



QUALITY CONTROL AND COST CONTROL ANALYSIS OF PULMONARY TUBERCULOSIS CLINICAL PATHWAY

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ABSTRACT

Tuberculosis is one of the global health issues discussed at the G20 meeting in 2020 in Indonesia, where the number of pulmonary tuberculosis patients in Indonesia continues to increase, where the treatment of pulmonary tuberculosis patients in hospitals requires clinical pathways to provide effective and efficient services to pulmonary tuberculosis patients in the treatment room. The study was conducted quantitatively with a cross sectional research design conducted on 127 medical record files of pulmonary tuberculosis patients in the inpatient treatment room at RSUD IA Moeis Samarinda in 2024 using purposive sampling. Electronic instruments of patient medical records were used to obtain data on compliance with specialist visits, laboratory examinations, thoracic X-ray examinations, administration of Anti-Tuberculosis Drugs, Length of stay, Cost of Drugs and Consumables (BHP), and Cost of Services to assess the effect of Quality Control and Cost Control of Clinical pathway for pulmonary tuberculosis patients hospitalized at RSUD IA Moeis Samarinda. Multivariate analysis using Kruskal Walls test. The results showed that variables that had an influence on the clinical pathway included compliance with specialist visits, where an increase in compliance with specialist visits was also obtained in the group without clinical pathway on average 57.04%, and the group with clinical pathway amounted to 64.07%. Antituberculosis drug administration also increased, in the group without clinical pathway by 22.6% and in the group with clinical pathway by 44.2%. Other variables that also affect the clinical pathway are Length of stay, Cost of Drugs and BHP, and Cost of Services. While 2 other variables, laboratory examination and radiology examination, did not affect the clinical pathway. The conclusion of this study is that clinical pathway is significantly related to visit compliance, OAT administration, Length of Stay, BHP Costs and Service Costs.

Keywords: clinical pathway; cost control; pulmonary tuberculosis; quality control

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INTRODUCTION

Pulmonary Tuberculosis is one of the global health issues discussed at the 2020 G20 meeting in Indonesia. Since 2022 until now, Indonesia has become the second largest number of tuberculosis cases in the world.(Bagechi, 2023). Currently, the prevalence of confirmed tuberculosis cases in East Kalimantan is still high and Samarinda is still in the top three districts with the highest number of tuberculosis cases in East Kalimantan besides Balikpapan and Kutai Kartanegara.(BPS Samarinda, 2021) Financing of tuberculosis program services is dominated by national programs, while some have been integrated in the National Health Insurance including diagnostic and consultation services at the primary health facility level (Kemenkes RI, 2020).

Hospital care requires a structured multidisciplinary care plan, which details the main steps in managing the care of patients with certain health conditions or undergoing certain procedures so that the patient care process can be effective and efficient(Sabarguna, 2022). Clinical pathways are designed to standardize care, optimize outcomes, and improve the quality and efficiency of health care delivery(Sabarguna, 2022. Aspland,2021). The purpose of this study was to analyze the effect of clinical pathway on quality control and cost control in Pulmonary Tuberculosis patients treated at Inche Adbdoel Moeis Samarinda Hospital, namely to see the effect of pulmonary tuberculosis

clinical pathway on specialist visite, laboratory examination, radiology examination, administration of anti-tuberculosis drugs (OAT), Length of stay, Cost of Drugs and Consumables (BHP), and service costs in pulmonary tuberculosis patients in the inpatient treatment room at IA Moeis Samarinda Hospital.

METHOD

This study is a quantitative study with a cross sectional method using secondary data in the form of electronic medical records of pulmonary tuberculosis patients in the inpatient treatment room at RSUD IA Moeis Samarinda in 2022 and 2023. The sampling technique in this study used purposive sampling without randomization on 127 medical record files of pulmonary tuberculosis patients hospitalized at RSUD IA Moeis who met the inclusion criteria of the study, namely patient medical record files diagnosed with pulmonary tuberculosis in 2022 and 2023 with INA CBG's diagnosis codes A.15 and A.16 and aged ≥ 18 years. While the exclusion criteria were pulmonary tuberculosis patients with significant comorbidities and treated for >7 days. Independent variables in this study were medical records of hospitalized Pulmonary Tuberculosis patients in the inpatient treatment room in 2022-2023 which were divided into 2 groups, namely those using clinical pathway and not using clinical pathway. The independent variables in this study include compliance with specialist doctor visits with a categorical scale, specialist doctor visits are presented in the form of a percentage, which is obtained from the number of doctor visits divided by the total Length Of Stay multiplied by 100% with units of percent. For the compliance of the doctor's visit according to the national quality indicators is $\geq 80\%$.

In the clinical pathway of pulmonary tuberculosis there are 9 laboratory examinations that must be carried out in tuberculosis patients, including complete blood (Hb, Leukocytes, Platelets, Hematocrit), Blood Glucose Examination, Covid 19 Screening, HIV Screening, Liver Function (SGOT / SGPT), kidney function (Serum Ureum and Creatinine). Sputum BTA, TCM Tuberculosis, and serum electrolytes. Where laboratory examination compliance is obtained from the number of examinations performed divided by the number of mandatory laboratory examinations multiplied by 100%. Other variables were radiology examination, administration of Anti-Tuberculosis Drugs, Length of Stay, Cost of Drugs and BHP and Cost of Services. Data analysis technique used non-parametric multivariate analysis of Kruskal-walls test to assess the most influential variables with clinical pathway of Pulmonary Tuberculosis. This study has undergone ethical review with ethical review number NO.60/KEPK-FK/III/2024.

RESULT

To determine the use of parametric and non-parametric tests, a normality test is carried out, to determine whether the data is normally distributed or not. Because the number of samples > 30 , the Kolmogorov-Smirnov test was used. The normality test results showed all variables < 0.05 , meaning that the data distribution was not normal.

Table 1.
Percentage of specialist visits

		Presentage visits			Total
		Rata-rata	$\leq 80\%$	$> 80\%$	
Clinical pathway	Yes	64.06%	16	36	52
	No	57.64%	36	39	75

There were no significant changes in radiology, and laboratory examinations Where the compliance of laboratory examinations and Thorax X-rays in samples of medical records of Pulmonary Tuberculosis patients using Clinical pathway was good, and not much different from samples of medical records using Clinical pathway. One of the pharmacological therapies that must be given in the clinical pathway in hospitalized pulmonary tuberculosis patients is the administration of anti-tuberculosis drugs. The following is the frequency distribution of anti-tuberculosis drug (OAT)

administration in hospitalized pulmonary tuberculosis patients, who used Clinical Pathway and not with Clinical Pathway.

Table 2.
Anti-Tuberculosis Drug Administration

		OAT		Amount	Presentation on OAT Administration
		Ya	Tidak		
Clinical pathway	Yes	23	29	52	44.2%
	No	17	58	75	22.6%

The results of the comparison between the provision of Anti-Tuberculosis Drugs in medical record samples using Clinical pathway showed a decrease in patients who were not given OAT, compared to before using Clinical pathway. And there is also an increase in the provision of OAT in the sample of medical records that use Clinical pathway compared to those that do not use Clinical pathway from 22.6% to 44.2%. The results of multivariate analysis on Length of stay, drug costs and BHP and service costs also show the effect of Clinical pathway on these three variables.

Table 3.
Results of Multivariate Analysis by Kruskal-Walls

Variabel		Jenis Variabel	Sig	Keterangan
Dependen	Independen			
Clinical Pathway	Specialist Visite	Categorical-Categorical	0.005	Influential
	Laboratory examination	Categorical-Categorical	0.570	Not Affected
	Radiology examination	Categorical-Categorical	0.857	Not Affected
	Anti-tuberculosis Medicine	Categorical-Categorical	0.002	Affected
	Length Of Stay	Categorical-Numeric	0.009	Influential
	Cost of Medicine and BHP	Categorical-Numeric	0.012	Influential
	Service Fee	Categorical-Numeric	0.016	Influential

The table above shows that there is an effect of clinical pathway on the variables of specialist visits, OAT administration, length of stay, drug costs and service costs, and there is no effect of clinical pathway on laboratory examinations and radiology examinations.

DISCUSSION

Multivariate analysis illustrates that specialist visit compliance ranks 2nd out of 7 variables studied. This means that there is an increase in the compliance rate of specialist visits in medical records that use clinical pathway, and is the most influential variable. Some relevant previous studies are research analyzing the implementation of clinical pathway, that one of the obstacles to the implementation of clinical pathway carried out in hospitalized patients is the non-compliance of specialist visits (Simec, 2021; Firmansyah, 2009; Fadilah et al 2018; Afifah et al, 2024). The effect of laboratory and radiology examinations on the clinical pathway showed an insignificant P-value or >0.05 , which means that laboratory examinations that have been running both using clinical pathway and without using clinical pathway have met the needs of the minimum service standards for pulmonary tuberculosis patients.

Multivariate analysis illustrates that OAT administration ranks 1st out of 7 variables studied. This means that clinical pathway is proven to be effective in improving OAT administration in patients with Pulmonary Tuberculosis in the inpatient treatment room at IA Moeis Hospital. The cause of the increase in OAT administration recorded in medical records using the clinical pathway may also be

influenced by the increased documentation of OAT administration that previously could not be seen in electronic medical records, especially in patients who had received Anti-Tuberculosis Drugs before entering the hospital inpatient room. This is of course very beneficial for the documentation of the administration of drugs given during the patient's hospitalization so that it can facilitate communication between the hospital and puskesmas or FKTP if the Tuberculosis patient's services are continued outside the hospital or at other health facilities.

The results of this study are in line with Firmansyah's research in 2009, that one of the advantages of clinical pathway is that every intervention to the patient can be recorded systematically so that it will improve the quality and service in the hospital (Sabarguna, 2022; Firmansyah, 2009). Multivariate analysis showed that the Length of Stay variable ranked 3rd out of 7 variables associated with Clinical pathway. This is in line with the research of Bethesda Jogjakarta Hospital, that Clinical pathway does not affect patient care days (Rahmawati et al, 2017), but can improve service quality, where the sample used is patients with the longest stay of 7 days, which is in accordance with the clinical pathway that applies in the hospital. However, in contrast to research on ADHF patients, where it was found that there was a decrease in the days of care for patients with ADHF (Acute Decompensated Heart Failure) in Japan (Amioka et al, 2022).

The theory put forward by Sabarguna, states that one of the benefits of the Clinical pathway is to control costs incurred in patient care (Sabarguna, 2022; Rahmawati et al, 2017; Murphy et al, 2022; Sadli, 2021). Health costs themselves must pay attention to effective and efficient aspects, namely not always lower costs, especially the cost of drugs and consumable medical materials, provide more effective therapeutic benefits for patients, so in financing it is necessary to pay attention to effective and efficient aspects (Sabarguna, 2022, Kwon et al.).

CONCLUSION

From this study we can conclude that there is an influence of the Pulmonary Tuberculosis Clinical pathway on compliance with specialist visits, administration of anti-tuberculosis drugs, length of stay, drug costs and BHP and service costs, and there is no influence of clinical pathways on laboratory examinations and radiology examinations. The suggestion that can be given is the addition of variance to the clinical pathway that is already running at RSUD IA Moeis Samarinda.

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