Incident Reports Involving Hospital Administrative Staff: Analysis of Data From a Japan Council for Quality Healthcare Nationwide Database

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Abstract

Background: Task shifting and task sharing in healthcare are rapidly becoming more common as the shortage of physicians increases. However, previous research has not examined the changing roles of hospital administrative staff. This study clarified: (1) adverse incidents caused by hospital administrative staff and the direct and indirect impact of these incidents on patient care, and (2) which incidents directly involved hospital administrative staff.

Methods: This study used secondary analysis of case report data from the Japan Council for Quality Healthcare collected from April 1, 2010, to March 31, 2019, which consisted of quantitative and text data from 85 case reports that were analyzed in terms of direct and indirect effects of hospital incidents. Differences in the direct and indirect impact of hospital incidents were statistically assessed using the χ^2 test and Fisher's exact test.

Results: Thirty-nine reports (45.9%) involved direct impact on patient care, while 46 (54.1%) involved indirect impact on patient care. Most incidents that directly impacted patient care involved administrative staff writing prescriptions on behalf of a doctor (n = 24, 61.5%). Most reported errors that indirectly affected patient care were related to system administration, information, and documentation used by administrative staff (n = 22, 47.8%), including 14 cases of patient misidentification (16.5% of all cases examined).

Conclusions: Incidents involving hospital administrative staff can lead to severe consequences for patients. As such staff are members of medical treatment teams, improvements in patient care may require the submission and review of more incident reports involving administrative staff.

Background

The population aging rate and number of older adults, defined as people aged 65 and over, are increasing in some countries.[1] Additionally, the United States will face a shortage of approximately 90,000 physicians by 2025, with particularly large shortfalls in certain surgical specialties, according to a study commissioned by the Association of American Medical Colleges (AAMC) and released in April 2019.[2] The AAMC further reported that as the nation's population is growing and aging, the United States will experience shortages of up to nearly 122,000 physicians by 2032 as the demand for physicians continues to grow faster than supply.[3] In an effort to address this problem, the supply of physicians, physician assistants, and advanced practice registered nurses is continuing to increase. Meanwhile, Japan faces serious policy problems regarding its aging society, which also include a shortage of physicians. The number of physicians per capita continues to rise with the goal of reaching the level recommended by the Organization for Economic Cooperation and Development. However, the estimated supply will not fulfill the demand for healthcare in an aging society; to meet the projected needs, the number of new physicians must increase by 53% over the current pace.[4] Thus, the Japanese government has strategized a new solution to the physician shortage issue as part of a series of related acts

promoting work-style reform.[5] Comprehensively, the reforms aim to create greater stability in the national workforce by formalizing the improvements to various aspects of employment in Japan, such as improving work-life balance and ensuring equal access to healthcare. To meet these goals, the reforms will allow for “a wide variety of work patterns” and “expand the duties of industrial physicians and strengthen the function of occupational health services.”[5]

Task shifting from physicians to nurses has attracted interest among policymakers as a strategy to respond to staffing shortages and to increase access to primary care; such task shifting has been reported as efficient and cost-effective.[6,7] This strategy of work reform in Japan is part of a global trend.[5] However, physicians working long hours continues to be a serious problem in Japan, prompting the government to provide incentives to hospitals that have adopted systems that shift tasks to nurses and pharmacists. For example, the Ministry of Health, Labour and Welfare added incentives for physician’s offices to add work support systems. In the Ministry’s medical fee revision in 2008, medical assistants were defined as hospital administrative staff with a specific license. Medical assistants are required to attain knowledge related to medical care with 32 credited education hours and they must pass an examination.[8] These staff may enter prescription information into patients’ charts on behalf of doctors.

After registered nurses, who comprise the largest number of employees per hospital, administrative staff are the second-largest group, followed closely by physicians, at 10.50% and 10.33% of all hospital staff, respectively, as of 2017.[9] Yet, previous studies have indicated that the number of incidents reported by administrative staff in general in Japan is low compared to those reported by nurses. Few nationwide studies have described the roles of administrative staff in Japan, and many of those were case studies involving one hospital, such as Ishibashi et al.[10] and Osawa.[11]

Previous studies of incident reports focused on clinical staff such as physicians, nurses, and pharmacists whose major roles directly impact patient care. However, the roles of hospital administrative staff mean that their work has an indirect impact on patient care, which may be why recent studies of incident reports have not focused on administrative staff. Therefore, the objective of this study was to examine incident reports involving hospital administrative staff to clarify: (1) how situations involving incidents were reported, focusing on their direct and indirect impact on patient care, and (2) the types of incidents reported. In this study, administrative staff were defined as clerks, medical secretaries, receptionists, and accountants.

Methods

Study Design

This study used secondary data from the Japan Council for Quality Healthcare (JCQHC). The Council collects all reports of adverse events and incidents (including errors and near-misses) nationwide from hospitals in Japan. The total number of registered and voluntary institutions was 1,018 in 2015. The JCQHC website contains open data and has been used to study medical incidents in previous studies. For

example, Akiyama et al.[12] used JCQHC data to compare differences in nurse-related incidents in terms of various factors, such as their clinical experience level, events, drug administration, and medical devices used. Additionally, Ichikawa et al.[13] used JCQHC data to implement case analyses of reports of pediatrician-related medical adverse events.

Data Collection

JCQHC open data were obtained for the 9 years from April 1, 2010, to March 31, 2019. These data were reported by hospital administrative staff, including medical assistants, medical clerks, and medical secretaries. We checked all eighty-eight self-reported incidents of hospital administrative staff and ensured that the reports did not implicate other medical staff, such as nurses or physicians. We excluded data from three of the reports that pertained to pharmacists, leaving a total of 85 reported incidents involving hospital administrative staff.

Statistical analysis

JCQHC data are both quantitative and textual. The quantitative data items include information such as when the incidents occurred (time and day), where (area of hospital), and who was involved (relevant personnel and their positions). Text data items describe the reported incidents, such as the situation, what happened, the background, related factors, and the resulting improvement plan. The data collected were categorized using content analysis, depending on whether the incident directly or indirectly affected patient care. Similarly, we categorized the type of incident as medication-related, surgery-related, exam and/or treatment-related, or other, as well as whether the incident involved patient misidentification. Work indirectly related to patient care, including the management of patient charts, is within the job description of administrative staff. Patient misidentification is defined as any instance of staff mistaking the identity of a patient or patient ID, or patients having ID cards that belong to other patients.

Original quantitative data and textual data were used to characterize the differences between direct and indirect effects on patient care using the chi-square test and Fisher's exact test. All statistical analyses were performed using JMP statistical software, version 12.0. A p-value $< .05$ was considered statistically significant. Text data were analyzed using content analysis, which is well suited to analyzing multifaceted characteristics of phenomena in a sensitive manner. We focused on the case factors regarding the "what" and "why" of the reported incidents.

Ethical considerations

This study was conducted using JCQHC data. These data are available as open access; sensitive information has been deleted by JCQHC staff to prevent possible identification of individuals and facilities.

Results

Sample characteristics

Table 1 shows the frequency and percentage of case reports by several factors. The highest number of incidents was reported from January to March (*n* = 33, 38.8%), and the second highest was during the period October to November (*n* = 21, 24.7%). Almost all cases reported occurred in the daytime on weekdays: 92.9% (*n* = 79) of incidents occurred on weekdays. Most direct-care incidents occurred from 2:00–3:00 pm (*n* = 11, 30.6%), while most indirect-care incidents occurred from 10:00–11:00am (*n* = 14, 31.8%). The highest incident rates occurred in outpatient units (*n* = 23, 27.1%) and examination or operating rooms (*n* = 12, 14.1%). There were no significant differences in incident characteristics between direct care and indirect care.

Incident report types

Fourteen out of the 85 cases (16.5%) involved patient misidentification. Table 2 shows the incident report types and how these differed for direct-indirect care. The percentage of patient misidentification for indirect care (*n* = 12, 26.1%) was significantly higher than that for direct care (*n* = 2, 5.1%; $p = .017$). Furthermore, the number of incidents involving medication for direct patient care was more than twice that of indirect care ($p < .001$).

Incident reports of direct impact on patient care

Thirty-nine out of 85 cases (45.9%) were determined to have a direct impact on patient care. They are presented by theme in Table 3. Four categories of themes of direct-care incidents were extracted: drug prescriptions (*n* = 24, 61.5%); system administration, information, and documentation (*n* = 7, 17.9%), inquiry (*n* = 5, 12.8%), and other (*n* = 3, 7.7%). For drug prescriptions, these cases occurred in situations such as a doctor asking a clerk to enter a medication order into electronic health records on the doctor's behalf.

When the staff member was asked by a doctor to type a drug order, the staff member mistyped the amount of Digoxin (digoxin is used to treat heart failure). (No. 6)

Nine out of 24 cases consisted of mistakes in prescription information. For example, a reception clerk did not ask whether a patient was taking a particular medicine.

Prior to the patient's exam, the staff had asked the patient to stop taking the drug, but the patient didn't say anything, so the staff didn't specifically ask. On the day of the patient's exam, the patient was taking the medication. (No. 82)

The next most common themes of indirect impact on patient care were system administration, information, and documentation. Three out of seven cases were related to communication errors with another department.

When I made a phone call regarding the preparation of chemotherapy, I said "today's treatment will be done," but it was wrong. I had to correct myself and say"today's treatment was canceled." (No 72)

Mistakes in preparing exam documents and hospital ambulance management errors occurred in two cases. In Japan, several large hospitals have their own ambulances, and these ambulances are managed and operated by hospital staff; accordingly, two cases related to ambulance equipment failure were reported.

Five out of the 39 (12.8%) direct impact incidents were inquiry errors. Inquiry errors were usually directly related to treatment by a physician, such as before hemodialysis or a prescription-related weight measurement (3 cases). In addition, there were two errors that resulted from a check of the patient's medical device records or the entry of data into an electronic medical chart on behalf of a doctor (2 cases). In the case of an anticancer drug, a serious accident may have occurred if not detected in advance, as in the following case.

The staff member measured the patient's height and weight, but transposed height and weight in the electronic medical chart. The doctor prescribed the patient's anti-cancer agent based on this mistyped record. (No. 68)

Incident reports of indirect impact on patient care

Forty-six out of 85 (54.1%) cases represented indirect impact on patient care, as shown in Table 4. These included five categories: system administration, information, and documentation (n = 22, 47.8%): reception (n = 9, 19.6%), reports of co-workers' errors (n = 8, 17.4%); accounting (n = 6, 13.0%); and other (n = 1, 2.2%). The category system administration, information, and documentation included misidentification of information and/or documents (e.g., fax number, patient profile, etc.) and database system errors (e.g., hospital electronic records, accounting management system).

The staff put an incorrect blood type seal in the patient's chart. (No. 80)

Hospital administrative staff frequently call and talk directly to patients through reception or accounting. In the reception category, examples of reported incidents include communication (four cases), misidentification of exam documents and administration of patient information (four cases), and miscommunication of forthcoming treatment (one case).

The patient talked with administrative staff about having an MRI exam. The staff said it depended on the situation, but the patient came to the hospital because he thought he could have the MRI examination that day. (No. 6)

The third most common indirect impact on patient care was a co-worker's error, with eight reports; doctor's error was involved in five cases; nurses or nutritionists were report subjects in only one case. In accounting processes, there were six cases; errors in medical expenses occurred in four cases, and prescription accounting and misidentification of a patient's ID card each occurred once.

Discussion

Direct and indirect impact on patient care

In our results, incidents related to direct and indirect impact on patient care comprised a similar percentage of cases, namely 46% and 54%, respectively. Task shifting might be affected by the changing roles of hospital administrative staff, as their work changes from only administrative tasks to including some aspects of direct patient care. As no relevant data were collected before ten years ago, we could not compare current results with historical data. However, our study suggests that administrative staff in hospitals have an important role in preventing errors within the medical team. In particular, administrative staff create and update the electronic charts that are used by all members of medical teams. If the chart data are incorrect, the patient's wrist band will be incorrect. The patient's wrist band displays important information, such as the patient's ID. Clinical staff cross-reference the ID on the patient's wrist band with electronic medical record IDs in various clinical situations.

Prescription drug-related incidents and indirect impact on patient care

Evaluation of the types and frequencies of errors is of critical importance, especially regarding medication errors.[14,15] Previous studies found that 11% of patients were subject to medication error; risk factors included poor coordination of care, cost-related barriers to medical services or medicines, multi-morbidity, and hospitalization.[16] In our study, incidents related to drug prescription errors amounted to 62% of the incidents with direct impact on patient care. The WHO reported factors that may influence medication errors associated with health care professionals are inadequate drug knowledge, inadequate prescription (e.g., an incorrect or incomplete prescription), lack of experience, and poor communication between healthcare professionals and with patients.[17] Many medications have similar names, which may facilitate staff making medication-related errors. The reports of errors made by hospital administrative staff suggest role task-shifting by medical staff. However, although the role of medical assistants is to assist doctors, the education required to qualify as a medical assistant is insufficient in terms of learning all of the subject matter relevant to assisting physicians, particularly regarding drug-related knowledge. If medical assistants have insufficient knowledge, they cannot be aware of prescription mistakes.

Due to limited secondary data, a root cause analysis could not be performed to determine why physicians at times omitted the reconfirmation process. If physicians consider administrative staff to be medical staff, hospital managers must educate physicians so that they can distinguish between administrative staff and healthcare professionals.

Patient misidentification and indirect impact on patient care

Patient misidentification continues to be a serious problem in daily clinical practice and can cause sentinel events. Sentinel events are defined by the Joint Commission as patient safety events that result in death, permanent harm, or severe temporary harm.[17] The WHO reported that the major areas where patient misidentification can occur include drug administration, phlebotomy, blood transfusions, and

surgical interventions. Trends toward limiting the working hours of clinical team members leads to an increased number of team members caring for each patient, thereby increasing the likelihood of hand-over and other communication problems.[18] In addition, the neonatal intensive care unit (NICU) has been identified as a major risk area for patient misidentification, due to NICU patients frequently being similar and often not recognizably unique in terms of identifiers.[19] Our results suggest that misidentification errors occur in all hospital areas, including in reception and accounting.

The most high-risk patient misidentifications by hospital administrative staff were in the category of indirect impact on patient care, such as system administration, information, and documentation. It is common for patients to wear wrist bands to prevent patient misidentification. However, outpatients do not wear wrist bands in hospitals, and thus patient misidentification was reported to occur during reception and accounting processes. Patient misidentification errors can be prevented when healthcare providers consistently verify patient identity using two unique patient identifiers, such as the wristband and verbal confirmation of the patient's date of birth.[20] The need to verify patient identity applies to situations such as blood transfusion, surgery, and treatment. Abraham et al.[16] reported that among 293 reported incidents of patient misidentification, the most frequent errors were missing wristbands, wrong charts or notes in files, administrative issues, and wrong labeling in patient transfers. Patient identification rules in the outpatient department require that patients state their first and last names and date of birth, and staff confirm that both of these match the electronic records, but no quantitative research has verified the effectiveness of these requirements; hence, further research is required.

Limitations

The present study has some limitations. First, although we used data gathered over ten years, the study sample was small. From January to December 2017, 5,129 cases were reported to JCQHC, with 45% reported by physicians and 49% reported by nurses,[12] but only 85 incidents were reported by hospital administrative staff. We used secondary data collected from JCQHC incident reports, which did not include the reporters' characteristics and institutional information. Clinical staff are generally guaranteed full-time and permanent employment, while administrative staff have various employment contracts; most are temporary, part-time employees. JCQOC data do not provide employment status information, so we could not segregate the incident reports according to those reported by full-time and part-time workers.

Conclusions

Physician shortage is a common problem in developed countries. In response to this issue, the Japanese government's system reforms included shifting tasks from physicians to hospital administrative staff. Prior studies of medical errors focused on medical staff such as physicians, nurses, and pharmacists as they provide direct patient care. The current study found that major errors were reported by hospital administrative staff, including entering prescription drug information on behalf of a physician, misidentification when indirectly involved with patient care, and errors in system administration,

information, and documentation. Although this study has some limitations, such as small sample size and use of secondary data, it is one of few studies to focus on incidents reported by hospital administrative staff.

Abbreviations

AAMC
Association of American Medical Colleges
JCQHC
Japan Council for Quality Healthcare

Declarations

Ethics approval and consent to participate: Not applicable

This study did not require ethics committee approval because the Japan Council for Quality Health Care open data includes information that has already been anonymized. The Ethics Committee at Iwate Medical University School of Medicine, to which the first author belongs, stipulates that it is not necessary to apply to the ethics committee for analysis of data that have already been anonymized by the organization providing the data. Further, the data used did not involve human subjects.

Consent for publication: Not applicable

Availability of data and materials

We used Japan Council for Quality Health Care open data. The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Author’s Contributions

KH and KK conceived the study and supervised this work. NA and TA were responsible for data analysis and interpretation, and revisions to the manuscript. NA wrote the main body of the manuscript. All authors approved the final version of the manuscript. All authors contributed to writing the final manuscript.

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Tables

Due to technical limitations, table 1, 2 is only available as a download in the Supplemental Files section.

Table 3. Direct impact on patient care.

Code (theme)	Code (categories)	Code (meaning units; error/mistake)	*For examples*
Direct impact on patient care (n = 39, 45.9%)	Prescription drug (n = 24, 61.5%)	When a member of administrative staff writes a prescription by proxy on behalf of a doctor error in medication name, dose, unit standard, and schedule (15 cases) error of wrong transcription of prescribed drugs (9 cases)	*When the staff was asked by a doctor to type a drug order, the staff mistyped the amount of the drug. (No. 6)* *Prior to the patient's exam, the staff were supposed to ask the patient to stop taking the drug, but the patient did not say anything, so the staff did not specifically ask. On the day of the patient's exam, the patient was still taking the medication. (No. 82)*
	System administration, information, and documentation. (n = 7, 17.9%)	When a member of administrative staff uses an electronic (digital) hospital management system, information, and documents mistake in telephone call for treatment to another department (3 cases, including one misidentification case) mistake in transcribing exam documents (2 cases) error of management of hospital ambulance (2 cases)	*When I made a phone all regarding the preparation of chemotherapy, I said "today's treatment will be done," but it was wrong. I had to correct myself to say "today's treatment was canceled." (No. 72)* *The staff forgot to document the items assessed during physical checkup. (No. 7)* *Ventilator did not connect to the oxygen valve in the ambulance. Repair technicians had confirmed that this valve connection was broken. (No. 66)*
	Inquiry (n = 5, 12.8%)	When a member of administrative staff works in hospital intake error of measuring patient's weight (3 cases) mistake in checking patient's medical device record before exam (2 cases)	*The staff measured patient's height and weight, and the staff transposed the height and weight in the electronic medical chart. The doctor prescribed the patient's anti-cancer agent based on this mistyped record. (No. 68)*
	Other (n = 3,	Error in acute	

	7.7%)	patient care, administration of vaccine, and misidentification of patient's meal (each 1 case)	

Table 4. Indirect impact on patient care.

Code (theme)	*Code (categories)*	*Code (meaning units; error/mistake)*	*For examples*
Indirect impact on patient care (n = 46, 54.1%)	System administration, information, and documentation. (n = 22, 47.8%)	Error made by member of hospital administrative staff: misidentification of information and/or documents (e.g., fax number, patient profile, etc.) (7 cases) error in patients' documents or in database (7 cases) error in contact and coordination with other departments (4 cases) error in administration of electronic (digital) systems (4 cases)	*The staff put a blood type seal on the wrong patient's chart. (No. 80)* *After the staff entered accounting management system data, the system was slow to process the data, so patients had to wait for a long time. (No. 34)*
	Reception (n = 9, 19.6%)	When a member of hospital administrative staff works in hospital reception: miscommunication (4 cases) misidentification of exam documents and administration of patient's information (each 2 cases) entering incorrect treatment information by administrative staff member (1 case)	*The patient talked with the hospital staff about having an MRI. The staff said it depended on the situation, but the patient had come to the hospital because he thought he could have the MRI that day. (No. 6)*
	Reported another co-worker's error (n = 8, 17.4%)	When a member of hospital administrative staff finds a co-worker's error: doctor's error (5 cases, including one misidentification case) nurse's error (2 cases) nutritionist's error (1 case)	*The staff received a call from a pharmacy about a doctor's incorrect drug prescription. (No13)*
	Accounting (n = 6, 13.0%)	When a member of hospital administrative staff works in hospital accounting: accounting value error (4 cases) prescription	*The patient had to wait a long time because an error occurred in the accounting document. (No. 23)*

		accounting error (1 case) misidentification of patient's ID card (1 case)	
	Others (n = 1, 2.2%)	When a member of hospital administrative staff mails information to a nurse about medical checkups for hospital staff misidentification due to nominal similarity of nurse's name (1 case)	-

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Table1.JPG
- Table2.JPG