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Current Issue

Vol. 6 No. 1 (2022): October

Current Issue

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Volume 6 No 1 contains 7 research articles and 3 literature review in the area of public health. These articles were authored/co-authored by 29 authors from 12 institutions and 2 countries (Indonesia, Malaysia).

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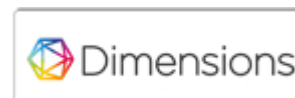Universitas Airlangga-Banyuwangi Campus, Indonesia
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IMPLEMENTATION OF ROOT CAUSE ANALYSIS ON PATIENT SAFETY IINCIDENCE IN HOSPITAL: LITERATURE REVIEW
Penerapan Root Cause Analysis Pada Insiden Keselamatan Pasien Di Rumah Sakit: Literature Review

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ABSTRACT

Background: Root cause analysis (RCA) is a process used by hospitals to reduce the level of patient safety incidents. The minimized application of root cause analysis has resulted in inevitable patient safety incidents. **Research objectives**: This study aims to determine the application of RCA to patient safety incidents in hospitals. **Method**: The method used in this study was a literature review. Articles were obtained through the Pubmed, SAGE, and Google Scholar databases published in 2016-2021. **Results**: The implementation of RCA in 46 hospitals in France, the United States, and Hong Kong is known to run inadequately. This is due to the fact that the overall causative factors are not identified and the type of solution produced is ineffective in preventing the occurrence of the same patient safety incidents (PSI) in the future. **Conclusion**: The results of the article review shows that the application of RCA is not optimal. Therefore, it is necessary to improve the quality of RCA in hospitals.

Keywords: Root Cause Analysis, Patient Safety Incident, Hospital

ABSTRAK

Latar belakang: Analisis akar penyebab merupakan proses yang digunakan oleh rumah sakit untuk mengurangi tingkat kejadian insiden keselamatan pasien. Penerapan analisis akar penyebab yang belum maksimal menyebabkan insiden keselamatan pasien belum berhasil untuk dicegah. **Tujuan:** Penelitian ini bertujuan mengetahui efektivitas dan hambatan penerapan RCA pada insiden keselamatan pasien di rumah sakit. **Metode:** Metode yang digunakan pada penelitian ini adalah scoping review. Pencarian artikel didapat melalui database Pubmed, SAGE, dan Google Scholar yang dipublikasikan pada tahun 2016-2021. **Hasil**: Penerapan RCA pada 46 rumah sakit di negara Prancis, Amerika Serikat, dan Hongkong diketahui belum berjalan secara optimal. Hal ini disebabkan, karena tidak mengidentifikasi faktor penyebab secara keseluruhan dan jenis solusi yang dihasilkan tidak efektif untuk mencegah terjadinya insiden keselamatan pasien (IKP) yang sama di masa mendatang. **Kesimpulan:** Hasil tinjauan artikel menunjukkan penerapan RCA belum optimal, sehingga dibutuhkan peningkatan kualitas RCA di rumah sakit.

Kata Kunci: Analisis Akar Penyebab, Insiden Keselamatan pasien, Rumah Sakit

INTRODUCTION

The World Health Organization (2017) declared that patient safety is the most fundamental principle in health care, especially in hospitals. In a report submitted by the Institute of Medicine (IOM) on patient safety, it is estimated that approximately 44,000-98,000 patients in the United States die from preventable medical errors annually. Moreover, the research results by Beekman et al. (2019) also stated that medical errors caused around 251,454 deaths per year. Medical error is defined as an unwanted action in the treatment process or an action that achieves the undesired result. Most of the occurrences of medical errors are preventable adverse events, but some can cause harm to patients.

A report submitted by the National National Health Service (2017) stated that in the period January-December 2016, there were 1,879,822 reports of patient safety incidents in the UK. Based on the results of the Rajalatchumi report (2018), patient safety incidents occurred from 3.2 to 16.2 per 100 patient admissions to hospitals. The highest incidence was in the UK with 11.7% cases, Denmark 9% cases, and the United States 3.2%-5.4%. A review of patient safety incident records in hospitals based on the results of the report of Mbogozi et al. (2021) in eight countries, namely Jordan, Morocco, Egypt, Kenya, Sudan, Yemen, Tunisia, and South Africa, estimated the incidence of injury to patients as 8.2% with a range of 2.5% to 18.4% per country. These incidences prove that patient safety implementation in hospitals is still lacking, causing many patient safety incidents in hospitals.

Hospital patient safety goals are achieved if the hospital immediately looks for factors that influence the incidence of patient safety incidents (IKP) to minimize possible risks. Several factors that can influence the occurrence of patient safety incidents in hospitals in the Sutabri et al. (2019) report are work environment factors, organizational factors, and staff factors. In addition, the report results from Sutabri et al. (2019) also stated that the cause of patient safety incidents was influenced by communication. Inaccurate information delivery can account for 70% of patient safety incidents (death or severe injury) caused by poor communication. For health organizations such as hospitals, ensuring patient safety is crucial. However, the number of patient safety incidents is still high until now. Thus a way is needed to prevent the recurrence of incidents that can endanger patients. One way to reduce patient safety incidents in hospitals is to identify the cause of a problem to determine actions to overcome it.

Root Cause Analysis (RCA) is a method to find the root causes and factors that influence the occurrence of patient safety incidents in hospitals which will then be analyzed for improvement. The implementation of improvements aims to reduce the possibility of the same patient safety incident happening again. Without an analysis of the causal factors that contribute to patient safety incidents in hospitals, it can cause more harm due to the inability to prevent incidents from occurring (Kwok *et al*, 2020).

The results of the research in the Delgado et al. (2019) report stated that the implementation of RCA in hospitals had been implemented inappropriately. Data from the public health system in Victoria, Australia showed that from 227 RCAs undertaken, 72% of solutions have not succeeded in preventing the recurrence of patient safety incidents and lack of attention to causal factors. Some studies suggest that RCA is designed to produce corrective action, but it may pose a risk of new patient safety incidents in practice. This study aimed to determine the application of RCA to patient safety incidents in hospitals.

METHOD

The method used in this study was a literature review. The collection of articles was obtained through the Pubmed, SAGE, and Google Scholar databases. The keywords used to search the article were "root cause analysis" AND "patient safety incident" OR "patient harms" OR "adverse event" OR "medical error" AND "hospital" OR "health care". The search for articles used English and was limited to publications for the last 5 years, namely 2016-2021. This was due to health services have characteristics that tend to fluctuate, so the researcher assumes that publication restrictions in the last 5 years are quite relevant. Based on the search results, the articles used were adapted to the purpose of writing the study and discussed how to apply RCA to patient safety incidents in hospitals. Articles were selected according to the inclusion criteria, namely articles in the form of original articles, full text, open access, articles discussing the application

of root cause analysis, and using qualitative and quantitative research methods. The selection of articles was not limited to the country of origin of the articles used as references.

There were 9 results on Pubmed, 12 results on SAGE, and 50 results on the search page of Google Scholar. Search results in the Google Scholar database were limited to the first 5 pages. The total articles obtained from the three databases were 51 articles. The search was continued by removing 4 duplicate articles, leaving 47 articles. Then as many as 43 articles that did not fulfil the inclusion criteria were excluded, because they did not discuss the application of RCA. The final results obtained were as many as 4 articles that were considered to meet the inclusion criteria.
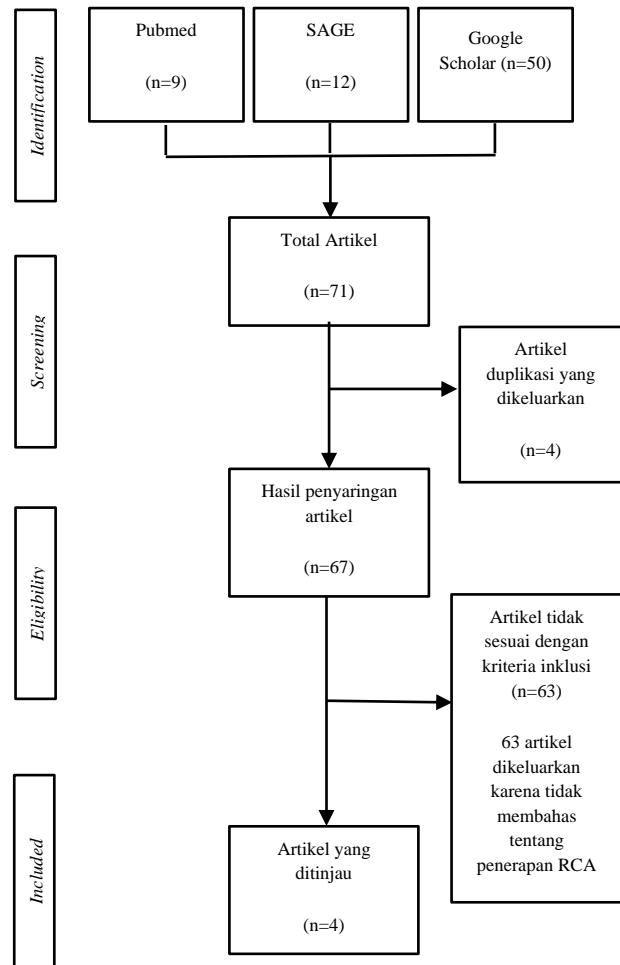
Figure 1. Framework of Article Search Results

RESULT

Table 1. Results of Literature Review

No	Author Name (Year)	Location & Country	Research Methods	Population/ Research Sample	Research result
1.	Kellogg, K., *et al* (2017)	The premier academic medical center in the United States	Qualitative and quantitative research	Examined 106 RCA samples to see what kind of solution was generated.	1. Most of the RCAs conducted on 302 cases at Primary Academic Medical Centers over the past 8 years resulted in the type of solution that has not been proven to prevent the recurrence of IKP. The resulting solutions only revolved around providing training to health workers, changing the work flow/mechanism, and strengthening policies. 2. RCA was said to be effective if it can reduce the incidence of similar IKP in the future and improve patient safety. Thus, the RCA team needed guidance regarding the type of solution and when to implement it, and needed to be validated to propose which change solution would be most effective.

Continued

No	Author Name (Year)	Location & Country	Research Methods	Population/ Research Sample	Research result
2.	Francois, P., *et al* (2018)	Grenoble University Hospital in France	Observational quantitative research with cross-sectional study design	Interviewed with leaders of experience feedback committees (EFC) in hospital departments.	1. There were major barriers to implementing RCA in health care teams caused by psychological, social and cultural factors. This caused the cause analysis in the RCA process was often incomplete in exploring all the causal factors. Factors commonly considered to be the cause of IKP were: organization, whereas patient-related factors have been less explored. 2. Implementation of RCA was assisted by using an experience feedback committee (EFC) which involved staff members directly in managing the side effects of IKP. RCA was declared successful if it has a long-term impact in improving patient safety culture and studying past SPIs; thus, they did not recur in the future.
3.	Boussat, B., *et al* (2017)	One of the university hospitals in France	Quantitative research with cross-sectional study design	3888 out of 5064 employees with minimum 6 months working criteria in clinical, laboratory, radiology, or pharmacy departments.	1. The application of RCA did not identify in depth the factors causing the IKP and the resulting solutions were less effective in overcoming the incidence of IKP. This was due to the lack of communication between RCA team members in its implementation. 2. In its implementation, RCA was assisted by using the experience feedback committee (EFC). The implementation of RCA was said to be effective if it can improve the culture of nurturing in patient safety by adjusting applicable regulations related to health care settings.

Based on the search results, it was known that the study was conducted in 46 hospitals located in 3 countries, namely France, the United States, and Hong Kong. There were two articles published in 2017, 1 article published in 2018, and 1 published in 2020. Of the four articles used, 2 used quantitative research methods with a cross-sectional study design, 1 article used qualitative research methods with a cross-sectional retrospective study design, and 1 article used mixed qualitative and quantitative research methods. Selected articles are published in the Pubmed and Google Scholar databases.

The results of the research review showed that the implementation of RCA in every hospital had not been appropriately implemented. The results in the table showed that the leading cause of RCA was not adequately resolved since it did not identify the causal factors as a whole and the type of solution produced was not effective in preventing the occurrence of the same IKP in the future (Boussat et al., 2017 & Kellogg et al., 2017). According to Francois et al. (2018) and

Boussat et al. (2017), the most widely used tool in assisting the implementation of RCA, especially in France, was the Experience Feedback Committee (EFC). The implementation of RCA was said to be successful in achieving its goals if it can reduce the number of IKP rates and prevent the same occurrence in the future and increase patient safety culture (Kellogg et al., 2017; Kwok et al., 2020; Boussat et al., 2017)

DISCUSSION

Patient safety incidents are still the leading cause of death in the United States with an estimated number of deaths at 251,454 per year (Makary & Danile, 2016). This is due to the low culture of patient safety and the non-solutional settlement process, because it is oriented towards blaming each other. So we need a way to develop a patient safety culture that is shared by all health care providers, one of which is by conducting a root cause analysis (RCA). In the last 10 years, RCA is the process used to investigate errors in medical care and determine measures to prevent their recurrence. The Joint Commission in the United States and the French National Health Authority in France are two organizations that have implemented RCA in their respective country hospitals as a method for investigating the occurrence of Patient safety incidents.

The application of RCA in health services, especially in hospitals, aims to improve safety by preventing patient safety incidents. It is known that the most widely used method in implementing RCA is the experience feedback committee (EFC)) (Boussat *et al*, 2017 & Francois *et al*, 2018). The EFC works by involving medical personnel as members in the implementation of the RCA. EFC members meet once a month to conduct inspections regarding reported incidents from their department (Boussat *et al*, 2017). In practice, EFC members select the incidents that are the top priority and analyze and propose corrective actions (Francois *et al*, 2018). Based on the results of the review, it was found that the implementation of the EFC did not run perfectly, because it only had a short-term impact in implementing improvements and in increasing patient safety. However, even so the EFC is expected to have a long-term impact by improving a safety culture and learning from mistakes that have occurred.

Based on the results of the study, it is known that although the RCA has been implemented, it still does not change because the Patient safety incidents will continue to occur in the future. This is due to the type and quality of the solutions proposed by the RCA team. The solutions proposed by the RCA team are relatively few and have no change in eliminating the risk of harm to the patientn (Kellogg et al, 2017). In addition, The Joint Commission also argues that often in its implementation, RCA does not fully identify the factors that directly influence the Patient safety incident, but only observes and concludes that this is due to imperfect human factors.

This is in accordance with the statement of Kellogg *et al* (2017) and Hibbert *et al* (2018) in his research which states that even though the organization has provided resources such as time and energy in carrying out the RCA process the number of incidents that should have been prevented did not decrease as expected. This may be due to the low level of effectiveness of the solutions produced by RCA due to the lack of thorough identification of causes related to Patient safety incidents. In addition, there are several factors that can cause the proposed solution to not develop, including lack of training and expertise in its implementation, poor leadership, and lack of education related to patient safety culture (Peerally *et al*, 2017).

The results of the study indicate that it is necessary to improve the quality of RCA in hospitals and other health organizations. First, conduct training for the RCA team where systems thinking and communication improvement are used as important components of the training. Second, it involves human factors where members must be directly involved in the RCA process to identify causal factors. Third, the organization must promote a culture of patient safety to all staff that includes an understanding of the objectives of RCA and the proposed solutions are more effective in making changes to the organization (Calcia M., 2016).

Research Limitations

This study only examines articles in English. The search for articles is limited to a period of 5 years, namely 2016-2021.

CONCLUSION

The article review results show that the implementation of Root Cause Analysis (RCA) in several hospitals has not been undertaken adequately since it has not been able to prevent and reduce the incidence of IKP in the future. This situation is due to the lack of type and quality of solutions resulting from the RCA process and not carrying out a thorough identification of the factors causing the Patient safety incidents.

SUGGESTIONS

Suggestions from researchers are to improve the quality of RCA implementation, training the RCA team, involving members directly in the RCA process, promoting a patient safety culture to all staff in the hospital, evaluating the implementation of the RCA process, and monitoring the implementation process in order to achieve The goal is to reduce the incidence of patient safety incidents and improve a patient safety culture.

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Telah melaksanakan penelitian dengan judul sebagai berikut :

No.	Judul Karya Ilmiah	Tahun Pelaksanaan Penelitian
1.	Implementation of Computerized Physician Order Entry in Primary Care: A Scoping Review	2021
2.	Adverse Reactions of COVID-19 Vaccines: A Scoping Review of Observational Studies	2023
3.	Literature Review: Cause Factor Analysis and an Effort to prevent Medication Administration Error (MAE) at Hospital	2020
4.	A Literature review on the Identification of Variables for Measuring Hospital Efficiency in the Data Envelopment Analysis (DEA)	2021
5.	Telemedicine Use In Health Facility During Covid-19 Pandemic: Literature Review	2022
6.	Faktor yang Menghambat Pelaporan Insiden Keselamatan Pasien di Rumah Sakit: Literature Review	2021
7.	Comparison of Four Methods To Detect Adverse Events in Hospital	2015
8.	Infections Prevention and Control (IPC) Programs in Hospitals	2021
9.	Studi Komparatif Pengembangan Contact Tracing Applications Di Singapura dan Indonesia (Studi Kasus: TraceTogether dan PeduliLindungi)	2022
10.	Faktor Penghambat Pelayanan Kesehatan Rutin di Rumah Sakit saat Pandemi COVID-19	2021
11.	Governmental Policies in Managing COVID-19 Pandemic: Comparative Study Between Indonesia and Vietnam, Period of January – March 2020	2021

12.	Akses Pelayanan Kesehatan Ibu dan Anak di Puskesmas Selama Pandemi Covid-19	2022
13.	Comparison of Dental Care Policies Before and During The COVID-19 Pandemic: A Literature Review	2022
14.	Analysis of Implementation of Patient Identification In Hospitals to Improve Patient Safety in Indonesia	2022
15.	Literature Review: Implementation Of Patient Safety Goals In Hospitals In Indonesia	2021
16.	Literature Review: Hospital Service Quality During The COVID-19 Pandemic	2022
17.	Comparison of Hospital Emergency Room Management Regulations in Indonesia Before and During The COVID-19 Pandemic: Literature Study	2022
18.	Analisis Pelaksanaan Pelayanan Kesehatan Perorangan (Ukp) Di Puskesmas Sebelum Dan Selama Pandemi Covid-19: Literature Review	2022
19.	Perbandingan Kebijakan Pelaksanaan Imunisasi Rutin pada Anak sebelum dan selama Pandemi	2022
20.	Recommendation Analysis Of Mental Health Services For Health Workers During Pandemic Covid-19	2021
21.	Impact Of Implementing A Surgical Safety Checklist In Hospital: Literature Review	2023
22.	Quality Improvement For Maternal And Child Health In Primary Health Care: A Scoping Review	2023
23.	Implementation Of Root Cause Analysis On Patient Safety Iincidence In Hospital: Literature Review	2022
24.	Analisis Peran Stakeholder dalam Kapasitas Rumah Sakit akibat COVID-19: Literature Review	2022
25.	Lessons from Indonesia, a country with highest COVID-19 mortality rate in the world: dissecting multiple aspects	2022

Adapun penelitian tersebut layak dilakukan dan menghasilkan output yang sangat baik, meskipun belum ada *Uji Etical Clearence* karena menggunakan metode litteratur review . Demikian surat keterangan ini kami buat untuk dapat dipergunakan sebagai persyaratan pengusulan Jabatan Fungsional Lektor Kepala.

Surabaya, 13 April 2023

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