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RESEARCH ARTICLE

An Analysis of the Quality of Patient Development Integrated Records as System Information Among Healthcare Professionals

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Abstract

Patient Development Integrated Records (CPPT) is the documentation for health personnel in conducting the assessment of hospitalized patients according to the Hospital Accreditation Committee Standard (KARS). The CPPT is a tool for all health professions to convert the data and treatment plan for the patient. This would lead to a collaboration and communication between healthcare professionals at the hospital. This study aims to analyze CPPT as the information system between healthcare professionals at the hospital. This design study used a mixed-method with quantitative research as a source of primary data and qualitative research as secondary data. This research used cross-sectional approach as the quantitative tool, involving 76 health workers, most of whom were nurses. The sample was done by systematic sampling. Data collecting was done using questionnaires chi-square bivariate analysis and multivariate logistic regression. Qualitative research was done through interviews, focus group discussions and documentation with the status of 140 documents. The results of this quantitative study showed that the quality of study documentation in hospitals is still 80,3%, good category, and based on documentation study shows 52.9%. Meanwhile, as an information system between professionals was influenced by education, length of work, understanding of the Standard Operating Procedure (SOP) and concern of health professionals who write Patient Development Integrated Records, with the most dominant factor is the knowledge of SOP with (p=0.003). These factors should be a concern for the hospital management as the evaluation in order to improve care to patients, patient safety and protect health care workers from lawsuits.

Keywords: *Influential factor, Inter-professional information system, Patient development integrated records.*

Introduction

Act No. 44 of 2009 about hospitals describes the hospital as a health care institution that organizes medical services which provide inpatient, outpatient, and medical emergency service. Every health-care provider is required to have patient medical records written by the physician and nurses related to the given health care services [1]. Health care services are given by teams of health professionals who communicate and collaborate.

This happens everywhere in Hospitals, Primary Health Care, Medical Clinic, and even Integrated Service Post. Every profession has its uniqueness and different characteristics in their area of study. Every profession has its way of describing and handling everything based on their discipline [2].

Thus as a way to gather all the informative and integrated health care service we need documentation as a tool. Based on Act No. 44 of 2009, it is mandatory for all hospitals in Indonesia to increase the quality of their health care through accreditation [1]. This increase should follow these 4 standards: Focus on Patients, Focus on Hospital Management, Focus on Patient Safety, and Focus on Millenium Development Goals [3].

Nurses that work in health care facilities have various levels of knowledge based on their competency level, education, work experiences, age, etc.

Hence, we could observe that nursing care quality which includes monitoring, diagnosing, planning, action, and evaluation might not be optimal as expected.

Data from nurses is collected mostly by other health professionals and only contains hemodynamic monitoring, drugs and medications. The skills to write nursing care process with standardized forms has not really compliance, complete, informative and right. In the past, physicians were the center of health collaboration teams, but nowadays patients, known as Patient Center Care (PCC), are the focus in health collaboration team. Related to that has changed, the planning process and intervention should be integrated and coordinated between departments, installation, health care units, and all of the health professionals in the entire hospital.

The implementation of these health integrated services is written on forms called Patient Development Integrated Records (CPPT). Patient Development Integrated Records (CPPT) is a tool for all health professionals to convert the data and treatment plan for the patients. Not only physicians but nurses, nutritionists, physiotherapists, and other health caregivers should use CPPT as documentation for the treatments given to the patients.

Writing Patient Development Integrated Records (CPPT) is a process to re-evaluate the nursing care that has been made and writing the rule of SOAP writing (Subjective, Objective, Assessment, and Plan), also to re-evaluate the nutrition care process using ADIME (Assessment, Diagnosis, Intervention, Monitoring, and Evaluation).

The purpose of writing CPPT forms is to monitor the patient's health and the integrated health care service done by health professionals (physicians, nurses, nutritionists, physiotherapists, and other health care workers). This has become the output of patient care so it could be measurable and has good quality. Research has shown that good interdisciplinary communication leads to better outcomes for the patients and their families, as seen by the increase patient and patient's family's satisfaction, symptom control, a decrease in the length of the stay and hospital costs [4].

Patient documentation in this hospital should follow the Indonesian Commission on Accreditation of Hospital's standards, start from early assessment, re-assessment on CPPT, nursing journal, flow sheet, educate patients and their families, and even discharge planning.

It all should demonstrate an integrated information system by planning treatment until implementation can be shared with all health professionals and all documents, SOP/guidance/guidelines, and hospital policies already done and socialized. The increase in public demands, better levels of public awareness, health information that is easily obtained from media and the number of legal institutions make it possible for the public to complain about health services given institutionally and individually. The complaints could be given personally to the physicians, nurses, and other health workers.

Methods

This design study used mixed methods, quantitative and qualitative studies. The tools used are Rapid Assessment Procedures (RAP) through questionnaires followed by in-depth interviews and Focus Group Discussion (FGD) using interview guidelines and also reviewing CPPT documents written on patient medical records.

The approach used in this study was a survey in which we collected primary data based on interviews between researcher and respondents and linked it with respondents' attitudes, experiences, and characteristics. The quantitative study uses on identify statistical relationship planning to determine the relationship between independent and dependent factors as well as observational which is a descriptive study to describe the phenomenon that could be happening.

This study was carried out by observing patient medical records as a research subject [5]. The qualitative study uses a descriptive design to find and develop knowledge that requires the researcher to determine and identify the relevance and relationship between certain phenomena and individuals. With in-depth interviews and focus group discussions, the researcher will gain and explore the data more. The researcher also used a phenomenological approach in formulating questions about what

respondents expected and obtained from doing CPPT documentation and how it affected their work between health collaboration team.

Results

The documentation reviews were performed on CPPT documents owned by 140 patients that had been released from the hospital maximum 1 week. The questionnaires were collected from health professionals who have access to writing CPPT documents. The early planning part meant giving the questionnaires to 110 respondents (nurses, physicians, nutritionists, and physiotherapists) but until the end of the research, the researcher could only get 76 respondents. A qualitative data collection was carried out using Focus Group Discussion (FGD) towards nurses and in-depth interviews with nutritionists and physiotherapists.

Description of Patient Development Integrated Records (CPPT) Quality (Completeness, Compliance, and SOAP Rule)

Based on hospital accreditation standards, a good Patient Development Integrated Records (CPPT) documentation should have 100% completeness, maintained validity, compliance to SPO/guidance/guidelines and follow SOAP rules. From the frequency records and data analyzing it the quality of Patient Development Integrated Records (CPPT) is as follows: 20.7% Patient Development Integrated Records (CPPT) documents come from Mother Care Unit and 20.7% come from a general care unit. The least are coming from The Intensive Care Unit, because of the patient's average length of stay ≥ 7 days. Medical Doctors in Charge (MDiC) who have most Patient Development Integrated Records (CPPT) is Doctor 'Hu' and Doctor 'Ot' with 13 documents each, while the other doctors were relatively balanced.

Patient's length of stay for 1-3 days are 48.6% followed by a length of stay of 4-6 days (42.9%), and the rest are patients who stay more than 7 days in Intensive Care Unit (ICU). The completeness of the Patient Development Integrated Records (CPPT) documents is relatively good because there is a doctor on standby in the ICU. The completeness of Patient Development Integrated Records (CPPT) documents is measured by complete signature, complete writing of SOAP according to rules, and complete writing of dates and hours when the care is given.

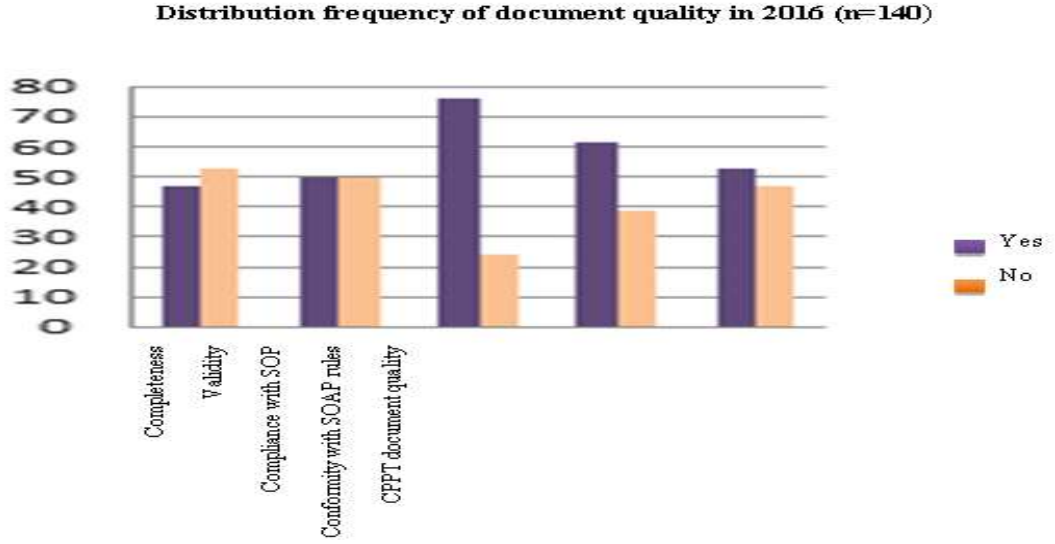

Fig. 1: Distribution frequency of document quality

The charts show that Patient Development Integrated Records (CPPT) with good quality is only 52.9%. The validity of Patient Development Integrated Records (CPPT) still at 50% means the awareness of the right information should be improved.

Univariate Analysis

There are 76 questionnaires collected from health professionals who have access to writing CPPT documents. The respondents are nurses, physicians, nutritionists, and physiotherapists. The respondents' characteristics include ages, length of work, education, and sex.

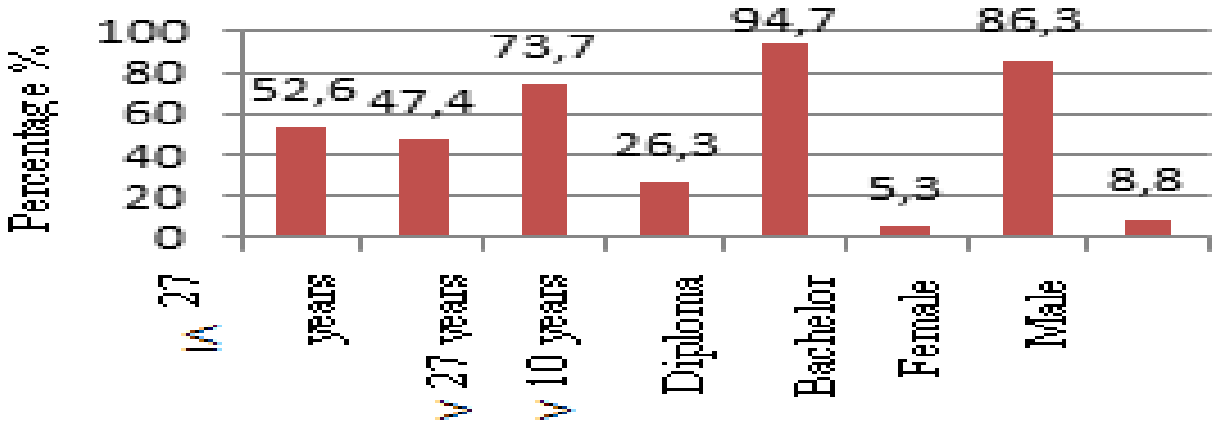

Fig. 2: Characteristic Frequency of Health Professional in 2016 (n=76)

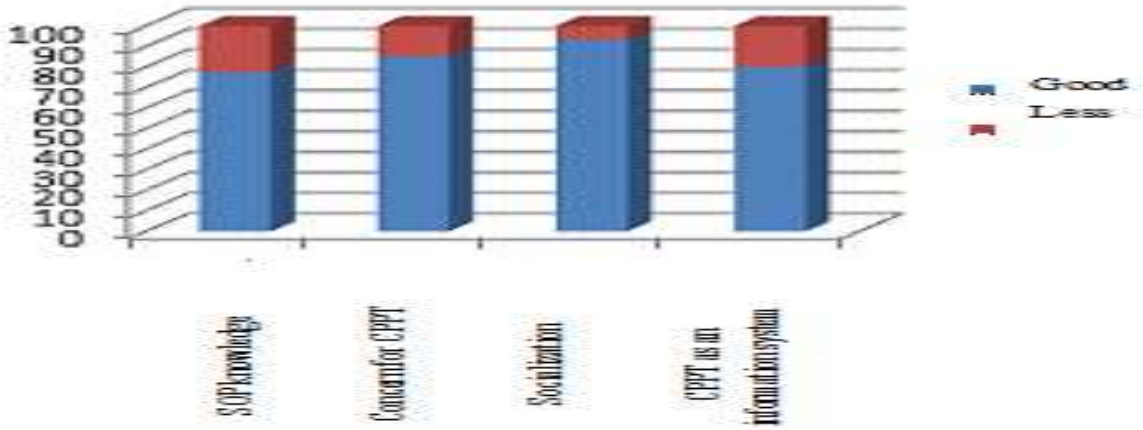

Fig. 3: Distribution of the Independent and Dependent Variables in 2016

The univariate analysis between independent and dependent variables shows that 80.3% of respondents rated the Patient Development Integrated Records (CPPT) as a good information system even though 19.7% of the respondents stated that the Patient Development Integrated Records (CPPT) is not a good information system.

Bivariate Analysis: Six Independent Variables with Dependent Variable

Table 1: The quality of Patient Development Integrated Records (CPPT) as an Information System in 2016

Variables	*p*	*OR*
Knowledge about SOP/Guidance/Guidelines	0,003	6,603
Awareness	0,682	2,745
Socialization/Training	0,254	2,974
Ages	1.000	0,966
Length of Work	0,328	0,3368
Education	0,001	0,153

It is analyzed using the *Chi-Square* test because the independent and dependent variables are categorical. From the table above it can be seen that ages (p value=1.00), length of work (p value=0.328) and awareness (p value=0.682) do not have a significant correlation with Patient Development Integrated Records (CPPT) documentation because their *p value* is higher than 0.25 (p>0,25). The results also indicate that knowledge about SOP/guidance/guidelines (p value=0.003), education (p value=0.001), and socialization/training (p value=0.25) have a significant correlation with Patient Development Integrated Records (CPPT) documentation as an Inter-disciplinary information system because their p values are less than 0.25 (p≤0,25)

Multivariate Analysis

The multivariate analysis is needed to determine the most significant factor with the quality of Patient Development Integrated Records (CPPT) documentation as an information system between professionals. The researcher uses the multivariate analysis with a logistic regression test because the independent and dependent variables are categorical. The model in use is a prediction model with the LR backward method where the researcher inputs all the selected variables into the software. Gradually, the non-significant variables will be let out. The process will continuously happen until no more variables are released.

Table 2: Logistic Regression Table/Model of Patient Development Integrated Records (CPPT) as an Information system in 2016

Variables	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Knowledge (1)	-1,888	,631	8,947	1	,003	,151	,044	,522
Constant	-,118	,486	,059	1	,808	,889		

From the 3 models of multivariate analysis we can conclude that:

- Factors related to the quality of Patient Development Integrated Records (CPPT) are knowledge about SOP/guidance/guidelines and education.
- The most significant factors related to the quality of Patient Development Integrated Records (CPPT) are knowledge about SOP/guidance/guidelines and education with a p value = 0,003.
- The equation of logistic regression: The quality of Patient Development Integrated Records (CPPT) as an Information system=-0,118+(-1,888*knowledge)
- The prediction ability of the knowledge variable on the quality of Patient Development Integrated Records (CPPT) as an information system is 80.3% which means the influence is strong.
- Odds Ratio Interpretation:
- The health professionals with the knowledge about SOP/guidance/guidelines are good will affect the quality of Patient Development Integrated Records (CPPT) 0.151 times higher compared to health professionals who lack proper knowledge.

Focus Group Discussion and In-depth Interviews

The presentation of the qualitative study results collected through interviews and Focus Group Discussion contains information about the description of health professionals' experience in making Patient Development Integrated Records (CPPT) documentation. Also, the researcher could get the information on whether the Patient Development Integrated Records (CPPT) can be used as information among health professionals in terms of the quality of Patient Development Integrated Records (CPPT) seen from its completeness, validity, compliance with SOP and SOAP writing rules, supervision, awareness, knowledge about SOP/guidance/guidelines, socialization/training. This will be explained through analysis and data validation based on verbatim transcripts during FGD and in-depth interviews with respondents.

Qualitative Analysis

An analysis was done by focusing on the variables used in document reviews and quantitative research.

Description of Respondents' Knowledge about SOP/guidance/guidelines (Variable Knowledge)

Some respondents know about the SOP/guidance/guidelines of Patient Development Integrated Records (CPPT), but the respondents said the guidelines were kept in the committee room, not in the treatment room. Few respondents said they still have not comprehended it well since the format of the CPPT documents is often changed. Quantitative Data: 77.6% of respondents have a good knowledge of SOP/guidance/guidelines of Patient Development Integrated Records (CPPT), but there are still 23.4% respondents who have insufficient knowledge about the SOP/guidance/guidelines.

Description of Respondents' Awareness of Writing Patient Development Integrated Records (CPPT) Documents (Variable awareness)

There is awareness from health professionals to see a patient's development based on a sense of responsibility, legal aspect. There are also some that are less aware because of the lack of team collaboration and bad hand-writing that make it hard to read the CPPT documents.

Quantitative Data: The awareness of writing CPPT documents is quite high (85.5%) but it still needs more effort so it could reach 100%.

Description of Socialization About Patient Development Integrated Records (CPPT) Documents (Variable Socialization)

Socialization has been done orally by the hospital's management. Quantitative Data: It

showed 93.4% of respondents admit that they got socialization about Patient Development Integrated Records (CPPT).

Description of the Quality of Patient Development Integrated Records (CPPT) as a Collaboration and Information System between Professionals (Variable Quality of CPPT as Information System)

Some respondents said the collaboration between professionals mostly has not been portrayed in Patient Development Integrated Records (CPPT).

Quantitative Data: A total of 80,3% of respondents stated that the existing CPPT has become a source of information system between professionals.

Description of Completeness of Patient Development Integrated Records (Variable Completeness)

The Patient Development Integrated Records (CPPT) are partially incomplete. The columns for date and times are often not filled in. The physicians often miss the verification process .

Description of the Validity of Patient Development Integrated Records (CPPT) Documentations (Variable Validity)

The Patient Development Integrated Records (CPPT) are normally based on facts and patient conditions thus are usually valid. But in the verification process where the Medic in Charge re-checks the documents, the doctor's handwriting and how readable it is are not optimal.

Quantitative Data: The document's validity has only reached 50%.

Description of the Respondents' Compliance to SOP on Writing Patient Development Integrated Records (CPPT) Documents (Variable Compliance to SOP)

Several filled CPPT documents spotted has not followed SOP yet. It could be seen in the lack of a health professional's signature, in the fact that the treatment had not been written according to SOAP rules (Subjective, Objective, Assessment, and Plan), and the errors on the treatments written.

Description of Writing Patient Development Integrated Records (CPPT) Documents using SOAP Rules (Variable SOAP rules)

Some respondents said they often confuse writing Patient Development Integrated Records (CPPT) documents using SOAP rules because the format of the CPPT documents often gradually changes.

Description of Patient Development Integrated Records (CPPT) documents quality (completeness, compliance, and SOAP rules) (Variable Quality of CPPT documents)

The quality of the CPPT documents has not been maximal because certain health professionals still lack compliance and awareness to fill these in.

Discussion

The quality of Patient Development Integrated Records (CPPT) as an inter-professionals information system is quite high (80.3%). It can be said that Patient Development Integrated Records (CPPT) are good as an inter-professionals information system. The results from the bivariate analysis of the variables knowledge, socialization, and education show a significant relationship with the quality of the Patient Development Integrated Records (CPPT).

Meanwhile, the variables of awareness, ages, and length of work do not have significant relationships because of their values ($p>0,25$). The variable knowledge about SOP/guidance/guidelines has the most significant relationship to the quality of CPPT. Bivariate analysis showed a significant relationship between knowledge and quality of CPPT with 77.6% of respondents knowing about the existance of SOP/guidance/guidelines. From the results of the qualitative analysis we could interpret that most respondents already know about the SOP/guidance/guidelines to help CPPT documentation and it has been socialized by Hospital Management.

However, it is quite disappointing because there are no copies of the SOP/guidance/guidelines in the treatment room. it is also quite confusing for health professionals because the format of CPPT documents is often changing.

Awareness and knowledge of the Standard Operating Procedure is one of the aspects that influences the quality of CPPT, apart from education, economy, culture, and the legal aspect [6]. The univariate analysis showed that 85.5% of respondents have the awareness to fill out the Patient Development Integrated Records (CPPT); however 21,5% (14 respondents) have bad quality CPPT. The reason for incompleteness on document writing could be due to the timidness, lack of awareness, being busy with patients, and a lack of comprehensive socialization [7].

Based on the qualitative analysis some have awareness because of the legal aspect and high sense of responsibility but others are less aware because of the lack of team collaboration, bad hand-writing that makes it hard to read the CPPT documents. The bivariate analysis showed that 93.4% of respondents received socialization from the hospital's management, yet 18,3% still had a poor quality of CPPT.

Based on the hospital's accreditation standards, only those who are competent can carry out the assessment [3]. It means we need socialization/training to provide knowledge to health professionals so they could reach the best quality of Patient Development Integrated Records (CPPT) documentation. Factors that could affect the CPPT documentation are education, economy, culture, legal aspect, Standart Operating Procedure and continuous socialization. The results of the bivariate test show a significant relationship between education and the quality of CPPT (*p value*=001) but a weak level of significance (OR=0.153). 15,3 % of respondents from Diploma background havebad quality CPPT.

All the respondents with a Bachelor background do not have a quality of CPPT yet. The bachelor respondents were 1 physician and 3 pharmacists. Education could affect the quality of CPPW as education is related to the ability of nurses and other health professionals to recognize, operate, and implement the SOAP writing [6]. Based on the qualitative analysis pharmacists tend not to write their activities in the Patient Development Integrated Records (CPPT) whereas doctors often donot comply with making a good quality CPPT. The multivariate analysis indicated that knowledge about SOP/guidance/guidelines has the biggest influence on the quality of Patient Development Integrated Records (CPPT) as an inter-professional information system with three significant variables (R square = 0,310). It means that three variables could explain the quality of CPPT as an inter-professional information system with 31.0% while the rest is explained by other variables.

The prediction of the knowledge variable on quality of Patient Development Integrated Records (CPPT) as an information system is 80.3% which means the influence of knowledge is really strong. The hospital's accreditation standard book, said, in the Chapter on Patient's Assessment, that "the hospital should initiate the minimum contents of assessment based on laws, regulations, and standards that must be carried out by physicians, nurses, and other health professionals. Only those who are competent can carry out the assessment" [3]. Based on the statements above, it means the SOP/guidance/guidelines are very important to be known and understood by health professionals so it could help them make the right assessment and good quality CPPT.

Only 47,1% of Patient Development Integrated Records (CPPT) are completely filled in. Invalid document value reaches 50% while the CPPT documents that are not reviewed by a physician/Medic in Charge are 78.6%. The compliance with SOP on writing Patient Development Integrated Records (CPPT) documents is considered good because 70% (98 documents) are written according to SOP. According to The Indonesian Commission on Accreditation of Hospital (2011) one of the examples on compliance to Standard Operating Procedure (SOP) is when you write something wrong; it should not be deleted with type-x or covered with a label. In addition, hospitals should have abbreviation guidance agreed by the hospital and nationally because it involves legal aspects and prevents misconception.

The Patient Development Integrated Records (CPPT) documents written using SOAP rules reach 67.9%. From the interviews and FGDs we could get the troubles on having 100% score is due to difficulties in reading the physician's handwriting and the format of the CPPT documents which often changes.

The quality of Patient Development Integrated Records (CPPT) as an information system between health professionals is 52.9%. It shows that the implementation of an integrated information system between health professionals is not in line with expectations. Through in-depth interviews and FGDs with nurses, nutritionists, and physiotherapists, the researcher asked about the sustainability value of CPPT, and their opinion varies from 30%, 50%, until 80%. It means that not all health professionals agree that CPPT is an informative system to use.

Conclusion

We can conclude from the quantitative study with univariate analysis between independent and dependent variables that 80.3% of respondents choose the Patient Development Integrated Records (CPPT) as a good information system. This is also supported by the results of the documentation study that shows the respondents' compliance with SOP/guidance/guidelines on filling Patient Development Integrated Records (CPPT) documents is quite good (75.7%) and the compliance with writing it with SOAP rules reaches 61.4%.

Meanwhile, based on documentation study, the quality of Patient Development Integrated Records (CPPT) documentation reaches 52.9%, yet the completeness of the CPPT documents (47.1%) and the validity of the CPPT documents (50%) are still considered low. In conclusion, we could imply that the quality of the Patient Development Integrated Records (CPPT) as an inter-professional information system is quite good but needs to be more concerned with the written document. Many respondents said that it could be the physician's bad handwriting or forms that are too many to fill and documents which change often that caused less optimal Patient Development Integrated Records (CPPT) completion. Through the bivariate analysis, we know that education, socialization, and knowledge about SOP/guidance/guidelines have a significant relationship with the quality of the Patient Development Integrated Records (CPPT).

Of the three, the one that has the most significant relationship is knowledge about SOP/guidance/guidelines (p=0.003) with the prediction ability about 80.3% which means it is predicted to have a strong influence on the quality of Patient Development Integrated Records (CPPT). Overall it can be interpreted that health professionals should know about how to write Patient Development Integrated Records (CPPT), the document's function, and what should be considered to make good quality CPPT documents. Meanwhile, age, length of work, and awareness did not have any significant relationship with the quality of Patient Development Integrated Records (CPPT).

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