

Appendix to “Characteristics, predictors, and reasons for regulatory body disciplinary action in health care: A scoping review”

Appendix C: Characteristics of Included Studies

First Author	Year	Countries included	Profession (Specialty)	Objective	Sample/Source	Key Findings
AbuDagga <sup>13</sup>	2016	USA	Physicians Osteopaths	Examine physician sexual-misconduct, types of disciplinary actions, characteristics of physicians, number and age of physicians reported	Physician licensure, clinical privileges, and malpractice-payment reports from January 1, 2003- June 30, 2016	<ul style="list-style-type: none"> <li>- Cases related to sexual misconduct made up 2.9% of all physician licensure reports</li> <li>- Licence suspension and license revocation were the most common serious licensure actions and both were more common in sexual misconduct cases than other offenses</li> <li>- Physicians aged 40-59 were more likely to offend compared to the general physician population</li> </ul>
AbuDagga <sup>14</sup>	2019	USA	Nursing	Examine nurse sexual-misconduct and compare to other offenses, types of disciplinary actions and characteristics of nurses disciplined	Nurse licensure and malpractice-payment reports from January 1, 2003- June 30, 2016	<ul style="list-style-type: none"> <li>- Sexual misconduct-related licensure reports made up 0.5% of all nurse licensure reports</li> <li>- License revocation was the most common penalty (26.9% vs 10.6% in other offenses),</li> <li>- 63.2% of reports involved male nurses</li> <li>- Compared to the general nurse population, nurses aged 25-44 and licensed practical nurses and licensed vocational nurses were more likely to offend</li> </ul>
Alam <sup>15</sup>	2011	Canada	Physicians	Determine the characteristics of physicians disciplined in Canada	Canadian regulatory body disciplinary cases for physicians from 2000 - 2009	<ul style="list-style-type: none"> <li>- Proportion of physicians disciplined per year ranged from 0.06% to 0.11%</li> <li>- Sexual misconduct was the most frequent violation (20% of cases), second was standard of care issues (19%), and third was unprofessional conduct (16%)</li> <li>- 92% of disciplined physicians were male vs 68% males in general physician population</li> </ul>

						<ul style="list-style-type: none"> <li>- Higher proportion of international graduates disciplined compared to general physician population</li> <li>- Most common specialties disciplined were family medicine, psychiatry, and surgery</li> </ul>
Alam <sup>17</sup>	2012	Canada	Physicians (Psychiatry)	Compare the characteristics of psychiatrists disciplined in Canada, nature of their offenses and penalties to Canadian physicians disciplined for other offenses	Canadian regulatory body disciplinary cases for physicians from 2000 - 2009	<ul style="list-style-type: none"> <li>- Psychiatrists more likely to be disciplined for sexual misconduct than other physicians (42.7% of psychiatrist violations are sexual misconduct-related compared to 26% of non-psychiatrist violations)</li> <li>- Psychiatrists made up 14% of disciplinary cases, approximately double their proportion in the general physician population</li> <li>- Four times more likely to surrender license and three times more likely to have license revoked compared to non-psychiatrists</li> </ul>
Alam <sup>16</sup>	2013	Canada	Physicians (Anesthesiology)	Examine disciplinary findings to identify characteristics for discipline and types of penalties compared to disciplinary action against other Canadian physicians	Canadian regulatory body disciplinary cases for physicians from January 1, 2000 – December 31, 2011	<ul style="list-style-type: none"> <li>- Anesthesiologists make up 2% of physicians disciplined but 4% of the physician workforce</li> <li>- Not more likely to be disciplined for substance abuse compared to other physicians</li> <li>- Most common reasons for discipline were standard of care issues, inappropriate prescribing, and fraud</li> <li>- Lower rates of sexual misconduct and unprofessional behaviour than other physicians</li> <li>- All 11 cases involved males, and 7 cases involved international graduates</li> </ul>
Banks <sup>18</sup>	2020	UK	Social work	To explore the extent and nature of fitness to practice referrals to the regulatory body, why and how referrals arise, and if they are justified	Health and Care Professions Council fitness to practice case files for social	<ul style="list-style-type: none"> <li>- Most cases related to misconduct or misconduct with lack of competence. Within this category, many cases related to disputes with family members over place</li> </ul>

					workers from 2014 - 2016	of residence and contact with children (1/3 of sample overall) - Those employed in children and family services formed most referrals (69%), while these social workers make up only 1/3 of general social worker population - Males overrepresented in cases
Barre <sup>19</sup>	2020	USA	Physicians	Describe the characteristics of disciplined physicians, and describe preventive measures available to at-risk physicians to mitigate their risk	Rhode Island Department of Health physician loss of licensure cases from 2009 - 2019	- Reasons for loss of license included improper controlled substance prescribing (30/82 cases), physician impairment (18 cases), and noncompliance with existing orders (11 cases) -Of the 66 physicians involved in 82 cases, 21 physicians were reinstated after remediation - Odds ratio for discipline if male was 4.69 - Disciplined physicians older than control group (59 years vs 55, OR 1.24) - No association with specialty - Loss of licensure rate varied from 0.7/1000 physicians to 4.5/1000 physicians
Birkeland <sup>22</sup>  Characteristics of complaints	2013	Denmark	Physicians (General practitioners)	This study aimed to analyse what characteristics (complaint motives, patients, and general practitioners) were associated with being disciplined in connection with complaint cases against general practitioners.	Complaint cases from the Danish Patient Complaints Board concerning general practitioners completed in 2007 in Denmark	- Odds of discipline were halved when the complaint was motivated by feeling devalued or request for explanation. When those complaining wanted placement of responsibility on the practitioner or requested review of competence, the odds of discipline doubled - Gender not found to be statistically significant - Odds of complaints doubled with more years in practise - Complaining patients were more likely to be female. Serious urgent illness was involved in 16% of cases, death of patient in 11% of cases, and cancer diagnoses in 8% of cases

Birkeland <sup>23</sup>	2013	Denmark	Physicians (General practitioners)	Using decisions against Danish general practitioners, the objective of this study was to investigate what process factors are statistically associated with decisions on discipline as seen from the sides of both the complainant party and the defendant (general practitioner) party.	Complaint decisions against general practitioners in 2007 from the Danish Patient Complaints Board	<ul style="list-style-type: none"> <li>- Odds of a case resulting in disciplinary action decreased when there more were general practitioners involved in the case</li> <li>- Longer case management duration (longer time to resolution) was associated with increased odds of the case resulting in disciplinary action</li> <li>- No association was found with the following factors: complainant lawyer involvement, length of the health care event resulting in a complaint, length of time between the event and filing a complaint, or involvement of an expert witness</li> </ul>
Birkeland <sup>20</sup>	2018	Denmark	Physicians (General practitioners)	To investigate the association between general practitioners' risk of becoming involved in a malpractice lawsuit and their educational background	Complaint cases in 2007 against general practitioners and demographic information were obtained from the Danish National Board of Health registries, and medical school information was obtained from the Danish Medical Association	<ul style="list-style-type: none"> <li>- Greater age at graduation was associated with increased odds of a complaint, but decreased odds of the complaint resulting in a critique</li> <li>- Of the physicians who had a complaint against them, the mean number of years in practice was 11</li> <li>- No association was found between place of education and complaints</li> <li>- Longer time since completing speciality training was associated with increased risk of complaints</li> </ul>
Birkeland <sup>21</sup>	2019	Denmark	Physicians (General practitioners)	To investigate the association between malpractice litigation figures and characteristics of general practice location in terms of rurality, number of patients listed with the GP, as well as levels of local unemployment, education, income tax and healthcare expenditure levels in a	Complaint cases and disciplinary board actions against Danish GPs from the National Disciplinary Complaints Board (NDCB)	<ul style="list-style-type: none"> <li>- Malpractice complaints against general practitioners were not associated with the area's level of education, unemployment rate, or the municipality's level of health care spending</li> <li>- Location in rural versus urban setting did not influence the rate of malpractice complaints against general practitioners</li> <li>- Greater patient list size of a physician was associated with increased odds of a complaint but not increased odds of the case having an outcome.</li> </ul>

				Danish national sample of general practices		- Fewer malpractice complaints were found in areas with higher income tax figures, but if litigation occurred then the odds of it ending in a disciplinary critique increased significantly
Campbell <sup>24</sup>	2013	UK	Physicians (Anesthesiology)	1. Analyse fitness to practise allegations made against anesthesiologists in 2009 to describe patterns of referral and identify common factors 2. To develop a robust methodology for analyzing the database	General Medical Council fitness to practice cases for anesthesiologists in 2009	<ul style="list-style-type: none"> <li>- Anesthesiologists were less likely to be referred for discipline than almost all other specialties and the general physician population, and less likely to be referred by an individual member of the public compared to the general physician population</li> <li>- Disproportionately more men, overseas-trained doctors, and doctors qualified for more than 20 years were disciplined than in the general physician population</li> <li>- Health issues and issues relating to conduct or criminality were more often in 'Stream 1' which required immediate investigation</li> <li>- Clinical care concerns and allegations of relationships with patients were more often in 'Stream 2' which were less serious but concerning if there was a pattern of repeated behaviour</li> <li>- Cases reaching fitness to practice are usually referred by a person acting in public capacity, have multiple allegations, and are related to health issues, conduct, or criminality</li> </ul>
Cardarelli <sup>25</sup>	2004	USA	Physicians Osteopaths	To identify predictors of physician and osteopathic physician disciplinary action	Texas Medical Board disciplinary action cases for physicians from 1989 - 1998	<ul style="list-style-type: none"> <li>- Female physicians less likely to be disciplined than males overall and for each type of violation (OR 0.26)</li> <li>- Osteopaths more likely to be disciplined than MD graduates (OR 1.83), especially for negligence/incompetence and prescribing</li> <li>- More years in practice positive predictor of disciplinary action overall and for each type of violation (OR 1.21 overall)</li> </ul>

						<ul style="list-style-type: none"> <li>- International medical graduates were less likely to be disciplined than US MD graduates (OR 0.76)</li> <li>- Compared to family medicine, general practitioners were the most likely to be disciplined overall and for each violation (OR 4.50; next highest was psychiatry OR 1.05). Anesthesiologists less likely to be disciplined for negligence/incompetence and prescribing, but more likely to be disciplined for alcohol/drug use</li> </ul>
Cardarelli <sup>26</sup>	2006	USA	Physician Osteopaths	To evaluate factors potentially associated with license revocation by a state medical board when taking disciplinary action against a physician	Texas Medical Board disciplinary action cases for physicians from 1989 - 1998	<ul style="list-style-type: none"> <li>- More years in practice and having two or more previous disciplinary actions was positively associated with license revocation</li> <li>- Compared to family medicine, psychiatry, anesthesiology, and general practice had significantly higher risk of revocation</li> <li>- Nonsignificant findings that men had higher risk of discipline, international MD graduates had lower risk of discipline, and osteopaths had higher risk of revocation than MD graduates</li> </ul>
Chappell <sup>27</sup>	1999	USA	Nurses	<p>Research questions:</p> <ol style="list-style-type: none"> <li>1. Was there a difference between the demographic profiles of nurses who violated the law and all other nurses in the Commonwealth?</li> <li>2. How did the ratio of number of KBN disciplinary actions and decisions to the number of licensed nurses change from 1989 to 1995?</li> <li>3. Was there an association between the type of nurse</li> </ol>	Nurses' disciplinary records and demographic information from the Kentucky Board of Nursing from 1989 - 1995	<ul style="list-style-type: none"> <li>- Higher recidivism if less restrictions were applied as a penalty. Recidivism rate was 8% when suspension applied, but was 16% if only limitations on license applied</li> <li>- 8.8% of men had a violation versus 2.6% of females (men make up 14.8% of nursing population and women make up 85.2%)</li> <li>- Violators were younger on average – 37 years compared to 43 years for non-violators</li> <li>- Nurses with more education had less violations – licensed practical nurses had highest rates, associate degree nurses/diploma graduates had less, and</li> </ul>

				<p>violations resulting in the initial disciplinary action/decision and the recidivism rate?</p> <p>4. Was there an association between the type of initial disciplinary action/decision and the recidivism rate?</p> <p>5. Was there a difference in the rate of recidivism among nurses/violators with court convictions before licensure compared to those who did not have court convictions before licensure, but violated the law post licensure?</p> <p>6. Was there a relationship between the number or type of court convictions and disciplinary decisions made by the Board of Nursing?</p>		<p>those with bachelor degree or higher had the least</p> <p>- Of those who had previous court convictions before licensure with the Board, 3.5% had violations after licensure, but of those who didn't have previous violations, 8.1% violated after licensure</p>
Clay <sup>28</sup>	2003	USA	Physicians Osteopaths	To assess characteristics of, offences committed by, and resulting disciplinary actions taken against a consecutive series of disciplined physicians in Ohio and comparing them to non-disciplined controls	State Medical Board of Ohio discipline reports for osteopathic and allopathic physicians disciplined in Ohio from Jan 1997 – June 1999	<p>-- When reasons for discipline were grouped by category, 25% due to health-related offenses, 21% due to drug or prescribing related crimes, 15% due to previous state actions by another board, and 12% due to personal and professional conduct issues, 9% due to fraud or other crimes, 7% due to negligence or incompetence, 5% due to credential issues, and 4% due to sexual misconduct</p> <p>- Disciplined physicians less likely to be women (OR 0.46), more likely to be in practice less than 20 years (OR 1.51), international graduates, not board certified (OR 0.65)</p> <p>- Nonsignificant trend to higher discipline in anesthesia, psychiatry, and surgery</p> <p>- Annual discipline rate was approximately 0.37%</p>

Cuddy <sup>29</sup>	2017	USA	Physicians	Research question: Are USMLE Step 1 and Step 2 CK scores related to the chance that a physician who graduated from a US MD-granting medical school will receive a disciplinary action in medical practice after accounting for other factors?	Federation of State Medical Boards disciplinary cases and National Board of Medical Examiners database for US physicians who graduated from a US medical school between 1994 - 2006	<ul style="list-style-type: none"> <li>- Lower average scores on Step 1 (basic science material) and Step 2 (clinical skills) of the Clinical Knowledge (CK) portion of the US licensing exam were associated with disciplinary action</li> <li>- Higher Step 2 CK scores were associated with lower disciplinary action after controlling for other factors</li> <li>- 1.3% of the physicians in the sample received at least one disciplinary action from a state board</li> <li>- Odds ratio for female discipline compared to males is 0.54</li> <li>- Average time to discipline was 12 years</li> </ul>
Davis <sup>31</sup>	2017	USA	Physicians	<p>1) To examine administrative actions taken to suspend or rescind the licenses of Florida physicians who were indicted or convicted of crimes related to illegally prescribing or dispensing controlled substances</p> <p>2) To provide insight into whether this disciplinary regime is sufficient to protect the public from physicians whose prescribing behaviour falls short of the standard of care</p>	Disciplinary action cases and court cases of Florida physicians indicted, charged, or convicted of illegal prescribing or dispensing of controlled substances from 2010 - 2015	<ul style="list-style-type: none"> <li>- Of 25 physicians who lost their licenses, 8 were revoked and 17 voluntarily surrendered with the condition of never reapplying</li> <li>- 11/25 physicians who eventually lost their licenses had active licenses until revocation.</li> <li>8/25 licenses were temporarily suspended before conviction, 6/25 were temporarily suspended after conviction. Only one license was permanently revoked before conviction.</li> <li>- In more than 2/3 of cases ending in revocation, the license was rescinded at least 1 year after the physician was indicted. The average time between conviction and revocation was 291 days.</li> </ul>
Draime <sup>32</sup>	2018	USA	Pharmacists Pharmacy technicians	The aim of this work was, with the use of state board records, to describe reported medication diversion within the practice of pharmacy and to compare diversion by employee type.	State board of pharmacy records from nine US states. Disciplinary actions were obtained from the records for the time period of May 2008 to May 2013.	<ul style="list-style-type: none"> <li>- Pharmacy technicians account for most medication diversion cases (71.4%)</li> <li>- Most controlled substance diversions were done by technicians (93%)</li> <li>- Pharmacists were more likely to divert for personal use than sale (44% vs 8%), while technicians diverted for these two reasons about equally</li> </ul>



						<ul style="list-style-type: none"> <li>- Authors suggest that reason for differences between technicians and pharmacists is the investment in the profession and risk if caught</li> </ul>
Elkin <sup>36</sup>	2011	Australia New Zealand	Physicians	To describe the characteristics of the doctors involved in misconduct cases, the misconduct at issue, and the case outcomes. In addition, because a robust typology for organizing this information does not exist, we aimed to develop one.	Physician disciplinary cases from New South Wales, Victoria, Queensland, Western Australia, and New Zealand between Jan 1, 2000 – Sept 30, 2009	<ul style="list-style-type: none"> <li>- Sexual misconduct (24% of cases), illegal or unethical prescribing (21%), and inappropriate medical care (20%, e.g., treatment problems and diagnostic errors) were most common reasons for discipline</li> <li>- In 19% of cases, the only penalty was non-restrictive (e.g., caution, reprimand, fine). In 43% of cases, penalty was temporary or permanent removal from practice</li> <li>- Male doctors disciplined 4 times more than female doctors</li> <li>- Average of 21.4 years since graduation until discipline</li> <li>- Rate of discipline was 6 per 10,000 doctors per year. Rate of discipline decreased over the study period</li> <li>- Most clinical cases occurred in non-inpatient settings</li> <li>- Obstetrician/gynecologists had highest case rate, then psychiatrists, followed by general practitioners</li> </ul>
Elkin <sup>34</sup>	2012	Australia New Zealand	Physicians	To examine how disciplinary tribunals assess different forms of misconduct in deciding whether to remove doctors from practice for professional misconduct.	Physician disciplinary cases from New South Wales, Victoria, Queensland, Western Australia, and New Zealand between Jan 1, 2000 – Sept 30, 2009	<ul style="list-style-type: none"> <li>- The most common types of misconduct were inappropriate or inadequate treatment (36% of cases), inadequate or inappropriate medical certificates or records (26%), and illegal or unethical prescribing (25%)</li> <li>- Harm to patients beyond emotional upset only occurred in 37% of misconduct cases</li> <li>- Most common explanations of misconduct were poor judgment (46%) and willful wrongdoing (45%)</li> <li>- 92% of cases against male doctors, and doctors had been practice an average of 21.4 years before discipline</li> </ul>

						<ul style="list-style-type: none"> <li>- 65% of cases were against general practitioners, 10% against physicians in psychiatry</li> <li>- Half of cases were first reported by patients or their representatives</li> </ul>
Elkin <sup>35</sup>	2012	Australia	Physicians	<ol style="list-style-type: none"> <li>1. To determine whether IMGs were disproportionately likely to attract complaints</li> <li>2. To analyze the extent to which the risk varied across countries of qualification, while recognizing that a variety of factors including cultural misunderstandings and racism may drive groundless complaints.</li> </ol>	Physician medical board complaints cases in Western Australia and Victoria from 2001 to 2010	<ul style="list-style-type: none"> <li>- 37% of doctors in the sample gained their entry-to-practice qualification outside of Australia</li> <li>- Compared to Australian-trained doctors, international graduates had higher odds of complaints (OR 1.24) and higher odds of adverse disciplinary findings (OR 1.41)</li> <li>- Incidence of complaints was 27 complaints per 1000 doctor-years. Investigations and hearings were conducted for 30% of complaints</li> <li>- Doctors from Nigeria, Egypt, Poland, Russia, Pakistan, the Philippines, and India had higher odds of complaints than Australian-trained doctors</li> </ul>
Enbom <sup>38</sup>	1997	USA	Physicians Osteopaths Podiatrists Physician Assistants Acupuncturists	All complaints of sexual misconduct investigated and closed by the Oregon Board of Medical Examiners for the years 1991 to 1995 are evaluated in this study to serve as a baseline. How does Oregon's experience compare with national data on violation of sexual boundary issues? Can we identify higher-risk groups? Are the essentials in place to work toward zero tolerance of sexual boundary violations?	All complaints of alleged sexual misconduct brought to the Oregon Board of Medical Examiners for the years 1991 to 1995.	<ul style="list-style-type: none"> <li>- 78/80 cases involved males, and the two cases involving females were closed with non-disciplinary outcomes</li> <li>- All sexual violation complaints occurred without a chaperone present</li> <li>- Increasing age associated with increased risk of complaint for sexual misconduct</li> <li>- Osteopaths and podiatrists at higher risk of disciplinary action than allopathic medical doctors</li> <li>- Specialties of psychiatry and obstetrics/gynecology were at higher risk of complaints resulting in disciplinary action</li> </ul>
Enbom <sup>37</sup>	2004	USA	Physicians Osteopaths	To analyze closed sexual misconduct allegations against physicians from 1998	Oregon Board of Medical Examiners closed complaints of	<ul style="list-style-type: none"> <li>- Sexual misconduct cases increased from 5.6% of total reportable disciplinary</li> </ul>

				– 2002 compared to allegations from 1991 – 1995	sexual misconduct from 1998 - 2002	actions from 1991 – 1995 to 14.5% from 1995-2002 <ul style="list-style-type: none"> <li>- Most practitioners continued working with practice limitations or modifications, monitoring, or therapy</li> <li>- Sexual misconduct complaints more common in age 50-59 and &gt; 70. Those aged 50-59 had the highest proportion of reportable disciplinary actions</li> <li>- Osteopaths had higher proportion of complaints and sexual misconduct complaints</li> <li>- Complaints most often from a patient or their associate</li> </ul>
Feine <sup>39</sup>	1991	USA	Dentists	This study investigated the disciplinary actions of the Texas State Board of Dental Examiners for cases of practicing dentistry without a license (PDWOL), malpractice/ negligence, and drug offences. An analysis was made of the likelihood of conviction, the likelihood of a sentence requiring time out of the office, and the severity of the sentences assigned by the board for these three infractions.	Texas Board of Dental Examiners disciplinary cases from 1985 – April 1988	<ul style="list-style-type: none"> <li>- Dentists charged with practicing dentistry without a license received harsher penalties than those charged with drug offenses or negligence/malpractice</li> <li>- Dentists charged with practicing dentistry without a license always received penalties that prevented them from practicing and for a longer time than for drug offenses or negligence/malpractice</li> <li>- More dentists charged with drug offences were convicted compared to those charged with negligence/malpractice</li> </ul>
Foong <sup>40</sup>	2018	Canada	Pharmacists	The objective of this study was to determine the most common actions or omissions that result in disciplinary action and to explore the restrictive actions that are imposed	Pharmacist regulatory body disciplinary cases from 10 provinces from 2010 – July 2017	<ul style="list-style-type: none"> <li>- Most cases occurred in community pharmacies and most involved multiple or repeated incidents</li> <li>- 61% cases involved professional misconduct, 30% involved unskilled practice, and 34% involved dishonest business practices (some cases involved multiple violations)</li> <li>- Of 558 cases, 225 involved professional misconduct only, 100 involved unskilled practice only, and 112 involved dishonest</li> </ul>

						<p>business practices only. 121 involved a combination</p> <ul style="list-style-type: none"> <li>- 42% of cases were from one province, Quebec. Quebec had a higher proportion of cases involving unskilled practice only and of isolated incidents</li> <li>- Three most common penalties were fines, license suspensions, professional development. Least common penalty was license revocation</li> </ul>
Foreman <sup>41</sup>	2004	USA	Chiropractors	To determine categories of offense, experience, and gender of disciplined doctors of chiropractic (DC) in California and compare them with disciplined medical physicians in California	California Board of Chiropractic Examiners disciplinary actions closed between Jan 1998 – April 2002	<ul style="list-style-type: none"> <li>- Fraud was the most common reason for discipline, second was sexual misconduct, ‘other’ was third, and drug or alcohol abuse was fourth</li> <li>- 44% of chiropractor cases concerned fraud, but only 9% of physician cases concerned fraud. 22.6% of chiropractor cases involved sexual boundary issues, with only 10% for physicians. In contrast, 6.4% of cases concerned negligence or incompetence, but 24% of physician cases concerned this</li> <li>- 89% of chiropractors disciplined were licensed less than 20 years.</li> <li>- Rate of discipline was 4.5 disciplinary actions per year, which is almost double the rate for medical doctors (2.27 actions per year)</li> </ul>
Gallagher <sup>42</sup>	2015	UK	Dentists	To assess if the General Dental Council considers relevant factors at all stages of its deliberations into misconduct, as required by the determinations in the cases of Cohen, Zygmunt, and Azzam; and to assess whether those circumstances described in the Indicative Sanctions Guidance as warranting erasure from	General Dental Council fitness to practise rulings from August 27, 2013 to October 10, 2014	<ul style="list-style-type: none"> <li>- Where harm or risk of harm to the patient was involved, 50% of cases resulted in removal of the professional, versus 36% when no risk of harm was found</li> <li>- Where dishonesty was involved, removal occurred in 77% of cases, versus 22% of cases where dishonesty was not involved</li> <li>- No association with severity of sanction was found with the behaviour of the dentist since the misconduct, or the time that had passed since the event, or the time that had</li> </ul>

				General Dental Council registers led to that outcome.		passed since previous disciplinary action event
Gallagher <sup>45</sup>	2015	UK	Physicians	The aim of this research is to examine determinations of impairment of fitness to practice, and sanctions imposed, by the General Medical Council and Medical Practitioners Tribunal Service between October 1, 2011 and September 30, 2012. Among the objectives are: 1. to assess whether aggravating and mitigating circumstances considered when imposing sanctions are first considered when determining impairment, as required by the determinations in Cohen, Zygmunt, and Azzam, 2. to assess whether those circumstances described by the GMC in their ISG as warranting erasure from the Medical Register do actually lead to that outcome.	GMC and MPTS Fitness to practice cases for doctors between Oct 1, 2011 and Sept 30, 2012	<ul style="list-style-type: none"> <li>- Where harm or risk of harm to the patient was involved in the case, there was a 49% chance that the sanction would be removal from the register. When there was no risk of harm, only 17% of doctors were erased from the register</li> <li>- Where dishonesty was involved in the case, there as a 40% chance of erasure, but only a 20% chance when dishonesty was not an involved</li> <li>- Overall, the GMC and MPTS do apply the rulings of appeal cases when considering an impairment of fitness to practise</li> </ul>
Gallagher <sup>46</sup>	2015	UK	Pharmacists	To assess whether aggravating and mitigating circumstances considered by the General Pharmaceutical Council (GPhC) when imposing sanctions are considered when determining impairment of fitness to practise and to determine whether those circumstances described by the GPhC in their Indicative Sanctions Guidance (ISG) as	GPhC Fitness to Practise Committee cases for pharmacists from October 1, 2011 to September 30, 2012	<ul style="list-style-type: none"> <li>- Cases that involved dishonesty had a statistically significant higher risk of erasure from the register.</li> <li>- More cases that involved risk of harm to patient resulted in erasure than cases that did not involve risk of harm to patient, but this was not statistically significant</li> </ul>

				warranting erasure from the Register of Pharmacists lead to that outcome.		
Gallagher <sup>43</sup>	2017	UK	Optometrists Opticians	The aim of this research is to examine determinations of impairment of fitness to practise and sanctions imposed by the General Optical Council during the three-year period between 1 October 2012 and 30 September 2015. Among the objectives are: (1) to assess whether the fitness to practise Committee is adhering to the judgements in Cohen, Zygmunt, and Azzam when determining fitness to practise; and (2) to assess whether those circumstances described by the General Optical Council in their Hearings Guidance and Indicative Sanctions as warranting the suspension or termination of an optician's registration do actually lead to these outcomes.	General Optical Council fitness to practise decisions from Oct 1 2012 to Sept 30, 2015	<ul style="list-style-type: none"> <li>- Where harm or risk of harm to patient was an aggravating factor, it was not more likely to result in erasure than if risk of harm was not present</li> <li>- Where dishonesty was involved, it was significantly more likely to result in erasure – it resulted in erasure in 94% of cases when dishonesty was involved, while only 67% cases when dishonesty was not involved</li> </ul>
Gallagher <sup>44</sup>	2020	UK	Pharmacists	To determine which factors are associated with removal from the professional register at General Pharmaceutical Council's (GPhC) disciplinary hearings.	GPhC Fitness to Practise Committee cases for pharmacists from January 1, 2016 – December 31, 2019	<ul style="list-style-type: none"> <li>- Failure of the registrant to attend the hearing increased risk of removal from the register by over three times, and absence of legal representation increased this risk by two times.</li> <li>- Composition of panel: Severity of sanction was not associated with the attendance of a chairperson, registrant, or lay panel member</li> <li>- Severity of sanction was not associated with profession, level of experience,</li> </ul>

						gender, nature of allegation, or area of practice
Grant <sup>47</sup>	2007	USA	Physicians	<p>1) To provide a current, general descriptive assessment of the rates of discipline</p> <p>2) To document an important feature of the disciplinary process, the rate at which offenders are subsequently sanctioned again</p> <p>3) To compare these features of board discipline to those of the malpractice system in order to better understand the interplay between these two quality-control mechanisms</p>	Federation of State Medical Boards database of sanctions delivered from 1994 to 2002	<ul style="list-style-type: none"> <li>- Most common reasons for discipline: After “not applicable” (used when the physician was found not guilty), unprofessional conduct, negligence, failure to conform to minimal standards of acceptable medical practice, and failure to maintain adequate records were the most common reasons for discipline</li> <li>- Physicians disciplined before are more likely to be subject to discipline again (12 times higher risk than those not disciplined before)</li> <li>- Number of actions increasing overall during the study period from 2971 to 5502</li> </ul>
Green <sup>48</sup>	1996	USA	Nurses	To determine whether there were certain characteristics common to registered nurses (RNs) who violated the nursing practice act and were subsequently disciplined	Board of Nurse Examiners for the State of Texas files and disciplinary cases for nurses over a two-year period	<ul style="list-style-type: none"> <li>- Disciplined nurses often had more than 6 years of experience but likely to be employed less than 3 years with employers when incident occurred – most discipline occurred within a year of changing jobs or practice settings</li> <li>- Most common settings are full-time employment in hospital medical-surgical unit, critical care, or emergency. A larger than usual percentage of nurses switched settings after discipline to geriatric nursing and long-term care</li> <li>- Penalty was most often a warning</li> <li>- Females are more than men, but men are disproportionately disciplined 3x more compared to the general RN population</li> <li>- Average age was 44 years</li> <li>- Disciplined nurses more likely to be associate-degree trained without advanced education</li> </ul>

Hamolsky <sup>50</sup>	1998	USA	Physicians	Summarize disciplinary actions undertaken by the state Board	Physician disciplinary action cases resulting in a finding of unprofessional conduct from the Rhode Island Board of Medical Licensure and Discipline from Jan 1987 – Sept 1998	<ul style="list-style-type: none"> <li>- All cases related to findings of unprofessional conduct – incompetence, negligent or willful misconduct; action taken by another state; abuse of controlled substances</li> <li>- Most to least common penalties were written reprimand, license suspension, restrictions on practice, surrender of license, license revocation, denial of licensure</li> <li>- Specialties with higher risk were general practice, emergency medicine, and obstetrics/gynecology</li> </ul>
Harris <sup>52</sup>	2018	USA	Physicians	To investigate the variation in the rate of state medical board physician disciplinary actions between US states	National Practitioner Data Bank disciplinary action cases for physicians from 2010 - 2014	<ul style="list-style-type: none"> <li>- There was a fourfold variation in total rate of misconduct between states with the lowest and highest rates. Mean rate was 3.76 disciplinary actions per 1000 physicians</li> <li>- Mean rate of cases involving license suspension, revocation, or surrender, mean rate was 1.15 actions per 1000 physicians</li> <li>- Malpractice environment, physician supply, and year of discipline were not found to be significant associations with discipline</li> <li>- Most common reason for discipline was ‘not specified’ (38% of cases), and second was ‘illegal activity’ (8%)</li> </ul>
Holtman <sup>53</sup>	2006	USA	Physicians	To examine longitudinal patterns in disciplinary actions taken by state medical boards against a national population of physicians, comparing the risks of repeat adverse licensure action among physicians disciplined for drug abuse with the risks	National Practitioner Data Bank disciplinary cases for physicians from 1990 - 2000	<ul style="list-style-type: none"> <li>- Alcohol and drug abuse and drug violations made up the largest specific category of reasons for licensure action (penalties/limitations on the physician’s license)</li> <li>- Physicians who underwent a licensure action for drug abuse are at the highest risk of repeat licensure action and faster repeat licensure action</li> </ul>



				for physicians disciplined for other reasons.		<ul style="list-style-type: none"> <li>- Cases involving drug or alcohol abuse were more likely to end in license restoration than other reasons for discipline</li> <li>- Physicians who graduated later (i.e., were younger) were more likely to have licenses restored. Younger physicians reoffended faster than older physicians</li> <li>- Faster repeat action was associated with number and severity of adverse actions</li> </ul>
Hudson <sup>54</sup>	2011	USA	Nurses	To describe nurses who have been disciplined in Oregon over a 12 year period. Data were analyzed to describe the disciplined population demographically, to address differences in violations at differing levels of licensure, to look for trends in Board actions related to the most frequently occurring violations, and to check for consistency of board actions for the same violation among licensure categories	Disciplinary cases against nurses in Oregon from 1996 to June 2008	<ul style="list-style-type: none"> <li>- Substance abuse was the most common violation (31.4%), substandard or inadequate care was second, unprofessional conduct was third, failure to maintain records was fourth, and incompetence was the fifth most common</li> <li>-Substandard care and unprofessional conduct violations more common for LPNs than RNs or APRNs. Failure to maintain records was more common in APRNs than RNS or LPNs.</li> <li>Substance abuse most common in RNs than LPNs or APRNs.</li> <li>- RNs were most likely to be reprimanded compared to LPNs and APRNs, and more LPNs were suspended than RNs or APRNs. RN licenses were revoked more frequently for substance abuse compared to LPNs and APRNs, and LPN licenses were revoked more often for unprofessional conduct compared to other nursing licenses.</li> <li>- Overall 7.6% recidivism rate</li> </ul>
Humphrey <sup>56</sup>	2011	UK	Physicians	To evaluate whether country of medical qualification is associated with higher impact decisions at different stages of the UK General Medical Council's fitness to practice process after allowing for	General Medical Council inquiries into fitness to practice for physicians from April 1, 2006 – March 31, 2008	<ul style="list-style-type: none"> <li>- Non-UK-qualified doctors are more likely to receive high-impact decisions at each stage of the fitness to practice process</li> <li>- Triage: More cases involving non-UK-qualified physicians had high impact decisions</li> </ul>

				other characteristics of doctors and inquiries		<ul style="list-style-type: none"> <li>- Investigation: Referral for adjudication more common for cases involving non-UK-qualified doctors</li> <li>- Adjudication: Non-UK-qualified doctors more likely to be suspended or license permanently revoked</li> <li>-37% of cases involved non-UK-qualified doctors, while 33% of doctors were trained outside the UK</li> <li>- More complaints about UK-qualified doctors came from individual members of the public, while more complaints about non-UK-qualified doctors came from organizations</li> <li>- Inquiries more likely to involve males, doctors qualified more than 20 years, and general practitioners</li> </ul>
Jeyalingam <sup>57</sup>	2018	Canada	Physicians	We aimed to determine the factors associated with recurrent disciplinary events in physicians who had already incurred a previous event. As such, we used a national cohort of disciplined Canadian physicians to characterize re-discipline and compare physicians disciplined more than once to those first-time disciplined.	Disciplined Canadian physicians from January 2000 to May 2015 using publicly available online publications from provincial medical boards	<ul style="list-style-type: none"> <li>- Main reasons for physicians to be re-disciplined were standard of care issues and unprofessional conduct. Re-disciplined physicians also had more cases related to mental illness and unlicensed activity and less cases related to sexual misconduct.</li> <li>- License suspension and restrictions were more frequent among re-disciplined physicians than those disciplined for the first time. License revocation was uncommon and similar for both first time and re-disciplined physicians</li> <li>- Of red-disciplined physicians, 93% were male and 34% were international graduates. The most common specialty was family medicine (58%), followed by psychiatry (11%), surgery (9%), and obstetrics/gynecology (9%)</li> </ul>
Jones <sup>58</sup>	2008	USA	Nurses	To study the difference in frequency of incidents of violations between associate degree-prepared registered	Ohio Board of Nursing disciplinary reports for registered	<ul style="list-style-type: none"> <li>- Associate degree-prepared (ADN) registered nurses had significantly more boundary violations than baccalaureate</li> </ul>

				nurses and baccalaureate degree-prepared registered nurses	nurses from Jan 2002 – Dec 2006	degree-prepared (BSN) registered nurses and <ul style="list-style-type: none"> <li>- Disproportionately more ADNs were subject to boundary violations compared to the amount of ADNs in the workforce</li> <li>- Rate of boundary violations in registered nurses was 0.01%</li> <li>- 37% of those disciplined for boundary violation had prior disciplinary action</li> </ul>
Jones <sup>59</sup>	2019	USA	Physicians (General surgeons)	To measure associations between first-time performance on the American Board of Surgery (ABS) recertification exam with subsequent state medical licensing board disciplinary actions	Certification data collected from the American Board of Surgery database for all surgeons initially certified in general surgery between 1976 and 2005, and disciplinary action case information	<ul style="list-style-type: none"> <li>- General surgeons who passed the recertification exam on their first attempt had the lowest risk of subsequent loss of license disciplinary actions, while those who failed on first attempt had significantly higher rate of loss of license actions (HR 2.98)</li> <li>- Those who waited until initial certification expired to take the exam again also had higher rate of loss of license actions (HR 2.08)</li> </ul>
Jonsson <sup>66</sup>	2007	Sweden	Physicians (Obstetrics)	The aim of this study was to review the grounds for disciplinary action in obstetric malpractice cases in Sweden, and to evaluate whether adverse perinatal outcomes in these cases were related to the inappropriate use of oxytocin, and, thus, could possibly have been prevented	Board of Medical Responsibility obstetric malpractice claims concerning delivery cases resulting in disciplinary action from 1996 - 2003	<ul style="list-style-type: none"> <li>- Incorrect use of oxytocin was one of the main reasons for discipline in 33% of cases and was a factor in 68.5% of cases</li> <li>- Most malpractice cases involved inability to recognize or respond to fetal distress, inappropriate use of oxytocin, and failure to effect a timely delivery</li> <li>- Main factors contributing to discipline were related to interpretation of fetal heart rate patterns and fetal scalp sampling to assess fetal wellbeing</li> <li>- More physicians involved in high-risk cases and midwives in low-risk cases</li> </ul>
Kenward <sup>61</sup>	2008	USA	Nurses	To review nursing disciplinary action cases in the USA from 1996 to 2006	Disciplinary action cases against nurses from the National Council of State Boards of Nursing's	<ul style="list-style-type: none"> <li>- Drug-related violations (e.g., drug abuse, diversion) made up 24% of all violations</li> <li>- Rate of discipline increased by 155% over 11 years, and percentage of nurse</li> </ul>

					<p>Nursys databank of license and discipline information from Jan 1996 to Dec 2006</p>	<p>population disciplined increased by almost 90%</p> <ul style="list-style-type: none"> <li>- Found that state boards across the USA issue similar penalties for certain violations</li> <li>- Males overrepresented in disciplinary action compared to general population of nurses that are men</li> <li>- Practical nurses are more likely to be disciplined than either advanced practice nurses or registered nurses</li> <li>- Average recidivism rate in a given stat was 24%</li> </ul>
Khaliq <sup>62</sup>	2005	USA	Physicians	<p>1) To examine a spectrum of characteristics of physicians disciplined by the Oklahoma Board of Medical Licensure and Supervision</p> <p>2) To assess the risk of being disciplined in the context of each of these characteristics over time</p> <p>3) We compared the Oklahoma State Board's performance in disciplining physicians to that of other state boards using data maintained by the Federation of State Medical Boards</p>	<p>Oklahoma State Board disciplinary actions and demographics for physicians in 2001</p>	<ul style="list-style-type: none"> <li>- Most frequent complaints were quality of care, medication/prescription violations, incompetence, and negligence/malpractice</li> <li>- Type of penalty did not vary with race, sex, or board certification</li> <li>- Increased risk of discipline was seen with male sex (HR 1.8), non-board-certified physicians (HR 2.2), more years in practice, and international graduates (HR 1.1; but only significant in univariate analysis)</li> <li>- Specialties with higher rates of discipline from highest to lowest risk were family medicine, psychiatry, obstetrics/gynecology, general practice, and emergency medicine. Lower risk associated with internal medicine, radiology, cardiology.</li> <li>- Since inception of the Board, 2.8% of physicians had been disciplined</li> <li>- Most common sources of complaints were the general public (66%) and 'other' sources (18%; Federation of State Medical Boards, Medicare, insurance companies, law enforcement)</li> </ul>

Kiel <sup>63</sup>	2006	Australia	Physicians	To explore the way in which psychiatric evidence is used in hearings involving sex or drug complaints against doctors in New South Wales	Medical Tribunal cases of doctors in New South Wales between 1980-2005	<ul style="list-style-type: none"> <li>- 40 doctors were disciplined for sexual misconduct, 35 of which were de-registered. 28 were general practitioners, 12 were psychiatrists.</li> <li>- 50 doctors were de-registered for self-prescribing and/or overprescribing.</li> <li>- Identified four characteristics or predictors of recidivism: lapse of time since conduct (less likely to reoffend with more time), once-off incident (less likely to reoffend), lack of insight (more likely to reoffend), and acceptance of adverse finding/contrition/remorse (less likely to reoffend)</li> </ul>
Kiel <sup>64</sup>	2013	Australia	Physicians	To examine why impaired doctors become the subject of disciplinary proceedings and draws on a small pilot study examining all the reported disciplinary cases in the Medical Tribunal of NSW in 2010.	New South Wales Medical Tribunal disciplinary case proceedings in 2010	<ul style="list-style-type: none"> <li>- Almost 1/3 cases involved a doctor with an impairment and more than half had some form of addiction</li> <li>- 1 in 3 doctors did not report colleagues they believed to be impaired or incompetent, and did not completely agree that they had a duty to report</li> <li>- Most cases related to psychiatric problems, followed by drugs, alcohol, and cognitive impairment</li> </ul>
Kiel <sup>65</sup>	2017	Australia	Physicians	To address the issue of how protective orders in medical tribunals are utilized	Two cohorts of cases from the Medical Council of New South Wales from 2013 – 2016: one involving impaired doctors and the other involving doctors who were not impaired (but were guilty of misconduct)	<ul style="list-style-type: none"> <li>- Most common forms of impairment were substance use disorder and psychiatric conditions.</li> <li>- In cases involving impairment in older doctors, common themes were a lack of insight into the misconduct and rigidity in the doctor's approach to practise</li> <li>- The most common penalty was conditions on the license to practice – 56/128 doctors had conditions, while 30 were erased and 24 were suspended</li> <li>- Conditions aimed to rehabilitate doctors, especially when a health condition was involved</li> </ul>

						<ul style="list-style-type: none"> <li>- 34/128 cases involved sexual misconduct</li> <li>- 14 were erased, 9 suspended, and all had conditions on their license</li> <li>- The authors hold that the tribunal's faith in conditions on a license in order to protect the public is misplaced</li> </ul>
Kinney <sup>66</sup>	2019	USA	Physicians (Physical medicine and rehabilitation)	<p>1) To determine the rate of disciplinary actions for physical medicine and rehabilitation (PM&amp;R) physicians and investigate the correlation of disciplinary actions with sex, practice subspecialty, and medical school training location</p> <p>2) To investigate the relationship between performance on the ABPMR primary certification examinations and the risk of subsequent disciplinary actions by state medical boards during a physiatrist's career</p> <p>3) To determine whether either of the two initial ABPMR certifying examinations is more predictive of physicians receiving future disciplinary actions</p>	Federation of State Medical Boards discipline cases and American Board of Physical Medicine and Rehabilitation database for physicians who completed a residency in physical medicine and rehabilitation between 1968 - 2017	<ul style="list-style-type: none"> <li>- Failing Part I and/or Part II of the board certification exam carried 5 times the risk for future discipline</li> <li>- Multiple attempts to pass Part II doubled the risk of discipline, and multiple attempts to pass Part I increased risk non-significantly</li> <li>- Multiple attempts to pass both Parts I and II carried three times the risk of discipline</li> <li>- Scores on the exams also were predictive of future discipline, with lower scores having higher risk</li> <li>- Male physiatrists had 2.29 times increased risk of discipline than females</li> <li>- International graduates were overrepresented and had 2.11 times higher risk of disciplinary action</li> </ul>
Kinney <sup>67</sup>	2020	USA	Physicians	1. To investigate the relationship of participation and performance in the American Board of Physical Medicine and Rehabilitation maintenance of certification program with the incidence of physician disciplinary	Physicians with time-limited board certificates in physical medicine and rehabilitation who were enrolled in the maintenance of competence program, and Federation of	<ul style="list-style-type: none"> <li>- Physicians with lapsed certification were 2.53 times more likely to have a disciplinary action than those who never lapsed</li> <li>- Physicians with lapsed board certification were more likely to have higher severity violations resulting in disciplinary action than those without a lapse in certification</li> </ul>

				<p>actions by state medical boards.</p> <p>2. To determine whether the severity of disciplinary action is related to participation in MOC.</p> <p>3. Also studied the relationship of scores on the MOC Part III knowledge assessment on the likelihood of receiving a disciplinary action.</p>	State Medical Boards disciplinary action cases	<ul style="list-style-type: none"> <li>- Lower scores on the Part III Knowledge Assessment component of the certification were associated with higher risk of discipline</li> <li>- Overall rate of disciplinary action for physical medicine and rehabilitation physicians was 3.6% from 1969 - 2017</li> <li>- 77% of disciplinary actions involved physicians over 40 years of age</li> </ul>
Kocher <sup>68</sup>	2008	USA	Physicians (Orthopedics)	To assess the association between orthopedic board certification and physician performance by comparing rates of medical malpractice claims, hospital disciplinary actions, and state medical board disciplinary actions between board-certified (BC) and non-board-certified (NBC) orthopedic surgeons.	State medical board public domain information for three states, and American Board of Orthopedic Surgeons database	<ul style="list-style-type: none"> <li>- Non-board-certified orthopedic surgeons had significantly higher discipline rates than those who were board-certified (13% rate for non-board-certified versus 7.6% for board-certified)</li> <li>- No significant difference was found regarding medical malpractice claims or hospital discipline</li> </ul>
Kohatsu <sup>69</sup>	2004	USA	Physicians	To determine if there is an association between certain physician characteristics and the likelihood of medical board-imposed discipline	Medical Board of California physician disciplinary cases between July 1, 1998 – June 30, 2001	<ul style="list-style-type: none"> <li>- Most common reasons for discipline were negligence (38%), drug/alcohol offenses, (10%) unprofessional conduct (10%), conviction of a crime (9%), and inappropriate prescribing (9%)</li> <li>- Most common penalties were probation (34%), reprimand (22%), license surrender (21%), or license revocation (16%)</li> <li>- Male sex (OR 2.76), international medical graduation (OR 1.36, outside US and Canada), and increasing age in 20 year intervals (OR 1.64) increased risk</li> <li>- Board certification reduced risk (OR 0.45)</li> <li>- Compared to internal medicine, radiology and pediatrics had decreased risk of discipline, and family practice, general</li> </ul>

						practice, obstetrics/gynecology, and psychiatry were at higher risk. Anesthesiology and surgery had similar risk as internal medicine.
Kreiner <sup>70</sup>	2017	USA	Physicians Osteopaths	To examine associations between prescriber risk indicators developed as part of a public health surveillance project and medical board disciplinary action against prescribers, particularly actions that cite inappropriate prescribing and actions that involve license suspension or revocation	Prescribers subject to actions by the Maine Medical Board and Osteopathic Board between 2010-2014	<ul style="list-style-type: none"> <li>- 199 unique prescribers generated 199 board actions. This involved 164 non-unique prescribers as some had multiple cases</li> <li>- 64 prescribers subject to severe discipline</li> <li>32 prescribers disciplined for inappropriate prescribing, 63 prescribers for personal substance use issue</li> <li>- Being in the top 1% of prescribers for the number of morphine milligram equivalents per day was associated with a severe disciplinary action</li> <li>- Being in the top 1% for number of patients, opioid prescriptions per day, prescriptions per day were risk factors for a moderate severity penalty</li> </ul>
Kriisa <sup>71</sup>	1990	Sweden	Various (Physicians Midwives Nurses Physiotherapists)	To review complaints against healthcare practitioners in Sweden to the Medical Board of Responsibility	Complaint cases reported to the Medical Board of Responsibility in Sweden against healthcare professionals from 1987-88	<ul style="list-style-type: none"> <li>- In 2/3 of cases, patients made the complaint against the healthcare provider</li> <li>- Most cases concerned physicians. Most common reasons for complaint was delayed diagnosis or missed diagnosis (58%), treating patient impolitely (14%), administrative error/refusal of certificate error in case sheet (12%), and wrong medicine or administrative (11%)</li> </ul>
Kwee <sup>72</sup>	2020	The Netherlands	Physicians (Radiology)	To systematically investigate the frequency and types of allegations related to radiology practice handled by the Dutch Medical Disciplinary Court in the past 10 years (2010-2019)	Verdicts concerning radiology practice in The Netherlands from 2010 to 2019 from The Dutch Medical Disciplinary Court database for 2010-2019	<ul style="list-style-type: none"> <li>- Allegations against radiologists are few at 4.8 allegations per year, which has been stable for 10 years</li> <li>- Most common allegation was error in diagnosis (39.6% of cases)</li> <li>- Most allegations related to breast imaging and musculoskeletal imaging (18.8% of cases each)</li> </ul>
Lipner <sup>73</sup>	2016	USA	Physicians (Internal medicine)	1) To examine the practice specialties of physicians in the decade following the start	Federation of State Medical Boards cases and American Board	<ul style="list-style-type: none"> <li>- ABIM-certified physicians had fewer very severe disciplinary actions and more less severe disciplinary actions, while non-</li> </ul>



				<p>of training in a U.S. IM residency ACGME-accredited program</p> <p>2) To explore performance characteristics during and after training, including the incidence of state medical board disciplinary actions among physicians who were ABIM certified, those who were ABMS but not ABIM certified, and those who never certified with the ABMS</p>	<p>of Internal Medicine database for physicians who had completed one year of internal medicine residency training from 1995 – 2004</p>	<p>board certified physicians had the most very severe actions and the fewest less severe actions. The cohort of ABMS certified physicians had more disciplinary actions than physicians certified in internal medicine, but had much lower discipline rates than non-certified physicians likely due to different rates of discipline depending on specialty</p> <ul style="list-style-type: none"> <li>- Those who did not obtain specialty board certification had 5 times the number of disciplinary actions</li> </ul>
Liu <sup>74</sup>	2015	Canada	Physicians (Internal medicine)	<p>Examine disciplinary cases among internal medicine physicians in Canada and compare to non-internal medicine physicians who were disciplined</p>	<p>Canadian regulatory body disciplinary cases for physicians from January 1, 2000 – December 13, 2013</p>	<ul style="list-style-type: none"> <li>- Internists less likely to be disciplined for sexual misconduct, standard of care issues, and unprofessional conduct than other physicians</li> <li>- Discipline rates low overall and lower for internists, specifically. Internists accounted for 10.8% of all disciplined physicians each year</li> <li>- General internal medicine was the most frequently disciplined subspecialty, followed by cardiology</li> <li>- 95.6% of disciplined internists were male</li> </ul>
McDonald <sup>75</sup>	2018	USA	Physicians (Internal medicine)	<p>To assess the risk of disciplinary actions among general internists who did and did not pass the maintenance of certification examination within 10 years of initial certification</p>	<p>Federation of State Medical Boards disciplinary cases and American Board of Internal Medicine database files for general internists from 1990 - 2003</p>	<ul style="list-style-type: none"> <li>- Not passing the maintenance of certification exam within 10 years of initial certification was associated with higher disciplinary action rates</li> <li>- Those who did not pass on first attempt had 35% higher risk of discipline than those who did</li> <li>- Those who passed the maintenance of certification exam within 10 years of initial certification had a higher proportion of less severe disciplinary actions, and lower proportion of very severe actions than those who did not pass</li> </ul>

Melo <sup>76</sup>	2019	USA	Physicians	To review Rhode Island boundary violations and penalties for physicians from 2012-2018 and an evaluation of what specific criteria were used by the Board to reinstate a physician's license	Rhode Island Board of Medical Licensure and Discipline disciplinary action cases relating to boundary violations	<ul style="list-style-type: none"> <li>- 15/16 boundary violation cases were related to sexual misconduct, and most involved males</li> <li>- 13/16 physicians who had a boundary violation lost their license. All physicians who had sexual intercourse with a patient lost their licenses for differing periods of time</li> <li>- All physicians who were reinstated were formally monitored for some time</li> <li>- Most common specialties disciplined: Psychiatry, internal medicine, family medicine</li> </ul>
Mendelson <sup>78</sup>	2014	Australia	Physicians	The aim in this study was to examine jurisprudential notions that underpin modern disciplinary proceedings, their purpose, fairness and efficiency, through the examine of 32 published decisions dealing with practitioners who were found to have inappropriately and/or unlawfully prescribed Schedule 4 and Schedule 8 medications	Disciplinary cases by professional disciplinary tribunals in New South Wales and Victoria against medical practitioners found guilty of inappropriately and/or unlawfully prescribed Schedule 4 and Schedule 8 medications from July 2010 to September 2014	<ul style="list-style-type: none"> <li>- Of the 32 cases, all were general practitioners, 7/32 were female, 30/32 were over 50 years old with most in late 60s or older</li> <li>- Penalties varied in severity from caution, reprimand, suspension, removal from register. Conditions or limitations on practice were applied in all cases except license revocation. Determination of penalties were discretionary by the disciplinary tribunals</li> <li>- Half of cases had a history of investigations for problematic practices</li> </ul>
Mendelson <sup>77</sup>	2015	Australia	Physicians	To examine case reports of disciplinary proceedings against doctors who abused narcotic analgesics between 2010 to 2015	Case reports of disciplinary proceedings from the Australia Health Practitioner Regulation Agency against doctors who were found to have self-administered Schedule 8 drugs (controlled drugs of addiction/dependence, mainly opioids) and	<ul style="list-style-type: none"> <li>- Specialty: 15/27 were general practitioners, 8 were anesthetists, two obstetrician/gynecologists, and 1 each cardiology, ENT surgeon, one resident</li> <li>- 21/27 cases involved males and average age was 42 years</li> <li>- 8/27 received a suspension, 10 were not practising but had license formally cancelled, 2 received reprimands and fines</li> <li>- Conditions on license to practise were also used. In some cases conditions combined with support from physician health programs enabled rehabilitation,</li> </ul>

					Schedule 4 drugs (anabolic and androgenic steroidal agents, barbiturates and benzodiazepines) between 2010 - 2015	while others relapsed when the conditions were lifted - Did not find that clear criteria were used to determine penalties in these cases
Morelock <sup>79</sup>	2017	USA	Nurses	The purpose was to investigate apparent disparities of licensure sanction between male and female RNs. The type of offense that resulted in licensure action was also captured for analysis.	Texas Board of Nursing disciplinary action cases from 2013 to 2016	- 37% of men's licenses were revoked or surrendered when disciplined, while for women only 29% were these penalties - Male nurses made up 9% of the RN population but comprised 23% of cases - For men, most frequent violation was controlled substance use or diversion, or alcohol-related incidence (73%), and second most common was clinical violations such as medical errors or clinical judgment errors (13%)
Morrison <sup>80</sup>	1998	USA	Physicians	To assess the offenses, contributing factors, and type of discipline of a consecutive series of disciplined physicians	All disciplined physicians publicly reported by the Medical Board of California from October 1995 to April 1997	- Discipline rate of 0.24% of physicians per year - Disciplined physicians less likely to be women (OR 0.44), more likely to be involved in direct patient care (OR 2.56), and more likely to have been practicing for more than 20 years (OR 2.02), and less likely to be board-certified (OR 0.42) - Trend to higher risk of anesthesia and psychiatry being disciplined - Most common reason for discipline was negligence or incompetence (1/3 of cases), followed by physician health issues - More likely to be disciplined severely if female or if multiple offenses
Munk <sup>81</sup>	2015	USA	Dentists	1) To explore a potential consequence of the paucity of emotional intelligence education by determining the level of emotional intelligence-related infractions in state dental board disciplinary actions	State dental board disciplinary action reports from 2010-2014 from 21 states	- Of 1100 disciplinary action reports, there were proportionately more emotional intelligence related infractions (56.6% of infractions) than cognitive (2.4%) or technical intelligence related (41%) infractions - No state in the study had more cognitive intelligence-related infractions than

				<p>and characterizing those infractions into the categories of cognitive intelligence-related (CI-R) infractions, technical intelligence-related (TI-R) infractions, and emotional intelligence-related (EI-R) infractions</p> <p>2) To assess the proportion of EI-R infractions to CI-R and TI-R infractions and to identify the nature of EI-R infractions</p>		<p>technical or emotional intelligence related infractions</p> <ul style="list-style-type: none"> <li>- (Cognitive-intelligence included mental/physical health; technical-intelligence included clinical standard of care, and emotional-intelligence related included professional misconduct and dishonesty)</li> </ul>
Nasseri <sup>82</sup>	2016	Canada	Physicians (Dermatology)	To review cases of disciplinary and legal action against dermatologists in Canada	Disciplinary action cases against Canadian dermatologists from 10 provincial medical regulators and malpractice cases from the Canadian Legal Information Institute	<ul style="list-style-type: none"> <li>- 6/1459 (0.4%) cases against doctors over 30 years involved dermatologists</li> <li>- Cause for discipline in 3/6 cases was failing to meet the standard of care, inadequate medical records in 3 cases, inadequate patient follow-up in 2 cases, inadequate consent in 1 case, and sexual assault in 1 case</li> <li>- Disciplinary measures included fines, reprimands, continuing education courses, suspension, loss of license, and criminal charges.</li> </ul>
Nelson <sup>83</sup>	2018	USA	Physicians (Emergency medicine)	To determine if maintaining certification was associated with a lower risk of regulatory body disciplinary action	Federation of State Medical Boards disciplinary cases and American Board of Emergency Medicine database files for physicians who obtained initial board certification from 1980 - 2005	<ul style="list-style-type: none"> <li>- Physicians who allowed their board certification to lapse had higher rates of disciplinary action vs those who did not lapse (6.4% vs 2.5%)</li> <li>- More than one attempt on the board certification exam was associated with 40% higher chance of being disciplined compared to those who passed on first attempt</li> </ul>
Papadakis <sup>86</sup>	2004	USA	Physicians	To determine if medical students who demonstrate unprofessional behaviour in medical school are more likely to have subsequent	Medical Board of California disciplinary cases from 1990 - 2000 for physicians who	<ul style="list-style-type: none"> <li>- Disciplined physicians were 2.15 times more likely to have negative comments about professionalism in their medical school files than those who were not disciplined</li> </ul>

				state board disciplinary action.	graduates from the University of California San Francisco	<ul style="list-style-type: none"> <li>- Reason for discipline in most cases was unprofessionalism (65/68 cases)</li> <li>- Disciplined physicians had slightly lower undergraduate GPA than those not disciplined</li> <li>- Students who became physicians of obstetrics/gynecology or psychiatry were overrepresented in discipline</li> </ul>
Papadakis <sup>85</sup>	2008	USA	Physicians (Internal medicine)	Determine whether performance during residency predicts future disciplinary action in internists	State licensing board disciplinary action cases and American Board of Internal Medicine Resident Evaluation Summary documents for physicians who entered internal medicine residency training in the US between 1990 - 2000	<ul style="list-style-type: none"> <li>- Disciplined physicians had more unsuccessful attempts and lower scores on the internal medicine certification exam. Higher scores were associated with decreased risk for discipline</li> <li>- Disciplined physicians had lower ratings on their ABIM Resident's Evaluation Summary.</li> <li>- Either of these predictors doubled the chance of being disciplined</li> <li>- 83% of cases were for unprofessional behaviour</li> </ul>
Peabody <sup>89</sup>	2019	USA	Physicians (Family medicine)	Examine the association between American Board of Family Medicine certification and state regulatory body disciplinary action against a physician	Federation of State Medical Boards disciplinary action cases for family physicians and American Board of Family Medicine database in 2017	<ul style="list-style-type: none"> <li>- Board certification was associated with decreased odds of being disciplined – more than twice the cases if not certified, and more than six times the cases of severe penalties if not certified</li> <li>- Having ever been certified decreased odds of discipline, even if certification later lapsed</li> <li>- Lapsed certification more likely to have a more severe penalty than a less severe penalty</li> </ul>
Phipps <sup>90</sup>	2011	UK	Pharmacists	To establish whether there are any characteristics of pharmacists that predict their likelihood of being subjected to disciplinary action	Pharmacists who had undergone a disciplinary hearing by the Royal Pharmaceutical Society of Great Britain from April 1, 2007 – Dec 2009	<ul style="list-style-type: none"> <li>- Misconduct (violation of standards, dishonest behaviour) was more common than clinical malpractice</li> <li>- Community pharmacists significantly more likely to be disciplined than pharmacists in non-patient facing roles. Community pharmacists more likely to be disciplined than hospital pharmacists, but not statistically significant</li> </ul>

						<ul style="list-style-type: none"> <li>- 1/5 pharmacists disciplined had previous disciplinary action</li> <li>- Higher odds ratio for overseas training and non-white ethnicity, but not statistically significant</li> </ul>
Reich <sup>91</sup>	2011	Various	Physicians (Psychiatry)	The goal of this article is to examine the published literature to identify which psychiatrists might eventually have difficulty with the law or medical boards and to see how these findings might inform psychiatric practice and training	Literature search to identify studies of malpractice lawsuits or medical board discipline of psychiatrists between 1990 and 2009	<ul style="list-style-type: none"> <li>- 8 reports of US physician discipline from various states, and one of UK physician discipline. Of insurance company reports, 4 reports were found and 2 sets of aggregated insurance company data were found - Legal complaints often involved patient suicide, sexual misconduct, inappropriate prescribing, and physician alcohol or substance use. Data from insurance companies involved ineffective or incorrect treatment, misdiagnosis, improper hospital detention.</li> <li>- The more severe the patient's illness, the higher the risk of legal action</li> <li>- Psychiatrists found to be at higher risk of discipline than other specialties</li> <li>- Greater risk of discipline associated with male gender, more years in practice, international medical graduates, and lower risk of board-certified</li> </ul>
Richard <sup>92</sup>	2005	USA	Physicians	To determine the actual risk of disciplinary action against a physician by a state medical board for prescribing opioids for patients in pain	All disciplinary actions taken against physicians by the New York State Board for Professional Medical Conduct reviewed for the three year period from July 1, 1999 to June 30, 2002.	<ul style="list-style-type: none"> <li>- Of 1050 cases, 32 (3%) involved overprescribing of opioids</li> <li>- 56% of New York State physicians disciplined for controlled substances had more than one additional charge of misconduct</li> <li>- Found little risk for discipline if there was documentation showing a doctor-patient relationship and that prescribing was for pain</li> </ul>
Roberts <sup>93</sup>	2020	USA	Osteopathic physicians	Investigate the relationship between COMLEX (osteopathic physician	Federation of State Medical Boards disciplinary action	<ul style="list-style-type: none"> <li>- Higher Level 3 scores had significantly lower odds in receiving a disciplinary action that revoked a license, imposed</li> </ul>

				licensing board examinations) scores with subsequent disciplinary action	cases for osteopathic physicians and National Board of Osteopathic Medical Examiners results from 2004 - 2013	limitations on practice, or had other actions. Level 3 is the last exam in order to be licensed <ul style="list-style-type: none"> <li>- Higher scores on the Level 2 PE BD (performance exam, biomedical/biomechanical domain) had significantly lower odds in receiving a board action that revoked a license or imposed limitations on practice</li> <li>- Significantly lower odds of discipline if female or more years in practice</li> <li>- Less than 1% of osteopathic physicians disciplined during the study period</li> </ul>
Ryan <sup>94</sup>	2018	Australia	Chiropractors Osteopaths Physiotherapists	We aimed to compare the risk of complaint among chiropractors, osteopaths, and physiotherapists and to locate any increased risks in specific aspects of clinical practice.	Complaints lodged against chiropractors, osteopaths and physiotherapists with the Australia Health Practitioner Regulation Agency and Health Professionals Council Authority	<ul style="list-style-type: none"> <li>- Male practitioners has 2.4 times the rate of discipline compared to females, and risk increased with each decade after the age of 35</li> <li>- Chiropractors had highest rate and risk of disciplinary action, followed by osteopaths, and then physiotherapists</li> <li>- Across professions, 90% of practitioners are not subject to complaints</li> <li>- For chiropractors and osteopaths, more than two-thirds of complaints related to professional conduct, and one-third were related to performance. For physiotherapists, about half of complaints related to professional conduct, and half were related to performance. For all professions, about 1/5 complaints concerned treatment provided.</li> </ul>
Santen <sup>96</sup>	2014	USA	Physicians	Research question: Is identification by promotions committees during medical school associated with disciplinary actions by state medical boards later in practice?	Students who matriculated in 1976-1996 and graduated in 1980-2000 from the Vanderbilt University School of Medicine and Federation of	<ul style="list-style-type: none"> <li>- Of 2078 students that graduated, 29 (1.4%) had disciplinary action by a state medical board. Only 4 of the graduates with disciplinary action had formal identification by the promotions committees during medical school.</li> </ul>

					State Medical Boards disciplinary action cases	<ul style="list-style-type: none"> <li>- Those identified by the promotions committees have 3 times the risk of being disciplined by a state medical board compared to those not identified during medical school</li> <li>- Of the 4 students identified, 3 failed a course in first year then had no further problems (55 students failed a course in first year and only three had state medical board actions)</li> </ul>
Spittal <sup>98</sup>	2016	Australia	10 health professions	To determine the outcomes of notifications of concern regarding the health, performance, and conduct of health practitioners from 10 professions in Australia and to identify factors associated with the imposition of restrictive actions.	All notifications lodged with the Australian Health Practitioner Regulation Agency from January 1, 2011 to December 31, 2012	<ul style="list-style-type: none"> <li>- Overall rate was 6.3 notifications per 1000 practitioners per year</li> <li>- 38% of notifications involved performance concerns (e.g., clinical care and communication), 31.5% involved conduct (e.g., disruptive behaviour, improper use of health information, noncompliance with regulatory requirements), 5.6% involved health of practitioners, and 2.7% involved alleged breaches of sexual boundaries</li> <li>- Dentists had highest rate of notification (20.7 per 1000 practitioners per year), followed by doctors (14.5) and nurses at the lowest rate (2.0)</li> <li>- Pharmacists who were subject to a notification were three times more likely to receive a penalty than doctors</li> <li>- Men were at higher risk of a notification, as were those who were older</li> <li>- Odds of restrictive action higher if involving health impairments, unlawful use of medications, or boundary violations compared to clinical care</li> <li>- Dentists and psychologists had 4 times the risk of a notification resulting in restrictive action</li> </ul>
Stewart <sup>99</sup>	2011	USA	Physicians	We hypothesized that complaints to the Texas Medical	Complaints, investigations,	<ul style="list-style-type: none"> <li>- After tort reform in Texas, complaints against physicians increased 13%, number</li> </ul>



				Board (TMB) increased after tort reform. To test this hypothesis, we compared complaints, investigations, disciplinary actions, and penalties against physicians before and after comprehensive state tort reform measures were adopted	disciplinary actions, and penalties against physicians by the Texas Medical Board from 1996 to 2010	of investigations opened increased by 33%, disciplinary actions increased by 96%. Regarding penalties, license revocations or surrendering of license increased by 47% and financial penalties increased by 367%. - Even after adjustment for increase in number of physicians, these increases remain
Strong <sup>100</sup>	2006	USA	Physicians Dentists Optometrists	This article explores questions of professional values and interests in health professional regulatory board decision making and reports on the results of a study of regulatory boards' enforcement of commercial practice restrictions. The study examined the disciplinary decisions of the Virginia Boards of Dentistry, Medicine, and Optometry between 1987 and 1997.	Disciplinary decisions of the Virginia Boards of Dentistry, Medicine, and Optometry relating to commercial violations between 1987 and 1997.	- Of 744 complaints regarding commercial violations, 18.4% of them were substantiated and found to be actual violations. Commercial violations involved business aspects of practice including advertising, billing insurance, and fees - Found no significant difference in the nature of sanctions imposed on commercial vs non-commercial violations – punitive sanctions were not more likely to be used in commercial violations than non-commercial violations - In commercial violations, punitive sanctions were used in 29%, and nonpunitive sanctions used in 71% of cases
Surgenor <sup>101</sup>	2016	New Zealand	Various health practitioners	Analyze all available decisions of New Zealand's Health Practitioners Disciplinary Tribunal published between 2004 and 2014, looking at both procedural factors (practitioner and hearing characteristics) and outcome factors (findings, penalties, and appeals).	Health Practitioners Disciplinary Tribunal cases from 2004 – 2014	- 77% of cases due to professional misconduct, 20% of cases due to a conviction, and a small number of cases involved both - Nurses were more likely than doctors to lose license permanently, and doctors were more likely than nurses to receive censure, fines, and costs of investigation - 75% of cases involved doctors, nurses, and pharmacists (the three largest health workforces) - Approximately 2/3 of cases involved females, and 8.7% of cases had previous disciplinary action

						<ul style="list-style-type: none"> <li>- Number of cases increasing yearly but likely due to change in disciplinary structure and increasing size of workforce</li> </ul>
Surgenor <sup>102</sup>	2018	New Zealand	Various health practitioners	The purpose of this study is to examine demographic, registration and practice setting characteristics of psychologists who were subject to any HPCAA notification over the 12 year period between 2004-2015	Notifications against psychologists to the New Zealand Psychologists Board and publicly available decisions of the Health Practitioners Disciplinary Tribunal from 2004 - 2015	<ul style="list-style-type: none"> <li>- Less than 2% of practising psychologists are subject of a notification per year</li> <li>- Most complaints from patients and family members</li> <li>- Average of 12.1 years licensed in New Zealand before notification. This was shorter of international graduates (9.2 years) versus graduates of New Zealand (13.1 years)</li> <li>- Most cases concerned females, but males were still overrepresented in notifications compared to general psychologist population. All four cases of sexual misconduct involved female psychologists.</li> <li>- Only 4.3% of complaints progressed to the disciplinary tribunal</li> <li>- Most common penalties were censure, conditions, costs, fines. Suspension and license cancellation occurred least frequently.</li> </ul>
Surgenor <sup>103</sup>	2019	New Zealand	Various health practitioners	To understand patterns of consensual relationship sexual misconduct in New Zealand, we collated all relevant HPDT decisions where there was a finding of guilt. We then discussed selected themes illustrated by these cases, including approaches taken to penalty.	Health Practitioner Disciplinary Tribunal cases related to consensual sexual relationship cases between Sept 2005 – Oct 2018	<ul style="list-style-type: none"> <li>- 26 cases, which comprised 6.4% of all disciplinary decisions at the time of the study</li> <li>- 50% of cases resulted in licence revocation/cancellation, and 30.8% involved suspension. All had to pay some amount of costs. Conditions were applied for those returning to continuing to practice</li> <li>- Male practitioners made up 61.5% of cases. Did not find men to be disciplined more severely than women for sexual misconduct</li> </ul>

						<ul style="list-style-type: none"> <li>- Nurses and doctors made up most cases (42.3% and 34.6% respectively), followed by psychologists (11.5%), physiotherapists (7.7%), and one midwife (3.8%)</li> <li>- 24/26 cases were in community or outpatient setting. 65.3% of cases involved providing care for mental health issues</li> </ul>
Taylor <sup>104</sup>	2017	United Kingdom	Physicians	We have investigated fitness to practise proceedings involving dually registered doctors, the practice of oral and maxillofacial surgery, or specialists in the field.	Outcomes of all General Dental Council fitness to practise proceedings from January 2004 to June 2016, and the General Medical Council's register to identify the licensing and registration status of all current specialists in oral and maxillofacial surgery.	<ul style="list-style-type: none"> <li>- Six cases were identified that involved an oral and maxillofacial surgeon who was registered with both the General Dental Council and General Medical Council</li> <li>- Three cases of "double jeopardy" were identified, where the practitioners were disciplined by both the GDC and GMC, when the practitioner should have been disciplined only by the GMC</li> </ul>
Thomas <sup>106</sup>	2018	Australia	Dentists	To describe the frequency and nature of complaints amongst all dental practitioners (dentists, dental prosthetists, oral health therapists, dental therapists and dental hygienists) registered to practice in Australia between January 1, 2011 and December 31, 2016, and examine the factors associated with receiving a complaint.	Complaints that involved dental practitioners (i.e. general dentists and dental specialists, dental prosthetists, dental hygienists, dental therapists and oral health therapists) between Jan 1, 2011 to Dec 31, 2016 identified through the Australian Health Practitioner Regulation Agency and the Health Professionals Council Authority	<ul style="list-style-type: none"> <li>- Compared to other health professions, dentists were at the highest risk of complaints in Australia (42.7 complaints per 1000 practitioners per year)</li> <li>- More than 90% of complaints involved dentists, less than 3% of complaints involved allied dental professionals</li> <li>- Among dentists, most complaints concerned performance issues (e.g., concerns about treatment and procedures), and conduct concerns (e.g., concerns about fees such as over-charging)</li> <li>- Higher disciplinary risk was associated with male gender and older age of practitioner</li> </ul>

Tiffin <sup>107</sup>	2017	UK	Physicians	<p>1) To evaluate the validity of the Professional and Linguistic Assessments Board (PLAB) system (of which the International English Language Test System (IELTS) could be considered a component) with respect to whether the scores demonstrated an ability to predict the risk of subsequent fitness to practise issues in IMGs registering via this route</p> <p>2) To evaluate the extent to which the proposed restrictions placed on the number of times the PLAB test could be taken must be expected to impact the future rate of fitness to practise events in this group of doctors working in the UK</p>	General Medical Council fitness to practice cases between 2006 – 2012 and PLAB scores for international medical graduates	<ul style="list-style-type: none"> <li>- Significant predictors of disciplinary action included male sex, higher IELTS speaking score, and multiple attempts at PLAB Part 1 or Part 2</li> <li>- Higher scores on IELTS reading, listening, Part 1 and Part 2 on the first attempt were protective of censure</li> <li>- Doctors with younger age at registration were more likely to be censured for non-clinical concerns. Older doctors had higher risk of a clinical issue leading to censure.</li> </ul>
Tullet <sup>108</sup>	2003	UK	Pharmacists	<p>To conduct a longitudinal study in order to define trends and identify areas where remedial or preventative support could be focused. Research questions included:</p> <ol style="list-style-type: none"> <li>1. Who were the individuals most likely to transgress?</li> <li>2. What types of misdemeanours were the most common?</li> <li>3. How were the misdemeanours dealt with?</li> <li>4. What were the motives for misbehaving?</li> </ol>	Royal Pharmaceutical Society of Great Britain disciplinary cases for pharmacists between Oct 1988 – Sept 2000	<ul style="list-style-type: none"> <li>- Fraud, drug trafficking, and theft were the most common personal misdemeanours, and failure to keep adequate written records, unsupervised sale of Pharmacy Only medicines, irresponsible actions as a superintendent pharmacist, and labelling offenses were the most common professional misdemeanours</li> <li>- 37% of hearings were for misconduct, and 63% resulted from a court conviction. Many cases involved multiple misdemeanours</li> <li>- Males 7.37 times more likely to be disciplined for misdemeanour, and those of ethnic minority were 3.80 times more likely to be disciplined than Caucasian</li> </ul>

				5. From the above, could strategies for future prevention be devised?		<ul style="list-style-type: none"> <li>- 94% of professional misdemeanours were from small chain or independent community pharmacies</li> <li>- Financial gain and ignorance of the law were the two most commonly cited motives by pharmacists</li> </ul>
Unwin <sup>109</sup>	2014	UK	Physicians	To examine the association between doctors' sex and receiving sanctions on their medical registration, while controlling for other potentially confounding variables	General Medical Council's List of Registered Medical Practitioners database from May 29, 2013 which included all doctors who have been registered to practise at any point from October 20, 2005 to May 28, 2013	<ul style="list-style-type: none"> <li>- Being a female doctor is protective of being sanctioned (OR 0.35). GMC is twice as likely to receive a complaint about a male than a female</li> <li>- Doctors who qualified outside the European Economic Area had the highest proportion of doctors with sanctions. Female doctors were more likely to have qualified in the UK and male doctors were more likely to have qualified outside the EEA</li> <li>- Regarding years in practice, doctors who qualified 31-40 years ago had the highest proportion of sanctions. Female doctors were more likely to have recently qualified. Also, as years in practice increased, the proportion of female doctors decreased.</li> <li>- Doctors registered to both the specialist and general practitioner registers had the highest proportion of doctors with sanctions. A higher proportion of female doctors registered as general practitioners, and a higher proportion of male doctors registered as hospital specialists</li> <li>- Possible reasons for lower sanctions in women include differences in communication style, less years in practice (more likely to work part time and have less patient encounters), and possibly a higher threshold for tolerance for females by the public</li> </ul>
Vander Woude <sup>111</sup>	1993	USA	Nurses	To identify the characteristics associated with chemically	All licensed and practical nurses	<ul style="list-style-type: none"> <li>- Of 35 cases, 65.7% were registered nurses, 23% were licensed practical nurses,</li> </ul>

				dependent nurses in an upper Midwest rural state (South Dakota) who have been disciplined by the Board of Nursing	disciplined by the South Dakota Board of Nursing for problems related to chemical dependency from Nov 1979 to July 1991	and 4 had dual licensure as a practical nurse and registered nurse - Males were overrepresented in the study population comprising 23% of nurses disciplined - Method of diversion varied: theft (40%), falsification of records (32%), substituting drugs with other substances (27%), combination (23%) - Nurses were primarily employed in hospital settings and rural settings (due to rural nature of the state) - Various factors common: family stress, family history of dependency, physically or verbally abusive relationships, mental illness.
Wakeford <sup>112</sup>	2018	The Netherlands	Physicians	To assess the association of poor performance on high-level UK postgraduate exams with the likelihood of fitness to practise sanctions, and in particular, we consider the separate roles of both clinical and knowledge assessments.	Physicians who had fitness to practise sanctions recorded on the publicly available List of Registered Medical Practitioners, combined with MRCGP and MRCP(UK) exam performance scores (marks on the first attempt) between Sept 2008 - Jan 2017	-Fitness to practise sanctions are clearly related to lower exam performance. Those who scored significantly lower on the MRCGP exam were more likely to be sanctioned – both the knowledge and clinical tests of the MRCGP are independent predictors of future sanction - Those disciplined were 2.73 times more likely to be male, 1.355 times more likely to have qualified outside the UK, and risk increased with more years in practise - 6158 doctors had a fitness to practise sanction, which was 1.62% of registered doctors
Wallis <sup>113</sup>	2019	New Zealand	Physicians	To describe disciplinary cases for inappropriate prescribing of drugs of dependence by doctors in New Zealand, with a view to understanding risk factors and outcomes	Medical practitioner disciplinary case proceedings from 1997-2005 from the Medical Practitioners Disciplinary Tribunal and from 2004-2016 for the Health	- Of 236 cases against medical practitioners, 25 (11%) included inappropriate prescribing of drugs of dependence. In all cases, the doctor was found guilty of professional misconduct - Cases of inappropriate prescribing often involved other misconduct such as forging a colleague's signature and sexual relations with patients

					Practitioners Disciplinary Tribunal	<ul style="list-style-type: none"> <li>- Prescribed drugs included opioids in 17 cases, benzodiazepines in 12 cases, pseudoephedrine in 2 cases, and sibutramine in 1 case</li> <li>- 6/25 doctors were removed from the register, 11 were suspended, and the rest had conditions on license to practice</li> <li>- Most doctors male, in practice average of 24 years, in general practice</li> </ul>
Walton <sup>114</sup>	2020	Australia	Dentists Nurses/midwives Pharmacists Physicians Psychologists	The aims of this study were to profile the most common complaints and to examine whether any demographic factors are associated with receiving a complaint for five health professions in Australia (dentistry, medicine, nursing/midwifery, pharmacy, psychology)	All complaints received for medicine, nursing/midwifery, dentistry, pharmacy, and psychology from the Australia Health Practitioner Regulation Agency, the New South Wales Health Professional Councils' Authority, and the NSW Health Care Complaints Commission from July 1, 2012 to December 31, 2013	<ul style="list-style-type: none"> <li>- Overall annual rate was 1.5 complaints per 100 practitioners. This rate varied by profession with dentistry and medicine having the highest rates of complaints</li> <li>- Risk of discipline was over twice as high for males than females, over three times as high for those 45 and older compared to those 35 and younger, and higher for those born overseas (not including UK or Ireland)</li> <li>- The most common reasons for discipline across professions were clinical care, medication, health impairment, communication, and documentation. The most common reasons varied by profession</li> </ul>
Webster <sup>115</sup>	1995	UK	Opticians Optometrists	This article looks at the meaning of professional misconduct and the disciplinary procedure	General Optical Council (UK) disciplinary cases from 1986 - 1993	<ul style="list-style-type: none"> <li>- Of 27 cases, 8 due to professional misconduct, 7 due to criminal offense, 6 due to breach of publicity rules, 1 each due to breach of supervision rules, a case against a Responsible Officer, and Opticians Act offense</li> <li>- More cases against optometrists than opticians likely because there are more optometrists and there are more regulations for optometrists</li> <li>- Assault of a patient will result in loss of license unless there is a strong mitigating factor such as medical or psychiatric reports</li> </ul>

						<ul style="list-style-type: none"> <li>- Failures of professional obligations are serious reasons for discipline often resulting in suspension or erasure</li> </ul>
Yates <sup>116</sup>	2010	UK	Physicians	To determine whether there are risk factors in a doctor's time at medical school that are associated with subsequent professional misconduct	Doctors who had graduated from any 1 of 8 medical schools in the UK from 1958 – 1997 who had a proved finding of serious professional misconduct in a General Medical Council proceeding from 1999 - 2004	<ul style="list-style-type: none"> <li>- Male sex was a predictor of professional misconduct</li> <li>- Poor performance during the early (pre-clinical) years of medical school also a predictor. Those subject to discipline were more likely to have failed exams, repeated parts of the program, or had overall lower level of performance</li> <li>- Most common reasons for complaints were professional and personal behaviour such as dishonesty or improper relationships. Clinical competence was a concern in 38% of cases</li> </ul>
Yeon <sup>117</sup>	2006	USA	Physicians	We hypothesized that the level of board activity, measured by the number of serious disciplinary actions taken by the board, might correlate significantly with board resources, so we performed a statistical analysis using medical board personnel and medical board budget as independent variables and board actions as the dependent variable.	Federation of State Medical Boards	<ul style="list-style-type: none"> <li>- Larger medical boards discipline more physicians than smaller boards. This finding was independent of medical board funding.</li> <li>- Medical board with more staff have more medical board actions per practicing physician per state each year</li> <li>- Overall, medical board resources, structure, and function influence board activity and disciplinary actions</li> </ul>
Zhou <sup>119</sup>	2017	USA	Physicians (Anesthesiology)	1. To test the hypothesis that the lifetime risk of a disciplinary action against a physician's medical license is lower in those who pass both the written and oral exams (i.e., are certified by the American Board of Anesthesiology) compared with those who pass only the written examination.	Federation of State Medical Boards discipline cases for physicians who entered anesthesiology training from 1971 - 2011	<ul style="list-style-type: none"> <li>- Risk of license action is more than 3 times higher in non-board-certified physicians compared to board-certified physicians</li> <li>- Those who had the lowest risk of license actions were those who passed both Part 1 (written exam) and Part 2 (oral exam) on the first attempt. Risk was higher for those who passed both exams but needed more than one attempt, and risk was highest for those who only passed Part 1, did not pass</li> </ul>



				2. To describe the basis and severity of the disciplinary actions in physicians who entered anesthesiology training from 1971 to 2011 and to determine the secular trend in the incidence of these actions during the study period.		<p>either, or did not finish anesthesiology training</p> <ul style="list-style-type: none"> <li>- Risk was similar for those who did not pass Part 1 and for those who pass Part 1 but not Part 2</li> <li>- The three most common violations were actions taken by another state board, failure to disclose required information, and violation of a board statute or rule</li> <li>- Risk of license actions higher in men than women and American graduates</li> <li>- Rate has been stable for 30 years for physicians entering anesthesiology training, with 2-3 new cases per 1000 person years</li> </ul>
Zhou <sup>120</sup>	2018	USA	Physicians (Anesthesiology)	To explore the association between participant performance in the Maintenance of Certification in Anesthesiology program and post certification physician performance as measured by license actions	Federation of State Medical Boards disciplinary cases involving anesthesiologists from 1994 - 2005	<ul style="list-style-type: none"> <li>- Voluntary participant in the Maintenance of Certification (MOC) program was associated with lower incidence of license actions</li> <li>- Failing to complete certification on time (every 10 years) was associated with higher incidence of actions</li> <li>- Introduction of time-limited certification requiring recertification every 10 years was not associated with change in license actions</li> <li>- Rate of license actions was 3.8%</li> </ul>
Systematic Review						
Unwin <sup>110</sup>	2015	International	Physicians	<p>Using a systematic review and meta-analysis, this study seeks to answer:</p> <ol style="list-style-type: none"> <li>1. Was the sex difference observed in UK doctors in 2013 also present in different countries, with different medical systems and cultures?</li> <li>2. Has the sex difference varied over the last four decades?</li> </ol>	Studies describing the association between doctors' sex and experience of medico-legal action	<ul style="list-style-type: none"> <li>- Meta-analysis found that men were 2.45 times more likely to be subject to medicolegal action than women.</li> <li>- Authors concluded that this increased risk for men persists despite increased numbers of women choosing medicine, and despite there being more male doctors in the workforce</li> <li>- Regarding disciplinary action, 12/15 studies found that male physicians were more likely to be subject to discipline than</li> </ul>

				3. Are sex differences present on measures of poor performance other than disciplinary action, such as malpractice litigation?		females, while 3/15 found no statistically significant difference - Of the 32 papers included, 27 showed that men were at higher risk of medicolegal action across disciplinary action, malpractice experience, referral to a medical regulatory body, medicolegal matters with a medical defence organization, criminal cases, and complaints to a healthcare complaints body
Literature Review						
Sansone <sup>95</sup>	2009	USA	Physicians	To present and summarize the available literature related to sexual boundary violations by physicians	Existing literature on sexual boundary violations by physicians	- This review identified 5 studies reviewing disciplinary actions of physicians by licensing bodies (4 from US, one from UK). Also identified surveys related to sexual boundaries (3 from US, 1 each from the Netherlands, New Zealand, and Israel) - More men are offenders (>85%) - Osteopathic physicians 4 times more likely to be disciplined for boundary violations than allopathic physicians - Physicians most at risk for boundary violations are from family medicine, psychiatry, obstetrics/gynecology, but some research has found no differences between specialties - Prevalence of sexual boundary violations from self-report studies is 6.8% while studies reviewing disciplinary action report a prevalence of 1.6%
Literature review and observational research						
DuBois <sup>33</sup>	2019	USA	Physicians	1) Describe prior research by others on the problems of serious ethical violations in medicine, including data on frequencies, harms to patients, and correlates of violations	Federation of State Medical Board disciplinary action cases for physicians who have committed serious ethical violations (improper prescribing of	Literature review: - Increased risk of discipline associated with male gender, age over 45 years, training outside of the US, lack of board certification, solo practice, prior grades/test scores Study:

				2) Analysis of cases to identify factors that are common to most cases, and factors that divide cases into distinct groups or typologies	controlled substances, sexual abuse of patients, unnecessary invasive procedures) and literature review	<ul style="list-style-type: none"> <li>- Most cases involved intentional and repeated offenses over a few years</li> <li>- Most cases involved males, occurred in non-academic settings, settings in which there were oversight problems, and were motivated by selfish reasons such as financial gain or sex</li> <li>- Higher than expected proportion of physicians were not board certified and were internationally educated</li> <li>- In over half of cases, the physician had a substance use disorder or suspected Cluster B personality disorder</li> </ul>
Integrative Review						
Papinaho <sup>88</sup>	2019	Australia Brazil Israel USA	Nurses	<p>To synthesize knowledge in studies about nurses who had been disciplined by their professional regulatory bodies.</p> <p>Research questions:</p> <ol style="list-style-type: none"> <li>1. What methods were used in previous studies about to research nurses who had been disciplined?</li> <li>2. What characteristics were reported with regard to nurses who had been disciplined?</li> <li>3. What reasons for taking disciplinary action against nurses have been reported?</li> <li>4. What kinds of disciplinary action against nurses have been reported?</li> </ol>	Studies published in English between Jan 2006 – Nov 2018, peer reviewed, abstract available, about nursing discipline	<ul style="list-style-type: none"> <li>- 14 studies from the US, one each from Australia, Brazil, and Israel</li> <li>- Found literature on nurse regulatory body discipline to be limited</li> <li>- Most studies reported on reasons for discipline, finding that threatening patient safety was main reason for discipline</li> <li>- 13 studies looked at characteristics associated with discipline, finding that more women are disciplined but men are overrepresented in discipline compared to the nurse population. Registered nurses comprise the majority of cases and most cases occur in hospital or long-term care settings</li> <li>- Nurses with a previous criminal record faced discipline earlier in their career. Nurses were more likely to reoffend if they had committed multiple violations</li> <li>- Penalties were similar across jurisdictions</li> </ul>
Survey						
Damiano <sup>30</sup>	1993	USA	Dentists	To examine the disciplinary activities of the state boards	US dental boards were sent a	- 26 states responded with disciplinary information

				of dental examiners and state peer review committees	questionnaire on disciplinary actions from 1979 - 1987	<ul style="list-style-type: none"> <li>- Discipline rates varied across states and depending on the year- 14% of cases dropped voluntarily and 28% were resolved through mediation, 38% resolved by full committee review, and 20% not resolved after a year</li> <li>- 43% of decisions favoured the patient, 31% favoured the dentists, and 9% were compromised, and the remainder favoured a third party such as insurance company</li> </ul>
Greysen <sup>49</sup>	2012	USA	Physicians and Osteopaths	To gain information about oversight by licensing authorities for physician uses of the Internet or disciplinary consequences for violations of online professionalism	Executive directors of medical and osteopathic boards in the USA	<ul style="list-style-type: none"> <li>- 44/48 boards received at least one report of an online professionalism violation</li> <li>- Inappropriate patient communication online was most common violation (e.g., sexual misconduct), second was use of Internet for inappropriate practice (e.g., internet prescribing without a clinical relationship), third was online misrepresentation of credentials</li> <li>- License restriction, suspension, or revocation occurred in 56% of the boards</li> <li>- Most incidents reported by patients/families, or by other physicians</li> </ul>
Hudspeth <sup>55</sup>	2007	USA	Physicians	The objective of this survey was to report all Advanced Practice Registered Nurse discipline for all states, including the District of Columbia, in a way which would capture as many discipline actions as possible considering the state-to-state variability which exists.	Survey responses from boards of nursing in the USA reporting all resolved complaints resulting in actions against an APRN's license or practice authorization in 2003 - 2004	<ul style="list-style-type: none"> <li>- Most common reasons for discipline were patient abuse and safety issues (30% of cases), unprofessional conduct (28%), chemical impairment (21.5%), and practicing outside scope of practice (20%)</li> <li>- Nurse practitioners made up 69% of cases, and certified registered nurse anesthetists made up 19%</li> <li>- Overall disciplinary rate was 0.54% (688 cases/ 125,882 nurses in sample)</li> </ul>
Scofield <sup>97</sup>	2005	USA	Dental hygienists	To collect quantitative data addressing safety when dental hygienists administer local anesthetics by reviewing disciplinary	State dental boards that authorize dental hygienists to administer local anesthesia	<ul style="list-style-type: none"> <li>-17/18 boards required certification for dental hygienists to administer local anesthetics</li> </ul>

				actions taken when dental hygienists and dentists administered local anesthetics		<ul style="list-style-type: none"> <li>- 13/18 boards reported no disciplinary actions for local anesthetic concerns, and 5/18 said information unavailable</li> <li>- 1/18 boards reported two cases of disciplinary action, while 12 boards reported no cases and 5 boards did not have this information</li> </ul>
Zhong <sup>118</sup>	2009	USA	Nurses	To determine what factors might affect the outcomes of remediation, including the likelihood of recidivism, among nurses who had been the subject of disciplinary action and had been put on probation by a state board of nursing	Nurses subject to discipline in six US states surveyed and publicly available data on criminal conviction and professional discipline in 2001	<ul style="list-style-type: none"> <li>- Category of intentional misconduct or criminal behaviour was the most common reason for discipline (21%)</li> <li>Double the proportion of men in the workforce were disciplined, and a higher proportion of men than women reoffended</li> <li>- Factors associated with those disciplined: Male sex, average age was 43.3, LPNs and RNs more likely to be disciplined in long-term care setting, twice the proportion of licensed practical nurses working was disciplined compared to general population of LPNs</li> <li>- Multiple probationary requirements imposed: employer must provide reports, must practice under supervision, work setting was restricted, or had to complete educational requirements</li> <li>- 39% of nurses disciplined recidivated.</li> <li>Factors associated with reoffending included: history of criminal conviction, switching employers during probation, disciplined for multiple violations, under 40 years old, male sex, and being a licensed practical nurse rather than a registered nurse</li> </ul>
Qualitative Research						
Hanna <sup>51</sup>	2019	UK	Physicians Dentists Pharmacists Nurses/Midwives	The aim of the research was to use topic analysis to examine UK fitness to practise dental, medical, nursing, and pharmacy cases	Fitness to practice cases in the UK for dentists, physicians, nurses/midwives, and	<ul style="list-style-type: none"> <li>- Patient care was the most common topic for medicine, dentistry, and nursing, and criminal offenses was second</li> <li>- For pharmacy, criminal offenses were the most common, drug possession and supply</li> </ul>

				to ascertain what lessons can be learnt. The objectives were as follows: 1) To demonstrate how topic analysis could be employed for examining published fitness to practise cases 2) To apply the NMF (non-negative matrix factorization) model to enable the identification of topics (themes) 3) To determine the extent to which the topics affected the four professions	pharmacists from Aug 2017 – June 2019	was second, and patient care was third. Drug possession was not as common for other professions - Medicine had highest percent of personal behaviour/sexual misconduct cases, followed by pharmacy, dentistry, then nursing - Dishonesty/fraud was also a common topic
Neville <sup>84</sup>	2017	UK	Dentists Dental Nurses	1. To identify the number of fitness to practise cases concerning social media infringements investigated by the GDC from Sept 1 2013 to June 21, 2016 2. To quantitatively examine the nature of each of the cases and identify pertinent themes and underlying patterns of these online professional lapses	Fitness to practise cases investigated by the General Dental Council from Sept 1, 2013 to June 21, 2016	- Of 253 fitness to practise cases, 6 (2.4%) were related to social media infringements -5/6 cases involved Facebook. - Most common type of social media infringement was unprofessional and offensive postings on Facebook - Most common penalties were suspension and reprimand - More social media cases involved women than men, and most cases involved dental nurses
Teherani <sup>105</sup>	2005	USA	Physicians	To identify the domains of unprofessional behaviour in medical students that were linked to disciplinary action.	Physicians who were graduates of the University of California, San Francisco that were disciplined by the Medical Board of California	- Regarding unprofessional behaviour, domains of poor reliability and responsibility, and poor initiative and motivation were identified significantly more often in students that were later disciplined as physicians than those who were not disciplined - Domain of lack of self-improvement and adaptability approached significance
Qualitative and observational research						
Papadakis <sup>87</sup>	2005	USA	Physicians	1) Investigate the association of disciplinary action against practicing physicians with	Federation of State Medical Boards disciplinary cases for	- Unprofessional behaviour in medical was associated with three times the risk of subsequent disciplinary action. Double the

				<p>prior unprofessional behaviour in medical school</p> <p>2) Examine the specific types of behaviour that are most predictive of disciplinary action against practicing physicians with unprofessional behaviour in medical school</p>	<p>physicians who graduated from one of three medical schools in the US since 1970 who were disciplined between 1990 - 2003</p>	<p>proportion of disciplined physicians demonstrated unprofessional behaviour in medical school compared to controls</p> <ul style="list-style-type: none"> <li>- Irresponsibility and diminished capacity for self-improvement were independent predictors</li> <li>- Low MCAT scores, failing a course during medical school, and low grades in the first two years of medical school were predictors of discipline</li> <li>- Family medicine and obstetrics/gynecology overrepresented and pediatrics underrepresented</li> </ul>
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