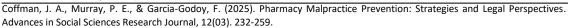
Advances in Social Sciences Research Journal - Vol. 12, No. 03

Publication Date: March 25, 2025 **DOI**:10.14738/assrj.1203.18568.





Pharmacy Malpractice Prevention: Strategies and Legal Perspectives

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ABSTRACT

Pharmacy malpractice poses serious risks to patient safety and exposes healthcare providers to significant legal liability. This study examines the critical strategies for preventing pharmacy malpractice through a comprehensive analysis of preventative strategies, legal frameworks, and best practices. It represents the first investigation into the proportion of legal malpractice cases to identify the most common pharmacy errors and their underlying causes. The study utilized the Google Scholar case law database to identify pharmacy malpractice cases. The search terms included patient age, health status, pharmacy type, healthcare specialty, malpractice types, and the nature of legal claims. The analysis focused on identifying patterns in malpractice allegations and the most frequently implicated healthcare providers and settings. The results revealed that the majority of malpractice allegations occurred during the care, treatment, and diagnosis stages, with most incidents taking place in pharmacies, hospitals, and clinics. Physicians, administrators, and nurses were the most frequently named as defendants in pharmacy malpractice claims. A significant portion of malpractice claims stemmed from a pharmacist's refusal or inability to fill medications. The healthcare specialties most linked to pharmacy malpractice included physical medicine and rehabilitation, internal medicine, pain management, surgery, and emergency medicine. The most prevalent legal claims against pharmacists were for malpractice, negligence, and breach of contract, the average legal settlement amounts for a general pharmacy clinic was between \$132.185 to \$274.887, and the average legal settlement for a compounding pharmacy was \$438,221. These cases often involved misfilled prescriptions, incorrect dosages, adverse drug interactions, and inadequate patient counseling. In conclusion, pharmacy malpractice is unacceptable and preventable. Improving patient safety requires greater attention to accuracy, competence, and diligence in medication management. Strengthening pharmacist training, enhancing oversight, and implementing more robust safety protocols are essential steps toward reducing malpractice incidents and protecting patient health.

Keywords: Pharmacist, Malpractice, Drugs, Medications, Negligence, Medical Errors, Legal claims.

INTRODUCTION

Every death, disability, or severe injury caused by pharmacy malpractice is a preventable tragedy [1]. Medical errors are estimated to cause the death of ninety-eight thousand American patients each year [2]. Medication errors affect seven million American patients annually and result in three and a half million doctor office visits and one million emergency department visits each year [3]. The median error rate for the wrong drug administration ranges from 3% [4] to 79% [5], these preventable healthcare risks, underscore the urgent need for pharmacists to strengthen safety protocols and enhance accuracy in medication management.

Pharmacists serve as critical healthcare providers, entrusted with the responsibility of ensuring the safe and effective use of medications [6]. Their professional duties extend beyond simply dispensing prescriptions; pharmacists play a pivotal role in safeguarding patient health by accurately interpreting prescriptions [7], managing potential drug interactions [8], and providing thorough patient counseling [9]. The accurate interpretation of prescriptions is essential to prevent misfills and dosage errors [10]. A misfilled prescription, whether involving the wrong medication or incorrect dosage, can result in severe health consequences, including toxic side effects, allergic reactions, therapeutic failure, permanent disability, and even death [11].

The timely dispensing of medications is a critical aspect of a pharmacist's duty, as delays in treatment can compromise patient recovery or worsen existing health conditions [12]. Beyond accuracy in dispensing, pharmacists are responsible for identifying and preventing drug interactions and contraindications [13]. This includes recognizing potential adverse reactions when medications are combined and advising patients on proper medication use to prevent harmful outcomes [14]. Proper drug labeling is another essential duty, requiring clear warnings about potential side effects and detailed usage instructions to ensure patients are well-informed about their medications [15]. When pharmacists fulfill these professional responsibilities, they serve as a vital safeguard against medication-related errors and contribute to improved patient outcomes [16]. The dispensing of the wrong drugs in error, accounted for 36.8% of malpractice claims in an insurance liability dataset, while dispensing the wrong dose in error, made up 15.3% of claims [17]. It is essential to mitigate malpractice claims, by reducing the frequency of dispensing errors, though continued vigilance and to make improvements in pharmacy practice processes [18].

Pharmacy malpractice in dispensing the wrong drugs to patients is entirely unacceptable [19], because it poses serious, potentially life-threatening risks to patients [20]. Malpractice occurs when pharmacists fail to meet their professional obligations, leading to harm [21]. Patients, guardians, or relatives can pursue legal claims against pharmacists for malpractice [22], negligence, battery, wrongful death, breach of contract, and other violations to recover medical costs and financial damages resulting from these failures [23]. Legal frameworks are in place

to hold pharmacists accountable for patient harm caused by professional misconduct [24], underscoring the importance of maintaining high ethical standards in pharmacy practice [25]. Pharmacists have a legal duty to minimize the risks to patients, by dispensing the correct medication in the proper dosage and to provide accurate labeling; a failure to meet these obligations can lead to successful claims of malpractice [26], negligence [27], neglect [28], strict liability [29], assault or battery [30], breach of contract [31], breach of warranty [32], and wrongful death [33]. Courts have also recognized a pharmacist's duty to warn patients about potential adverse drug effects [34]. When acting as medication consultants, pharmacists have a duty to accurately assess health issues, recommend appropriate medications, and warn patients about potential risks associated with nonprescription drugs [35]. As pharmacists' responsibilities grow more complex and hazardous, their exposure to legal liability continues to increase [36]. The tort of negligence, has evolved significantly over the past 30 years, leading to an increased liability for practicing pharmacists in both ordinary negligence and criminal negligence cases. This evolution underscores the growing responsibility of pharmacists to adhere to the highest standards of care, as failure to do so can result in legal consequences ranging from civil actions to criminal charges [37].

Previous insights into pharmacy malpractice claims have largely been drawn from insurance provider data [38] and surveys of patients complaints [39]. However, no prior studies have systematically analyzed legal cases alleging pharmacy malpractice using the Google Scholar case law database.

Insurance malpractice studies have consistently shown that neurosurgeons, particularly spine surgeons, are at the highest risk of facing malpractice claims. Litigation in spine surgery has been shown to result in average verdicts exceeding USD \$1 million per case [40]. Remarkably, up to 19.1% of neurosurgeons face a malpractice claim annually, and by the age of 65, nearly 99% of physicians in high-risk specialties will have encountered at least one malpractice claim [41]. In comparison, 7.4% of all physicians experience a malpractice claim, with 1.6% resulting in a payment to the claimant [41]. This highlights that a significant portion of claims, approximately 78% do not result in financial compensation [42]. The annual likelihood of a physician facing a malpractice claim varies significantly by specialty: 19.1% of neurosurgeons, 18.9% of thoracic-cardiovascular surgeons, and 15.3% of general surgeons face claims, while only 5.2% of family medicine practitioners, 3.1% of pediatricians, and 2.6% of psychiatrists are affected [41]. The average indemnity payment across all specialties is \$274,887, with a median of \$111,749 [41]. Payments vary widely by specialty, with dermatology averaging \$117,832 and pediatrics \$520,923 [41]. By the time they reach 65, approximately 75% of physicians in low-risk specialties will have faced a malpractice claim, whereas this figure rises to 99% for physicians in high-risk specialties [43]. These statistics emphasize the heightened legal exposure faced by practitioners in high-risk specialties, underscoring the need for robust risk management strategies in these fields [44].

Avoiding a malpractice lawsuit requires a physician's ability to proactively anticipate and address potential issues in diagnosis and treatment. This involves not only a deep understanding of the principles of informed consent but also a thorough awareness of the standard of care. By consistently meeting these standards, physicians can mitigate the risk of legal claims and foster trust with their patients [45].

This study aims to fill that gap by examining key variables, including patient age, health status, pharmacy type, healthcare specialty, the types of malpractice alleged, and the nature of legal claims. By identifying patterns in malpractice claims and examining which healthcare providers and practice settings are most frequently involved, the study will offer critical insights into how pharmacy practice can be improved to reduce the risks associated with pharmacy-related malpractice.

METHODS

On March 20-22, 2025, a search was conducted on Google Scholar for the number of legal cases using the term "pharmacy malpractice." The pharmacy malpractice search was then combined with additional search terms for other criteria, such as patient age, health status, pharmacy type, healthcare specialty, malpractice types, and the nature of legal claims etc. The raw data was then expressed as a proportion to identify the percentage risks for each of the individual criteria for pharmacy malpractice. The raw numerical data for the numbers of the legal cases for pharmacy malpractice was then analyzed using Kruskal-Wallis X^2 statistical tests [46] (JMP Statistical Discovery, Cary, NC, USA) at a significance level of p<0.05, to determine if there were significant differences between the medians of the google search results for the reasons for pharmacy malpractice. No institutional ethical review of this research was necessary, because it used publicly available data, which is exempt from the ethical review requirements [47].

RESULTS

Ages of Patients in Pharmacy Legal Cases

A significant proportion of patients involved in pharmacy malpractice cases were young and vulnerable. Children accounted for 38% of cases, followed by babies and adults, both at 18% and teenagers at 16%. In contrast, adults and elderly patients represented a smaller share, comprising only 10% of the cases (X^2 , p<0.05), as shown in Figure 1.

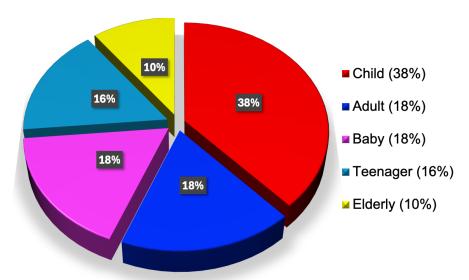


Figure 1: Patient ages in pharmacy malpractice legal cases.

Patient Health Status in Pharmacy Malpractice Legal Cases

Unexpectedly, the majority of patients involved in pharmacy malpractice cases reported being in good health, accounting for 50% of claims. Less than half of the cases involved patients with disabilities (15%) or compromised health conditions (8%). Notably, a significant proportion of

cases (14%) involved patient deaths allegedly resulting from malpractice (X^2 , p<0.05), as shown in Figure 2.

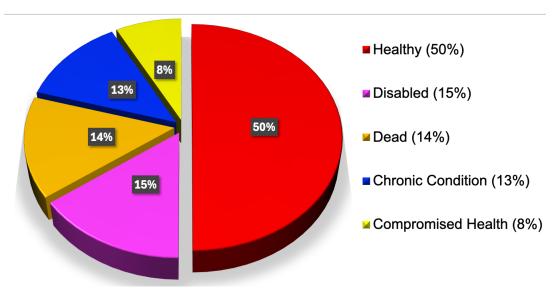


Figure 2. Patient health status in pharmacy malpractice legal cases.

Sex of Patients in Pharmacy Malpractice Legal Cases

The majority of pharmacy malpractice claims (52%) involved female patients (X^2 , p<0.05), which closely reflects the gender distribution within the general population, as shown in Figure 3.

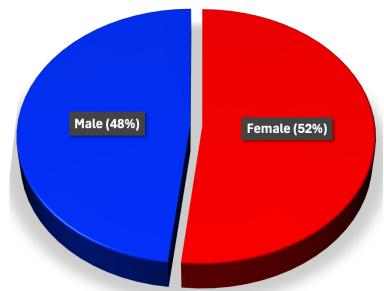


Figure 3: Sex of patients in pharmacy malpractice legal cases.

Pharmacy Malpractice Occurrence During Different Phases of Professional Care

The majority of pharmacy malpractice cases occurred during the patient care (26%), treatment (24%), and diagnosis (16%) stages. Fewer claims were linked to the emergency/accident phase (15%), referral stage (9%), planned care (8%), and outpatient care (2%) (X^2 , p<0.05), as shown in Figure 4.

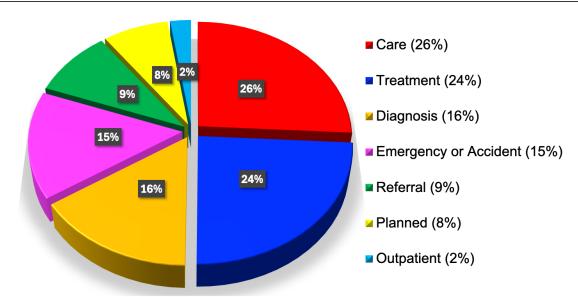


Figure 4: Pharmacy malpractice occurrence during different phases of professional care.

Pharmacy malpractice across different types of pharmacy clinics.

The majority of the pharmacy malpractice cases occurred within the Pharmacy premises (27%), or in Hospital (19%), or in a Pharmacy clinic location (12%), Prison (8%), Emergency room (8%), Nursing home (7%), First Aid (7%), Rehabilitation (5%), Ship or vessel (2%), and the least were in Ambulances (2%) (X^2 , p<0.05), as shown in Figure 5.

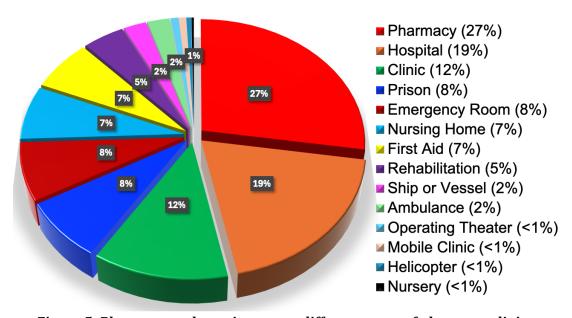


Figure 5: Pharmacy malpractice across different types of pharmacy clinics.

Pharmacy Malpractice Across Various Employment Positions.

The majority of pharmacy malpractice claims are directed at physicians (18%), administrators (15%), and nurses (12%), while only 8% of total claims are filed against pharmacists. Fewer claims involve dentists (7%), first aiders (6%), medical specialists (6%), professors (6%), residents or trainees (4%), nurse aides (4%), students (4%), technicians (3%), pathologists

(2%), radiologists (2%), hygienists (2%), dieticians (<1%), and microbiologists (<1%) (X^2 , p < 0.05), as shown in Figure 6.

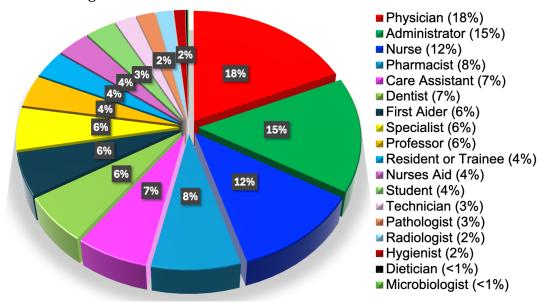


Figure 6: Pharmacy malpractice across various employment positions.

Reasons for Pharmacy Malpractice Legal Cases

The most common cause of malpractice claims against pharmacists was the refusal to fill medication (13%), followed closely by an inability to fill medications (12%).

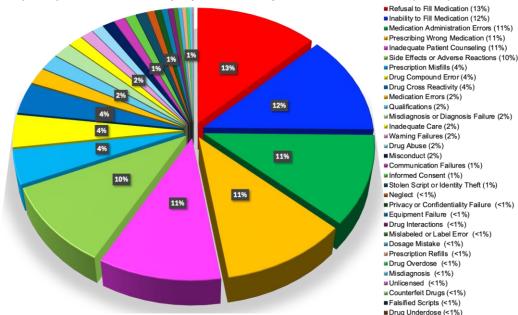


Figure 7: Reasons for pharmacy malpractice legal cases.

Other major reasons included administration errors (11%), prescribing the wrong medication (11%), inadequate patient counseling (11%), drug side effects or adverse reactions (10%), prescription misfills (4%), drug compounding errors (4%), and drug cross-reactivity (4%). Less frequently cited reasons for malpractice claims included medication errors (2%), lack of qualifications (2%), misdiagnosis or diagnostic failure (2%), inadequate care (2%), failure to

provide proper warnings (2%), drug abuse (2%), and misconduct (2%) (X^2 , p < 0.05), as shown in Figure 7.

Pharmacy Malpractice Legal Cases by Healthcare Specialties

The majority of pharmacy malpractice claims are associated with the healthcare specialists of physical medicine and rehabilitation (27%), internal medicine (7%), pain (7%), surgery (6%), and emergency medicine (5%). The minority of pharmacy malpractice were against the other healthcare specialties, including physical therapy (4%), dentistry (4%), first aid (3%), psychiatry (3%), colon and rectal surgery (2%), cancer (2%), preventative medicine (2%), intensive care (2%), the other healthcare specialties comprise of less than 1% of the total claims, (X^2 , p < 0.05), as shown in Figure 8.

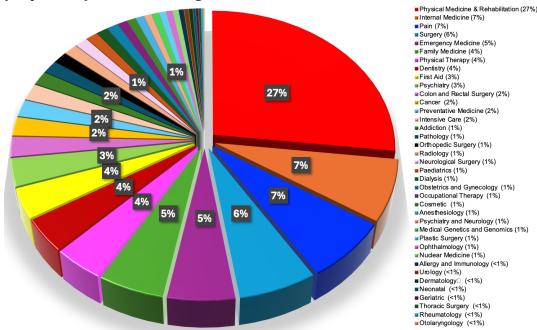


Figure 8: Pharmacy malpractice legal cases by healthcare specialties

Pharmacy Malpractice and Its Relationship to Medical Care in Legal Cases

The majority of the pharmacy malpractice claims were related to medical care alleging pain and suffering (8%), diagnosis failure (7%), failed surgery (7%), death (6%), surgery (6%), trip and fall (5%), inadequate treatment (5%), side effects (4%), surgical errors (4%) surgical errors (4%) warnings (4%) accidents (4%), and delayed diagnosis (3%). Fewer than 3% of legal claims of pharmacy malpractice were related to medical care alleging infection, unnecessary surgery, disability, birth injuries, equipment failure, burn, adverse reactions or complications, pregnancy, trauma, fracture, anesthesia errors, dermatitis, itching or rash, transplant, bruise, amputation, hair loss, tooth extraction, transfusion, disfigured, laceration, fainting, infarction, necrosis or osteonecrosis, dementia, paresthesia, and needlestick injuries (X^2 , p < 0.05), as shown in Figure 9.

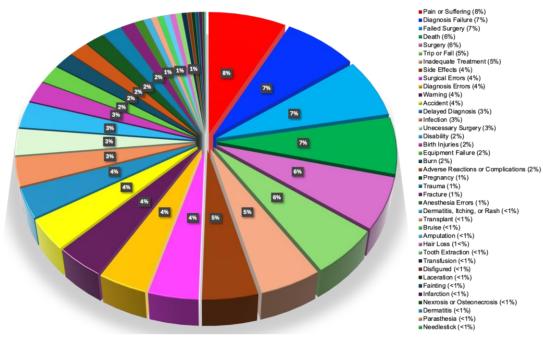


Figure 9: Pharmacy malpractice and its relationship to medical care in legal cases.

Medication Errors in Pharmacy Malpractice

The majority of pharmacy malpractice medication errors were for weight loss (14%), antineoplastics for cancer (8%), cough suppressants (8%), antianxiety or anxiety (8%), hormonal birth control pills (7%), cardiovascular (7%), antibiotics (6%), sex hormones for females (4%) and males (4%), antibacterials or antibactericidals (4%) and Opioids (3%).

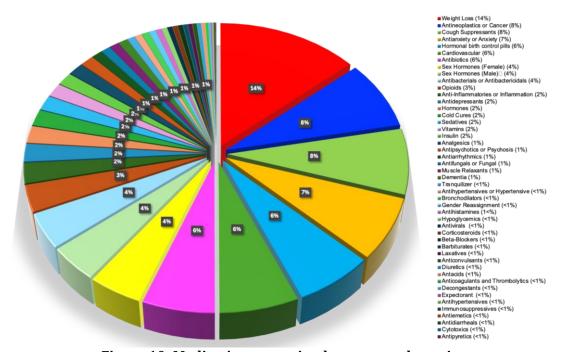


Figure 10: Medication errors in pharmacy malpractice.

Less than 2% of the pharmacy malpractice medication errors were for anti-inflammatories or inflammation, antidepressants, hormones, cold cures, sedatives, vitamins, insulin, analgesics, antipsychotics or psychosis, antiarrhythmics, antifungals or fungals, muscle relaxants, dementia, tranquilizer, antihypertensives or hypertensive, bronchodilators, gender reassignment, antihistamines, hypoglycemics, antivirals, corticosteroids, beta-blockers, barbiturates, laxatives, anticonvulsants, diuretics, antacids, anticoagulants and thrombolytics, decongestants, expectorant, antihypertensives, immunosuppressives, antiemetics, antidiarrheals, cytotoxics, and antipyretics (X^2 , p < 0.05), as shown in Figure 10.

Pharmacy Malpractice Causes of Action, Torts and Breach Of Contracts

A majority of legal cases against pharmacists alleged malpractice (27%), negligence (22%), and breach of contract (9%). The minority of legal cases against pharmacists alleged product liability (8%), wrongful death (8%), strict liability (8%), fraud or misrepresentation (7%), assault (4%), privacy (3%), battery (3%), identity theft (2%) and larceny (<1%), (X^2 , p < 0.05), as shown in Figure 11.

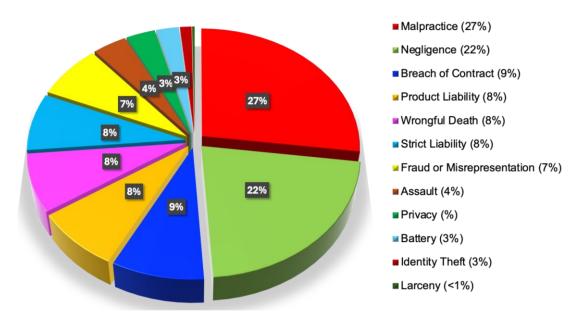


Figure 11: Pharmacy malpractice causes of action, torts and breach of contracts.

DISCUSSION

This is the first study of its kind to analyze a comprehensive case law database to identify the most and least frequent causes of pharmacy malpractice. The findings fill a significant knowledge gap by highlighting the key pharmacy-related factors that contribute to legal malpractice claims. This valuable insight can help pharmacists prioritize areas where increased attention is needed to prevent malpractice claims.

All types of pharmacy malpractice is both unacceptable and preventable [19]. By focusing on the critical areas of malpractice identified in this study, pharmacists can reduce the risks of drug-related errors and negligence, ultimately improving patient safety and health outcomes. The most fundamental pharmacy malpractice issues are summarized in Figure 12.

Failure to Failure to Prescription **Identify** Provide **Mislabeling Compounding Errors** or Incorrect Proper **Errors** Drug Dispensing Counselling **Interactions Instructions** the wrong Not advising or Allergies Incorrect Mistakes in medication Not checking labeling of on potential preparing Incorrect side effects for contramedication customized dosage or indications bottles or proper use medications instructions Misleading or with other Inadequate Providing medications unclear warnings Incorrect medication to Failing to dosing about formulation or the wrong account for medication instructions contamination patient allergies risks

Figure 12: Fundamental Issues in Pharmacy Malpractice.

This study has identified the proportions of 219 pharmacy malpractice variables through eleven analyses (Figures 1 to 11), highlighting the relative significance of both major and minor factors. The major variables included patient age, health status, pharmacy type, healthcare specialty, malpractice types, and the nature of legal claims. The results showed that most malpractice allegations occurred during the care, treatment, and diagnosis stages, with incidents primarily taking place in pharmacies, hospitals, and clinics. Physicians, administrators, and nurses were the most frequently named defendants in pharmacy malpractice claims. A significant portion of claims stemmed from a pharmacist's refusal or inability to fill medications, highlighting the need for pharmacists to better anticipate patients' prescription needs and maintain an adequate stock of medications to meet dispensing demands.

The healthcare specialties most commonly linked to pharmacy malpractice included physical medicine and rehabilitation, internal medicine, pain management, surgery, and emergency medicine. This suggests a higher risk of issues in these areas, which could be mitigated by improving communication with physicians to resolve prescription problems before malpractice occurs.

The most prevalent legal claims against pharmacists were for malpractice, negligence, and breach of contract, often involving misfiled prescriptions, incorrect dosages, adverse drug interactions, and inadequate patient counseling. This indicates that pharmacies should enhance their prescription and dispensing protocols and improve the quality of medication counseling to prevent malpractice.

Improving patient safety requires increased focus on accuracy, competence, and diligence in medication management. Strengthening pharmacist training, enhancing oversight, and implementing more robust safety protocols are essential steps toward reducing malpractice incidents and protecting patient health. Therefore, the pharmacy malpractice prevention strategies identified from the results of this study are shown in Figure 13.



Figure 13: Pharmacy malpractice prevention strategies.

Patient Ages in Pharmacy Malpractice Legal Cases

Most of the population consists of adults, who are also the primary consumers of medications, due to the higher prevalence of chronic conditions, age-related health issues, and general medical care needs [48]. As such, it might be reasonable to expect that the majority of pharmacy patients involved in malpractice cases would be adults, given their significant role in healthcare utilization [49]. However, the findings from the data present a surprising trend, revealing that the majority of patients involved in pharmacy malpractice cases were actually young and vulnerable individuals, including children (38%), babies (18%), and teenagers (16%). Which is a concerning trend given the potential vulnerabilities of these populations to medication errors [50]. It is important to note that teenagers, children, and babies have unique physiological characteristics that may make them more susceptible to medication errors, such as dosage miscalculations, incorrect drug formulations, or the administration of inappropriate medications [51].

Moreover, while adults and the elderly generally account for a larger share of total medication consumption [52], they only represented a minority (10%) of those involved in pharmacy malpractice cases. Elderly patients though often at higher risk for adverse drug events due to polypharmacy and age-related changes in metabolism [53], do not appear to be as commonly represented in these malpractice cases, which may suggest a need for more targeted interventions in younger populations.

These findings highlight the importance of focusing on vulnerable groups, such as children, babies, and teenagers, when developing prevention strategies for pharmacy malpractice. Accordingly, pharmacists should adjust their training programs, medication management systems, and patient safety measures to specifically address the unique risks faced by these younger age groups. For instance, there may be a greater need for clearer labeling, age-appropriate dosing, and improved communication between pharmacists and caregivers to ensure medications are being administered safely to young patients. In particular, the complexity of medication administration in infants and young children is often heightened by the need for liquid medications, dosage adjustments based on weight, and a lack of standardized dosing forms. Ensuring that pharmacists are thoroughly trained in these areas, as well as maintaining robust communication with parents or guardians, could help minimize the risk of errors. For teenagers, it is also crucial to focus on medication adherence and patient education, as adolescents may be more likely to miss doses or misuse medications [54].

Furthermore, pediatric pharmacists and healthcare providers should be equipped with tools and resources that enable accurate dispensing and monitoring of medications for younger patients. Technology, such as automated dispensing systems or barcode verification, could play a key role in improving accuracy and reducing the potential for mistakes.

While it is typically expected that adults would make up the majority of pharmacy malpractice cases, the data indicates a concerning trend where children, babies, and teenagers are disproportionately affected. These findings underscore the need for targeted prevention strategies, education, and safety measures to better protect young, vulnerable patients from medication-related injuries. By adjusting their practices and focusing on this high-risk group, pharmacists can play a crucial role in reducing pharmacy malpractice claims and improving overall patient safety for children and adolescents.

Patient Health Status in Pharmacy Malpractice Legal Cases

The correlation between patient health status and pharmacy malpractice risk was previously uncertain [55], as various factors, such as the nature of the medication prescribed, the patient's age, and the complexity of their health conditions, can all influence the likelihood of malpractice claims. While it may seem intuitive that unhealthy patients would be at a higher risk for drug-related malpractice due to their more complex medical needs and higher medication usage, the relationship between health status and the occurrence of pharmacy errors is not entirely straightforward [56].

Unexpectedly, the results from the data showed that 50% of patients involved in pharmacy malpractice cases claimed to be healthy, which challenges the assumption that patients with pre-existing health conditions are the most at risk [57]. Fewer than half of the patients involved in these cases were reported to be disabled (15%) or to have compromised health (8%). This

suggests that healthy individuals are, in fact, a significant portion of the population affected by pharmacy malpractice. These findings underscore the fact that pharmacy-related errors are not solely confined to patients who are already dealing with complex medical issues but can also have a profound impact on otherwise healthy individuals. Healthy patients may experience adverse drug reactions, misfilled prescriptions, or medication errors that lead to injury, disability, or even death.

Notably, a significant percentage of the malpractice cases involved patient deaths (14%) linked to alleged pharmacy errors. This is particularly concerning because it highlights the severity of potential consequences for patients who are otherwise healthy, yet still suffer fatal consequences due to medication-related mistakes. The fact that such a substantial portion of cases involves fatalities suggests that pharmacies should be especially vigilant when it comes to safeguarding healthy patients from errors that could lead to death or serious harm. It is not only the more vulnerable, chronically ill patients who are at risk, but also those who may have no apparent health issues until a medication error triggers a serious adverse outcome.

These findings imply that pharmacy malpractice prevention strategies should not be focused solely on patients who are already known to have health conditions or disabilities. Instead, pharmacists need to implement comprehensive safety measures that address the risks for all patients, including those who are healthy. For example, while the risk of harm from medication errors may be higher in patients with complex conditions, healthy patients may still be impacted by misdiagnosed conditions, incorrect drug prescriptions, or medication side effects that could result in serious consequences. Thus, strengthening medication safety protocols and improving accuracy in prescribing and dispensing medications should be a key priority for pharmacists. This includes double-checking prescriptions, using automated dispensing systems, and implementing clinical decision support tools to help identify potential errors before they reach the patient. Additionally, enhancing patient education about the proper use of medications and the potential risks of drug interactions can help patients avoid unnecessary complications, particularly those who may not be aware of the dangers of specific medications. By focusing on enhancing accuracy, communication, and safety standards across the board, pharmacies can reduce the occurrence of malpractice claims and safeguard the health of patients, regardless of their baseline health status.

Sex of Patients in Pharmacy Malpractice Legal Cases

Females make up the majority of the population and are expected to be the primary consumers of prescription drugs, largely due to their longer life expectancy [58] and higher likelihood of seeking medical care [59], particularly for chronic conditions that require ongoing medication management. As a result, one might assume that female patients would be more commonly involved in pharmacy malpractice claims. However, the correlation between patient sex and pharmacy malpractice remains unclear, as other factors, such as the nature of the medication prescribed, the complexity of patient care, and systemic issues within healthcare settings, can all influence the frequency and types of malpractice claims filed. The results from the data indicate that females accounted for 52% of pharmacy malpractice claims, which closely mirrors the general female-to-male ratio in the population [60]. This statistic is important because it suggests that the distribution of pharmacy malpractice claims is relatively proportional between the sexes, with no significant gender-based disparity in terms of claim frequency.

Moreover, the findings suggest that pharmacy malpractice claims are not disproportionately skewed toward one gender, which may indicate that systemic issues in the pharmacy profession, such as medication errors, misfills, inadequate patient counseling, and lack of proper oversight, affect patients of both sexes in similar ways. This might be because the nature of pharmacy malpractice, whether it involves incorrect dosages, missed drug interactions, or poor counseling, can impact all patients regardless of gender, and thus the number of claims remains proportionate to the overall population.

In terms of implications, the results suggest that healthcare systems should focus on improving pharmacist training, medication management systems, and patient counseling protocols to minimize risks across the board, without a gender bias in approach. The efforts to reduce pharmacy malpractice claims should be universal, targeting common issues that affect all patients, rather than being based on purely demographic characteristics. The fact that pharmacy malpractice claims are distributed relatively evenly across genders means that improvements in medication safety, accuracy, and patient education will benefit both male and female patients alike, thereby enhancing overall public health outcomes and reducing the risk of legal claims.

Pharmacy Malpractice Occurrence During Different Phases of Professional Care

The correlation between the different phases of professional care and pharmacy malpractice cases was previously unclear, as there is limited data specifically linking certain stages of care with higher rates of malpractice [61]. However, the results revealed interesting trends in how pharmacy malpractice cases are distributed across various phases of patient care. According to the present results, most pharmacy malpractice cases occurred during the care phase (26%), followed by the treatment phase (24%) and diagnosis phase (16%). These stages, which involve direct patient interaction and the administration of medications, represent critical points in the healthcare process where medication errors are more likely to occur.

The care phase, where pharmacists are often responsible for assessing patient needs, managing medication regimens, and counseling patients on proper drug use, presents a particularly highrisk period for malpractice [62]. Errors during this stage may involve improper medication dispensing, insufficient patient counseling, or failure to address drug interactions. In these instances, patient safety can be significantly compromised, which could lead to serious adverse events and ultimately result in legal claims. For instance, a pharmacist may fail to recognize a drug-drug interaction, or they might not provide adequate guidance on how to manage potential side effects, leading to complications in patient health.

The treatment phase, which involves the ongoing administration of medications and adjustments to treatment plans based on patient responses, also presents significant risks. Pharmacists are expected to monitor patient responses to medications and make adjustments when necessary. However, errors such as prescribing the wrong drug, administering the incorrect dosage, or failing to recognize adverse reactions can result in patient harm. This phase is particularly sensitive because it often involves patients who are already in a fragile state of health, making medication errors during this stage even more critical.

The diagnosis phase (16%), where pharmacists may be involved in reviewing diagnostic information and determining the appropriate therapeutic approach, also plays a significant role

in the prevention of malpractice. Misinterpretation of diagnostic data, failure to consider certain patient conditions when choosing medications, or not fully understanding the implications of a diagnosis can all lead to errors. In some cases, pharmacists may be required to assist in making decisions about treatment options based on the diagnosis, and errors at this stage can lead to malpractice claims if the wrong drug is prescribed or if treatment does not align with the patient's condition.

Fewer cases of pharmacy malpractice were reported during the emergency/accident phase (15%), referral phase (9%), planned care phase (8%), and outpatient phase (2%) of pharmacy care. While these stages may still involve some risk for medication errors, the lower frequency of claims in these areas suggests that the most critical points for pharmacy-related malpractice occur during the earlier stages of care, treatment, and diagnosis.

The emergency/accident phase, which typically involves immediate or urgent care, often requires rapid decision-making, and the focus is primarily on stabilizing the patient. Errors may still occur in this phase, such as giving the wrong drug in an emergency or failing to address known allergies, but the fast-paced nature of the environment often minimizes opportunities for complex medication errors [63]. The referral phase (9%), where patients are referred to specialists or other healthcare providers, is also associated with fewer malpractice claims, potentially because this stage often involves less direct medication management by pharmacists and more coordination of care. Similarly, planned care (8%) and outpatient care (2%) stages tend to involve more routine medication management, and errors in these phases may be less common compared to more acute phases like treatment or diagnosis.

These findings suggest that the care, treatment, and diagnosis phases of the healthcare process present the highest risks for pharmacy-related errors. These stages involve key interactions between pharmacists and patients, where accurate medication management, careful patient monitoring, and thorough drug counseling are crucial. As such, it is essential for pharmacies to implement preventative measures and safety protocols during these critical stages. These might include double-checking prescriptions, improving patient education on the importance of adhering to prescribed treatments, enhancing communication between pharmacists and other healthcare providers, and utilizing technology solutions such as automated dispensing systems and clinical decision support tools to minimize errors.

Thus, while errors can occur at any stage of care, the findings indicate that a particular focus on the care, treatment, and diagnosis stages will have the greatest impact on reducing pharmacy malpractice claims. Targeted efforts in these phases will help to ensure that medications are dispensed accurately, patients are adequately educated, and appropriate treatment plans are followed, ultimately improving patient safety and reducing the risk of legal claims against pharmacists.

Pharmacy Malpractice Across Different Types of Pharmacy Clinics

The impact of the type of pharmacy clinic on malpractice claims remains uncertain, as there is insufficient definitive data linking specific pharmacy settings to higher or lower malpractice risks. This is likely due to the consistent influence of human factors in medication and dispensing errors across different settings [64]. However, the available data reveals some interesting trends that can help inform future strategies for reducing malpractice incidents. The

majority of pharmacy malpractice cases occurred within pharmacy premises (27%), followed by hospitals (19%) and pharmacy clinic locations (12%). These findings suggest that pharmacy settings where medications are frequently dispensed and managed, such as pharmacies and hospitals, tend to present higher risks for malpractice claims. This is likely due to the complex nature of medication management in these environments, where pharmacists are responsible for ensuring that prescriptions are accurately filled, drug interactions are minimized, and patients receive proper counseling.

Pharmacies, as a primary point of medication dispensing, deal with high volumes of prescriptions on a daily basis, which increases the likelihood of human errors such as misfills, incorrect dosages, and failure to provide appropriate patient instructions [65]. Hospitals, where pharmacists often work in high-pressure environments, are also prone to similar challenges, including managing complex drug regimens for critically ill patients, overseeing drug interactions, and ensuring timely medication administration. The complexity of healthcare within these institutions, along with the involvement of multiple healthcare professionals, increases the chances of errors or communication breakdowns that could lead to malpractice claims.

Other locations, such as prisons (8%), emergency rooms (8%), nursing homes (7%), first aid settings (7%), and rehabilitation centers (5%), reported fewer malpractice claims, but still accounted for a significant portion of the data. Prisons and nursing homes, for instance, represent environments with vulnerable patient populations who often require specialized medication management [66]. In these settings, pharmacists may face challenges related to patient non-compliance, drug abuse, or mental health issues, and lack of consent and confidentiality, all of which can contribute to malpractice claims [67]. Similarly, emergency rooms, where quick decisions must be made under pressure, may see incidents where drug prescriptions or dosages are incorrectly administered due to time constraints, leading to errors and potential legal issues.

First aid settings (7%) and rehabilitation centers (5%) also recorded malpractice claims, though these figures were somewhat lower. In these settings, the focus is often on providing immediate care or supporting patients in recovery, which can include medication management. However, the likelihood of encountering serious drug-related errors may be lower compared to hospital or pharmacy environments, as the medication interventions are generally more limited in scope.

Interestingly, ships or vessels (2%) and ambulances (2%) had the lowest incidence of malpractice claims, which may be attributed to the more transient nature of care in these environments. Medications dispensed on ambulances or ships tend to be emergency-based [68] and often involve life-saving treatments, leaving less room for routine errors such as misfills or prescription mistakes. Additionally, these settings may have more stringent protocols for handling medications [69], given the high stakes involved in emergency care, contributing to fewer malpractice incidents.

These findings suggest that pharmacy malpractice risks are highest in pharmacy and hospital settings, indicating a need for enhanced safety protocols and oversight in these environments. As these two settings involve the most frequent dispensing of medications and a higher volume

of patient interactions, they are inherently more vulnerable to errors [70]. Strengthening quality control measures, improving pharmacist training, and ensuring consistent communication among pharmacy staff and other healthcare providers in these settings are essential steps to reducing malpractice claims. Additionally, automating or digitizing prescription filling processes, conducting more thorough medication reconciliation, and employing pharmacovigilance systems can help prevent errors that may arise from manual processes or oversight in high-pressure environments.

In summary, while the type of pharmacy clinic plays a role in malpractice claim frequencies, the overarching takeaway is that enhancing medication safety, improving communication, and bolstering oversight in all settings where pharmacy services are provided will contribute to reducing malpractice risks across the healthcare system.

Pharmacy Malpractice Across Various Employment Positions

The majority of pharmacy malpractice claims are filed against physicians (18%), administrators (15%), and nurses (12%), while only 8% of total claims are directed at pharmacists. Despite pharmacists being integral to the medication management process, they are not the most frequently targeted professionals in malpractice and negligence cases [71]. This discrepancy may be due to a variety of factors, such as the perception that prescribing errors and patient care issues are primarily the responsibility of physicians or that other healthcare professionals are more directly involved in patient outcomes, leading to a culture of defensive medical practice [20][72]. Nevertheless, it is important for pharmacists to recognize that their role in preventing medication errors, educating patients, and ensuring proper drug therapy is crucial in reducing the overall risk of malpractice claims.

Fewer claims were made against other healthcare professionals, including dentists (7%), first aiders (6%), medical specialists (6%), professors (6%), residents or trainees (4%), nurse aides (4%), students (4%), technicians (3%), pathologists (2%), radiologists (2%), hygienists (2%), dieticians (<1%), and microbiologists (<1%). While the frequency of malpractice claims is lower in these groups, the claims still highlight areas where patient safety can be improved and where accountability must be maintained. For example, claims against dentists and first aiders often relate to procedural mistakes or misdiagnoses, while claims against residents or trainees emphasize the importance of adequate supervision and ongoing education [73].

These findings suggest that while pharmacists are not the most frequently targeted professionals in malpractice claims, improving medication safety and professional accountability across all healthcare roles remains essential for reducing overall malpractice risks. Every healthcare professional, whether a physician, pharmacist, nurse, or technician, plays a role in delivering safe and effective care to patients. As such, targeted interventions that foster interprofessional collaboration, enhance patient education, and promote clear communication among healthcare providers are key to reducing the incidence of errors that lead to malpractice claims.

Reasons for Pharmacy Malpractice Legal Cases

The leading cause of pharmacy malpractice claims was refusal to fill medication (13%), followed closely by inability to fill medications (12%). These two categories are particularly concerning as they reflect situations where patients are either denied necessary medications

or encounter delays in obtaining critical prescriptions. In many cases, this can have serious repercussions for patients, especially those with chronic conditions or urgent medical needs [74]. Denying a prescription or being unable to fulfill it, whether due to pharmacy stock issues, insurance barriers, or miscommunication, can lead to patient harm, worsening health outcomes, and, in some cases, legal action [75]. Addressing these challenges requires improving communication between pharmacies, physicians, and patients to ensure that medication access is never impeded due to preventable issues, and that patients are informed promptly if their prescriptions cannot be filled.

Other significant causes of malpractice claims included administration errors (11%), prescribing the wrong medication (11%), inadequate patient counseling (11%), and drug side effects or adverse reactions (10%). These categories highlight the critical role pharmacists play in ensuring both the safety and efficacy of medication regimens. Administration errors could involve giving the wrong dose, wrong form, or failing to administer a drug properly. Such mistakes can lead to serious patient harm, particularly when dealing with high-risk medications, such as anticoagulants or controlled substances.

Prescribing the wrong medication is another frequent cause of malpractice claims, although this is often the responsibility of the prescribing healthcare provider [76]. However, pharmacists still play an important role in detecting and preventing medication errors, especially when there is a risk of drug-drug interactions or allergies that could harm the patient. Effective collaboration between pharmacists and prescribing clinicians is essential to prevent such errors.

Inadequate patient counseling is another major source of claims. Pharmacists are responsible for providing patients with the information they need to use their medications safely, including guidance on dosage, potential side effects, and drug interactions [77]. Failure to properly counsel patients can lead to misuse, adverse reactions, or non-compliance, all of which could potentially result in legal claims [77]. Furthermore, patients may be unaware of the risks associated with their medications or how to use them correctly, leading to adverse outcomes. Drug side effects or adverse reactions (10%) are also a significant cause of claims, as these can occur despite the pharmacist's best efforts to ensure safety. Adverse drug reactions can sometimes be unpredictable [78], but pharmacists can minimize the risk by conducting thorough medication reviews, monitoring for potential interactions, and educating patients on what to expect from their medications.

Less frequent causes of pharmacy malpractice claims included prescription misfills (4%), drug compounding errors (4%), and drug cross-reactivity (4%). While these issues are less common, they still represent critical points where errors can occur. Prescription misfills can involve providing the wrong medication or incorrect dosage, and drug compounding errors can occur when pharmacists create custom compound medications that don't meet the intended requirements [79]. Similarly, drug cross-reactivity, where two drugs interact in a way that causes a harmful reaction, can pose significant risks to patients, particularly if they are not carefully monitored [80]. By addressing these areas proactively, pharmacies can reduce the risk of malpractice claims, improve patient outcomes, and ensure a safer and more effective healthcare experience for all.

Pharmacy Malpractice Legal Cases by Healthcare Specialties

The majority of pharmacy malpractice claims are strongly associated with healthcare specialists in physical medicine and rehabilitation (27%), internal medicine (7%), pain management (7%), surgery (6%), and emergency medicine (5%). These specialties are often involved in complex patient care, where medication management plays a crucial role in treatment success [41][81]. Given that physical medicine and rehabilitation involves patients recovering from injuries or surgeries, and internal medicine and pain management often involve long-term medication regimens, pharmacists in these fields are frequently tasked with ensuring that medications are prescribed, dispensed, and monitored appropriately. Surgery and emergency medicine also involve high-pressure environments where drug interactions, dosing errors, and medication mismanagement can have serious consequences.

The significant presence of malpractice claims in these specialties [41][81], indicates the critical need for pharmacists to work closely with healthcare providers in these fields to ensure proper medication management. For instance, pain management often requires careful coordination of analgesics, including opioids, which can present high risks for misuse or overdose if not managed properly [82]. Pharmacists in these areas must ensure that prescriptions are accurate, dosages are correct, and patients are properly educated on the use of medications to prevent adverse effects.

Fewer malpractice claims were linked to other healthcare specialties, including physical therapy (4%), dentistry (4%), first aid (3%), psychiatry (3%), colon and rectal surgery (2%), oncology (2%), preventative medicine (2%), and intensive care (2%). These specialties, while still important, tend to involve fewer direct medication management tasks than those in physical medicine, internal medicine, and surgery. However, oncology and psychiatry, in particular, involve specialized medications that require close oversight and careful prescribing [83], making them important areas for pharmacists to focus on for safety improvements.

Healthcare specialties not directly involved in frequent medication management, such as first aid, dentistry, and physical therapy, accounted for even fewer malpractice claims. While these claims are less common, they still require pharmacists to ensure that medications prescribed or dispensed in these settings are appropriate for the condition being treated, and that patients are informed about potential side effects or complications. Additionally, expanding efforts to address medication-related issues in lower-claim specialties like oncology and psychiatry will contribute to the overall goal of improving healthcare outcomes and reducing malpractice exposure across the board.

Pharmacy Malpractice and Its Relationship to Medical Care in Legal Cases

The majority of pharmacy malpractice claims were linked to medical care involving pain and suffering (8%), failure to diagnose (7%), failed surgery (7%), death (6%), surgical complications (6%), trip and fall accidents (5%), inadequate treatment (5%), side effects (4%), and various surgical errors (4%). These issues highlight the significant role that diagnostic and treatment errors play in malpractice claims [84]. While some of these incidents may be related to the actions of physicians and other healthcare professionals, pharmacists are often involved in medication management that directly impacts treatment outcomes, making it critical for them to be vigilant in areas like proper diagnosis, medication administration, and communication with patients and other healthcare providers.

Additionally, common allegations included diagnosis errors (4%), failure to provide warnings (4%), and delayed diagnosis (3%), all of which emphasize the importance of timely and accurate communication in the healthcare process. Pharmacists, as key members of the healthcare team, must be proactive in ensuring patients receive proper counseling on their medications, including potential risks, side effects, and drug interactions, which can prevent such errors from occurring.

Fewer than 3% of malpractice claims were related to more specific medical issues such as infection, unnecessary surgery, disability, birth injuries, equipment failure, burns, adverse drug reactions or complications, pregnancy-related issues, trauma, fractures, anesthesia errors, dermatitis, itching or rashes, transplants, bruises, amputations, hair loss, tooth extractions, blood transfusions, disfigurement, lacerations, fainting, infarctions, necrosis or osteonecrosis, dementia, paresthesia, or needlestick injuries. While these issues represent a smaller proportion of claims, they still carry significant implications for patient safety and highlight the need for pharmacists to be aware of a broad range of potential complications related to medication use.

These results underscore the importance of pharmacies focusing on the most common causes of malpractice, particularly those related to diagnosis and treatment failures. Given the significant role pharmacists play in medication management, they must prioritize accuracy in drug dispensing, patient counseling, and communication with other healthcare providers. By identifying and addressing the most common sources of pharmacy malpractice, such as medication errors, lack of patient education, and delayed diagnoses, pharmacists can mitigate risks, prevent patient harm, and ultimately reduce the occurrence of malpractice claims. Furthermore, enhancing pharmacist training, improving error-reporting systems, and implementing stronger safety protocols are crucial steps toward minimizing the risks of malpractice and ensuring better quality patient care.

Role of Healthcare Professionals in Pharmacy Malpractice

While one might expect pharmacy malpractice claims to be the most prevalent due to the direct involvement of pharmacists in medication management and patient care, the data reveals that the majority of malpractice claims are actually filed against physicians (18%), administrators (15%), and nurses (12%). Pharmacists account for only 8% of the total claims. This suggests that pharmacists are not the most frequently targeted professionals when it comes to legal challenges, despite their significant role in patient care.

The lower incidence of claims against pharmacists may be attributed to several factors, including the nature of pharmacy practice, which often involves collaboration with other healthcare professionals, such as physicians and nurses, in the medication process [41][42]. It may also reflect the distinct responsibilities of pharmacists compared to other healthcare providers, with fewer direct interactions in areas like diagnosis or surgery. However, while the frequency of pharmacy malpractice claims is lower, the claims that do arise still have substantial consequences for patient safety and professional accountability.

Fewer claims were made against other healthcare professionals, including dentists (7%), first aiders (6%), medical specialists (6%), professors (6%), residents or trainees (4%), nurse aides (4%), students (4%), technicians (3%), pathologists (2%), radiologists (2%), hygienists (2%),

dieticians (<1%), and microbiologists (<1%). These percentages further highlight that while pharmacists may not be the most frequently targeted in malpractice claims, healthcare professionals across the board face legal scrutiny, with physicians, administrators, and nurses being the most common defendants in these cases [41][42].

These findings suggest that, although pharmacists are not the primary focus of malpractice claims, it is still crucial to enhance safety protocols, refine training programs, and ensure accountability across all healthcare roles. Improving communication between healthcare providers, strengthening medication management practices, and fostering a culture of safety in all healthcare settings are essential steps toward minimizing malpractice risks. By addressing these areas in both pharmacy and broader healthcare practice, the overall quality of patient care and safety can be significantly improved, leading to fewer legal claims and better patient outcomes.

Pharmacy Malpractice Causes of Action, Torts and Breach of Contracts

A significant portion of legal cases against pharmacists involved allegations of malpractice (27%), negligence (22%), and breach of contract (9%). These three categories represent the most common claims filed against pharmacists, highlighting areas where errors or lapses in professional responsibility are most often contested. In contrast, fewer claims were made regarding other types of legal issues, including product liability (8%), wrongful death (8%), and strict liability (8%). Fraud or misrepresentation was cited in 7% of cases, while assault (4%), privacy violations (3%), battery (3%), identity theft (2%), and larceny (<1%) were less commonly alleged. These findings suggest that while malpractice and negligence remain the primary concerns in pharmacy practice, other legal matters such as product liability, fraud, and privacy issues also contribute to legal challenges. Pharmacists and their employers should focus not only on reducing errors that lead to malpractice but also on safeguarding against a wider range of potential legal risks. This includes addressing concerns related to product quality, patient privacy, and ethical conduct to minimize exposure to liability and protect both patients and professionals.

A pharmacist's most important duty is to prevent malpractice. However, malpractice cases are often confidential and not publicly accessible [85]. While studies conducted by insurance providers have offered useful insights into malpractice claims [17][38], they are limited by potential customer and biases, as they only reflect cases within the insurer's customer base. In contrast, searching the entire Google Scholar database for pharmacy malpractice cases provides access to a broader dataset of several thousand cases, making the results more reliable than smaller studies with limited sample sizes. Nonetheless, the dataset has some limitations. The cases were not screened to exclude potentially frivolous or unjustified legal claims, as this information was not readily available. Future studies could refine this approach by incorporating more rigorous screening measures and applying advanced statistical analysis to uncover more complex correlations beyond the 219 pharmacy malpractice variables examined in the eleven analyses described in Figures 1 to 11.

Monetary Damages in Pharmacy Malpractice Cases

Pharmacy malpractice settlements and court judgments typically provide compensation to patients and/or their families who have experienced medical harm and financial losses due to errors or negligence by a pharmacist or pharmacy staff. The awarded monetary damages

generally cover pain and suffering, disability, and the costs of corrective treatments and ongoing medical care. Based on published data [41], [86-89], the estimated monetary damages for different types of pharmacy malpractice claims are shown in Figure 14.

Estimated ranges of monetary damages	Patient harms and the types of malpractice case
\$0 - \$25,000	None or minimal harm to patients caused wrongfully dispensed medications, wrongful refusal to fill prescriptions, overdoses and underdoses, improper drug labelling, incorrect drug directions, and drug contraindications.
\$25,000 - \$132,185	Short-term disabilities and suffering to patients caused by missed diagnoses, minor prenatal errors, and negligent drug dispensing mistakes.
\$132,185 - \$438,221	Patients requiring drug rehabilitation, minor surgeries, and hospital treatments to correct health conditions created by pharmacy malpractice and negligence.
\$438,221- \$1,500,000	Patients suffering significant pain and long-term malpractice injuries, resulting from injury, infection, illness, and incidents such as miscarriage, fertility issues, chronic pain, and amputation.
\$1,500,000 - \$261,000,000	Patients suffering from permanent injuries, disability, or wrongful death resulting from severe professional negligence.
Averages \$132,185, \$274,887, and \$438,221	Very high monetary damages tend to be rare, the average settlement amounts for a general pharmacy clinic was between \$132,185 to \$274,887, whereas the average settlement for a compounding pharmacy was \$438,221.

Figure 14: Monetary damages in pharmacy malpractice cases.

CONCLUSION

The high incidence of pharmacy malpractice cases is alarming, as they create preventable risks that can result in patient injuries, disabilities, or even wrongful death. Pharmacists should adopt a proactive strategy aimed at preventing all forms of malpractice by focusing greater care and targeted training on the areas where malpractice occurs most frequently. This approach would have the greatest impact in reducing both the overall number of malpractice incidents and the associated risks. Pharmacy malpractice most commonly arises during the stages of care, treatment, and diagnosis, with the highest occurrence rates in pharmacies, hospitals, and clinics. Physicians, administrators, and nurses are the parties most frequently held liable for pharmacy-related malpractice, negligence, and breach of contract claims. A significant portion of these claims stems from a pharmacist's refusal or inability to fill prescriptions, particularly in the fields of physical medicine and rehabilitation, internal medicine, pain management, surgery, and emergency medicine. Common pharmacy malpractice issues include misfilled prescriptions, incorrect dosages, harmful drug interactions, and inadequate patient counseling. The most prevalent legal claims against pharmacists were for malpractice, negligence, and breach of contract. The average legal settlement amounts for a general pharmacy clinic was between \$132,185 to \$274,887, and the average legal settlement for a compounding pharmacy was \$438,221. Enhancing patient safety requires increased attention to accuracy, competence, and diligence in medication management. Strengthening pharmacist training, improving oversight, and implementing more rigorous safety protocols are essential steps toward reducing malpractice incidents and protecting patient health.

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