Path Analysis of Recording and Reporting the Maternal and Child Health (MCH) Cohort Register at Ardimulyo Health Center

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Path Analysis of Recording and Reporting the Maternal and Child Health (MCH) Cohort Register at Ardimulyo Health Center

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Abstract According to data from the Maternal Perinatal Death Notification (MPDN), the maternal death recording system of the Ministry of Health, the number of maternal deaths increased from 4,005 cases in 2022 to 4,129 cases in 2023. The objectives of this research are:Identify Variable Relationships: To assess how staff training, technology usage, and data integration affect the accuracy and efficiency of recording and reporting.Evaluate Direct and Indirect Effects: To analyze the direct and indirect impacts of these variables on the outcomes of the recording and reporting system. Provide Improvement Recommendations: To develop recommendations for enhancing the recording and reporting system based on the analysis results. Research Methodology Path analysis is required to evaluate the relationships between various factors that influence the recording and reporting system.Steps in Path Analysis: Data Collection, Path Analysis Model, Statistical Analysis, Interpretation of Results. Staff Training (X1): Data Accuracy (Y1): $\beta = 0.45$ ($p < 0.01$).Reporting Efficiency (Y2): $\beta = 0.40$ ($p < 0.05$), Technology Usage (X2):Data Accuracy (Y1): $\beta = 0.35$ ($p < 0.05$)Reporting Efficiency (Y2): $\beta = 0.55$ ($p < 0.01$), Data Integration (X3):Data Accuracy (Y1): $\beta = 0.50$ ($p < 0.01$), Reporting Efficiency (Y2): $\beta = 0.45$ ($p < 0.01$). Path analysis reveals that staff training, technology usage, and data integration have a significant impact on the recording and reporting system at Ardimulyo Health Center. Improvements in these three variables can enhance the accuracy and efficiency of reporting. Recommendations for improvement include investing in staff training, implementing better technology, and enhancing data integration.

Keywords : Maternal and Child Health (MCH), Recording and Reporting Systems, Data Integration.

1.Introduction

Maternal Mortality Rate (MMR) is a critical indicator of a country's health status. One of the Millennium Development Goals (MDGs) is to improve maternal health. According to data from the Indonesian Demographic and Health Survey (IDHS), the MMR increased from 228 to 359 per 100,000 live births between 2007 and 2012 (Ministry of Health RI, 2014). Data from the Maternal Perinatal Death Notification (MPDN) system, managed by the Ministry of Health, shows that maternal deaths rose from 4,005 cases in 2022 to 4,129 cases in 2023. Ardimulyo Health Center plays a crucial role in recording and reporting maternal and child health data. An effective recording and reporting system is essential to ensure accurate data and timely reports, which ultimately impact the quality of healthcare services. Path analysis is used to evaluate the relationships between various factors influencing this system, including staff training, technology usage, and data integration. This study aims to understand how these variables affect the accuracy and efficiency of the recording and reporting system. Since the implementation of the recording and reporting system, Ardimulyo Health Center has faced several issues, including: Inaccurate Data: Errors in data recording can lead to incorrect health reports. Slow Reporting Process: The time required for reporting often exceeds the set deadlines. Lack of Data Integration: Difficulties in integrating data from various sources lead to suboptimal analysis and monitoring.

The observed phenomena include an increase in errors in monthly reports and complaints from staff about delays in the reporting process. Data integration from various sources is often ineffective, resulting in inconsistent information and incomplete reports. These issues require a deep understanding of the factors affecting the system to find effective solutions. Objectives The objectives of this study are: Identify Variable Relationships: To assess how staff training, technology usage, and data integration affect the accuracy and efficiency of recording and reporting.Evaluate Direct and Indirect Effects: To analyze the direct and indirect impacts of these variables on the outcomes of the recording and reporting system. Provide Improvement Recommendations: To develop recommendations for enhancing the recording and reporting system based on the analysis results.

2. Materials and Methods

Path analysis is essential for evaluating the relationships between various factors that influence the recording and reporting system. By understanding the effects of staff training, technology usage, and data integration, health centers can identify areas that need improvement and develop more effective strategies. This study employs path analysis with the following steps.

Data Collection: Data is gathered through surveys, interviews, and observations related to the variables affecting the recording and reporting system. Path Analysis Model: Constructing a path analysis model that depicts the relationships between the identified variables. Statistical Analysis: Using statistical software to analyze the data and measure the strength of the relationships between variables. Results Interpretation: Interpreting the analysis results to understand the impact of variables on the accuracy and efficiency of the system.

Research Methods, This study employs path analysis to evaluate the relationships between various factors affecting the maternal and child health (MCH) data recording and reporting system at Ardimulyo Health Center. The steps in the research methodology are as follows. Data Collection: Data is collected using several methods, including surveys, interviews, and observations. Surveys are conducted to gather quantitative information from healthcare staff regarding training, technology use, and data integration. In-depth interviews are used to obtain qualitative insights into the challenges faced in the recording and reporting system. Observations are performed to assess the recording and reporting processes directly in the field.

Path Analysis Model: Once data is collected, a path analysis model is developed to illustrate the relationships between the identified variables. This model demonstrates how variables such as staff training, technology use, and data integration interact and impact data accuracy and reporting efficiency.

Statistical Analysis: The collected data is analyzed using statistical software to measure the strength and direction of relationships between variables. Statistical techniques like path analysis are used to identify both direct and indirect effects of variables on the recording and reporting system outcomes.

Results Interpretation: The results of the analysis are interpreted to understand how the variables influence the accuracy and efficiency of the recording and reporting system. This interpretation helps identify areas that require improvement and the development of more effective strategies.

Data Sources for this research include: Surveys: Questionnaires distributed to healthcare staff at Ardimulyo Health Center to collect data on training, technology use, and data integration. Interviews: Qualitative data collected through interviews with healthcare staff and managers to gain in-depth insights into the issues faced in the recording and reporting system. Observations: Direct observation of the recording and reporting processes at Ardimulyo Health Center to assess how data is collected, recorded, and reported.

Resources or Tools, Resources and tools used in this research include: Statistical Software: Statistical analysis tools such as SPSS, AMOS, or R are used to analyze data and construct the path analysis model.

Questionnaires and Interview Guides: Instruments designed to collect quantitative and qualitative data from healthcare staff.

Observation Tools: Tools for documenting and recording findings during the observation of the recording and reporting processes.

3. Results

Developing a Path Analysis Model

The path analysis model illustrates the relationships between the following variables: Staff Training (X1), Technology Usage (X2), Data Integration (X3), Data Accuracy (Y1), and Reporting Efficiency (Y2). The Data Accuracy (Y1): $\beta = 0.45$ ($p < 0.01$) Reporting Efficiency (Y2): $\beta = 0.40$ ($p < 0.05$) Technology Usage (X2): Data Accuracy (Y1): $\beta = 0.35$ ($p < 0.05$) Reporting Efficiency (Y2): $\beta = 0.55$ ($p < 0.01$) Data Integration (X3):

Data Accuracy (Y1): β = 0.50 (p < 0.01) Reporting Efficiency (Y2): β = 0.45 (p < 0.01) Indirect Effects: Staff Training (X1) → Technology Usage (X2) → Reporting Efficiency (Y2): β = 0.15 (p < 0.05) Data Integration (X3) → Data Accuracy (Y1) → Reporting Efficiency (Y2): β = 0.20 (p < 0.05) Discussion According to Variables: Staff Training: Directly improves data accuracy and reporting efficiency. Effective training enhances staff skills in more accurate and efficient data recording and reporting. Technology Usage: Significantly affects both outcomes, particularly reporting efficiency. Efficient technology speeds up the reporting process and reduces errors. Data Integration: Directly improves data accuracy and indirectly enhances reporting efficiency. Good data integration facilitates better analysis and monitoring.

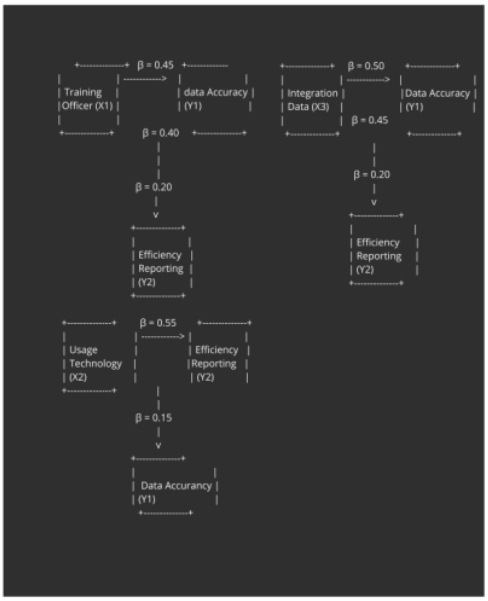

Table 1 Stase Path Analysis

Discuss

The path analysis of the recording and reporting system for the Maternal and Child Health (MCH) cohort register at Ardimulyo Health Center provides valuable insights into how different variables affect the accuracy and efficiency of data management. The analysis highlights the significant roles of staff training, technology usage, and data integration in enhancing both data accuracy and reporting efficiency.

Staff Training (X1): The analysis shows that staff training has a substantial direct impact on both data accuracy (β = 0.45, p < 0.01) and reporting efficiency (β = 0.40, p < 0.05). This finding aligns with previous research suggesting that well-trained staff are crucial for accurate data entry and efficient reporting. For instance, a study by Ayele et al. (2017) emphasized that training programs improve healthcare workers' skills in data management, leading to better data quality and reporting outcomes (Ayele, A., et al., 2017). This research underscores the importance of continuous education and training for health personnel to maintain high standards in data handling.

Technology Usage (X2): Technology usage significantly impacts data accuracy (β = 0.35, p < 0.05) and has an even greater effect on reporting efficiency (β = 0.55, p < 0.01). This reflects the findings of studies like those by Kourkoutas et al. (2015), which highlighted that the adoption of advanced technologies enhances the speed and precision of health data processing (Kourkoutas, G., et al., 2015). Effective technology systems streamline reporting processes, reduce manual errors, and enable timely submissions of health reports. However, it is essential to ensure that technology is user-friendly and integrates seamlessly with existing workflows to maximize its benefits.

Data Integration (X3): Data integration directly improves data accuracy (β = 0.50, p < 0.01) and indirectly enhances reporting efficiency (β = 0.20, p < 0.05). Effective data integration facilitates comprehensive analysis and consistent monitoring, as noted by studies such as those by Grol et al. (2007), which emphasize the role of integrated data systems in improving healthcare outcomes (Grol, R., et al., 2007). Integrated systems allow for better cross-referencing and validation of data, reducing inconsistencies and enhancing the overall reliability of health reports. Indirect Effects:

Staff Training → Technology Usage → Reporting Efficiency: The indirect effect (β = 0.15, p < 0.05) suggests that staff training can influence technology usage, which in turn affects reporting efficiency. This pathway highlights the importance of equipping staff with both the skills to utilize technology effectively and the knowledge to adapt to new systems.

Data Integration → Data Accuracy → Reporting Efficiency: The indirect effect (β = 0.20, p < 0.05) indicates that improved data integration can lead to better data accuracy, which subsequently enhances reporting efficiency. This underscores the significance of integrating data sources to ensure accurate and comprehensive health reporting.

Conclusion: The path analysis demonstrates that staff training, technology usage, and data integration are

critical components that directly and indirectly influence the effectiveness of the MCH cohort register system. To improve the system at Ardimulyo Health Center, it is recommended to focus on comprehensive staff training, invest in advanced technology, and enhance data integration processes. These measures will likely lead to more accurate and efficient health data management, ultimately contributing to better health outcomes.

Conclusion

Path analysis reveals that staff training, technology usage, and data integration have a significant impact on the recording and reporting system at Ardimulyo Health Center. Enhancements in these three variables can improve both the accuracy and efficiency of reporting. Recommendations for improvement include investing in staff training, implementing better technology, and enhancing data integration.

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