Near miss	Minor error	Major error
To a colleague	86.6%	85.7%	98.3%
To head of ward	34.8%	41.1%	85.7%
Hospital committee of errors and near misses	32.1%	52.6%	90.2%
Report to the patient	26.7%	60.7%	93.8%

Relevant motivational, behavioural and cultural factors

Motivation: Positive and negative motives concerning the clinicians' willingness to report errors were divergent. The most often endorsed motives to disclose an error were (see *table 3* for the three most important ones): 1) to prevent future errors (99%), 2) to enable others to learn from them (99%), 3) that it is one's responsibility (95%), 4) to improve patient safety (94%) and 5) because one would have liked this if one were a patient (91%). Important reasons prohibiting the intention to report an error were that 1) it could arouse negative publicity (21%), 2) it could harm one's reputation (20%), 3) patients' reactions might be negative (19%), 4) the risks of a complaint still exist (11%) and 5) because one did not consider themselves to be the only responsible person (8%).
Behavioural control: The most important reasons endorsed for having (lack of) behavioural control were that 1) one

Table 3. *Overview of most important motives, behavioural reasons and cultural factors to (not) report an error*

	Agree altogether/ to some extent	Mean ±SD
Motives to report an error		
To prevent future errors	99.1%	1.18±.405
So others can learn from it	99%	1.21±.429
I consider it my responsibility	94.8%	1.49±0.63
Motives not to report an error		
It could arouse negative publicity	21.1%	3.71±1.14
It could harm my reputation	20.1%	3.63±1.15
Patients' reaction could be negative	19.3%	3.67±1.14
Behavioural reasons to not report an error *If I were to report an error, I*		
Would find it difficult	67.9%	2.52±1.16
Would have to prepare carefully	65.2%	2.27±1.09
Would worry about it	64.9%	2.46±1.10
Supportive cultural factors *As regards error reporting, I find people in my department*		
To be happy to learn from errors	85.4%	1.75±.74
To respect the person reporting an error	83.7%	1.83±.76
Make it clear that errors could happen to anyone	79.1%	1.85±.82
Most important cultural barriers *As regards error reporting, I find people in my department*		
Not to treat cases confidentially	30.6%	3.23±1.14
Keep the consequences of reporting unclear	23.6%	3.41±1.11
Use openness about errors against someone later on	16.3%	3.79±1.16

would find it difficult (68%), 2) one would have to prepare carefully (65%), 3) one would worry about the reporting (65%), 4) one would be stressed beforehand (54%) and 5) one might disagree with colleagues about what had happened (43%) (see *table 3* for the most important ones).

Departmental culture: The most important supportive factors encountered within the department were 1) the department's perceived eagerness to learn from past errors (85%) and 2) the respect expected towards the person reporting an error (84%, *table 3*). In addition, over three quarters of the internists also found that 3) in their department it is clear that anyone can make an error (79%). Many emphasised the need for the person reporting an error to be treated fairly (77%), and to be provided a safe environment (77%). At the same time most perceived barriers were related to 1) the incident not being treated confidentially (31%), that 2) consequences of reporting were unclear (24%) or that 3) openness about errors could be used against someone later (16%).

Factors predicting internists' willingness to report errors

After looking at individual item descriptive statistics, scales were constructed for the intention to report near misses, minor misses, major misses and the overall intention to report errors. Reliabilities of the scales were satisfactory to good (α's were .69, .75, .68 and .82 respectively). These scales are taken as endpoints for the prediction of respondents' intention to report errors.

Background factors: Neither the respondents' gender, nor age, working in an academic hospital, being a staff member or having a regular error reporting meeting were predictive of the willingness to report errors in the univariate analysis (results not shown).

Motivation: Based on the results from the factor analysis, the items addressing motivation to report errors were subdivided into four subscales covering either positive motives that were 1) 'patient driven' i.e., being in the interest of patients (e.g., "Reporting is better for the patients' safety.") 2) 'socially driven', i.e., in the interest of others (e.g., "Reporting is better as others can learn from it.") or 3) 'personally driven', in the interest of the clinician (e.g., "If I report, I would feel less guilty.") or 4) negative motives (e.g., "Reporting might result in negative publicity."). Cronbach's α's were good (.76, .76, .72 and .81 respectively).

As shown in *table 4*, the clinicians' willingness to report near misses, major and all errors was related to socially driven motives (p=.022, p<.001 and p=.026 respectively) and to negative motives (p=.047, p=.001 and p=.005 respectively) rather than to patient driven or personally relevant motives (*table 4*).

Behavioural control: Factor analysis results suggested that the items addressing behavioural control were best described using two scales. These address either 1) emotional barriers (e.g., "I'd be afraid to get too emotional.") or 2) behavioural barriers (e.g., "I wouldn't know how to act.") Cronbach's α's were .91 and .65. The item pertaining to legal barriers did not fit either scale and was explored as a single item.

As shown in *table 4*, the clinicians' willingness to report near misses, major and all errors was related to emotional (p<.001, p=.013 and p=.003 respectively) as well as behavioural barriers (p=.006, p=.002 and p=.003 respectively). Legal barriers did not predict clinicians' intention to report errors.

Table 4. *Motivational, behaviour related and cultural factors predicting the intention to report near misses and errors (univariate analysis)*

	Near miss		Minor errors		Major errors		All	
	Stand. Beta	*P* value	Stand. Beta	*P* value	OR	*P* value	Stand. Beta	*P* value
Motivation								
Patient driven	0.10	0.299	0.15	0.126	1.14	0.037	0.16	0.104
Socially driven	0.22	0.022	0.08	0.377	1.41	<0.001	0.21	0.026
Personally driven	-0.005	0.959	-0.02	0.807	1.06	0.340	-0.05	0.626
Negative motivation	0.19	0.047	0.13	0.176	1.21	0.001	0.26	0.005
Behavioural control								
Emotional	-0.33	<0.001	-0.05	0.598	0.95	0.013	-0.28	0.003
Behavioural	-0.26	0.006	-0.08	0.386	0.81	0.002	-0.28	0.003
Legal consequences	-0.09	0.372	-0.03	0.718	0.74	0.126	-0.11	0.272
Cultural factors								
Cultural factors	-0.12	0.204	0.02	0.870	0.93	<0.001	-0.16	0.097

OR = odds ratio; Stand. = Standardized.

Departmental culture: The factor analysis results indicated that the items addressing the department's culture constituted a single construct (α=.95). The clinicians' willingness to report near misses was found to be related to the perceived supportive culture within their department (p<.001) (*table 4*).

Predicting the internists' intention to report, the multivariate approach: To further understand how the combination of the different factors was associated with clinicians' willingness to report near misses and major errors, we investigated sequential multivariate regression models. Older physicians and women were more likely to report near misses (*table 5*). In the final block the internists' gender (p=.039), socially driven motivation (p=.045) as well as the absence of emotional barriers (p=.002) explained the tendency to report near misses.
In the first block, willingness to report major errors was again stronger among older and female internists (p=.026 and p=.027 respectively). After entering the clinicians' motives, socially driven (p=.001) and negative motives (p=.012) were significantly associated with the willingness

Table 5. *Factors predicting intention to report near misses and major errors*

	Block 1		Block 2		Block 3		Block 4	
Near miss	Stand. Beta	*P* value	Stand. Beta	*P* value	Stand. Beta	*P* value	Stand. Beta	*P* value
Sex	-0.20	0.036	-0.18	0.074	-0.21	0.034	-0.20	0.039
Age	0.21	0.033	0.09	0.429	-0.01	0.948	0.01	0.926
Patient driven			-0.04	0.733	0.003	0.975	0.008	0.935
Socially driven			0.16	0.169	0.20	0.084	0.24	0.045
Negative motivation			0.10	0.327	-0.03	0.788	-0.001	0.992
Emotional					-0.34	0.003	-0.36	0.002
Behavioural					-0.03	0.778	-0.06	0.600
Cultural factors							-0.14	0.224
Adjusted R^2	0.048		0.051		0.135		0.139	
	Block 1		**Block 2**		**Block 3**		**Block 4**	
Major error	OR	*P* value	OR	*P* value	OR	*P* value	OR	*P* value
Sex	0.39	0.026	0.44	0.084	0.41	0.082	0.40	0.081
Age	1.04	0.027	0.98	0.391	0.96	0.147	0.95	0.104
Patient driven			0.95	0.482	0.97	0.706	0.96	0.626
Socially driven			1.48	0.001	1.52	<0.001	1.47	0.002
Negative motivation			1.18	0.012	1.11	0.164	1.09	0.257
Emotional					0.96	0.133	0.96	0.197
Behavioural					0.90	0.246	0.92	0.350
Cultural factors							1.03	0.218
Pseudo R^2	0.055		0.212		0.252		0.262	

OR = odds ratio; Stand. = Standardized.

to report a major error. In the final model, socially driven motives (p=.002) significantly explained the internists' willingness to report major errors.

DISCUSSION

The occurrence of errors is prominent among physicians as elsewhere. Such errors threaten patient safety and are found to be related to physician burnout and emotional problems.[13] Yet, interestingly, only recently the focus of attention has been directed to the role of the different parties involved: patients, professionals, institutions, and government. One method to reduce future medical errors is to openly discuss them. In the present study insight was gained into factors that may either promote or hinder the open disclosure of medical errors by internists and trainees in internal medicine. A survey completed by 115 internists (in training) evaluated to what extent they would be willing to report errors. We identified factors these physicians experienced as most relevant to help or hinder disclosing of errors.

The severity of the error was related to the willingness to report an error. Specifically, near misses were not reported by the majority of respondents to patients, the head of the department or the hospital safety committee. Even in the case of a severe medical error, one out of eight physicians would not be willing to disclose the error to the head of the department. In contrast, irrespective of the severity of the medical error, physicians were very likely to disclose/discuss the error with a colleague. They prefer to discuss medical errors with their peers, most likely because they feel safe among them.

As hypothesised, older and female doctors were more likely to disclose an error. Female doctors are indeed considered more patient-oriented communicators in general.[14] We speculated that older doctors would be less vulnerable than younger physicians, especially with regard to reputation. However, Kaldjian reported otherwise with younger physicians more likely to disclose an error than older physicians,[7] demonstrating that there was no consistent correlation between age and the willingness to report an error.

It is interesting to note that the respondents' attitudes towards disclosure were generally positive: they reported more reasons supporting the disclosure a medical error, and far less downsides of such disclosures. Positive motives were the prevention of future errors, the educational value of disclosing the error and, often, that it was one's responsibility to disclose. The most often reported negative motives were negative publicity, harm to reputation and an unfavourable response from the patient involved.

Two-thirds of the respondents reported that while they considered themselves eventually able to openly disclose an error, this would be perceived as difficult and more than half mentioned that it would induce personal stress. Unlike elsewhere, legal arguments were rarely perceived as an important barrier.[15] In line with other studies,[16,17] several issues related to the departmental cultures were raised. Most anticipated they would be treated fairly and respectfully and experienced a desire to let others learn from medical errors. Still, one third of respondents acknowledged that they feared that disclosure would most likely not be treated confidentially, that it would be used against them or that the consequences of the disclosure were unclear.

The positive responses suggest that many internists would be willing to report any mistake, though often severe errors and less often near misses. This is in contrast with the current conviction that most errors are not reported. It may be explained by the fact that, as our study confirmed, negative motives have a stronger impact on the willingness to report an error than personal or patient driven motives (*table 4*).

We anticipated that the participating hospital with a monthly open discussion of medical errors would result in a more favourable opinion towards open disclosure. In addition we hypothesised that those who had reported errors previously would be more willing to disclose future mistakes. Interestingly, none were found to be factors influencing the decision to report. Apparently, having a meeting where errors are discussed does not guarantee a favourable attitude towards disclosure. Indeed our study suggests that most barriers are of a more individual, personal nature.

Obviously, our study has limitations. First, although our sample size was substantial, the response rate (51%) was limited. While the non-response was comparable among staff, trainees and the various hospitals involved, it is unclear whether non-respondents were less in favour of openly disclosing medical errors than those who responded. In addition, our responses were by definition of a subjective nature, and could not be ratified with objective data. Yet, this study was specifically designed to identify personal factors that promote or hinder the disclosure of medical errors. In fact, it is the first study to base those factors on psychological theory and is therefore likely to cover all relevant aspects at stake. Also, our newly developed questionnaire turned out to yield reliable responses that were, moreover, tapping relevant domains.

In conclusion, while internists (in training) in general demonstrate a willingness to openly disclose medical errors, several factors aid in the decision to do so. Such willingness to disclose turns out to be a personal rather than an organisational issue. Personal barriers have to be overcome. Especially emotional obstacles such as being worried about the implication of disclosure and

the stress related to disclosing may be discussed with individual professionals. A socially driven motivation was found to be the most important factor in predicting the internists willingness to openly disclose errors. Organising a meeting to disclose errors is not sufficient in itself, professionals need to be convinced that disclosure is beneficial to medical care and the medical community. Therefore it should be stressed within departments that the creation of an atmosphere where disclosing errors is part of routine practice is not only vital to the patient, or the clinical care, but also serves the medical community in general. In addition, it is essential to pay attention to individual barriers along with the creation of a departmental culture where medical errors are openly discussed in a non-judgmental, respectful and safe atmosphere.[16,17] It is suggested that much could be gained by aiding the reporting physician to alleviate the perceived stress, while at the same time maintaining confidentiality. In addition, possible negative publicity surrounding the disclosure should be identified and adequately addressed, and clarity should be given regarding what the consequences are for the reporting physician.

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