(RESEARCH ARTICLE)

Evaluating dentist knowledge and its impact on compliance with dental record maintenance in Sidoarjo Region, Jawa Timur, Indonesia

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Abstract

The utilization of teeth as identification markers necessitates the creation of comprehensive dental records, yet the implementation of this practice remains suboptimal. Consequently, there is a dearth of dental information, including outdated or incomplete medical records. Various studies have documented dentists' insufficient knowledge and compliance when completing medical records across different populations. In light of this, the current study aimed to assess the correlation between dentists' knowledge of medical records and their compliance in filling them out within the Sidoarjo Region of Jawa Timur, Indonesia. A questionnaire was administered to 93 dentists in the region to measure their knowledge and compliance, and a Chi-square analysis was conducted to examine the relationship between these two variables. The results revealed that the majority of dentists exhibited good knowledge (62.4%) and displayed good compliance (78.5%), with a *p*-value of 0.488 and α>0.05, indicating no significant correlation between dentists' knowledge of medical records and their compliance in filling them out within the Sidoarjo Regency.

Keywords: Compliance; Dental record; Knowledge; Health care; Human rights

1. Introduction

Indonesia is situated in the geologically active "Ring of Fire" region, characterized by numerous volcanoes. Violent and unforeseen disasters often result in a significant number of unidentified or unclaimed victims. The National Disaster Management Agency (BNPB) records indicate a significant occurrence of natural disasters in Indonesia, with 2952 events recorded in 2020. Tragically, these disasters resulted in the loss of 370 lives, with 39 individuals reported as missing and 536 people sustaining injuries. The challenges associated with victim identification in the aftermath of disasters or mass accidents pose substantial problems in forensic science. The identification of victims following mass disasters assumes immense importance and becomes a crucial undertaking in nearly every incident involving a substantial loss of life. Consequently, human identification becomes paramount in such circumstances [1, 2].

Within the realm of forensic science, human identification involves various techniques such as fingerprinting, DNA analysis, and dental examination. The utilization of teeth as an identification tool has evolved through diverse methodologies, underscoring the pivotal role of dentists in identification endeavors. Furthermore, teeth play a significant role in the identification process, mainly when dealing with decomposed remains, individuals lacking fingerprints, or cases where visual identification is challenging. This stems from the remarkable resilience of dental tissues to endure harsh conditions such as high temperatures, humidity, and pressure. Tooth identification predominantly relies on comparing postmortem dental records with antemortem records, as teeth are considered the most durable bodily tissue following natural disasters. According to the 2018 Interpol Disaster Victim Identification

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Guide, dental identification is a primary method boasting high reliability, thus making it an invaluable tool in human identification [3, 4].

The significance of utilizing teeth as one of the identifiers necessitates the obligatory recording of dental data and maintenance of medical records by dentists on patient cards, although the execution of this practice falls short of optimization. As society evolves more dynamically, the importance of medical records becomes increasingly evident. Dentists are bound by the Regulation of the Minister of Health of the Republic of Indonesia Number 24, 2022, about Medical Records and Law Number 29, 2004, about Medical Practice, which mandates the comprehensive documentation of medical records. According to these regulations, medical records must be promptly completed following the provision of healthcare services to patients. This underscores the crucial role of medical record-keeping for dentists. Compliance with these regulations has become a legal requirement that healthcare providers, including dentists, must adhere to in procuring and maintaining complete medical records [5, 6].

The Indonesian Ministry of Health has set a national standard for dental records, which outlines the required information to be included in dental records in Indonesia. These include details about the patient's identity, odontogram, diagnosis and treatment, and additional attachments as necessary. However, studies conducted in the past have revealed that the implementation of good dental record practices in Indonesia is not widespread. Specific institutions in Indonesia, such as the Indonesian National Armed Forces (TNI), police, pilots, and flight attendants, have successfully maintained high-quality dental records, especially for antemortem data purposes [7, 8].

A previous study found that dentists at the Padang City Health Center and Hospital had a low level of knowledge regarding the complete requirements, essential elements, benefits, and aspects of dental and medical records, with a rate of less than 55% [9]. Another study reported that from January to March 2012, the dental records at the Bahu Health Center lacked public health records, odontogram records, and visit schedule tables [10]. Drawing from our preliminary observations involving several practicing dentists in Sidoarjo Region, Jawa Timur, it was evident that dentists had poor compliance in maintaining accurate medical records. Hence, this study aims to analyze the correlation between dentists' knowledge of medical records and their compliance in filling out medical records within the Sidoarjo Regency.

2. Material and methods

The ethical clearance of this study was obtained from The Health Research Ethical Clearance of Faculty of Dental Medicine Universitas Airlangga (number: 036/HRECC.FODM/I/2022). This study employs an analytic observational research design to investigate the knowledge and compliance of dentists in maintaining accurate dental records. The study population comprises dentists aged 23-65 years practicing within the Sidoarjo Region, Jawa Timur, Indonesia, with a total of 93 respondents. The inclusion criteria encompassed both general dentists and specialist dentists within the specified age range, actively practicing in the Sidoarjo Region.

The research instrument employed in this study was an online questionnaire administered via Google Forms. The questionnaire was designed with two distinct sections to assess the knowledge and compliance of dentists in filling out medical records. Before commencing data collection, participants were requested to provide informed consent, thereby signifying their voluntary participation and dedication to completing the questionnaire.

The collected questionnaire data underwent meticulous analysis to derive meaningful insights. The statistical analysis was performed using SPSS Statistics version 23.0, enabling comprehensive examination and interpretation of the data.

3. Results and discussion

A total of 93 respondents voluntarily participated in this study. The demographic characteristics of the respondents, including their sex, age groups, and years of experience as dentists, are presented in Table 1. The data provided in Table 1 indicate that the majority of respondents have been practicing dentistry for more than five years. Among the 81 dentists with over five years of experience, 47 of them demonstrated a good understanding of dental records, while a small percentage (3.7%) within this category displayed poor knowledge of dental records. This finding is consistent with a previous study that concluded that dentists with more extended experience tend to possess better knowledge regarding the crucial elements and medicolegal aspects of medical records than those new to the field [9]. The categorization of knowledge levels in this study was based on the distribution level of knowledge proposed by Arikunto (2006). According to Arikunto, respondents who attain a total questionnaire score of more than 70% are considered to have good knowledge [11].

Table 1 Characteristics of the respondents in the present study based on sexes, age groups, and working experience as a dentist

Sex	n	%	Age Group	n	%	Working experiences	n	%
Male	23	24.70%	23-35	38	40.90%	< 5 years	12	12.90%
Female	70	75.30%	36-45	30	32.30%	> 5 years	81	87.10%
			46-55	20	21.50%			
			>55	5	5.40%			
Total	93	100%		93	100%		93	100%

The findings of this study, as depicted in Table 2, highlight that 62.4% of dentists in the Sidoarjo Region possess a commendable understanding of the significance of maintaining good medical records. Among those with good knowledge of dental records, a significant proportion (68.4% of 38 respondents) belonged to the young-aged groups. Notably, only one senior dentist (above 55 years old) exhibited a solid comprehension of dental records, accounting for 20% of the five respondents in that age category. On the other hand, it was discovered that 8.6% of respondents aged 23 to 45 had inadequate knowledge regarding dental records. These findings are consistent with the study conducted by Murniwati (2013), which also observed that early adult dentists possess the highest level of knowledge in fulfilling the requirements for dental records [9].

Table 2 Distribution of the level of knowledge of dentists in Sidoarjo Region, Jawa Timur, Indonesia

Category	N	Level of Knowledge					
		Good		Fairly good		Poor	
		n	%	n	%	n	%
Age Group							
23-35 years old	38	26	68.4%	7	18.4%	5	13.2%
36-45 years old	30	19	63.3%	8	26.7%	3	10.0%
46-55 years old	20	12	60.0%	8	40.0%	0	0.0%
> 55 years old	5	1	20.0%	4	80.0%	0	0.0%
Total	93	58	62.4%	27	29.0%	8	8.6%
Working experiences							
< 5 years	12	11	91.7%	1	8.3%	0	0.0%
> 5 years	81	47	58.0%	31	38.3%	3	3.7%
Total	93	58	62.4%	32	34.4%	3	3.2%

Good (score > 70.00); Fairly good (score 40-69.99); Poor (score <40.00)

Table 3 illustrates that most respondents consistently responded with "very often" for all questions. Regarding the first question, which pertains to filling out medical records for each patient, 77 respondents (82.8%) indicated they do so very often. Similarly, for the second question regarding the completion of patient identity in medical records, 73 respondents (78.5%) reported doing so very often. As for the third question concerning the instruction of patients to fill out informed consent forms for risky procedures, 52 respondents (55.9%) indicated they do so very often. For the fourth question on completing odontograms, 44 respondents (47.3%) responded with "very often." Concerning the fifth question about updating odontograms, 31 respondents (33.3%) reported doing so very often. Finally, for the sixth question regarding the completion of the treatment table, 73 respondents (78.5%) indicated they do so very often.

Table 3 Descriptive analysis of the questionnaire answer about the compliance of filling out medical records by dentists in the Sidoarjo Region

	Questions	Always		Often		Rarely		Very Rarely	
		n	%	n	%	n	%	n	%
Q1	How frequently do you complete the medical record for each patient?	77	82.8%	13	14.0%	3	3.2%	0	0.0%
Q2	Do you consistently record the patient's identity, including personal information and medical history, in the medical record?	73	78.5%	17	18.3%	2	2.2%	1	1.1%
Q3	Do you consistently ensure patients fill out an informed consent form for high-risk procedures, such as surgery and other relevant treatments?	52	55.9%	28	30.1%	11	11.8%	2	2.2%
Q4	Do you consistently complete the odontogram section in the medical record?	44	47.3%	31	33.3%	10	10.8%	8	8.6%
Q5	Do you regularly update the odontogram when there are changes in the patient's dental condition?	31	33.3%	25	26.9%	20	21.5%	17	18.3%
Q6	Do you consistently complete the treatment table in the medical record?	73	78.5%	17	18.3%	3	3.2%	0	0.0%

The level of compliance in filling out medical records among dentists in the Sidoarjo Region was assessed using six questionnaire questions and categorized into three levels: high (score < 8), moderate (score between 9 and 16), and low (score > 16). As presented in Table 4, most dentists in the Sidoarjo Region exhibited high compliance in filling out medical records (78.5%). Among the dentists in the Sidoarjo Region, those aged 46-55 had the highest percentage of high compliance, followed by senior dentists aged over 55 years. Furthermore, 5.3% of young dentists (aged 23-35) demonstrated low compliance in filling out medical records.

Table 4 Distribution of the level of compliance in filling out the medical records of dentists in Sidoarjo Region, Jawa Timur, Indonesia

Category	N	Level of Compliance					
		High		Moderate		Low	
		n	%	n	%	n	%
Age Group							
23-35 years old	38	30	78.9%	6	15.8%	2	5.3%
36-45 years old	30	21	70.0%	9	30.0%	0	0.0%
46-55 years old	20	18	90.0%	2	10.0%	0	0.0%
> 55 years old	5	4	80.0%	1	20.0%	0	0.0%
Total	93	73	78.5%	18	19.3%	2	2.2%
Working experiences							
< 5 years	12	10	83.3%	2	16.7%	0	0.0%
> 5 years	81	63	77.7%	16	19.8%	2	2.5%
Total	93	73	78.5%	18	19.3%	2	2.2%

High (score < 8); Moderate (score 9-16); Low (score >16)

The results also revealed that 77.7% of respondents with over five years of experience as dentists exhibited high compliance in maintaining accurate medical records. This finding aligns with a previous study by Istirochah et al. (2016), which indicated that compliance with medical record documentation could be influenced by the length of a doctor's service in a healthcare facility. The longer a doctor works in a hospital, the more proficient they become in their skills and adapt to the work environment. This accumulated experience leads to a better understanding of maintaining comprehensive and complete medical records [12]. According to a study conducted by Anugrahwati et al. (2019), age is significantly correlated with compliance in maintaining medical records [13]. Additionally, Ahmad (2018) identified several factors that can influence a doctor's compliance in documenting medical records, such as their level of knowledge, attitude, and work motivation [14].

The correlation between dentists' knowledge and compliance in filling out medical records was assessed in this study (Table 5). The findings unveiled that 49.5% of the respondents displayed both good knowledge and a high level of compliance in their medical record-keeping practices. Additionally, 11.8% of the respondents exhibited good knowledge along with a moderate level of compliance. Interestingly, 6.5% of the respondents demonstrated high compliance despite their limited knowledge regarding proper medical record-keeping practices. The Kendall's Tau correlation test reveals a very weak correlation between dentists' knowledge of medical records and their compliance with maintaining good medical records in the Sidoarjo Region, with a correlation coefficient of 0.033 ($p>0.05$).

Table 5 The correlation between dentists' knowledge and compliance with filling out the medical records in Sidoarjo Region

Knowledge	Compliance						Correlation coefficient	Sig.
	High		Moderate		Low			
	n	%	n	%	n	%		
Good	46	49.5%	11	11.8%	1	1.1%	0.033	0.744
Fairly good	21	22.6%	6	6.5%	0	0%		
Poor	6	6.5%	1	1.1%	1	1.1%		
Total	73	78.5%	18	19.4%	2	2.2%		

Knowledge plays a crucial role in shaping an individual's behavior and performance. More excellent knowledge empowers individuals to approach their tasks with outstanding care and thoroughness, including accurately completing medical record documentation. However, despite having a high level of knowledge, some dentists still exhibit non-compliance in filling out medical records. The incompliance can be attributed to various factors, including motivation, rewards, workload, and employment status, which influence their adherence to established practices [15, 16].

Doctors with a comprehensive understanding of medical records are expected to demonstrate proficiency in accurately and comprehensively completing medical documentation. While having good knowledge can enhance the quality of medical records, it does not guarantee optimal performance in their completion. Various factors can hinder this process, including high workload, insufficient organizational support, and communication gaps among doctors. These challenges can impede their ability to consistently and effectively fill out medical records, despite their knowledge. Therefore, doctors must be aware and motivated to adhere to a standardized medical record [17–19].

Motivation is a crucial factor that significantly influences healthcare professionals' commitment to record and report on health services accurately. It is essential to recognize that operational effectiveness relies not only on advanced technology and facilities but also on the involvement of motivated and skilled healthcare workers. In order to facilitate this motivation, the provision of rewards for dentists who consistently and accurately complete medical records, as well as the implementation of sanctions for those who fail to do so, can be considered. Additionally, if necessary, socialization efforts can be undertaken to promote compliance with medical record filling among medical personnel, paramedics, and medical recorders [20–22].

4. Conclusion

This study highlights the crucial role of knowledge in shaping dentists' behavior and performance, particularly in the accurate completion of medical record documentation. While possessing good knowledge can enhance the quality of

medical records, it does not guarantee optimal performance in their completion. Factors influencing dentists' compliance with established practices include motivation, rewards, workload, and employment status.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare that they have no competing interests.

Statement of ethical approval

This study was approved by The Health Research Ethical Clearance of the Faculty of Dental Medicine Universitas Airlangga (number: 036/HRECC.FODM/I/2022).

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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