

Impact of Workload, Knowledge, Motivation, and Compliance of Medical Doctor on Quality of Medical Record at a Hospital in South Tangerang City, Indonesia

Devina Arrandhikasari¹, Rian Adi Pamungkas², Agusdini Banun Saptaningsih

Master of Hospital Administration, Universitas Esa Unggul, Jakarta, Indonesia

Article information	Abstract
<p>Article history: Received; April 30th, 2023 Revised: May 25th, 2023 Accepted: June 15th, 2023</p> <p>Corresponding author: Name: Devina Arrandhikasari Address: Jalan Arjuna Utara No.9, Kebon Jeruk, Jakarta 11510 E-mail: dr.devina.a@gmail.com</p> <hr/> <p>International Journal of Nursing and Health Services (IJNHS), Volume 6, Issue 3, June 20th, 2023 DOI: 10.35654/ijnhs.v6i3.705 E-ISSN: 2654-6310</p>	<p>Background: Medical Records is an electronic system intended to administer medical records. Quality medical records if the medical record data and information are complete and can be read by those entitled from time to time and from place to place as a tool for continuous communication. Objective: This study examines the relationship between workload, knowledge, and motivation on the quality of medical records with physician compliance as an intervening variable. Method: This study uses a quantitative approach with a cross-sectional research design. This study used 60 medical doctors at Hospital in South Tangerang. Result: Three main results in this study including 1) no relationship between workload on the quality of medical records through doctor compliance; 2) There is a relationship between knowledge of the quality of medical records through doctor compliance; 3) motivation has a relationship with the quality of medical records through doctor compliance. Conclusion: This study proves that compliance with medical doctors mediates the influence of knowledge and motivation, which can improve the quality of medical records. Creating improvements and providing support to motivate doctors regarding the importance of changes in the digitalization era can increase doctors' awareness to work in an orderly administration and an orderly manner towards standard operating procedures. Recommendation: The management of hospital need to consider the knowledge and motivation factors to ensure the quality of medical record.</p> <p>Keywords: workload, knowledge, motivation, compliance, quality of medical record</p> <hr/> <p>This is an Open Access article distributed under the terms of the Creative Commons Attribution 4.0 International License CC BY -4.0</p>



BACKGROUND

Hospital is a public health service which consists of personnel with various backgrounds (1). Complete data and information from medical records become the parameters to determine the quality of health services in hospitals (2).

Medical records contain a history of a person's illness, including written information about identity, anamnesis, physical examination, laboratory tests, and diagnoses. Health workers provide all medical services and actions to outpatients and inpatients. An electronic medical record uses an electronic system intended to implement medical records (3).

Electronic medical records are implemented from when the patient enters until the patient returns, is referred, or dies. Healthcare facilities must develop standard operating procedures for implementing electronic medical records (4). This is adjusted to the needs and resources of each health service facility regarding electronic medical record guidelines (3).

A preliminary study regarding the completeness of the contents of the medical record file at the South Tangerang Hospital was carried out by taking 50 random samples of the medical record file and looking at the completeness of the contents of the medical record file in 2021. The preliminary survey observations showed that 55% of the medical record showed patients' initial assessment completeness. About 45% of them incomplete to fill in the medical record

Of the 50 samples of medical record files, only 60% showed the completeness of filling in the patient's medical resume sheet. Meanwhile, 40% indicated that doctors must promptly complete the medical record file after the patient returns home.

The limited duration of doctor's practice time, the large number of visiting patients, and the renewal of SPOs related to patient examination protocols during the COVID-19 pandemic caused doctors to neglect often administrative duties such as not complying with SPOs in filling out medical records.

The preliminary study regarding medical doctors' knowledge, motivation, and adherence regarding the quality of medical records

indicates that doctors have good knowledge regarding filling out medical records and their functions. However, it needs to be improved in carrying out e-medical records. Due to time constraints, the lack of interest of doctors in improving capabilities related to advances in the development of information system technology become the significant factor not filling the medical records (5). In addition, the habits of nurses who are always helpful in completing make doctors negligent in carrying out their duties and responsibilities in filling out medical records entirely and accurately (6).

In addition, there was a demand from the hospital that doctors be required to fill in the manual version of the medical record and the e-medical record during the transition period. It was caused by the doctor's compliance in filling out the medical record to decrease (7). This is important considering that there are still few studies conducted in this area, so the results can positively improve hospitals, especially regarding the completeness of medical records.

METHOD

Design

A cross-sectional study approach was applied in this study. This study examined the relationship between workload, knowledge, and motivation on the quality of medical records, with compliance of medical doctors as an intervening variable.

Sample, sample size, & sampling technique

The sample in this study was all practicing doctors at the hospital. X South Tangerang. Sixty samples are selected using a purposive sampling technique based on the inclusion criteria. The inclusion criteria in this study were: 1) Still active as a doctor, 2) Doctors who practice, and 3) have practiced for at least one year. At the same time, the exclusion criteria were those who were not present during the study and were not willing to be involved in this study.

Data collection process

The researcher and assistant researcher collected the data. We collected the data within one month. All respondents willing to participate in this study must sign the informed

consent. Every respondent received the information for processing this study.

The instrument for data collection

Medical Record Quality Questionnaire. This questionnaire is used to measure the quality of medical records used in hospitals. This questionnaire consists of four dimensions, including 1) Completeness of the contents of the medical record file; 2) the accuracy of the contents of the medical record file; 3) timeliness of completion and return of medical record files; and 4) fulfillment of legal requirements. This questionnaire uses a Likert scale with a score of strongly disagree = 1, disagree = 2, agree = 3, and strongly agree = 4. In addition, this questionnaire has been tested for validity and reliability with Cronbach alpha = 0.92, indicating reliability.

Workload questionnaire. The workload questionnaire is used to measure the workload of nurses for the caring process among patients. This questionnaire consists of six dimensions: 1) mental demand, 2) physical demand, 3) temporal demand, 4) performance, 5) effort, and 6) frustration. This questionnaire uses a Likert scale with a score of strongly disagree = 1, disagree = 2, agree = 3, and strongly agree = 4. In addition, this questionnaire has been tested for validity and reliability with Cronbach alpha = 0.73, indicating reliability.

Knowledge questionnaire. The knowledge questionnaire measures nurses' understanding of the quality of medical records. This questionnaire consists of 16 question items. This questionnaire uses a Likert scale with a score of strongly disagree = 1, disagree = 2, agree = 3, and strongly agree = 4. In addition, this questionnaire has been tested for validity and reliability with Cronbach alpha = 0.88, indicating reliability.

The motivational questionnaire determines how much the nurses are motivated to work. This questionnaire consists of 26 question items. This questionnaire uses a Likert scale with a score of strongly disagree = 1, disagree = 2, agree = 3, and strongly agree = 4. In addition, this questionnaire has been tested for validity and reliability with Cronbach alpha = 0.92, indicating reliability.

The work compliance questionnaire measures how much the nurse's compliance is at work. This questionnaire consists of 21

question items. This questionnaire uses a Likert scale with a score of strongly disagree = 1, disagree = 2, agree = 3, and strongly agree = 4. In addition, this questionnaire has been tested for validity and reliability with Cronbach alpha = 0.91, which indicates that the questionnaire is reliable

Statistically analysis

Path analysis is used to examine the association between the dependent variable and the independent variable. Before carrying out the analysis test, the assumptions must be met, such as the data must be normally distributed, homogeneity, and homoscedasticity. The results show that all data are normally distributed with a p-value > .05

Ethical consideration

This research has undergone an ethical review process at Esa Unggul University. All respondents who are willing to be involved in this study are required to sign the informed consent.

RESULT

Characteristic of Respondents

Demographic data shows that more than half of the respondents are women (58.33%), while the number of male respondents is 25 people (41.67%). More than half of the respondents were aged between 25-35 years (53.33%), while the smallest number was >55 years old (8.33%). Based on the characteristics of employment status, the majority of them have part-time jobs (85%). Only nine people have a full-time job (15%). Related to the type of work, almost half of the respondents were specialist doctors (46.67%), while the smallest number were dental specialists (5%).

Path Analysis

Path analysis was applied in this to examine the association between the dependent variable and the independent variable. The results of this path analysis are based on the output results of the two regressions to obtain the beta coefficient and find a direct and indirect relationship; in full, the following results are obtained:

1) Structural Path Coefficient I

Path coefficient 1 examines the effect of the workload, knowledge, and motivation on

the intervening variable, such as compliance. The result found that path equation results and hypothesis testing in the model I are obtained as follows:

$$Z = Pzx_1 + Pzx_2 + Pyx_3 + e_1$$

$$Z = (-0.131)X_1 + 0.453X_2 + 0.622X_3 + e_1$$

Table 1. Coefficient of Determination of Model I

Model Summary				
Model	R	R Square	Adjusted R Square	Std. error of the Estimate
1	.960 ^a	.921	.917	3.42915
a. Predictors: (Constant), workload, knowledge, motivation				
b. Dependent Variable: Medical doctor compliance				

The results of the coefficient of determination are shown at $r^2=0.921$. Thereby, 92.1% contributed to the effect of the independent variables on workload, doctor's knowledge, and motivation on the intervening variable compliance, while the remaining 7.9% contribution to the influence of other variables not examined in this study.

2) Structural Path Coefficient II

The coefficients of path 2 test the effect of the independent variables on workload, knowledge, motivation, and compliance, intervening variables on the dependent variable on the quality of medical records. The results are as follows:

$$Y = Pyx_1 + Pyx_2 + Pyx_3 + Pzy + e_2$$

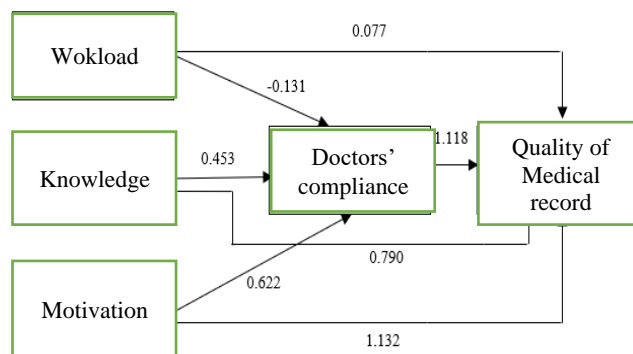
$$Y = 0.077X_1 + 0.790X_2 + 1.132X_3 + 1.118Z + e_2$$

Table 2. Coefficient of Determination of Model II

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.897 ^a	.805	.791	5.50364
a. Predictors: (Constant), workload, knowledge, motivation, doctor compliance				
b. Dependent Variable: medical record quality				

The result of the coefficient of determination showed that $r^2=0.805$. It was indicated that 80.5% contributed to the effect of workload, knowledge, motivation, and the intervening variable, such as compliance

with the quality of medical records. At the same time, the remaining 19.5% contributed to the influence of other variables not examined in this study. Details of the association can be seen in this figure 1.



Hipotesis Testing

Hypothesis testing in this study used the f-test (simultaneous), t-test (partial), and Sobel test. The F tests the association between the independent variables with the dependent variable simultaneously. The T-test was used to examine the effect of the independent variables on the dependent variable individually or partially. The Sobel test was used to examine the effect of mediation on the dependent variable. Thereby, Sobel Test can be calculated with the Online Sobel Calculator. The test is carried out using a significance (p-value) of $0.000 < 0.05$ and $f\text{-count} > f\text{-table}$ or $t\text{-count} > t\text{-table}$.

The results of the f (simultaneous) test of the model I obtained f-count results of 218.205 with $p\text{-value} < 0.05$. The results of $f\text{-count} > f\text{-table}$ ($218.205 > 2.761$) and $p\text{-value} = 0.000 < 0.05$. Thus, there is a significant effect of workload, knowledge, and motivation on physician compliance.

The score of the f-test (simultaneous) in model II obtained f-count results of 56.781 with a p-value of 0.000. Therefore, there is a significant effect on workload, knowledge, motivation, and doctors' adherence to the quality of medical records.

Table 3 shows the direct effect of dependent variable to the independent variables. Results were explained in the table 3.

The Sobel test is carried out by testing the strength of the indirect effect from the independent variable (X) to the dependent variable (Y) through the intervening variable

(Z). This study tested the effect of workload, knowledge, and motivation on the quality of medical records through physician compliance as an intervening variable. The Sobel Test can be calculated using the Online Sobel Calculator to test the effect of mediation. Based on the results of data processing, the Sobel test results are obtained, as shown in the following table.

Table 3. Direct effect between dependent variable with independent variables

Direct effect between variables	Coefficient score	F-count	p-value
Correlation between workload with compliance	-0.131	-2.830	0.006
Correlation between knowledge with compliance	0.453	6.723	0.000
Correlation between motivation with compliance	0.622	8.702	0.000
Correlation between workload with quality of MR	0.077	0.978	0.332
Correlation between knowledge with quality of MR	0.790	5.494	0.000
Correlation between motivation with quality of MR	1.132	6.506	0.000
Correlation between compliance with quality of MR	1.118	5.271	0.000

Table 7. Indirect Effect between dependent variable with independent variables

Indirect effect between variables	Sobel test	p-value
Correlation between workload with quality of MR mediated by compliance	-1.224	0.110
Correlation between knowledge with quality of MR mediated by compliance	3.646	0.000
Correlation between motivation with quality of MR mediated by compliance	4.665	0.000

DISCUSSION

The effect of workload, knowledge, and motivation simultaneously on the quality of medical records through doctor compliance

The results of Sobel testing showed no significant effect of workload, knowledge, and motivation simultaneously on the quality of medical records through doctor compliance, with p-value = 0.110 > 0.05.

Quality medical records should be complete and could be used as a reference for health services and protect legal interests following existing regulations (8). In addition, medical records also could support information for quality assurance activities, help determine diagnoses and disease coding procedures, as well as for medical research, and reimbursement of treatment costs (9).

However, the workload among medical doctors in this hospital is not evenly distributed and is a relatively as high workload. Besides that, there are relatively few medical doctors in this hospital. Therefore, The demands on the workload are also high.

Physician motivation, compliance, and knowledge positively affect the quality of the content and usability of medical records. However, the lack of resocialization from management regarding filling out procedures and the desire to learn how to fill out e-medical records make medical doctors often forget the value of filling out e-medical records.

It was consistent with a previous study that showed that knowledge, attitude, motivation, and compliance improved the quality of medical resumes at Zahirah Hospital (10). Another study also described the effect of knowledge on the completeness of nursing care documentation in the internal medicine and surgery wards of RSUD Dr. Tjitrowardojo Purworejo (11). A study also supported that knowledge positively correlates with filling out the completeness of the medical record at Aisyiyah Bojonegoro Hospital (12).

The results of the partial test also show that there is no significant adverse effect of workload on the quality of medical records. It was indicated that the higher or lower the workload has given, the quality of medical records would remain.

This statement is supported by a previous study that showed that workload was not significantly associated with the accuracy of

nursing documentation (13). Conversely, knowledge positively affects the quality of medical records. The higher understanding of medical doctors regarding the quality of medical records improved the quality of the medical records. It was consistent with a previous study that found higher knowledge of filling out the completeness of the medical record file at the hospital (12).

Another factor described the positive effect of motivation on the quality of medical records. Work motivation is a condition that influences a person to continue to improve, direct and maintain behavior related directly or indirectly to the work environment (14). In this study, the motivation and responsibility in providing services to medical doctors were considered quite good. However, a lack of desire or motivation to learn to fill out e-medical records is also a factor causing the decline in the quality or quality of medical records, particularly among senior specialists (15).

It was consistent with a previous study that found a relationship between nurses' work motivation and the completeness in documenting nursing care in the Surgery Room and Internal (16).

Another factor such as the compliance of medical doctors. The finding showed a positive effect on physician compliance with the quality of medical records. In this study, physician compliance in filling out the medical record is quite good. However, the lack of socialization from management regarding the procedure for filling in e-medical records causes doctors to ignore e-medical records often because they think that filling in medical records manually is more accessible. Whereas the higher the compliance with medical record filling, the quality of medical records in hospitals is increasing.

The results of this study align with previous research conducted by Sunnah et al. which stated that there is a relationship between the compliance of dentists and the completeness of medical record filling (17).

CONCLUSION

The results of hypothesis testing showed no significant effect of workload simultaneously on the quality of medical records through doctor compliance. However, in part, there is an effect of knowledge on the quality of medical records

through doctor compliance, and there is an influence of motivation on record quality. Medicine through physician compliance. The value of the effect of the independent variables on workload, knowledge, and motivation on the intervening variable of physician compliance was obtained by an r^2 of 0.921 or 92.1%. In comparison, the remaining 7.9% contributed to the influence of other variables not examined in this study.

Implication

The results showed that the quality of medical records decreased based on workload, motivation, knowledge, and compliance, indicating that management was expected. Thus it is necessary to re-socialize the SPO, evaluate and implement the results of the evaluation and then conduct round table discussions with vendors regarding the development of e-medical records that can reach all service needs of X Tangerang Selatan Hospital to improve the quality of medical records, especially the quality of e-medical records.

Future research is expected to carry out further research with different research designs, such as qualitative research types, to improve the assessment of research results and examine other more specific variables to generalize them from existing research results. Involve respondents from other groups of health workers so that the results can be more generalized because the population and sample are more significant. Add individual interviews as a data collection method.

Acknowledgment

The author would like to thank: Dr. P. H. Rian Adi Pamungkas, S.Kep. Ns., MNS, Dr. Agusdini Banun Saptaningsih Apt, MARS, Dr. Rokiah Kusumapradja, SKM, MHA, and Dr. Ir. Nofierni, MM for his valuable suggestions and input in this research. While writing this research, I thank all hospital doctor respondents. X South Tangerang.

REFERENCES

- (1) Babiker A, El Husseini M, Al Nemri A, Al Frayh A, Al Juryyan N, Faki MO, Assiri A, Al Saadi M, Shaikh F, Al Zamil F. Health care professional development: Working as a team to improve patient care. *Sudan J Paediatr.* 2014;14(2):9-16

- (2) Huffman EK. (1994). *Health Information Management* (J. Cofer & American Health Information Management Association (eds.); 10th ed.). Physicians' Record Company
- (3) Peraturan Menteri Kesehatan RI. (2022). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 24 Tahun 2022 Tentang Rekam Medis*.
https://yankes.kemkes.go.id/unduh/FILEUNDUHAN_1662611251_882318.pdf
- (4) Aguirre RR, Suarez O, Fuentes M, Sanchez-Gonzalez MA. Electronic Health Record Implementation: A Review of Resources and Tools. *Cureus*. 2019 Sep 13;11(9):e5649. doi: 10.7759/cureus.5649
- (5) Bali A, Bali D, Iyer N, Iyer M. Management of medical records: facts and figures for surgeons. *J Maxillofac Oral Surg*. 2011;10(3):199-202. doi: 10.1007/s12663-011-0219-8
- (6) Fajariani V, Noor NB, Amqam H. Completeness analysis of completeness filling and time of returning the medical record for inpatient patients at Regional General Hospital of Makassar City. *Journa of Asian Multicultural Research for Medical and Health Science Study*. 2020; 1(2): 074-083
- (7) Honavar SG. Electronic medical records - The good, the bad and the ugly. *Indian J Ophthalmol*. 2020;68(3):417-418. doi: 10.4103/ijo.IJO_278_20
- (8) Endriyas M, Kawza A, Alano A, Lemango F. Quality of medical records in public health facilities: A case of Southern Ethiopia, resource limited setting. *Health Informatics Journal*. 2022;28(3). doi:[10.1177/14604582221112853](https://doi.org/10.1177/14604582221112853)
- (9) Ehrenstein V, Kharrazi H, Lehmann H, Taylor CO. Chapter 4 Obtaining data from electronic health records. Retrieved from:
<https://www.ncbi.nlm.nih.gov/books/NBK551878/>
- (10) Husni M. Pengaruh Pengetahuan, Sikap dan Motivasi Terhadap Kepatuhan Dokter dalam Penulisan Diagnosis pada Resume Medis di RS Zahirah 2018. *Jurnal Administrasi Rumah Sakit Indonesia*. 2018; 4(3): 184-197.
- (11) Kimalaha N, Mahfud M, Anggraini AN. Pengetahuan dan Beban Kerja Perawat Berhubungan Dengan Kelengkapan Pendokumentasian Asuhan Keperawatan di Bangsal Penyakit Dalam dan Bedah. *Indonesian Journal of Hospital Administration*. 2019; 1(2), 79.
<https://doi.org/10.21927/ijhaa.v1i2.932>
- (12) Kumalasari RR, Darmawan Y, Winarni S. Hubungan Pengetahuan, Sikap Dan Usia Dokter Terhadap Kelengkapan Pengisian Berkas Rekam Medis Pada Pasien Bpjs Di Rumah Sakit Aisyiyah Bojonegoro. *Jurnal Kesehatan Masyarakat (e-Journal)*. 2018; 6(4), 125-131
- (13) Prakosa MM, Nursalam, Asmoro CP. Quality of Nursing Documentation and Nurse s Objective Workload Based on Time and Motion Study (TMS). *Jurnal INJEC*. 2016; 1(2), 173-177.
- (14) Riyadi S, Kusnanto H. Motivasi Kerja dan Karakteristik Individu Perawat di RSD Dr. H. Moh Anwar Sumenep Madura. *KMPK Universitas Gadjah Mada*, 2017; 18
- (15) Ajami A, Bagheri-Tadi T. Barriers for adopting electronic health records (EHRs) by physician. *Acta Inform Med*. 2013; 21(2): 129-134
- (16) Ramadani FR, Arifin RF, Abiyoga A. Correlation of Nurses' Workload and Work Motivation with the Complete Documentation of Nursing Care in the Surgical Room and Internation RSUD Dr. *Dinamika Kesehatan*. 2018; 9(2)
- (17) Sunnah TD, Wardhana ES, Aurora HB. The Relationship Between Legal Understanding, Attitudes and Dentist's Behavior On Completing Medical Records in Semarang. *ODONTO Dental Journal*, 2021; 8(1)