The Relationship Between Board Certification and Disciplinary Actions Against Board-Eligible Family Physicians

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Abstract

Purpose
Lack of specialty board certification has been reported as a significant physician-level predictor of receiving a disciplinary action from a state medical board. This study investigated the association between family physicians receiving a disciplinary action from a state medical board and certification by the American Board of Family Medicine (ABFM).

Method
Three datasets were merged and a series of logistic regressions were conducted examining the relationship between certification status and disciplinary actions when adjusting for covariates. Data were available from 1976 to 2017. Predictor variables were gender, age, medical training degree type, medical school location, and the severity of the action.

Results
Of the family physicians in this sample, 95% (114,454/120,443) had never received any disciplinary action. Having ever been certified was associated with a reduced likelihood of ever receiving an action (odds ratio [OR] = 0.35; 95% confidence interval [CI] = 0.30, 0.40; $P < .001$), and having held a prior but not current certification at the time of the action was associated with an increase in receiving the most severe type of action (OR = 3.71; 95% CI = 2.24, 6.13; $P < .001$).

Conclusions
Disciplinary actions are uncommon events. Family physicians who had ever been ABFM certified were less likely to receive an action. The most severe actions were associated with decreased odds of being board certified at the time of the action. Receiving the most severe action type increased the likelihood of physicians holding a prior but not current certification.

A medical license is a legal authorization from a state or territorial medical board that allows a physician to practice medicine in that jurisdiction and assures patients that they are receiving treatment from a trained professional.[1] State medical boards are also empowered to revoke the license of physicians when they violate professional standards of practice in that state.[2] Whereas a license to practice medicine is an undifferentiated license—physicians are not limited by their license in their scope of practice—medical specialty board certification is intended to signify a physician's specific training and demonstrated skills in a particular medical or surgical specialty or subspecialty.

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To Err Is Human: Building a Safer Health System, the influential report from the Institute of Medicine (now the National Academy of Medicine), declared that a small proportion of the physician population "may be incompetent, impaired, uncaring, or may even have criminal intent."[3] Previous research has shown that a small number of physicians are responsible for a large proportion of negative patient outcomes. In the United States, 1% of all physicians accounted for 32% of all paid malpractice claims[4]; in Australia, 3% of the medical workforce accounted for 49% of patient complaints[5]; and in Canada, 10% of physicians accounted for 20% of licensure actions.[6]

Previous studies have reported that significant physician-level predictors of medical license disciplinary action in the United States include lack of specialty board certification,[7–9] practicing family medicine,[7,10] male gender,[7,8,11] practicing more than 20 years,[8,11] and international medical graduate (IMG) status.[7,12] Although male gender was found to be a significant predictor in some studies,[7,8,11] it was not found to be significant in another.[10] One study found that women were disciplined less often but more severely.[8] Limitations of previous research have included studies of only a single state licensing board,[7,8,11] a small selection of medical school graduates,[10,11] or internal medicine residents only.[9] Although research has shown that family physicians are more likely to receive disciplinary actions from state medical boards, to our knowledge no national study has explored the relationship between disciplinary action and board certification in family medicine.

To examine the association between American Board of Family Medicine (ABFM) certification and disciplinary action against a physician from a state medical board, we looked at whether ABFM-certified physicians received fewer disciplinary actions than non-ABFM-certified family physicians. We controlled for demographic variables such as gender and age to examine how other family physician characteristics influenced their likelihood of receiving a disciplinary action. We also examined the association between the severity of a disciplinary action with the likelihood that these physicians held a current or prior certification at the time of the action.

Method

Data

We merged data from the 2017 American Medical Association (AMA) Physician Masterfile, the ABFM, and the Federation of State Medical Boards (FSMB). The AMA Physician Masterfile includes demographic data on physicians, residents, and medical students in the United States. The 2017 AMA Physician Masterfile contained 1,215,753 physician records, for which 1,119,519 records contained residency information. To identify physicians who were trained in family medicine and eligible for ABFM board certification, we restricted our sample to those whose most recent residency training was in family medicine, who completed at least two years in the residency program, and who had at least three years of residency training overall. After implementing our inclusion criteria, we were left with 93,523 physicians in the AMA sample.

The ABFM database contains demographic information as well as the certification history for all physicians who attended family medicine residency programs accredited by the Accreditation Council for Graduate Medical Education (ACGME) or by both the ACGME and the American Osteopathic Association (AOA) since 2005; prior to 2005, this information is only available for those physicians who applied for ABFM certification (through December 31, 2017). After eliminating current residents, there were 135,187 physician records in the ABFM data file for this study. These datasets were then merged with National Provider Identifier (NPI) records to create a dataset of 148,355 individual physician records. There were 80,355 (54.2%) physicians appearing in both AMA and ABFM data, while 13,168 (8.9%) appeared only in AMA data and 54,832 (37.0%) only in the ABFM data.

We excluded osteopathic physicians who completed AOA-accredited training who appeared in the AMA Physician Masterfile but did not appear in the ABFM dataset (n = 2,379). This exclusion was incorporated to better identify those osteopathic physicians who would have had the opportunity (based on completing a dual ACGME/AOA residency program) to elect to certify with the ABFM but did not do so. Prior to 2005, those osteopathic physicians applying for ABFM certification would have been eligible, but we were unable to identify those who were eligible and chose not to certify. Following this exclusion, the dataset consisted of 145,976 individual physician records.

The FSMB aggregates disciplinary data reported from state medical boards. The FSMB provided ABFM disciplinary data for physicians in the sample through June 15, 2017, and matched 120,443 (82.5%) physician records where the AMA Masterfile had a valid NPI or medical license number.

Variables

In our analyses, we examine only punitive disciplinary actions—namely, a reportable reprimand or punishment, suspension of license, or revocation of license; however, these actions do not necessarily lead to the loss of a physician's board certification. The FSMB provided information on the severity of the disciplinary action taken, and following the methodology used by Lipner and colleagues,[9] we classified severity into three groups. The "most severe" actions were those in which the license was revoked, suspended, denied, or surrendered. The second category was "somewhat severe" actions, such as a license restricted, placed on probation, or other conditions imposed, and the third category was "least severe" actions—namely, reprimands, requirement of remedial continuing medical education, or imposition of a fine. Administrative actions or other actions were classified as not applicable. When the unit of analysis was the physician and multiple actions were noted, we based our classification on the most severe action. The institutional review board of the American Academy of Family Physicians approved this study. We conducted all analyses using R 3.3.1 (R Project for Statistical Computing, R Foundation; http://www.r-project.org).

Statistical analysis

We first calculated bivariate statistics comparing differences in physician demographics according to whether or not a physician had ever received a disciplinary action from a state medical board, using *t* tests and chi-square analyses where applicable. Next, we examined the extent to which family physicians received disciplinary actions from state medical boards by computing the number of times each physician in our sample received a disciplinary action. We then cross-tabulated the number of disciplinary actions taken by the severity category of the disciplinary action and whether physicians were certified at the time they received the disciplinary action. Finally, we supplemented the unadjusted analyses by conducting a series of logistic regressions to examine the relationship between certification status and disciplinary actions when adjusting for covariates.

Ever certified. Because our goal was to determine whether certification status was related to receiving a disciplinary action, we conducted a logistic regression to examine the relationship between a physician having ever received a disciplinary action, physician characteristics, and having ever been ABFM certified. Because the ABFM has only issued time-limited certificates, physicians were required to make a conscious decision about whether or not to continue their certification, and there is no confounding effect of lifetime certificates. Predictor variables were gender, medical training degree type, medical school location, and whether the physician was ever certified. Unfortunately, because of the widespread time frame of our data, we were not able to model age as a variable in this portion of the analysis.

Current certification. Next, we created a subset of physicians against whom disciplinary actions had been reported and used logistic regression to examine the relationship between the severity of the disciplinary action and current certification at the time of the action. Predictor variables were gender, medical training degree type, medical school location, age by decade at the time of the action, and the severity of the action.

Prior but not current certification. Lastly, we used logistic regression to examine the relationship between severity of the disciplinary action and prior certification for physicians who were not certified when they received a disciplinary action but did hold an initial certification at some point in the past. Predictor variables were gender, medical training degree type, medical school location, age by decade at the time of the action, and the severity of the action.

Results

Available physician demographic information is presented in Table 1. The majority of family physicians in the sample were male (61.2%, n = 73,172), held an MD degree (89.7%, n = 107,181), were graduates of U.S. medical schools (77.1%, n = 92,839), and never received a disciplinary action (95.0%, n = 114,454). The 5% (n = 5,989) of family physicians who did receive a disciplinary action were more likely to be male (84.0%, n = 4,961, $P < .001$), to hold an MD (92.7%, n = 5,473, $P < .001$), and to have received their action between the ages of 40 and 49 (33.3%, n = 1,992, $P < .001$).

Next, we calculated the number of actions against each physician. These actions could be from separate disciplinary events, multiple actions for the same event, or reciprocal actions by another state board for the same event. Of the 5.0% (n = 5,989) of physicians who had received a disciplinary action, 54.6% (n = 3,269) received only a single disciplinary action, 21.6% (n = 1,291) received two separate disciplinary actions, and 23.9% (n = 1,429) received three or more separate disciplinary actions (data not shown). The greatest number of actions incurred by a physician was 14.

The number of actions that occurred while a physician was certified is categorized by the severity of the action in Table 2. When a disciplinary action was taken, more than twice the number occurred while a physician was not certified (n = 8,036; 67.3%) than when a physician was certified (n = 3,893; 32.6%). More than six times as many cases of the most severe actions for physicians occurred for those who were not certified than for those who were certified (n = 3,644 vs. n = 603, respectively). In addition, twice as many of the somewhat severe actions were taken against noncertified physicians (n = 3,667; 45.6%) than the certified physicians (n = 1,808; 46.4%), while twice as many cases of the least severe actions were taken against the certified physicians (n = 1,482; 38.1%) than the noncertified physicians (n = 725; 9.0%).

Ever certified. Results of the logistic regression analyzing disciplinary action as a function of gender, degree type, medical school, and whether a physician was ever certified are shown in Table 3. Being male

Table 1

Demographics of Family Physicians Eligible for American Board of Family Medicine Certification in the United States, by Whether They Ever Received a Medical License Disciplinary Action, From a Study of Board Certification and Disciplinary Action, 2017

		Received an action				Ever certified				Action while certified			
Characteristic	No. (%) total (N = 120,443)	No. (%) no (n = 114,454)	No. (%) yes (n = 5,989)	*P* value	No.	No. (%) no (n = 369)	No. (%) yes (n = 5,620)	*P* value	No.	No. (%) no (n = 3,494)	No. (%) yes (n = 2,495)	*P* value	No.
Gender[a]				< .001	119,478			.292	5,903			< .001	5,903
Female	46,306 (38.8)	45,364 (39.9)	942 (16.0)			52 (18.4)	890 (15.8)			483 (14.2)	459 (18.4)		
Male	73,172 (61.2)	68,211 (60.1)	4,961 (84.0)			231 (81.6)	4730 (84.2)			2,925 (85.8)	2,036 (81.6)		
Degree type[a]				< .001	119,478			< .001	5,903			.403	5,903
DO	12,297 (10.3)	11,867 (10.4)	430 (7.28)			40 (14.1)	390 (6.94)			257 (7.54)	173 (6.93)		
MD	107,181 (89.7)	101,708 (89.6)	5,473 (92.7)			243 (85.9)	5,230 (93.1)			3,151 (92.5)	2,322 (93.1)		
Medical school[b]				< .001	120,391			< .001	5,980			< .001	5,980
USMG	92,839 (77.1)	88,066 (77.0)	4,773 (79.8)			239 (66.2)	4,534 (80.7)			2,725 (78.2)	2,048 (82.1)		
IMG	27,552 (22.9)	26,345 (23.0)	1,207 (20.2)			122 (33.8)	1,085 (19.3)			761 (21.8)	446 (17.9)		
Age decade				< .001	120,443			< .001	5,989			< .001	5,989
< 40	895 (0.74)	—	895 (14.9)			79 (21.4)	802 (14.3)			464 (13.3)	417 (16.7)		
40–49	1,992 (1.65)	—	1,992 (33.3)			143 (38.8)	1,857 (33.0)			1,069 (30.6)	931 (37.3)		
50–59	1,830 (1.52)	—	1,830 (30.6)			99 (26.8)	1,745 (31.0)			1,071 (30.7)	773 (31.0)		
> 60 or greater	1,271 (1.06)	—	1,271 (21.2)			47 (12.7)	1,216 (21.6)			889 (25.4)	374 (15.0)		
Certification				< .001	120,443							< .001	5,989
Ever certified	117,046 (97.2)	111,426 (97.4)	5,620 (93.8)			—	—			3,125 (89.4)	2,495 (100)	—	—
Never certified	3,397 (2.82)	3,028 (2.65)	369 (6.16)			—	—			369 (10.6)	0 (0.00)	—	—

Abbreviations: DO indicates doctor of osteopathy; MD, medical doctor; USMG, United States medical graduate; IMG, international medical graduate.
[a]965 missing.
[b]52 missing.

Table 2

Types of Disciplinary Actions Taken, by Certification Status, From a Study of Family Medicine Board Certification and Disciplinary Action, 2017

Severity	Action category[a]	No. (%) all (N = 11,929)	Action while certified: No. (%) no (n = 8,036)	Action while certified: No. (%) yes (n = 3,893)
Least		2,207 (18.5)	725 (9.02)	1,482 (38.1)
	CME required	384 (3.22)	95 (1.18)	289 (7.42)
	Fine	755 (6.33)	257 (3.20)	498 (12.8)
	Reprimand	1,068 (8.95)	373 (4.64)	695 (17.9)
Somewhat		5,475 (45.9)	3,667 (45.6)	1,808 (46.4)
	Probation	2,174 (18.2)	1,379 (17.2)	795 (20.4)
	Restricted	2,048 (17.2)	1,620 (20.2)	428 (11.0)
	Conditions	1,253 (10.5)	668 (8.31)	585 (15.0)
Most		4,247 (35.6)	3,644 (45.3)	603 (15.5)
	Revoked	768 (6.44)	650 (8.09)	118 (3.03)
	Surrendered	873 (7.32)	762 (9.48)	111 (2.85)
	Denied	318 (2.67)	249 (3.10)	69 (1.77)
	Suspension	2,288 (19.2)	1,983 (24.7)	305 (7.83)

Abbreviation: CME indicates continuing medical education.
[a]*t* tests for severity by action while certified and action category by action while certified were both statistically significant ($P < .001$, N = 11,929).

was associated with an increase in the odds of receiving a disciplinary action (odds ratio [OR] = 3.44; 95% confidence interval [CI] = 3.20, 3.69; $P < .001$), as was holding an MD (OR = 1.58; 95% CI = 1.43, 1.75; $P < .001$) and being a graduate of a U.S. medical school (OR = 1.22; 95% CI = 1.14, 1.31; $P < .001$). However, having ever been certified was associated with reduced odds of ever receiving a disciplinary action (OR = 0.35; 95% CI = 0.30, 0.40; $P < .001$).

Current certification. The results of the logistic regression exploring the relationship between gender, degree type, medical school, age, and the severity of the disciplinary action and certification at time of disciplinary action are shown in Table 4. There was not a significant effect between gender and being certified at the time of a disciplinary action (OR = 0.88; 95% CI = 0.75, 1.03; $P = .011$). However, MDs (OR = 1.34; 95% CI = 1.07, 1.67; $P = .010$) and graduates of U.S. medical schools (OR = 1.27; 95% CI = 1.10, 1.48; $P = .001$) showed increased odds of being certified at the time of a disciplinary action. There was also not a significant effect in the odds of physicians 40 to 49 years (OR = 0.98; 95% CI = 0.83, 1.17; $P = 0.851$) compared with those less than 40 years and being certified at time of action, though physicians who were 50 to 59 years old when they received their action had a decrease in the odds of being certified at the time of the action (OR = 0.80; 95% CI = 0.67, 0.95; $P = .014$), as did those who were 60 years old or greater when they received their action (OR = 0.48; 95% CI = 0.39, 0.59; $P < .001$). Finally, physicians with actions classified as somewhat or most severe, compared with least severe, had a continual decrease in the odds of being board certified at the time of an action (somewhat severe OR = 0.26; 95% CI = 0.23, 0.30; $P < .001$; most severe OR = 0.08; 95% CI = 0.07, 0.10; $P < .001$).

Table 3

Association Between Ever Receiving a Disciplinary Action and Physician Characteristics (N = 120,443), From a Study of Family Medicine Board Certification and Disciplinary Action, 2017[a]

Variable	OR	95% CI	*P* value
Gender (female)	Ref.		
Male	3.44	3.20, 3.69	< .001
Degree type (DO)	Ref.		
MD	1.58	1.43, 1.75	< .001
Medical school (IMG)	Ref.		
USMG	1.22	1.14, 1.31	< .001
Ever certified (no)	Ref.		
Yes	0.35	0.30, 0.40	< .001

Abbreviations: DO indicates doctor of osteopathy; MD, medical doctor; USMG, United States medical graduate; IMG, international medical graduate; OR, odds ratio; CI, confidence interval.
[a]Only adjusted results reported.

Prior but not current certification. The results of the logistic regression exploring the relationship between gender, degree type, medical school, age, and severity of the disciplinary action and prior certification are shown in Table 5. Gender (OR = 1.19; 95% CI = 0.81, 1.74; $P = .369$) and degree type (OR = 1.00; 95% CI = 0.56, 1.71; $P = .986$) did not significantly change the odds of physicians having held prior certification in the past but not at the time of the disciplinary action; however, graduating from a U.S. medical school (OR = 2.79; 95% CI = 1.97, 3.94; $P < .001$) increased the odds of having held a prior certification at the time of the action. Increasing physician age was associated with a continual increase in the odds that they had prior certification at the time of the action (40–49 years OR = 10.44; 95% CI = 7.61, 14.45; $P < .001$; 50–59 years OR = 46.00; 95% CI = 28.76, 77.19; $P < .001$; 60 years old or greater OR = 434.71; 95% CI = 136.20, 2,651.70; $P < .001$). Finally, most severe compared with least severe actions were associated with an increase in the odds that physicians held a prior certification in the past but were not certified at the time the disciplinary action was incurred (OR = 3.71; 95% CI = 2.24, 6.13; $P < .001$).

Discussion

Findings from our study demonstrate that the overwhelming majority of family physicians, 95%, have never received a disciplinary action from their state medical board. When a disciplinary

Table 4

Association Between Holding Certification at Time of License Action and Physician Characteristics and Severity of Action (N = 5,989), From a Study of Family Medicine Board Certification and Disciplinary Action, 2017[a]

Variable	OR	95% CI	*P* value
Gender (female)	Ref.		
Male	0.88	0.75, 1.03	.011
Degree type (DO)	Ref.		
MD	1.34	1.07, 1.67	.010
Medical school (IMG)	Ref.		
USMG	1.27	1.10, 1.48	.001
Age decade (< 40)	Ref.		
40–49	0.98	0.83, 1.17	.851
50–59	0.80	0.67, 0.95	.014
> 60	0.48	0.39, 0.59	< .001
Severity (least)	Ref.		
Somewhat	0.26	0.23, 0.30	< .001
Most	0.08	0.07, 0.10	< .001

Abbreviations: DO indicates doctor of osteopathy; MD, medical doctor; USMG, United States medical graduate; IMG, international medical graduate, OR, odds ratio; CI, confidence interval.
[a]Only adjusted results reported.

action was taken, more than twice the number occurred while a physician was not certified than when a physician was certified, and more than six times as many disciplinary cases were classified as most severe for physicians who were not certified than for those who were certified.

Our study suggests that board certification is an important component of public protection. The findings indicate that ever having been certified was associated with reduced odds of ever receiving a disciplinary action from a state or territorial medical board. In contrast, we found that those family physicians who had a most severe action compared with a least severe action had an increase in the odds that they held a prior ABFM certificate that had lapsed, suggesting a strong association between severity of actions and continual certification status. It should be noted that a physician could have a lapsed certificate because of a previous license action, in which case the certificate would have been revoked, or for a personal decision to not continue with the certification program. Our purpose was not to differentiate between these two possibilities but, rather, to examine the effect of lapsed certificates for any reason. Our findings would seem to refute claims that initial board certification is sufficient for public protection.[13]

Table 5

Association Between Having Had a Prior but Not Current Certification at Time of License Action and Physician Characteristics and Severity of Action (N = 3,494), From a Study of Family Medicine Board Certification and Disciplinary Action, 2017[a]

Variable	OR	95% CI	*P* value
Gender (female)	Ref.		
Male	1.19	0.81, 1.74	.369
Degree type (DO)	Ref.		
MD	1.00	0.56, 1.71	.986
Medical school (IMG)	Ref.		
USMG	2.79	1.97, 3.94	< .001
Age decade (< 40)	Ref.		
40–49	10.44	7.61, 14.45	< .001
50–59	46.00	28.76, 77.19	< .001
> 60	434.71	136.20, 2,651.70	< .001
Severity (least)	Ref.		
Somewhat	1.26	0.81, 1.94	.299
Most	3.71	2.24, 6.13	< .001

Abbreviations: DO, doctor of osteopathy; MD, medical doctor; USMG, United States medical graduate; IMG, international medical graduate; OR, odds ratio; CI, confidence interval.
[a]Only adjusted results reported.

This study supports previous research suggesting that male physicians, generally, are more likely to receive disciplinary actions.[7,8,11] Female physicians are reported to have a more patient-centered communication style,[14–17] which may lead to fewer patient complaints. Female physicians have also been shown to have better patient outcomes in some settings,[18] perhaps because they tend to adhere to clinical guidelines,[19–21] and provide preventive care[22–24] more often than their male counterparts.

Our findings do not support previous research suggesting that IMGs are disciplined more often than U.S. medical school graduates.[7,12] We found the opposite—that graduating from a U.S. medical school was associated with increased odds of receiving a disciplinary action; however, we have no theories to account for this finding, and additional research should be conducted to investigate this relationship.

Previous research has focused simply on whether older physicians are more likely to receive disciplinary actions, but we focused on the physician's age at the time a disciplinary action occurred and found that physicians who were 50 years or older when they received such actions were less likely to be certified at the time of the action. A quick calculation of the unadjusted analysis from Table 1 shows that 96% of physicians over 60 were certified at some point (1,216/1,263), but only 30% were certified when they received their action (374/1,263). For comparison, 91% (802/881) of those younger than 40 had ever been certified, but 47% (417/881) were certified when they received their action. This suggests that engaging in a continuous certification program may be especially important as physicians age.[8,11]

Limitations

This study has several limitations. We eliminated osteopathic physicians listed in the AMA file who were not in the ABFM dataset to ensure that those who were included were eligible for ABFM certification. It is possible that through this approach we eliminated osteopathic physicians who were AOA certified or, alternately, those who did not have either American Board of Medical Specialties member board or AOA certification. Our eligibility criteria required that physicians' last residency program was completed in family medicine; this increased the likelihood that subjects were practicing primary care. However, it is possible that, for instance, someone first completing a three-year family medicine residency and then a three-year emergency medicine residency could be practicing as a family physician, but we assumed for the sake of this study that such a physician would likely be practicing emergency medicine. It is also possible that our eligibility criteria and subsequent match rate of 82.5% may have introduced some selection bias into the sample. Furthermore, our decision to select the most severe action may have skewed the results toward an inflated rate of severe actions. Finally, the AMA Masterfile contains self-reported data, and we did not independently verify data contained in it.

Conclusion

Receiving a disciplinary action against a medical license from a state medical board is an uncommon event. Family physicians who had ever been certified by the ABFM were less likely to ever receive a disciplinary action. If a physician did receive a disciplinary action, the most severe actions were associated with decreased odds of being board certified at the time of the action. Actions categorized as most severe and being older at the time of the action increased the likelihood that the physicians held a prior but not current certification.

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