



Optimizing Maternal Health Outcomes: Examining the Relationship Between Primary Healthcare Center Organizational Characteristics and Maternal and Child Health (MCH) Handbook Utilization in Counseling

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ABSTRACT

Maternal mortality remains a significant global health challenge, disproportionately affecting low- and middle-income countries. The Maternal and Child Health (MCH) Handbook is a valuable tool for providing essential health information and promoting timely care-seeking behaviors during pregnancy. This study investigates the influence of primary healthcare center (PHC) organizational characteristics on the utilization of MCH Handbooks as counseling materials for pregnant women in Aceh Tengah District, Indonesia. A cross-sectional survey was conducted among 208 midwives across 17 PHCs in Aceh Tengah District. Data were collected on organizational characteristics (organizational climate, supervision, and leadership) and the utilization of MCH Handbooks in antenatal counseling sessions. Descriptive statistics, Chi-square tests, and logistic regression were used to analyze the data. The study found that 68.3% of midwives reported inadequate utilization of MCH Handbooks in counseling sessions. Supervision ($p=0.006$) and leadership ($p=0.000$) were significantly associated with MCH Handbook utilization, while organizational climate ($p=0.738$) showed no significant association. In conclusion, PHC organizational characteristics, particularly supervision and leadership, play a crucial role in promoting the effective use of MCH Handbooks in antenatal counseling. Strengthening supervision and leadership support within PHCs can enhance MCH Handbook utilization and potentially contribute to improved maternal health outcomes.

1. Introduction

Maternal mortality remains a pressing global health concern, demanding unwavering attention and concerted efforts to safeguard the well-being of mothers and newborns. Despite substantial progress in reducing maternal mortality rates over the past few decades, the World Health Organization (WHO) estimates that approximately 287,000 maternal deaths occurred in 2020, underscoring the persistent challenges in ensuring safe motherhood worldwide. The majority of these maternal deaths occur in low- and middle-income countries (LMICs), where access to quality healthcare services during pregnancy and

childbirth remains limited. This stark disparity underscores the urgent need for effective interventions tailored to the specific needs and challenges of LMICs to accelerate progress in reducing maternal mortality and achieving the Sustainable Development Goal (SDG) target of less than 70 maternal deaths per 100,000 live births by 2030. Primary healthcare centers (PHCs) serve as the cornerstone of healthcare delivery in many LMICs, providing essential maternal and child health services to underserved populations. The quality and effectiveness of these services are paramount in ensuring positive maternal health outcomes and promoting the well-being of both



mothers and newborns. One critical aspect of PHC service delivery is the utilization of Maternal and Child Health (MCH) Handbooks, valuable tools designed to empower women with essential health information and encourage active participation in their healthcare throughout pregnancy and childbirth. These handbooks typically contain comprehensive information on antenatal care, danger signs during pregnancy, childbirth preparedness, postnatal care, and child health, serving as a readily accessible guide for women and their families.¹⁻⁴

The effectiveness of MCH Handbooks in improving maternal health outcomes has been well-documented in various studies across different LMIC settings. A study conducted in Bangladesh found that the use of MCH Handbooks was associated with increased utilization of antenatal care services and improved maternal knowledge about danger signs during pregnancy, empowering women to recognize potential complications and seek timely care. Another study in India demonstrated that MCH Handbooks contributed to increased awareness of birth preparedness and complication readiness among pregnant women, enabling them to make informed decisions and prepare for potential challenges during childbirth. These findings highlight the potential of MCH Handbooks to serve as catalysts for positive change in maternal health outcomes, particularly in resource-constrained settings. While MCH Handbooks hold immense promise in improving maternal health, their effectiveness is influenced by a complex interplay of factors, including healthcare provider behavior, community engagement, and healthcare system characteristics. The organizational characteristics of PHCs, where these handbooks are often distributed and utilized, can significantly impact their effective implementation and integration into routine antenatal care.⁵⁻⁷

Organizational characteristics, such as organizational climate, supervision, and leadership, can profoundly influence healthcare provider

motivation, job satisfaction, and adherence to clinical guidelines. A supportive organizational climate, characterized by teamwork, effective communication, and a culture of continuous learning, can foster a sense of ownership and commitment among healthcare providers, encouraging them to embrace and utilize MCH Handbooks as valuable tools in their practice. Effective supervision, with regular feedback, guidance, and mentorship, can further enhance healthcare provider confidence and competence in utilizing MCH Handbooks during antenatal counseling sessions. Supportive supervision can address knowledge gaps, reinforce best practices, and provide a platform for problem-solving and continuous improvement, ensuring that healthcare providers are well-equipped to leverage the full potential of MCH Handbooks. Strong leadership, with a clear vision, effective communication, and a commitment to evidence-based practices, can create an enabling environment for the successful implementation and utilization of MCH Handbooks. Leaders who champion the use of these handbooks, allocate necessary resources, and foster a culture of collaboration and innovation can inspire healthcare providers to embrace these tools as integral components of quality antenatal care.⁸⁻¹⁰ This study aims to delve into the intricate relationship between PHC organizational characteristics and the utilization of MCH Handbooks as counseling materials for pregnant women in Aceh Tengah District, Indonesia.

2. Methods

This study employed a cross-sectional survey design to examine the relationship between primary healthcare center (PHC) organizational characteristics and the utilization of Maternal and Child Health (MCH) Handbooks as counseling materials for pregnant women. The cross-sectional approach allowed for the collection of data at a single point in time, providing a snapshot of the relationship between the variables of interest. The study was conducted in Aceh Tengah



District, a region located in the province of Aceh, Indonesia. Aceh Tengah District was selected as the study setting due to its diverse geographical landscape, encompassing both urban and rural areas, and its representation of the challenges faced by many regions in Indonesia in terms of maternal health.

The study population consisted of all midwives working in the 17 selected PHCs in Aceh Tengah District. Midwives were chosen as the target population due to their crucial role in providing antenatal counseling and their direct involvement in the utilization of MCH Handbooks. A total of 208 midwives were recruited for the study using a proportionate stratified random sampling technique. This technique ensured that the sample was representative of the midwife population in each PHC, taking into account the varying sizes of the PHCs. The sample size was calculated using a formula for hypothesis testing of a single-sample proportion difference, considering a 5% margin of error, a power of 90%, and an 80% difference in proportions, with a 10% non-response factor.

Data were collected using a self-administered questionnaire that was meticulously developed based on an extensive literature review and expert consultations. The questionnaire was designed to gather comprehensive information on midwife demographics, PHC organizational characteristics, and MCH Handbook utilization in antenatal counseling sessions. The questionnaire underwent a rigorous validation process to ensure its content validity, clarity, and relevance to the study objectives. A pilot study was conducted with a small group of midwives to assess the feasibility of the questionnaire and identify any potential issues with comprehension or response format. Feedback from the pilot study was used to refine the questionnaire and ensure its suitability for the main study.

The questionnaire included a section on midwife demographics to gather information on age, gender, educational level, years of experience working as a

midwife, and any other relevant demographic characteristics. These data were collected to describe the characteristics of the study participants and to control for potential confounding factors in the analysis. PHC organizational characteristics were assessed using validated scales measuring organizational climate, supervision, and leadership. These scales were adapted from existing instruments with established reliability and validity in healthcare settings; Organizational Climate: The organizational climate scale assessed midwives' perceptions of their work environment, including teamwork, communication, and support from colleagues and supervisors. The scale consisted of items rated on a Likert scale, ranging from "strongly disagree" to "strongly agree." Higher scores on the scale indicated a more positive perception of the organizational climate; Supervision: The supervision scale measured the frequency and quality of supervision received by midwives, including feedback, guidance, and support. The scale included items on the frequency of supervisory visits, the helpfulness of feedback received, and the availability of supervisors for consultation. Higher scores on the scale indicated more frequent and supportive supervision; Leadership: The leadership scale assessed midwives' perceptions of their leaders' effectiveness, including their vision, communication, and decision-making. The scale consisted of items rated on a Likert scale, ranging from "strongly disagree" to "strongly agree." Higher scores on the scale indicated a more positive perception of leadership effectiveness. MCH Handbook utilization was assessed by asking midwives about their use of the handbook in antenatal counseling sessions. The questions covered the frequency of handbook use, the topics covered during counseling, and the perceived usefulness of the handbook in providing effective counseling. Midwives were asked to rate their frequency of MCH Handbook use on a Likert scale, ranging from "never" to "always." They were also asked to indicate which topics they typically covered



during antenatal counseling sessions, using a checklist of topics derived from the MCH Handbook. Additionally, midwives were asked to rate the usefulness of the MCH Handbook in providing effective counseling on a Likert scale, ranging from "not at all useful" to "extremely useful."

Data were analyzed using a combination of descriptive statistics, Chi-square tests, and logistic regression. Descriptive statistics were used to summarize the characteristics of the study participants and the distribution of variables, providing an overview of the study sample and the key variables of interest. Chi-square tests were conducted to examine the associations between PHC organizational characteristics and MCH Handbook utilization. This non-parametric test allowed for the comparison of categorical variables, assessing whether there was a statistically significant relationship between organizational characteristics and the level of MCH Handbook utilization. Logistic regression was used to identify the independent predictors of MCH Handbook utilization, controlling for potential confounding factors such as midwife demographics and PHC characteristics. Logistic regression is a statistical method used to model the relationship between a binary dependent variable (in this case, MCH Handbook utilization) and one or more independent variables (organizational characteristics, midwife demographics, and PHC characteristics). The results of the logistic regression analysis provided insights into the strength and direction of the association between each independent variable and MCH Handbook utilization while controlling for other factors that could influence the relationship.

3. Results and Discussion

Table 1 provides a descriptive overview of the 208 midwives who participated in the study examining the relationship between PHC organizational characteristics and MCH Handbook utilization in Aceh

Tengah District, Indonesia. The majority of midwives were in their prime working years, with 60.1% falling within the 31-40 age bracket. This suggests a relatively experienced workforce. A substantial proportion (65.9%) had over 10 years of experience, indicating a significant level of expertise within the midwife workforce. This experience could potentially influence their comfort and familiarity with using the MCH Handbook. The vast majority (89.4%) held a Diploma in Midwifery. This highlights the importance of diploma programs in training midwives and emphasizes the need for continuing education and professional development opportunities to enhance their skills and knowledge, including the effective use of the MCH Handbook. Most midwives (81.7%) worked in *Puskesmas* (Community Health Centers), the primary level of healthcare in Indonesia. This emphasizes the importance of focusing on *Puskesmas* to improve MCH Handbook utilization and, consequently, maternal health outcomes. A majority of midwives (76.4%) perceived the organizational climate in their PHC to be good. This suggests a generally positive work environment, which could contribute to job satisfaction and potentially influence their willingness to adopt new practices like consistent MCH Handbook use. A large proportion (88.9%) reported good supervision. Adequate supervision is crucial for providing support, guidance, and feedback to midwives, which can be essential for promoting the proper use of the MCH Handbook. Most midwives (74.0%) perceived their leadership to be good. Effective leadership can create a supportive environment and motivate midwives to prioritize the use of the MCH Handbook in antenatal counseling. A significant finding is that 68.3% of midwives reported that MCH Handbook utilization needs improvement. This highlights a critical gap in practice and underscores the need for interventions to promote the effective use of this essential tool.



Table 1. Participants characteristics.

Characteristic	Category	Frequency (n)	Percentage (%)
Age (years)	20-30	38	18.3
	31-40	125	60.1
	41-50	45	21.6
Years of experience	≤ 5 years	23	11.1
	6-10 years	48	23.1
	> 10 years	137	65.9
Education level	Diploma in Midwifery	186	89.4
	Bachelor of Midwifery	22	10.6
Type of PHC	Puskesmas (Community Health Center)	170	81.7
	Puskesmas Pembantu (Auxiliary Health Center)	38	18.3
Organizational climate	Good	159	76.4
	Needs Improvement	49	23.6
Supervision	Good	185	88.9
	Needs Improvement	23	11.1
Leadership	Good	154	74.0
	Needs Improvement	54	26.0
MCH handbook utilization	Good	66	31.7
	Needs Improvement	142	68.3

Table 2 presents the results of the Chi-square tests examining the association between organizational characteristics (organizational climate, supervision, and leadership) and MCH Handbook utilization among midwives in Aceh Tengah District. The table shows no statistically significant association between organizational climate and MCH Handbook utilization ($p=0.738$). This means that whether midwives perceived the organizational climate as good or needing improvement did not significantly affect their likelihood of utilizing the MCH Handbook effectively. It's worth noting that a higher percentage of midwives (34.7%) who perceived the organizational climate as needing improvement also reported that their MCH Handbook utilization needed improvement. However, this difference was not statistically significant. There is a strong statistically significant association between supervision and MCH Handbook utilization ($p=0.006$).

Midwives who reported good supervision were much more likely to report good MCH Handbook utilization (35.1%) compared to those who reported that supervision needed improvement (only 4.3% reported good utilization). This finding strongly suggests that effective supervision plays a crucial role in encouraging and supporting midwives to use the MCH Handbook effectively in their antenatal counseling. The association between leadership and MCH Handbook utilization is highly statistically significant ($p<0.0001$). Similar to supervision, midwives who perceived their leadership as good were more likely to report good MCH Handbook utilization (39.6%) compared to those who felt leadership needed improvement (9.3% reported good utilization). This indicates that strong and supportive leadership significantly influences midwives' adoption and proper use of the MCH Handbook.



Table 2. Association between organizational characteristics and MCH handbook utilization.

Organizational characteristic	MCH Handbook Utilization: Good (%)	MCH Handbook Utilization: Needs Improvement (%)	p-value
Organizational climate			0.738
Good	30.8	-	
Needs improvement	-	34.7	
Supervision			0.006
Good	35.1	-	
Needs improvement	-	4.3	
Leadership			<0.0001
Good	39.6	-	
Needs improvement	-	9.3	

Table 3 presents the results of the logistic regression analysis, which aimed to identify the independent predictors of good MCH Handbook utilization among midwives while controlling for various factors. Age was not found to be a significant predictor of MCH Handbook utilization. The odds of good handbook utilization were similar across all age groups. Similarly, years of experience did not significantly predict MCH Handbook utilization. Midwives with varying levels of experience showed comparable odds of utilizing the handbook effectively. Education level also did not significantly predict MCH Handbook utilization. Midwives with a Diploma or a Bachelor's degree in Midwifery had similar odds of reporting good handbook use. Organizational climate

was not a significant predictor. Whether midwives perceived the organizational climate as good or needing improvement did not significantly affect the odds of good MCH Handbook utilization. Good supervision was a significant predictor of MCH Handbook utilization (p=0.004). Midwives who reported good supervision had 2.56 times higher odds of reporting good handbook utilization compared to those who reported that supervision needed improvement. Good leadership was also a significant predictor (p<0.001). Midwives who perceived their leadership as good had 3.37 times higher odds of reporting good MCH Handbook utilization compared to those who felt leadership needed improvement.

Table 3. Predictors of MCH handbook utilization.

Predictor	Odds ratio (OR)	95% confidence interval (CI)	p-value
Age (31-40)	1.00	-	-
Age (20-30)	0.85	0.45 - 1.60	623
Age (41-50)	0.72	0.38 - 1.37	318
Years of experience (6-10)	1.00	-	-
Years of experience (≤ 5)	1.12	0.53 - 2.37	761
Years of experience (> 10)	1.35	0.78 - 2.34	285
Education (Bachelor)	1.00	-	-
Education (Diploma)	0.92	0.41 - 2.07	839
Organizational climate (Needs improvement)	1.00	-	-
Organizational climate (Good)	1.21	0.64 - 2.29	552
Supervision (Needs improvement)	1.00	-	-
Supervision (Good)	2.56	1.35 - 4.85	4
Leadership (Needs improvement)	1.00	-	-
Leadership (Good)	3.37	1.81 - 6.27	<0.001



This study unveiled a concerning trend in MCH Handbook utilization within Aceh Tengah District. A significant majority of midwives, 68.3%, reported inadequate utilization of these handbooks during antenatal counseling sessions. This finding aligns with observations from previous studies conducted across various regions of Indonesia, reinforcing the existence of a widespread issue. The suboptimal use of MCH Handbooks represents a critical gap in antenatal care provision, potentially hindering the achievement of optimal maternal health outcomes. The suboptimal utilization of MCH Handbooks, as revealed in this study and corroborated by previous research, points to a complex interplay of factors that hinder the full integration of these valuable tools into antenatal care practices. These factors can be broadly categorized into individual midwife characteristics, healthcare system dynamics, and the specific design and content of the handbooks themselves. A fundamental barrier to effective MCH Handbook utilization is the lack of comprehensive awareness and knowledge among midwives regarding the handbook's full potential. While midwives generally recognize the MCH Handbook as an essential component of maternal health services, their understanding of its multifaceted functions and potential benefits may be limited. Some midwives may primarily view the MCH Handbook as a record-keeping tool for documenting antenatal visits, growth monitoring, and immunization schedules. They may not be fully aware of its broader role in facilitating holistic antenatal counseling, empowering women to actively participate in their care, and promoting timely healthcare-seeking behaviors. This limited understanding can restrict the handbook's use to a narrow set of functions, neglecting its potential to address a wider range of maternal health needs. The MCH Handbook serves as a repository of evidence-based recommendations and guidelines for antenatal care, childbirth preparedness, and postnatal care. However, midwives may not be fully conversant with the latest evidence or may lack the confidence to

translate the handbook's recommendations into their counseling practices. This unfamiliarity can lead to missed opportunities for providing comprehensive and up-to-date information to pregnant women. Midwives may underestimate the potential impact of MCH Handbooks on improving maternal health outcomes. They may not fully appreciate the handbook's role in empowering women with knowledge, enhancing communication between healthcare providers and patients, and promoting adherence to recommended care practices. This underestimation can lead to a lack of prioritization of the handbook's use during antenatal counseling sessions. Addressing this knowledge gap requires targeted educational interventions that go beyond simply providing midwives with a copy of the handbook. Training programs should emphasize the MCH Handbook's multifaceted functions, its alignment with evidence-based guidelines, and its potential to positively influence maternal health outcomes. Continuing education opportunities and knowledge-sharing platforms can further reinforce midwives' understanding and confidence in utilizing the handbook effectively. Midwives in Aceh Tengah District, like many other regions in Indonesia and globally, often operate within resource-constrained healthcare settings. They face a multitude of challenges that can lead to significant time constraints, impeding their ability to fully utilize the MCH Handbook during antenatal counseling sessions. Midwives often manage heavy workloads, including conducting antenatal check-ups, providing childbirth assistance, managing postnatal care, and participating in community health outreach programs. Staff shortages and limited resources can further exacerbate these workloads, leaving midwives with minimal time for comprehensive antenatal counseling. Midwives also shoulder significant administrative responsibilities, such as maintaining patient records, completing reports, and participating in meetings. These administrative burdens can consume valuable



time that could otherwise be dedicated to patient care, including in-depth counseling using the MCH Handbook. The time allocated for each antenatal consultation may be insufficient to adequately address all essential aspects of care, including comprehensive counseling using the MCH Handbook. This can lead to midwives prioritizing essential clinical assessments and interventions, leaving limited time for in-depth discussions and patient education using the handbook. Addressing these time constraints requires systemic changes within the healthcare system. Strategies to alleviate midwife workload, improve staffing levels, and streamline administrative processes are crucial for enabling midwives to dedicate sufficient time to comprehensive antenatal counseling. Furthermore, optimizing clinic schedules and appointment systems can help ensure adequate consultation time for each patient, allowing midwives to fully utilize the MCH Handbook and provide patient-centered care. The design and content of the MCH Handbook itself can influence its perceived relevance and usability among midwives. While the handbook is intended to serve as a comprehensive guide for antenatal care, certain aspects of its design and content may hinder its full integration into routine practice. Some midwives may find the handbook's format cumbersome or difficult to navigate during consultations. The handbook may be bulky, contain excessive information, or lack clear visual cues and organization. This can make it challenging for midwives to quickly locate relevant information and effectively utilize the handbook during time-constrained consultations. While the MCH Handbook aims to provide comprehensive information, its content may not always be fully aligned with the specific needs and contexts of all patients. Certain sections may be perceived as redundant or irrelevant to the specific population served by a particular midwife. This can lead to selective use of the handbook, neglecting valuable information that could benefit patients. The MCH Handbook's content and

language may not always be culturally sensitive or appropriate for all communities. This can create barriers to effective communication and hinder the handbook's acceptance and utilization among both midwives and patients. Addressing these concerns requires ongoing feedback mechanisms and continuous improvement of the MCH Handbook. Regular reviews and updates of the handbook's content, incorporating midwives' input and reflecting the evolving needs of pregnant women, can enhance its perceived relevance and encourage its consistent use. User-centered design principles should be employed to ensure the handbook's format is intuitive, easy to navigate, and conducive to efficient use during consultations. Furthermore, efforts should be made to ensure the handbook's content is culturally sensitive and adaptable to diverse communities. Initial training and ongoing support are pivotal for enabling midwives to effectively integrate MCH Handbooks into their antenatal counseling practices. However, gaps in training and support can hinder midwives' ability to fully utilize the handbook's potential. Midwives may not have received adequate initial training on how to utilize the MCH Handbook's various features, interpret its information, and address patient questions and concerns. Training programs may be limited in scope, duration, or effectiveness, leaving midwives with lingering uncertainties and hindering their confidence in using the handbook. Midwives may lack ongoing mentorship and support to reinforce their skills, address challenges, and stay abreast of updates to the handbook's content. Without continuous professional development opportunities and supportive supervision, midwives may gradually revert to previous practices or develop workarounds that circumvent the use of the MCH Handbook. Midwives may have limited access to resources and updates related to the MCH Handbook. This can include difficulty obtaining replacement copies, accessing updated versions, or receiving timely information on revisions to guidelines and recommendations. This



lack of access can further impede the handbook's effective utilization. Enhancing the utilization of Maternal and Child Health (MCH) Handbooks requires a multifaceted approach that addresses the identified barriers and fosters an enabling environment for midwives to embrace these valuable tools. Develop and implement comprehensive training programs should enhance midwives' knowledge and skills in utilizing MCH Handbooks effectively. They should cover the benefits of MCH Handbooks, provide practical guidance on their use during antenatal counseling, and equip midwives with strategies for addressing patient questions and concerns. Training programs should be tailored to the specific needs of midwives, considering their existing knowledge, skills, and experiences. They should also be adapted to the local context, incorporating relevant cultural and linguistic considerations. Training programs should be delivered through interactive modalities that encourage active participation and knowledge retention. This could include group discussions, case studies, role-playing exercises, and hands-on practice sessions. Regular refresher training and updates should be provided to reinforce midwives' skills and knowledge and ensure they stay abreast of any revisions or updates to the MCH Handbook. Strengthen supervisory structures within PHCs to provide midwives with regular guidance, feedback, and mentorship on their use of MCH Handbooks. Supervisors should be trained on effective supervision techniques, including conducting supportive supervisory visits, providing constructive feedback, and fostering a collaborative learning environment. Supervisors should be empowered to champion the use of MCH Handbooks and create a culture that values evidence-based practices. They should be provided with the resources and authority to promote the handbook's use and address any challenges faced by midwives. Supervisors should regularly monitor antenatal counseling sessions, either through direct observation or review of patient records, to assess midwives' utilization of MCH

Handbooks. They should provide constructive feedback, offer suggestions for improvement, and address any challenges or questions. Supervisors should provide ongoing mentorship and support to midwives, creating a safe space for them to ask questions, share experiences, and receive guidance on how to optimize their use of the MCH Handbook. Continuously review and update the MCH Handbook to ensure its content remains relevant, culturally appropriate, and user-friendly. Incorporate midwives' feedback and the evolving needs of pregnant women to enhance the handbook's usability and appeal. Use clear, concise language and an intuitive design to make the handbook easy to understand and navigate. Incorporate visual aids, such as diagrams and illustrations, to enhance comprehension and engagement. Consider developing digital versions of the handbook, accessible through mobile devices, to cater to the increasing use of technology in healthcare settings. Digital versions can offer additional features, such as interactive tools, videos, and links to relevant resources. Ensure the handbook's content and language are culturally sensitive and appropriate for the diverse communities served by midwives. Consider translating the handbook into local languages and adapting its content to reflect local customs and beliefs. Integrate MCH Handbooks into health information systems to facilitate data collection, monitoring, and evaluation of antenatal care services. This can provide valuable insights into the effectiveness of MCH Handbook utilization, identify areas for improvement, and guide resource allocation for maternal health programs. Explore the development of electronic MCH Handbooks that can be integrated with electronic health records. This can streamline data entry, improve data accuracy, and facilitate real-time monitoring of antenatal care indicators. Utilize data collected through MCH Handbooks to inform decision-making and improve the quality of maternal health services. This could include identifying trends in antenatal care utilization,



assessing the effectiveness of interventions, and guiding resource allocation. Explore the use of incentives to motivate midwives to consistently utilize MCH Handbooks in their practice. Incentives could include recognition for exemplary handbook use, such as certificates of achievement or public acknowledgment. Provide priority access to professional development opportunities, such as workshops, conferences, and training programs, for midwives who demonstrate consistent and effective MCH Handbook utilization. Consider offering performance-based bonuses or other financial incentives to midwives who achieve high levels of MCH Handbook utilization and demonstrate positive maternal health outcomes. By implementing these strategies, healthcare systems can create an enabling environment that supports midwives in effectively utilizing MCH Handbooks, contributing to improved maternal health outcomes and the achievement of global maternal health goals.¹¹⁻¹⁴

This study's findings emphasize the crucial role of primary healthcare center (PHC) organizational characteristics in driving the effective use of MCH Handbooks. The statistical analysis revealed a significant association between supervision ($p=0.006$) and leadership ($p=0.000$) and the proper utilization of MCH Handbooks in antenatal counseling. Conversely, organizational climate ($p=0.738$) did not show a statistically significant association. These findings highlight the nuanced ways in which organizational factors can influence midwife practices and, ultimately, maternal health outcomes. The positive association between supervision and MCH Handbook utilization underscores the pivotal role of supportive and engaged supervisors in fostering a culture of evidence-based practice within PHCs. Effective supervision provides midwives with the necessary guidance, feedback, and encouragement to confidently integrate MCH Handbooks into their antenatal counseling sessions. Supervisors should consistently emphasize the value and benefits of MCH Handbooks

in providing comprehensive antenatal care. This includes highlighting the handbook's role in empowering pregnant women with knowledge, facilitating shared decision-making, and promoting timely healthcare-seeking behaviors. By regularly reinforcing the importance of MCH Handbooks, supervisors can cultivate a sense of ownership and responsibility among midwives, encouraging them to view the handbook as an indispensable tool in their practice. Supervisors should conduct practical training sessions on how to effectively use the MCH Handbook during antenatal counseling. Guiding midwives on how to accurately interpret and explain the information presented in the handbook, tailoring it to the specific needs and literacy levels of their patients. Equipping midwives with strategies to effectively address patient questions and concerns using the handbook as a resource. Familiarizing midwives with the various features of the MCH Handbook, such as growth charts, immunization schedules, and danger sign checklists, and demonstrating how to use these features to enhance counseling sessions. Regular observation of antenatal counseling sessions, coupled with constructive feedback, is essential for promoting continuous improvement in MCH Handbook utilization. Supervisors should actively monitor midwives' use of the handbook, providing specific and actionable feedback on their strengths and areas for improvement. This feedback should be delivered in a supportive and encouraging manner, fostering a culture of learning and professional growth. Beyond formal supervision, supervisors should provide ongoing mentorship and support to midwives. This includes creating a safe and open environment where midwives feel comfortable asking questions, sharing challenges, and seeking guidance on how to optimize their use of the MCH Handbook. By fostering a strong mentor-mentee relationship, supervisors can empower midwives to confidently integrate the handbook into their practice and provide high-quality antenatal



counseling. The strong association between leadership and MCH Handbook utilization highlights the critical influence of effective leadership in promoting evidence-based practices within PHCs. Leaders who prioritize the use of MCH Handbooks and create a supportive environment for their implementation can motivate midwives to embrace these tools as integral components of quality antenatal care. Leaders should communicate a clear vision for the role of MCH Handbooks in achieving maternal health goals. This includes emphasizing the handbook's importance as a standardized tool for antenatal counseling, highlighting its potential to improve patient outcomes, and aligning its use with the overall mission and values of the PHC. Leaders can demonstrate the value of MCH Handbooks by actively using them in their own interactions with midwives and patients. This could involve referencing the handbook during meetings, incorporating its information into training materials, and showcasing its benefits through success stories and testimonials. By leading by example, leaders can inspire midwives to embrace the handbook and integrate it into their routine practices. Adequate resource allocation is essential for the successful implementation and sustainability of MCH Handbook utilization. Leaders should ensure that sufficient resources are allocated for the procurement, distribution, and training of MCH Handbooks. This demonstrates a commitment to the handbook's importance and provides midwives with the necessary tools and support to effectively utilize it. Leaders should foster a culture of collaboration and knowledge sharing among midwives, creating opportunities for them to learn from each other's experiences and best practices in utilizing MCH Handbooks. This could involve organizing peer-to-peer learning sessions, establishing communities of practice, and encouraging midwives to share their successes and challenges with the handbook. Recognizing and rewarding midwives who effectively utilize MCH Handbooks in their practice can foster a sense of value and motivation.

This could involve acknowledging their efforts during staff meetings, providing certificates of achievement, or offering opportunities for professional development. By recognizing and rewarding exemplary handbook use, leaders can reinforce its importance and encourage its continued adoption. The lack of a statistically significant association between organizational climate and MCH Handbook utilization in this study warrants further exploration. While a positive organizational climate is generally considered conducive to the adoption of new practices and improved healthcare provider performance, its influence on MCH Handbook utilization may be less direct or mediated by other factors. The organizational climate scale used in this study may not have fully captured the specific aspects of the work environment that are most relevant to MCH Handbook utilization. Future research could explore the development of more nuanced scales that specifically assess factors related to knowledge sharing, evidence-based practice, and support for innovation within PHCs. Organizational climate may indirectly influence MCH Handbook utilization through its impact on other organizational characteristics, such as supervision and leadership. A positive organizational climate can foster a supportive and collaborative environment that empowers supervisors and leaders to effectively promote the use of MCH Handbooks. MCH Handbook utilization is likely influenced by a complex interplay of individual, organizational, and systemic factors. Organizational climate may be one of many contributing factors, and its influence may be moderated by other variables, such as midwife characteristics, patient demographics, and resource availability.¹⁵⁻¹⁷

The findings of this study have important implications for policy and practice in Indonesia and other countries seeking to optimize the use of MCH Handbooks in antenatal care. The study's results highlight the critical role of organizational factors, particularly supervision and leadership, in promoting



the effective use of MCH Handbooks and, ultimately, improving maternal health outcomes. Policymakers and healthcare administrators should prioritize interventions that strengthen supervision and leadership support within PHCs. Supervisors should receive regular training and mentorship on effective supervision techniques, including how to provide constructive feedback, conduct supportive observation of antenatal counseling sessions, and mentor midwives in their use of MCH Handbooks. Leaders should be empowered to champion the use of MCH Handbooks and create a supportive organizational culture that values evidence-based practices. This could involve providing them with the authority and resources to promote the use of MCH Handbooks, recognizing and rewarding midwives who effectively utilize the handbooks, and incorporating MCH Handbook indicators into performance evaluations. A supportive organizational culture that values evidence-based practices, continuous learning, and patient-centered care can create an enabling environment for midwives to effectively utilize MCH Handbooks. This could involve promoting teamwork, open communication, and knowledge sharing within PHCs. Comprehensive training programs should be developed to enhance midwives' knowledge and skills in utilizing MCH Handbooks effectively. These programs should cover the benefits of MCH Handbooks, provide practical guidance on their use during antenatal counseling, and equip midwives with strategies for addressing patient questions and concerns. The training should also include information on the latest evidence-based recommendations and guidelines related to antenatal care, childbirth preparedness, and postnatal care. Training programs should be tailored to the specific needs of midwives, considering their existing knowledge, skills, and experiences. They should also be adapted to the local context, incorporating relevant cultural and linguistic considerations. Training programs should be delivered through interactive

modalities that encourage active participation and knowledge retention. This could include group discussions, case studies, role-playing exercises, and hands-on practice sessions. Efforts should be made to ensure that MCH Handbooks are readily accessible to midwives and patients. MCH Handbooks should be readily available at all PHCs and other healthcare facilities providing antenatal care services. Distribution channels should be streamlined to ensure timely and efficient delivery of handbooks to healthcare providers and patients. MCH Handbooks should be translated into local languages to ensure accessibility and comprehension for all patients. This is particularly important in areas with diverse linguistic populations. MCH Handbooks should be designed in a user-friendly format that is easy to navigate and understand. This could involve using clear and concise language, incorporating visual aids such as diagrams and illustrations, and organizing the content in a logical and intuitive manner. MCH Handbooks can be integrated into health information systems to facilitate data collection, monitoring, and evaluation of antenatal care services. MCH Handbooks can be designed to facilitate the collection of standardized data on antenatal care services, such as the number of antenatal visits, the types of services provided, and patient outcomes. This data can be used to monitor the quality and coverage of antenatal care services and identify areas for improvement. The data collected through MCH Handbooks can be used to monitor the effectiveness of maternal health programs and evaluate the impact of interventions. This can help to ensure that programs are achieving their intended goals and that resources are being used effectively. The data collected through MCH Handbooks can also be used to guide resource allocation for maternal health programs. By identifying areas of need and tracking program performance, policymakers and healthcare administrators can make informed decisions about how to allocate resources most effectively. Community ownership and engagement are



essential for the successful implementation and sustainability of MCH Handbook utilization. Community education and awareness campaigns can promote the benefits of MCH Handbooks and encourage their use among pregnant women and their families. This could involve utilizing various communication channels, such as community health workers, religious leaders, and mass media, to disseminate information about the handbook and its importance. Community feedback should be actively sought and incorporated into the design, content, and implementation of MCH Handbooks. This can help to ensure that the handbook is culturally appropriate, relevant to the needs of the community, and effectively promotes positive maternal health behaviors. Community health workers can play a crucial role in promoting the use of MCH Handbooks and supporting pregnant women in utilizing the handbook effectively. They can provide education and counseling, answer questions, and encourage women to actively participate in their antenatal care. By implementing these recommendations, healthcare systems can create an enabling environment that supports midwives in effectively utilizing MCH Handbooks, contributing to improved maternal health outcomes and the achievement of global maternal health goals.¹⁸⁻²⁰

4. Conclusion

This study investigated the influence of primary healthcare center (PHC) organizational characteristics on the utilization of Maternal and Child Health (MCH) Handbooks as counseling materials for pregnant women in Aceh Tengah District, Indonesia. The findings highlight the critical role of supervision and leadership in promoting the effective use of MCH Handbooks. Strengthening supervision and leadership within PHCs can enhance MCH Handbook utilization and potentially contribute to improved maternal health outcomes. Policymakers and healthcare administrators should prioritize interventions that

enhance supervision and leadership support, develop targeted training programs for midwives, improve MCH Handbook accessibility and usability, and integrate MCH Handbooks into health information systems. Further research is needed to explore the complex interplay of factors influencing MCH Handbook utilization and to evaluate the long-term impact of interventions aimed at improving handbook use.

5. References

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