



Determining the frequency of defensive medicine among general practitioners in Southeast Iran

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Abstract

Background: Defensive medicine prompts physicians not to admit high-risk patients who need intensive care. This phenomenon not only decreases the quality of healthcare services, but also wastes scarce health resources. Defensive medicine occurs in negative and positive forms. Hence, the present study aimed to determine frequency of positive and negative defensive medicine behaviors and their underlying factors among general practitioners in Southeast Iran.

Methods: The present cross-sectional study was performed among general practitioners in Southeast Iran. 423 subjects participated in the study on a census basis and a questionnaire was used for data collection. Data analysis was carried out using descriptive and analytical statistics through SPSS 20.

Results: The majority of participants were male (58.2%). The mean age of physicians was 40 ± 8.5 . The frequency of positive and negative defensive medicine among general practitioners in Southeast Iran was 99.8% and 79.2% respectively. A significant relationship was observed between working experience, being informed of law suits against their colleagues, and committing defensive medicine behavior ($P < 0.001$).

Conclusion: The present study indicated high frequency of defensive medicine behavior in the Southeast Iran. So, it calls policy-makers special attention to improve the status quo.

Keywords: Defensive Medicine, General Practitioners, Frequency, Iran

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Introduction

Defensive medicine refers to every therapeutic test or method, whose primary aim is to protect the physician against the threat of being accused of making a forensic medicine mistake or of being sued for medical mistakes. Defensive medicine reduces the tendency of physicians to accept high-risk patients who need special care (1–5).

Defensive medicine takes two main forms of positive and negative. Positive defensive medicine includes unnecessary prescriptions, unnecessary referral of patients to specialists, asking patients for more details. Negative defensive medicine includes avoiding prescribing risky procedures for curing patients and avoiding accepting high-risk patients (6–8).

In a study in Pennsylvania in 2003 (9), it was reported that 93% of subjects practiced defensively. A Japanese study (10) in 2006 indicated that 98% of participants enjoyed defensive medicine in their medical practices. Summerton reported that the most common defensive medicine practices among the subjects included increased diagnostic tests, increased referrals, increased follow-ups, more details for patients, and documentation of treatment trend (11). In Iran, the rate of complaints from physicians is increasing; according to the latest available statistics, the number of complaints from Tehran Medical Council increased from 134 cases in 1999 to 1270 cases in 2005 (12).

Despite the fact that the issue of defensive medicine has been recognized in developed world for several decades, this phenomenon is not well-known in developing countries,

including Iran. Moreover, presence of certain behaviors such as referring patients to specialists, documentation of patient's treatment process, and prescription of unnecessary medicines indicates the incidence of this phenomenon among Iranian physicians. Therefore, this study examines the frequency of positive and negative defensive medicine practices among general practitioners in Southeast Iran; the aim is to present necessary guidelines and to open a window to conduct more studies in this field.

Methods

This cross-sectional study was carried out in 2013. All general practitioners who ran their own offices in four cities of three provinces of Kerman, Sistan and Baluchestan and South Khorasan participated in the study according to a census basis. Eight educated questioners referred to the offices to complete the questionnaires. Before completing the questionnaires, informed consent of participants was obtained and the objective of the study was explained to them. They were also assured that the questionnaires were anonymous. In sum, 423 general practitioners completed the questionnaires.

Data collection instrument was a questionnaire, which consisted of four parts: the first part included physicians' demographic information; the second part consisted of 15 questions about frequency of defensive medicine behaviors; the third part included 11 questions about the reasons of defensive medicine behaviors; and the fourth part was related to physicians' risk-taking and risk-aversion.

To determine the validity of the questionnaire, the questions were reviewed by several experts. After some modifications, its content validity was confirmed. To determine reliability, the questionnaire was distributed among ten general practitioners of Kerman two times with an interval of 10 days and the reliability was confirmed with Pearson Correlation Coefficient of 0.7.

To determine the frequency of defensive medicine, every question was given three options of “never, 1–6 times, and more than 6 times”. To determine the frequency of defensive medicine, if a participant had experienced at least one of the events, it was considered a case of defensive medicine. The next section of the questionnaire consisted of eleven probable reasons of practicing defensive medicine; in a case that the participants had practiced any of the cases in the first part, they were asked to prioritize the reason for them. Participants were asked to show their priority with a number: 1) for the first priority, 2) for the second, 3) for the third, 4) for the fourth, and 5) for the fifth priority. Then, any variable which received the highest frequency in each of these five prioritizing steps, was selected as the priority of that stage from participants’ points of view. The last part of the questionnaire assessed risk taking of the participants.

Questionnaire data entered into SPSS 20 (SPSS Inc., Chicago, IL, USA) and was analyzed using statistical tests of frequency, mean, and chi-square. Significance level of *P*-value was considered equal to or less than 0.05.

Results

Most of the participants in the study were male (58.2%). Average age of the subjects was 40 ± 8.5. Most of them were in the 31–40 (38.3%) and 41–50 (36.4%) age group. Most of them were in the 11–20 years (33.6%) working experience group (Table 1). Moreover, frequency of practicing positive and negative defensive medicine among general practitioners in Southeast Iran was 99.8% and 79.2% respectively.

Table 2 shows that negative defensive medicine was more in women than in men (83.6% vs. 76%) and this difference

Table 1. Demographics of studied population

Variable		(%) Number
Gender	Male	58.2 (246)
	Female	41.8 (177)
Age group	30≥	15.1 (64)
	31–40	38.3 (162)
	41–50	36.4 (154)
	50<	10.2 (43)
Working experience	1–5 years	28.4 (120)
	6–10 years	28.6 (121)
	11–20 years	33.6 (142)
	20 years and higher	9.5 (40)
Liability insurance	Covered	81.6 (345)
	Not covered	18.4 (78)
Risk taker	Yes	18.7 (79)
	No	81.3 (344)
Being informed of law suits against colleagues	Yes	35 (148)
	No	65 (275)
Total		100 (423)

was statistically significant (*P*= 0.04). The highest frequency of negative defensive medicine was observed in general practitioners aged ≤30; however, chi-square test showed that the difference observed between negative defensive medicine in different age groups was not significant (*P*= 0.52). The general practitioners in 6–10 and 1-5 years working experience group showed the highest negative defensive medicine respectively (87.6% and 86.7%; *P*< 0.001). Frequency of practicing defensive medicine in general practitioners who had liability insurance was more than that of general practitioners without liability insurance (79.7% vs. 76.9%; *P*= 0.31). It was also more prevalent in risk averse than risk takers (80.2% vs. 74.7%; *P*= 0.23). Moreover, Table 3 shows that general practitioners who had information about complaints from their colleagues had significantly the highest negative defensive medicine (85.1%; *P*< 0.001).

Physicians surveyed in Southeast Iran stated that they had practiced some defensive medicine such as more detailed descriptions of the proper and timely use of medicines (78% of physicians), asking patients for more details about their diseases (78% of physicians), emphasizing patients’ timely referral (71.9% of physicians), giving patients more details about the therapeutic methods (71.9% of physicians), and asking patients to participate in selecting their therapeutic methods (58.4% of physicians) for more than 6 times.

Concerning causes of defensive medicine, 43.3% (183) of physicians reported that observing clinical standards was the first cause among 11 causes mentioned in the questionnaire. According to 27.4% (116) of physicians, the second cause was patients’ awareness. The third and the fourth most common causes were fear of disciplinary measures of medical council or of forensic medicine organization (12.5%; 53 physicians) and concern about legal actions (11.1%; 47 physicians). The fifth most common cause of defensive medicine was fear of negative publicity (12.3%; 52 physicians).

Discussion

Results showed that the frequency of defensive medicine was high in the studied population and that almost all general practitioners practiced both positive and negative defensive medicine. Results also indicated that most physicians showed negative behaviors in their work such as not prescribing risky methods to cure patients, avoiding to admit high-risk patients, prescribing unnecessary clinical procedures, prescribing unnecessary treatment, prescribing unnecessary medicines and patients’ unnecessary referral to specialists.

In a study entitled “Reviewing defensive medical behavior among general practitioners” Summerton showed in a study (11) that the most common defensive medical behaviors taken by physicians included increasing the diagnostic tests, increasing referrals, increasing follow-ups, describing more details for patients and taking notes (documentation); despite cultural, legal and educational differences between this society and our present society, these results are in line with defensive medicine behaviors selected by physicians who participated in our study. In a study by Hiyama et al. (10), 96% of physicians avoided prescribing special procedures or interventions and refused to accept high-risk patients; 91% presented medical wasteful and additional services; and 61% stated that they sometimes referred patients to specialists. Thus, frequency of

Table 2. Frequency of negative defensive medicine according to demographics of studied population (Chi-square test)

Variable		(%) Number	P
Gender	Male	76 (187)	0.04
	Female	83.6 (148)	
Age group	30≥	85.9 (55)	0.52
	31–40	79 (128)	
	41–50	76.6 (118)	
Working experience	50<	79.1 (34)	<0.001
	1–5 years	86.7 (104)	
	6–10 years	87.6 (106)	
	11–20 years	66.9 (95)	
Liability insurance	20 years and higher	75 (30)	0.31
	Covered	79.7 (275)	
Risk taker	Not covered	76.9 (60)	0.23
	Yes	74.7 (59)	
Being informed of law suits against colleagues	No	80.2 (276)	<0.001
	Yes	68.2 (101)	
	No	85.1 (234)	

Table 3. Status of positive and negative defensive medicine commitment among studied population

Variable	(%) Number			
	Never	1–6 times	More than 6 times	
Positive defensive medicine behaviors	Prescribing unnecessary Para-clinical orders	19.6 (83)	48.5 (205)	31.9 (135)
	Prescribing unnecessary treatments	44.7 (189)	33.8 (143)	21.5 (91)
	Prescribing unnecessary medicines	42.3 (179)	41.4 (175)	16.3 (69)
	Referring patients to hospital who could be treated in ambulatory setting	52.2 (221)	33.6 (142)	14.2 (60)
	Unnecessary referral of patients to specialists	11.6 (49)	47.3 (200)	41.1 (174)
	Emphasizing patients to refer to physician timely	2.6 (11)	25.5 (108)	71.9 (304)
	Providing more details on proper and timely medicine consumption	1.2 (5)	20.8 (88)	78 (330)
	Asking patients more detail about their disease	1.9 (8)	20.1 (85)	78 (330)
	Following up the success of a treatment employed for the patient	13.7 (58)	38.1 (161)	48.2 (204)
	Keeping patients medical record	20.1 (85)	30.3 (128)	49.6 (210)
	Providing patient more detail on the treatment method	3.3 (14)	24.8 (105)	71.9 (304)
	Involving patient in choosing treatment method	7.3 (31)	34.3 (145)	58.4 (247)
	Recording specific statements in patient record	75.2 (318)	-	24.8 (105)
Negative defensive medicine behaviors	Avoiding to provide high-risk procedures for patients however, these procedures might be useful for patients	31.4 (133)	35.9 (152)	32.6 (138)
	Avoiding to admit high-risk patients	39.7 (168)	40.9 (173)	19.4 (82)

defensive medicine is higher than our present research. It may be due to the fact that physicians in Japan are sued to a great degree.

In this study, no significant relationship was observed between variables of age, risk-taking, and having liability insurance and negative defensive medical practices; however, there was a statistically significant relationship between gender, working experience, and having information about complaints from their colleagues and negative defensive medicine. In a research Catino (13) showed that there was a relationship between defensive medical practices and demographic variables of age; that is, younger physicians were more willing to practice defensive medicine which may be due to the fact they had low working experience and did not have enough experience and

skill.

Catino (13) reported that the most important causes of defensive medical practices were fear of legal complaints (80.4%), having information about colleagues being sued (65.7%), fear of compensation (59.8%), having a previous lawsuit (51.8%), fear of negative publicity and loss of reputation (43.5%), and fear of disciplinary measures (15%). In our present study, disciplinary measures, fear of lawsuit, and fear of negative publicity; and loss of reputation were also the reasons of defensive medicine.

Concerning its effects on healthcare outcomes and costs, defensive medicine is classified into four groups: 1) methods that benefit both healthcare system and patients, 2) methods that are harmful both to healthcare system and patients, 3) methods that are involved in quality of healthcare and health

costs, and 4) methods that sometimes benefit the patients and sometimes are harmful to them. Generally, defensive medicine is hard to measure and there is no strong evidence indicating which of these four types of defensive medicine is more frequent. However, factors that make the physicians practice defensive medicine include consequences of complaints, financial consequences, psychological consequences, lack of self-confidence, and lack of specialized knowledge in some physicians (14–18).

Some defensive medicine practices such as emphasizing patients' timely referrals, explaining about the drug consumption, asking patients for more detailed information, and explaining the therapeutic methods are satisfactory; they increase the accuracy of treatment and impose no cost on the patient and the healthcare system. But some other defensive medical practices such as prescribing unnecessary medications, emphasizing unnecessary referrals to physicians, unnecessary referrals to hospitals and higher levels of service provision, prescribing unnecessary para-clinical services, prescribing unnecessary medicines and treatment, avoiding to do risky therapeutic methods to treat patients in spite of patients' needs, and refusing to accept high-risk patients are undesirable elements in providing medical services to patients. These cause many problems for patients such as further complications of the disease, patients' morbidity and mortality, increased average length of stay in hospitals, increases health costs for families and psychological and mental problems for patients and their families. Its probable causes include physicians' low self-confidence, low specialized knowledge and information about the disease, low risk-taking morale, fear of loss of reputation due to adverse events, fear of negative publicity and poor support of insurance organizations (14–20).

Limitation

Since questionnaires were completed on a self-reported basis, exaggeration of the participants in responding the questions related to positive defensive medicine was one of the potential limitations of this study. Thus, due to the novelty of this concept in Iran and uncertainty in generalizing the results to other parts of Iran, similar studies are recommended.

Conclusion

The present study shows that practicing components of defensive medicine by general practitioners is a common issue and that presence of negative factors of defensive medicine and positive defensive medical factors with negative and harmful meanings can be detrimental to the society. The study suggests that physicians' unnecessary concerns about legal aspects resulted from medical mistakes and undesirable defensive medical practices could be reduced by developing clinical standards and teaching these standards to physician.

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Ethical issues

The study was approved by the ethic committee of Kerman University of Medical Sciences.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

MM contributed to writing introduction, writing methodology, Writing findings and design and data analysis. MA had a substantial role in content and writing discussion. IA, MN and MM contributed to Coordinating with general practitioners and collecting data.

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References

1. Studdert DM, Mello MM, Brennan TA. Medical malpractice. *N Engl J Med* 2004; 350: 283–92.
2. Thompson MS, King CP. Physician perceptions of medical malpractice and defensive medicine. *Eval Program Plann* 1984; 7: 95–104.
3. Bassett KL, Lyer N, Kazanjian A. Defensive medicine during hospital obstetrical care: a by-product of the technological age. *Soc Sci Med* 2000; 51: 523–37.
4. Nelson LJ, Morrisey MA, Kilgore ML. Damages caps in medical malpractice cases. *Milbank Q* 2007; 85: 259–86.
5. Sloan FA, Shadle JH. Is there empirical evidence for? Defensive Medicine? A reassessment. *J Health Econ* 2009; 28: 481–91.
6. Brilla R, Evers S, Deutschlander A, Wartenberg KE. Are Neurology residents in the United States being taught defensive medicine? *Clin Neurol Neurosurg* 2012; 108: 374–7.
7. Tussing AD, Wojtowycz MA. Malpractice, defensive medicine, and obstetric behavior. *Med Care* 1997; 35: 172–91.
8. Moher JC. American Medical Malpractice Litigation in Historical Perspective. *JAMA* 2000; 283: 1731–7.
9. Studdert DM, Mello MM, Sage WM, Desroches CM, Peugh J, Zepert K, et al. Defensive medicine among high-risk specialist physicians in a volatile malpractice environment. *JAMA* 2005; 293: 2609–17.
10. Hiyama T, Yoshihara M, Tanaka SH, Urabe Y, Ikegami Y, Fukuhara T, et al. Defensive medicine practices among gastroenterologists in Japan. *World J Gastroenterol* 2006; 12: 7671–5.
11. Summerton N. Positive and negative factors in defensive medicine: a questionnaire study of general practitioners. *BMJ* 1995; 310: 27–9.
12. Rafizadehtabatabaei M, Hajmanoochehry R, Nassajizavareh M. [The survey of prevalence of Malpractice of Medical General in The complaints referred to Commission on Medical legal in Tehran center from 2003 to 2005 years]. *SJFM* 2007; 13: 152–7.
13. Catino M. Why do Physicians practice defensive medicine? the side-effects of medical litigation. *Safety Science Monitor* 2011; 15: 1–12.
14. Brilla R, Evers S, Deutschlander A, Wartenberg KE. Are Neurology residents in the United States being taught defensive medicine? *Clin Neurol Neurosurg* 2012; 108: 374–7.
15. Kessler D, McClellan M. Do physicians practice defensive medicine? *Q J Econ* 1996; 111: 353–90.
16. Klingman D, Wagner JL, Polishuk PT, Wolfe L, Corrigan JA. Measuring defensive medicine using clinical scenario surveys. *J Health Polit Policy Law* 1996; 21: 185–217.
17. Kessler D, Sage WM, Becker DJ. Impact of malpractice reforms on the supply of physician services. *JAMA* 2005; 293: 2618–25.
18. Cunningham W, Dovey S. Defensive changes in medical practice and the complaints process: a qualitative study of New Zealand doctors. *N Z Med J* 2006; 119: U2283.
19. Studdert DM, Mello MM, Brennan TA. Defensive medicine and tort reform: a wide view. *J Gen Intern Med* 2010; 25: 380–1.
20. Baicker K, Chandra A. Defensive medicine and disappearing physicians. *Regulation* 2005; 28: 24.

Key Messages

Implications for policy makers

- Defensive medicine is a common practice in many countries across the globe.
- Defensive medicine has two side effects; first it can result in a considerable waste of limited healthcare resources. Second, it seriously affects access to health services, some of which might threaten patients' life.
- Some of defensive behavior is learnt at medical schools which again calls for a new perspective in medical education.
- This study brings this message to health policy-makers to make policies in order to tackle this problem. They also should become more aware of the importance of establishing customized clinical guidelines.

Implications for public

Traditionally, physicians are regarded as patients agents, but liability issues have caused physicians to behave in a more conservative manner, which has overshadowed this relation. Patients should become knowledgeable regarding their medical conditions. A well informed patient probably will be less treated defensively.