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Integrated Care Impact on Postpartum Visit Compliance and Readmissions

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Walden University
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Abstract

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MHA, Walden University, 2017

BS, Purdue University, 2015

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Healthcare Administration

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Abstract

The specific research problem that was addressed through this study is the low rate of postpartum visits among Medicaid-enrolled women, leading to increased postpartum complications and readmissions. The purpose of this quantitative study was to evaluate if hospital readmissions can be reduced by integrated care home visiting services relating to postpartum visit compliance. The research questions evaluated the relationships between postpartum visit compliance, hospital readmissions among Medicaid-enrolled women in Indiana, and an integrated care home visiting program. The Donabedian model for quality-of-care grounds this study and is based on structure, process, and outcome. Through this model, healthcare leaders can evaluate their current structure and processes and determine if the desired outcomes are being achieved. A binary logistic regression analysis yielded no statistically significant relationship between postpartum visit compliance and hospital readmission; however, there was a statistically significant relationship between enrollment in clinically integrated home visiting services and postpartum visit compliance. The recommendation to healthcare leaders would be to use clinically integrated home visiting programs to increase postpartum visit compliance. Recommendation for further research would include a more expanded review to analyze birth outcomes and other variables, such a Neonatal Intensive Care Unit (NICU) admission, premature, low birth weight, failure to thrive, well-child visits, etc. The implications of this study's findings have impact for positive social change relates to increasing postpartum visits and providing healthcare leaders practical evidence and understanding of the benefits of clinically integrated home visiting programs.

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Dedication

I dedicate this work to my wife, Kylee, and my children, Elijah, Elsie, and Elliott. You have made me stronger, better, and more fulfilled than I could have ever imagined. I hope the sacrifices you have endured for me to pursue this dream will be repaid to you with many opportunities for joy and success in your future. I love you all ‘most.’

Acknowledgments

First and foremost, I would like to praise and thank God, the Almighty, who has granted countless blessing, knowledge, and opportunity in life as well as the amazing people I am humbled to hold as family and friends. Secondly, I extend endless gratitude to my wife (Kylee Herrick), three children (Elijah, Elsie, and Elliott Herrick), my parents (Ron and Karen Herrick), and my colleague (Hicham Rahmouni) for their constant, consistent, and compassionate belief that I can accomplish anything I set my mind to. Their names belong cemented in this work just as much as mine does. Through the years, my family has cheered me on as I have progressed through my educational endeavors; all while loving me unconditionally. Last, but most certainly not least, I thank my best friend and wife, Kylee, for her immense love, continued support, unwavering partnership, camaraderie, and friendly competition throughout our concurrent respective educational journeys. Additionally, I extend the humblest and kind gratitude to Dr. Tom Clobes and Dr. Matt Frederiksen-England of Walden University for their assistance in this arduous process.

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Section 1: Foundation of the Study and Literature Review

In this study, I examined the impact of integrated care on postpartum visit compliance among Medicaid-enrolled Indiana women. This study is significant in that its findings can be used to identify the benefits of integrated care home visiting services for healthcare leaders to implement to increase postpartum visit compliance and reduce hospital readmission rates due to postpartum complications, creating positive social change. The major sections of this chapter include (a) Background, (b) Problem Statement, (c) Purpose of the Study, (d) Research Questions and Hypotheses, (e) Theoretical Foundation of the Study, (f) Nature of the Study, (g) Literature Search Strategy, (h) Literature Review Related to Key Variables and Concepts, (i) Definitions, (j) Assumptions, (k) Scope and Delimitations, (l) Significance, and (m) Summary and Conclusions.

Background

More than a third of all counties (32) in Indiana, predominantly rural, are designated as obstetric deserts (Indiana Department of Health, 2018). An obstetric desert is a geographical area that does not have a provider offering ongoing prenatal care or does not have a birthing or delivery facility. Women in these rural areas may have to travel up to 60 minutes for prenatal visits, delivery, and postpartum care. Adding to this burden, many women in rural areas lack reliable transportation and support (Indiana Primary Health Care Association, 2017). Both lack of access to maternity care and lack of transportation are perinatal risk factors which can lead to increased infant mortality in Indiana. Aside from the lack of local transportation and providers, the population density

further restricts access to adequate prenatal care. While 30% of the counties do not have obstetric providers, the Indiana State Department of Health (ISDH) suggest that these same counties account for about 15% of the total deliveries in Indiana annually, yet they consistently have higher infant mortality rates (IMR) (ISDH, 2019). The IMR for the Central Southwestern Region was 9.5 per 1,000 live births in 2017 and 4.6 in 2018 (ISDH, 2020). Of the 559 Indiana infant deaths in 2018, 14 occurred in the Central Southwestern Hospital Region with Clay County having an IMR of 15.4 deaths per 1,000 live births in 2018 (ISDH, 2020). Many of these infant deaths were due to perinatal risk factors including late entry into prenatal care, preterm birth, and low birth weight due to chronic medical conditions, obesity, smoking and substance use (Table 1).

Table 1

Birth and PPOR Data for Selected Hospital Service Area

	Total Live Births		**% Low Birthweight**		**% Preterm**		**% Pnc Starting 1st Trimester**	
	2016	**2017**	**2016**	**2017**	**2016**	**2017**	**2016**	**2017**
Indiana	**83,063**	**82,251**	**8.2**	**8.3**	**10.0**	**9.9**	**69.3**	**68.6**
Clay	312	317	11.2	4.4	12.5	8.5	63.8	68.8
Parke	207	205	5.3	6.3	7.2	9.8	55.1	53.7
Vermillion	155	170	10.3	4.7	10.3	5.9	70.3	59.4
Vigo	1,284	1,223	8.3	8.9	10.3	10.5	64.7	75

Note. (ISDH, 2017)

In 2018, there were 3,050 births in the Central Southwestern Region (ISDH, 2020). In 2018, the Central Southwestern region had a high percentage of preterm births, of women smoking during pregnancy, and a lower percentage of breastfeeding at hospital discharge (Table 2). Vermillion County, with 15,560 people is the 79th most populated

county in the state of Indiana out of ninety-two counties (County Health Ranking, 2020). In 2018, the median household income of Vermillion County residents was $48,377 and 15.2% of Vermillion County residents live in poverty (County Health Rankings, 2020). Clay County is the 60th most populated county out of ninety-two counties with a population of 26,268 in 2018 (County Health Rankings, 2020).

Table 2

Health and Population Statistics for Hospital Service Area

	% Children living in poverty		% Mothers on Medicaid		% Pregnant Mothers Smoking		% Unmarried		% Breastfeeding at Discharge	
	2017	**2018**	**2016**	**2017**	**2016**	**2017**	**2016**	**2017**	**2016**	**2017**
Indiana	**20**	**18**	**41.7**	**41**	**13.5**	**13.5**	**42.7**	**42.8**	**80.9**	**81.9**
Clay	20	22	56.1	47	16.7	16.1	48.4	40.4	79.2	81.1
Parke	25	24	37.2	34.1	13	15.1	31.9	32.7	81.2	83.9
Vermillion	19	21	54.8	58.8	18.7	22.4	50.3	52.4	79.4	79.4
Vigo	25	28	41.7	58.6	20.9	18.9	51.3	40	74.5	71.3

Note. (ISDH, 2017)

Problem Statement

The situation or issue that prompted the search of healthcare administration literature regarding navigation services and postpartum visit compliance is the low national rate of less than 60% of Medicaid-enrolled women who attend their postpartum visits (Rodin et al., 2019). Lower rates of postpartum appointment compliance led to an increase in hospital readmission rates for postpartum complications, resulting in increased utilization of services and healthcare costs (Szafranska et al., 2020). Increased costs and negative maternal and infant outcomes can be a result of fragmented care. Healthcare professionals must work to address the fragmented care of prenatal and

postpartum women to improve patient outcomes and reduce unnecessary healthcare costs (Wen et al., 2020).

The specific research problem that I addressed in this study was the low rate of postpartum visit compliance among Medicaid-enrolled Indiana women, leading to increased postpartum complications and readmissions for healthcare organizations (see Rodin et al., 2019). Although researchers have investigated this issue, there is little or no literature on the effectiveness of integrated care home visit program participation for healthcare organizations to improve postpartum visit compliance among Medicaid-enrolled Indiana women as well as to reduce postpartum-related hospital readmissions (Rodin et al., 2019). Many recent studies have investigated the ongoing problem of postpartum women having discontinuous care nation-wide, however, researchers have had limited information on the completion of patient postpartum visits among Medicaid-enrolled Indiana women (Rodin et al., 2019).

Purpose of the Study

The purpose of this quantitative study was to evaluate if hospital readmissions can be reduced by effective integrated care home visiting services relating to postpartum visit compliance among Medicaid-enrolled women at an Indiana hospital. The dependent variables were postpartum visit compliance and hospital readmission, and the independent variable was Indiana Medicaid-enrolled women who may or may not participate in integrated care home visiting program.

Research Questions and Hypotheses

The research questions and hypotheses for this study were:

Research Question 1 (RQ1): What is the relationship between postpartum visit compliance and hospital readmission among Medicaid-enrolled women at an Indiana hospital between 2020 and 2021?

Null Hypothesis ($H_0$1): There is no statistically significant difference between postpartum visit compliance rates and hospital readmission among Medicaid-enrolled women at an Indiana hospital.

Alternative Hypothesis (H_a1): There is a statistically significant difference between postpartum visit compliance rates and hospital readmission among Medicaid-enrolled women at an Indiana hospital.

Research Question 2 (RQ2): Is enrollment of Medicaid-enrolled women in integrated care home visiting programs associated with postpartum visit compliance and mitigation of hospital readmission?

Null Hypothesis 2 ($H_0$2): Enrollment of Medicaid-enrolled women in integrated care home visiting programs is not predictive of postpartum visit compliance and lower hospital readmissions.

Alternative Hypothesis 2 (H_a2): Enrollment of Medicaid-enrolled women in integrated care home visiting programs is predictive of postpartum visit compliance and lower hospital readmissions.

Theoretical Foundation for the Study

The theory that I used to ground this study is the Donabedian model for quality of care. This model is based on three measures: structure, process, and outcome, each of which impact the level of quality care provided to patients (Donabedian, 1966). Through

this model, healthcare organizations can evaluate their current structure and processes, such as integrated home visiting services, and determine if the desired outcomes are being achieved, such as reduced readmissions among postpartum women. This model was first developed in 1966 by Avedis Donabedian (Donabedian, 1966). The logical connections between the framework presented and the nature of my study include the framework of the integrated care model is one that redesigns how healthcare is provided by healthcare organizations. The aspect of providing home visiting patient navigation to provide all-inclusive services and resources to patients to ensure the best outcome is one that can increase care use, namely postpartum visits, and reduce unnecessary hospitalizations (see Donabedian, 1966).

I used this model to frame the topic of interest and research questions because there is a direct link to healthcare administration and quality/process improvement through new service delivery structures, such as home visiting navigation programs. Healthcare organizations and administrators have used the Donabedian model to improve their service delivery and increase the level of quality provided to their patients. The Donabedian model was useful to examine the current structure and process of maternal and child health services as they relate to the negative outcome of postpartum hospital readmission. I used this model to assess the level of quality that home visiting navigation services may provide to families to reduce postpartum hospital readmission and improve health outcomes for both women and infants.

Nature of the Study

To address the research questions in this quantitative study, I used a binary logistic regression research design using a secondary data set from a hospital in Indiana. This design was the best fit for this study because it is used to predict the relationship between independent and dependent variables when the dependent variable is binary, such as a yes or no answer to having a postpartum visit. A categorical prediction can be analyzed through the classification table to identify the probability of an event occurring. I categorized postpartum visit compliance as *either excellent/good* = 0 or *fair/poor* =1. Similarly, I coded hospital readmission as one for any number of readmissions and 0 for no readmission. I calculated Cox and Snell R Square and Nagelkerke R Square values to explain variation between variables. I used a Wald Test to determine the significance of each independent variable.

For this study, I used data from a rural Indiana hospital's home visiting program, maternal and child health department, and the healthcare system's obstetric clinic. The Indiana hospital that I selected is composed of an acute care hospital, critical access hospital, and specialty practices located throughout rural Indiana. The acute care hospital is a not-for-profit regional medical center located in West Central Indiana, serving over 275,000 patients annually. Patients primarily live in seven rural counties. Most patients cared for at this hospital earn significantly below the national and state median household income. As the only delivering facility in West Central Indiana seeking Level 3 perinatal certification for both obstetric and neonatal services, this hospital system provides most of the maternal-child services in this region. The need for these services is exacerbated by

the scarcity of obstetricians in the neighboring counties resulting in the systematic referral of high-risk patients to providers in this healthcare system, resulting in women from these rural areas having to drive to a different county for their Obstetric (OB) prenatal care and to deliver their babies.

Literature Search Strategy

To explore current literature on home visiting navigation, postpartum visit compliance, and postpartum hospital readmissions, I conducted an examination of peer-reviewed articles from the year 2017 forward. The library databases and search engines that I used in this exhaustive search included ProQuest, ProQuest Dissertation & Thesis, and PubMed. The search terms for these databases included *postpartum readmission, postpartum home visit, post-delivery, navigation, home visit, postpartum attendance, postpartum health,* and *hospital readmission*. Although researchers have investigated this issue in the past, there is little or no literature on the effectiveness of clinically integrated care home visiting program strategies for healthcare organizations to effectively increase the low rates of postpartum visit compliance among Medicaid-enrolled Indiana women to reduce related hospital readmissions in the postpartum period (Rodin et al., 2019).

Literature Review Related to Key Variables and/or Concepts

The problem that I addressed in this study was that while home visiting navigation programs have been used throughout many areas of the healthcare system, research does not show the impact they have on reducing postpartum hospital readmissions in rural Indiana. The problem leading to postpartum readmissions is the low national rate of less than 60% of Medicaid-enrolled women who attend their routine

postpartum visit following delivery (Rodin et al., 2019). Lower rates of postpartum appointment compliance led to an increase in hospital readmission rates for postpartum complications, resulting in increased use and healthcare costs that have the potential of being preventable. The specific research problem that I addressed in this study was the low rate of postpartum visit compliance among Medicaid-enrolled Indiana women, leading to increased postpartum complications and readmissions for healthcare organizations (see Rodin et al., 2019). Although researchers have investigated this issue, there is little or no literature on the effectiveness of integrated care home visiting strategies for healthcare organizations to increase the low rates of postpartum visit compliance among Medicaid-enrolled Indiana women to reduce related hospital readmissions (see Rodin et al., 2019). Indiana Medicaid-enrolled women often lose their healthcare coverage in the postpartum period, causing some to forego care due to not being able to afford medical out-of-pocket bills.

According to the American College of Obstetricians and Gynecologists (ACOG), rural populations throughout the United States experience higher incidence of infant mortality compared to the national average (ACOG, 2018). In fact, 51% of nonmetropolitan counties in the United States experienced rates exceeding the national average, while 6.2% of rural counties experienced nearly double the national average (ACOG, 2018). Indiana, like the United States, has similar geographic characteristics that create access barriers for delivering safe and efficacious care for infants and their mothers, their family members, and other supportive caregivers. According to the Indiana Primary Health Care Association, forty-three out of Indiana's 92 counties are designated

as medically underserved areas or populations while fifty-one of these counties are designated as Health Professional Shortage Areas (HPSA) (Indiana Primary Healthcare Association, 2017). Thirty-three of Indiana's 92 counties have no obstetrical services available, eighteen counties have no hospital, including the two rural ones targeted by this project, and fifteen critical access hospitals have no obstetrical service line available (Indiana Hospital Association, 2016).

The lack of obstetrical services has created a high-risk scenario that places Indiana among the worst performing states in the nation, particularly concerning its increased maternal mortality rate (MMR) and IMR. In fact, Indiana has the fifth highest IMR rate in the nation. In 2015, Indiana's IMR was 7.3 per 1,000 live births compared to 5.9 per 1,000 for the United States overall (ISDH, 2020). Of additional concern is that the infant mortality rate in eleven of Indiana’s counties exceeded nine deaths per 1,000 live births (ISDH, 2020). Infant mortality is associated with many factors before, during, and after birth: maternal health, prenatal and postnatal care, and access to quality health care are some of the factors. Significant sociodemographic disparities persist, particularly in the postnatal period where low socioeconomic status has been associated as one of the leading determinants of poor outcomes (ISDH, 2020).

The purpose of this quantitative study was to evaluate if hospital readmissions can be reduced by effective integrated care home visiting services relating to postpartum visit compliance among Medicaid-enrolled women at an Indiana hospital. Home visiting programs provide additional touchpoints with women and children beyond the clinic site where they receive medical care. Home visiting program staff can address risk factors

associated with the social determinants of health that are beyond the scope of a clinical provider. The extra touchpoints provided by home visiting program staff in the early postpartum period can help to identify any complications early and allows the staff to ensure that the enrolled woman schedules and attends her postpartum appointment with her medical provider. In this section, I provide an explanation of the literature search strategy. The next section includes an explanation of the conceptual framework used for the current study as well as a review of the current literature on topics relating to clinically integrated home visiting navigation programs and postpartum hospital readmissions.

Beyond the Walls of Healthcare

The health of individuals and communities across the globe is impacted by more than just what occurs within the walls of a clinic or a hospital. Specifically, some of the social factors associated with negative birth outcomes include minorities, rural residents, and low education levels (Amjad et al., 2018). As the U.S. healthcare system shifts to focus more on prevention and the social determinants of health, healthcare administrators are having to become creative in expanding the services they provide beyond the walls of a traditional clinic or hospital setting. According to the Alliance for Strong Families and Communities, only 20% of health outcomes are associated with healthcare and the remaining 80% encompass socioeconomic factors, health behaviors, and the physical environment that can all be addressed by a home visiting navigation program that goes beyond the 20% healthcare setting (Alliance for Strong Families and Communities, 2020).

Elrod et al. (2017) suggested that in doing so, healthcare providers are more adept to identifying innovative methods and approaches that can be utilized to improve healthcare organizations service and lead to improved health outcomes for their patients. This shift in service delivery will require healthcare administrators to adjust their service lines that may be well established within their hospitals to include a community aspect that meets the patients where they are in the community. Similarly, Kumar et al. (2017) found that by targeting efforts outside of the health clinic setting are critical in addressing health disparities for adolescent mothers.

For communities to have full social support and resources to reach a higher level of health, it will take more than just one organization in the community to help. An example of this collaboration may be a community action network of community members and service providers that come together around a shared passion or cause. The All Babies Deserve a Chance Initiative, or All Babies Initiative, is an example of this effort. The All Babies Initiative established a Community Action Network (CAN) for the purpose of bringing people and organizations together for a collaborative effort to reduce the high rate of infant mortality in the Central Southwestern region of Indiana (All Babies Initiative, 2021). The Community Action Network plays an intrinsic role in guiding referrals to the navigation program in helping identify and connect with women who could potentially benefit from the services. Religious institutions are part of the fabric of every rural community and as such play a pivotal role in the outreach efforts of the program. Connecting with the local healthcare coalitions through this network allows for better targeting of patients as these engaged networks of organizations are often the best

place to begin. Typically, referrals to navigation programs are made by both a medical office and community organization and follow the same process (All Babies Initiative, 2021). Warm handoffs are an effective initial introduction possible at the clinics as the navigators are integrated into each office workflow and schedule and operate as integral part of the staff with full access to the practice's medical records. Having access to the navigation program participant's medical records allows the navigation staff to see the whole picture of their participant family's health, enabling to better serve their families. The navigation program participant also has a certified Community Health Worker (CHW) at the same visit, and both are included in the design and development of their patient's individual care plan (All Babies Initiative, 2021). The navigator and certified community health worker team are responsible for conducting a daily huddle on each of the new participants for a multidisciplinary approach toward creating their customized care plan and to ensure proper follow-up has taken place that addresses the participants unique needs.

Thomas et al. (2017) also noted the importance of healthcare organizations to focus their efforts on meeting their patient's underlying social needs through community partnerships and outreach. Additionally, Cesta (2014) noted that to truly case manage individuals to improve health outcomes in a community, it takes a continuum of care approach. In doing so, patient outcomes will improve, and healthcare costs can be reduced. Many healthcare organizations across the country are employing community health workers to address many of these social and behavioral needs to reduce hospitalization and improve the quality of care provided (Kangovi et al., 2018). A

certified community health worker can provide reimbursable services for healthcare entities while costing the organization much less than a clinical provider, such as a registered nurse.

Maternal Outcomes

A significant focus exists in the United States on improving prenatal care among women, while there is less of a focus on improving postnatal care (Hostetter & Klein, 2019). The need for access to OB services certainly exists, but with transportation being the greatest barrier to care, women delay, forego, or compromise on needed prenatal and postpartum care (Amjad et al., 2019). Postpartum complications, occurring with the first few months postdelivery, contribute to the increasing maternal mortality in the United States (McMorrow et al., 2020). More than seven hundred women die each year of pregnancy-related conditions in the United States with 60% of these deaths being preventable (Butkus et al., 2020). More effort should be put forth to focus on reducing maternal mortality in the United States, not only at the point of delivery, but the days and weeks following a delivery.

In addition to maternal mortality, maternal morbidity has also been increasing from contributing delivery complications and lack of postnatal follow-up (McMorrow et al., 2020). The addition of what is now referred to as the fourth trimester is important in addressing the continuum of maternal child health care. During this period after birth, there are several factors that need to be addressed during a routine postpartum visit to ensure that women are adjusting well after delivery and with their newborn. A barrier for many Medicaid-enrolled women in Indiana is the loss of insurance coverage in the

postpartum period, leading to many not attending their postpartum appointment and foregoing needed care to manage existing chronic disease, post-delivery complications, and mental health concerns (McMorrow et al., 2020).

Disparities exist among women who receive postpartum care and those who do not, based on type of insurance, race and ethnicity, age, level of education, and socioeconomic status (Yee et al., 2017). From 2016 to 2017, more than a third of Medicaid-enrolled women delivered via cesarean section and then later lost insurance coverage in the postpartum period when they needed enhanced care for recovery from their delivery (McMorrow et al., 2020). Healthcare systems need to ensure continuity of care for women for prenatal care, labor, and delivery, as well as this newly termed fourth trimester postpartum period.

Women in the fourth trimester are having shifting hormones on top of many social stressors seen among Medicaid-enrolled populations that can contribute to mental health concerns. Another factor in postpartum care is depression and suicide. One in seven mothers and one in ten fathers experience postpartum depression (Postpartum International, 2021). A report from the Indiana State Department of Health (ISDH) found that from 2011-2015 major depression is the diagnosis most associated with suicide (ISDH, 2017). Unhealthy relationships involving conflict or violence can be an influential risk factor. Healthy relationships, including those with individuals, family, community, and health care providers, can be protective and contribute towards a healthy mental health status. From 2011 to 2015, the suicide rate of Fountain, Parke, and Vigo Counties respectively was 17.8, 18.7, and 22.4 per 100,000 persons (Indiana State

Department of Health, 2017). Building healthy relationships is a vital part of alleviating or preventing postpartum depression.

In rural areas where access is limited to mental health providers, such as in many parts of the Central Southwestern region of Indiana, the prevention and quick diagnosis of postpartum depression is essential to preventing other self-harming actions (Postpartum Support International, n.d.). Care provided in this fourth trimester can provide the routine care, disease management, recovery support, and connection to needed resources so that women are not readmitted to the hospital unnecessarily following a delivery.

The counties that comprise the targeted region rank among the worst performing counties in the state for health behaviors, factors, and social and economic factors (StatsIndiana, 2018). Zip codes 47803 and 47804 in Vigo County rank as the worst in the whole county for infant mortality. This area encompasses approximately 65,918 individuals, with 22% being under the age of eighteen years old (StatsIndiana, 2018). Causative factors leading to these poor rankings include: a higher than state average unemployment rate of 4.1% compared to the state average of 3.5%; a lower per capita income at $35,558 compared to the state average of $41,490; and 15.8% of the region's population living at or below the federal poverty level (Bureau of Indiana Workforce, 2020). Consequently, more mothers in this region are enrolled in the Medicaid program (47.8%) compared to the state average (StatsIndiana, 2018). Other factors that contribute to poor quality of life for postpartum women in Indiana, including low-birth weight infants, are the 25% of mothers who smoke during pregnancy, which is noted to be 10%

higher than the state smoking average among pregnant women (ISDH, 2017). Only one county in the Indiana region selected for this study, Vigo, has some form of public transportation, but like the other two counties, which are largely agrarian and rural, all have a high prevalence of poor physical health days, poor mental health days, high obesity rates, diabetes, and a lack of access to healthy food options and methods to foster healthy lifestyles such as access to exercise and community-based support programs.

In addition to sociodemographic and economic disparities experienced by pregnant women in Indiana, women often present in imminent delivery situations at critical access hospitals, in neighboring counties (Indiana Hospital Association, 2017). This phenomenon poses significant challenges to the rural workforce. Infants who are low birth weight and those with complex medical, surgical, or cardiac problems are often critically ill, necessitating transport to receive specialized care that is not available at the rural critical access hospital. Care providers are often unaware of any pre-existing issues as the mother has not received prenatal care. Women who access rural critical access hospitals for delivery situations increase their risk for ineffective or inadequate stabilization techniques due to the high-risk, low-volume scenario these situations present to the rural workforce (Indiana Primary Health Care Association, 2017).

An additional negative maternal health outcome is maternal mortality. In severe cases when maternal health is not effectively managed and cared for, complications during pregnancy and in the postpartum period can lead to maternal mortality (ISDH, 2017). Indiana's maternal mortality rate has been on the rise in recent years as outlined in Table 3 below. This rate is calculated by comparing the number of pregnancy related

deaths (deaths while pregnant or within 42 days of the end of pregnancy) to the number of live births (Boulware, 2017). The 2014 maternal mortality rate in Indiana is slightly higher than that of Mongolia (Boulware, 2017). United States healthcare has seen many advancements over the past decade as a well-developed country and with that, the maternal mortality rate should not be as high as a developing country like Mongolia.

Table 3

Indiana Maternal Mortality

	PREGNANCY RELATED DEATHS	LIVE BIRTHS	MATERNAL MORTALITY RATE PER 100,000 LIVE BIRTHS
2008	12	88,679	13.5
2009	15	86,126	17.4
2010	12	83,867	14.3
2011	43	83,750	51.3
2012	30	83,250	36.0
2013	35	83,115	42.1
2014	39	83,927	46.5

Note. (Boulware, 2017).

Obstetric Readmissions

Women's health is one area of the healthcare sector that has many attributable social factors that are associated with maternal and infant health outcomes. In 2016, the national 30-day obstetric hospital readmission rate was 3.6% (Bailey et al., 2019). Clapp et al. (2018) notes that many obstetric hospital readmissions are more attributable to patient's social risks than hospital care. An example of risk factors associated with negative pregnancy/birth outcomes that lead to hospital readmission are substance use disorder, tobacco use, alcohol use, lack of social support, housing insecurity, low-income, etc.

(Amjad et al., 2019). Each of these risk factors, if not addressed in the pre-conception or prenatal period, can lead to complications requiring hospital admission following delivery.

Similarly, Szanfranska et al. (2020) found that a sizable proportion of women seek postpartum care from multiple healthcare entities, leading to a fragmentation in care as there is no healthcare continuum that allows these entities to communicate to one another. Not only can this lead to duplication of efforts, but also a gap in care when addressing the patient's social determinants of health. Wen et al. (2020) noted that this fragmentation of postpartum care is often associated with increased risk for severe morbidity, increased healthcare costs, and a longer length of hospital stay. Fragmentation of care, or inadequate care, can result in misdiagnosis or uncontrolled disease management as the postpartum care may not be frequent enough or across multiple providers that are not communicating with each other. Healthcare administrators must work to reduce this fragmentation in a step toward improving postpartum are for women. To do so, healthcare administrators must collaborate with these women to better understand why they are receiving care from multiple providers. There may be a miscommunication between providers and their patients not knowing that they are able to provide all the care they need as it relates to prenatal and postpartum care. There may also be a fear of being reported to child protective services, or the Department of Child Services, if an illegal drug screen in conducted and produces a positive lab result (Amjad, 2019). To effectively reduce this fragmentation, healthcare administration will need to identify the specific reason for their patients and implement a quality improvement steps.

Postpartum Visit Compliance

Rodin et al. (2019) analyzed qualitative case studies and found that postpartum visit compliance is essential to maternal and infant health outcomes and is important in reducing hospital readmissions. Likewise, Yee et al. (2017) noted that healthcare organizations that implement postpartum navigation services for their patients have a higher rate of postpartum visit compliance and better maternal outcomes. The Obstetricians and Gynecologists (OB/GYN) suggests that women have contact with their OB/GYN within three weeks postpartum and a comprehensive postpartum checkup completed by 12 weeks postpartum (ACOG, 2018).

Similarly, La Rosa et al. (2017) supported the use of maternal outreach programs to increase postpartum visit compliance among low-income individuals. McKenney, Martinez, and Yee (2018) observed that low-income women who received postpartum navigation services were more likely than those not receiving navigation services to attend and receive postpartum visit care. Handler et al. (2019) conducted a mixed-methods study that also supports postpartum navigation services and serves as a good strategy for healthcare administrators to utilize to improve postpartum women's health. Home visiting navigation program staff can be a support to postpartum women, encouraging their participants to take charge of their health and attend their postpartum visit with their OB/GYN.

Past research on home visiting programs and the importance of postpartum care has been conducted that has identified various strengths and weaknesses within each of their respective approaches. Dodge et al. (2019) found a limitation in their randomized

clinical trial approach in that it was narrowed to one specific community. Additionally, Yee et al. (2017) noted a limitation of their prospective observational study that was conducted within an academic tertiary care medical center which is a referral site for high-risk pregnancies with enhanced resources and staffing. The effectiveness of clinically integrated home visiting programs should be studied across multiple population types and delivering facilities to be more replicable and effective at reducing hospital readmissions for postpartum women.

The proposed study focused on delivering women in rural Indiana that are enrolled in Medicaid. This population is often disadvantaged when it comes to healthcare, as mentioned previously, and should be examined to determine if home visiting services would improve their health outcomes. Many of these disadvantages and negative social factors can lead to high-risk pregnancies that need additional support outside of the prenatal care clinic. Clinically integrated home visiting navigation programs can provide this additional support for program staff to meet with participating families in between their regularly scheduled prenatal and postpartum care appointments to be their advocate, empower them to make healthy choices, and to connect them with needed resources such as a tobacco cessation program, insurance coverage, or public housing.

Furthermore, Rodin et al. (2019) identified a limitation in not being able to obtain complete information regarding the completion of postpartum visits by their women participants. Similarly, Swoboda et al. (2018) noted that the lack of data on whether the study participants were receiving services from other home visiting programs could limit the ability to compare groups. Additionally, Green et al. (2018) conducted a randomized

trial and acknowledged their limitation of having research study participants that were not eligible for or receiving services from a home visiting program. To further clarify and eliminate these limitations, information on other program services that participants are receiving may be beneficial as well as examining a home visiting program with little to no eligibility restrictions. The study conducted is unique in that the home visiting program data that is being utilized is clinically integrated within the selected Indiana hospital system. This system includes a delivering hospital and Obstetrics and Gynecology (OBG/GYN) practices. Thus, the program data includes postpartum visit information if the woman only received prenatal and postpartum care within the hospital system and not elsewhere. Correspondingly, the hospital Perinatal Navigation Program (PNP) does not have eligibility requirements and will not be limited like the Green study.

Navigation Services

Navigation services can bring several benefits to a healthcare organization that is working to address their community's social determinants of health. Heitzman et al. (2019) noted that the relationship that is formed between the navigation program participant and the home visiting program staff is one of the key benefits, with the secondary benefit being the helpful information and resources provided. Home visiting navigation program staff have a unique opportunity to meet families in their homes and build a professional relationship with them in a positive way (All Babies Initiative, 2021). This relationship is essential in coaching and motivating women and their families to obtain proper prenatal care, postpartum care, well-woman care, well-childcare, and to

follow up on needed resource that can reduce their risk factors associated with their pregnancy and post-delivery health.

Green et al. (2018) also found that navigation services were beneficial in acquiring health insurance coverage for children and to assist families in navigating the ever-complex realm of healthcare. The navigation program model of visiting participants in their home is a model that reduces the many barriers that families have around transportation. By meeting them in their homes, navigation staff can enroll them in health insurance, if needed, and provide them with key resources without the need for the family to find transportation to go multiple community organizations. Dodge et al. (2019) also found that navigation services are helpful in connecting families to services, reducing depression, and decreasing the amount of child abuse cases. The simple support of a home visiting program staff member can help alleviate the stress of raising and family and provide an outlet of support, empowerment, and connection to needed services is likely what is attributable to decreasing the amount of child abuse cases. Tandon (2020) noted that most women enrolled in navigation services were 25% less likely to have depression. Once again, the relationship and trust that clinically integrated home visiting navigation program staff can establish with their participant families is one that is helpful in reducing stress levels and providing help that can reduce the number of women with depression and the number of child abuse cases. However, Swoboda et al. (2018) did not find a statistical significance between the number of infant deaths of enrolled versus non-enrolled women in navigation programs. Many factors are associated with infant mortality that expand well beyond navigation programs and the diverse services that each

program may provide. Although there may not be a statistically significant different for navigation participants, more research will need to be conducted to determine the types of services that this navigation program provided (Swoboda et al., 2018). Many variations of navigation programs exist, and additional research should be conducted to determine which pieces of different programs may contribute to a reduction in risk factors, negative health outcomes, and infant and maternal mortality.

For this study, the dependent variables were postpartum visit compliance and hospital readmission, and the independent variable will be enrollment in integrated care home visiting program. Dodge et al. (2019) noted the importance of postnatal home visiting programs. Similarly, Rodin et al. (2019) identified home visiting programs to improve postpartum care. This literature highlights the importance of the independent variable of being enrolled in an integrated care home visiting program. The hospital's clinically integrated home visiting programs enroll pregnant and postpartum women beginning in the first trimester and through the child's 18-month of life. The data provided by the selected Indiana hospital showed at what stage the participant was enrolled and if/when they exited the program to determine if they were enrolled postpartum and received services. A sizable portion of the home visiting program's focus on the postpartum period is ensuring that the participant women attend their postpartum visit with their OB/GYN in the recommended timeframe, screen them for postpartum depression, and ensuring that they have all the resources they need to make a smooth transition to caring for a newborn infant.

More mothers in this region of Indiana are enrolled in the Medicaid program compared to the Indiana state average. Other factors that contribute to poor quality of life, including low-birth weight infants, are the 25% of mothers who smoke during their pregnancy, which is noted to be 10% higher than the state smoking average among pregnant women (ISDH, 2017). Many rural counties in Indiana do not have any form of public transportation, yet all have a high prevalence of poor physical health days, poor mental health days, high obesity rates, diabetes, and a lack of access to healthy food options and methods to foster healthy lifestyles such as access to exercise and community-based support programs (County Health Rankings, 2020).

In addition to sociodemographic and economic disparities experienced by pregnant women in Central Southwestern Indiana, women often present in imminent delivery situations at Critical Access Hospitals (CAHs) in rural areas, who have ceased providing obstetric services more than a decade ago (Indiana Hospital Association, 2017). This phenomenon poses significant challenges to the rural workforce who are not as well trained for this type of healthcare service. Infants who are low-birthweight and those with complex medical, surgical, or cardiac problems are often critically ill, necessitating transport to receive specialized care that is not available at the rural critical access hospital. Healthcare providers are often unaware of any pre-existing issues as the mother has not received prenatal care and the mother may not have seen a provider at all within their health system (ISDH, 2017). Many of Indiana's rural counties do not have obstetricians. As a result, pregnant women in these areas must travel between 45 minutes to an hour for their prenatal care and other medical needs such as high blood pressure,

depression, or minor illnesses (Indiana Primary Health Care Association, 2017). The burden and lack of public or private transportation was noted as one of the biggest challenges in most recent community health needs assessments for the Central Southwestern region of Indiana. This frequently results in foregoing adequate prenatal care and postpartum care within the recommended timeframe.

Wen et al. (2020) conducted a retrospective cohort study and found that discontinuous postpartum care is associated with increased hospital readmission. Discontinuous postpartum is defined as care that is not received within a set timeframe from delivery, such as the 12-week postpartum period recommended by the American Obstetricians and Gynecologists (ACOG). Additionally, Yee et al. (2017) also identified improved postpartum health outcomes among postpartum navigation program participants. This literature supports the dependent variable of hospital readmission among postpartum women. Women lacking postpartum care are more likely to have undermanaged chronic health conditions and inadequate access to effective contraception, which can lead to short pregnancy intervals and negative health outcomes (ACOG, 2018). Postpartum care is essential in ensuring that women are healthy after delivery and are transitioning well. More than half of the maternal mortality deaths that are associated with pregnancy occur in the postpartum period (ACOG, 2018). Postpartum appointment attendance is of utmost importance to catch any pregnancy-related, delivery-related, or chronic condition complications early to prevent unnecessary hospital readmission, negative maternal or infant health outcomes, or even maternal or infant mortality (Boulware, 2017).

Navigation Services and Decreased Readmission

Balaban et al. (2015) suggested that healthcare systems can decreased their postpartum hospital readmissions by implementing a patient navigation program for high-risk women. Navigation programs have seen success in creating care transition strategies that help women navigate the prenatal, postpartum, and interconception periods of their health. Navigation programs for this period are especially useful as the healthcare associated with prenatal and postpartum care can be complex and difficult to navigate alone. Similarly, Kitzman et al. (2017) implemented a navigation program for stroke patients that proved to be beneficial in reducing both 30-day emergency department visits and 30-day hospital readmissions through providing increased communication between the patient and the providers, assistance with insurance coverage, and relevant educational resources. This example of how navigation services can reduce hospital readmissions is a key benefit for this type of service. Clinically integrated home visiting navigation program staff can provide the extra support and assistance for patients beyond what they typically receive within the hospital or clinic setting. Conducting follow-up with these patients via phone and home visits are extra touches with the patient where the navigator can provide support and direct the patients along their care path. Additionally, the home visiting portion of these types of navigation programs provide an additional layer of being able to see the environment that patients go home to after being discharged from the hospital. For example, if a patient is discharged after having a severe asthma attack, it may not be great for them to go home to their old rental house with ten cats roaming around. A navigator or community health worker would be able to identify the

condition of the home and communicate it back to the hospital or clinic provider so a more targeted and appropriate care plan can be created with defined goals around reducing asthma attacks by purifying the air in the patient's home.

Nourse and Paauwe-Weust (2021) also suggested that navigation programs are key in improving care transitions, decreasing hospital readmission rates, and reducing healthcare costs. They also proposed that by implementing such a navigation program with non-nurse community health workers (CHWs), additional health savings can be made by healthcare organizations by keeping staffing costs low as opposed to hiring nurse navigators. Hannan (2013) also reviewed an additional service that is low cost for healthcare organizations. Advanced Practice Nurses (APNs) can be utilized for telephone follow-up calls to first time mothers, which can improve both maternal and infant health outcomes and reduce healthcare costs associated with readmission. Milani et al. (2017) also found that navigation services in the postpartum period can have a positive impact on postpartum depression that leads to improved health outcomes for women and children. The relational support provided by navigations helps to impact postpartum depression while also referring to mental health services as needed when a woman screens positive for depression.

Lastly, La Rosa et al. (2017) identified an association between home visiting program participants and increased postpartum visit attendance in their retrospective cohort study. Milani et al. (2017) also noted from their clinical trial that postpartum home visiting program can improve postpartum health. This literature is supportive of the second dependent variable looking at postpartum visit compliance. Healthy People 2020

has a goal to increase postpartum visit compliance to improve the overall health of U.S. communities (ACOG, 2018). This study is seeking to determine if a clinically integrated home visiting navigation programs are effective at increasing postpartum visit compliance among rural Indiana women that are enrolled in Medicaid. The specific variables used in this study are those that have been shown to be lacking in current literature around clinically integrated home visiting navigation programs and women's postpartum period hospital readmissions.

Throughout the multiple previous studies surrounding home visiting programs and postpartum care, there have been some mixed findings by researchers. Swoboda et al. (2018) noted that home visiting programs do not independently address infant mortality or maternal mortality, but it may help to prevent associated risk factors. Infant mortality and maternal mortality can have several contributing factors, such as medical, environmental, social, mental, etc. It is often difficult for researchers to control for these other contributing factors when determining a relationship between a variable and an outcome. Similarly, Green et al. (2018) identified an increase in emergency room visits among children enrolled in home visiting programs. Providing assumptions for these can help to provide better context for the abnormality.

For example, further data on what education and services are provided in home visiting programs may vary and should be considered when determining relationships. Another factor that differentiates home visiting navigation programs is if they are integrated in healthcare settings. Clinically integrated home visiting navigation programs can access their participants health record within the organization and create a continuum

of care that combines their clinical care and their social/environmental care as well (Butkus et al., 2020). Additionally, many home visiting programs work to increase health insurance coverage which can in turn result in increased healthcare usage (i.e., increased emergency room visits) (Balaban et al., 2015). It would be beneficial in this case to then examine if the home visiting program were not only enrolling participants in health insurance, but whether they were connecting them to a medical home or a primary care physician instead of using emergency services unnecessarily. This is the next step in ensuring appropriate use of medical services and incorporating preventative care while keeping healthcare costs at a minimum.

Definitions

American College of Obstetricians and Gynecologists (ACOG): A professional association of physicians specializing in obstetrics and gynecology in the United States (ACOG, 2018).

Community Action Network (CAN): A network that mobilizes health care, social service, and other providers, along with members of the community, to coordinate services and steer local action to address social determinants of health—such as income, education, and access to high-quality care—that can contribute to poor birth outcomes (Johns Hopkins All Children's Hospital, 2021).

Community Health Worker (CHW): A member of a community who is chosen by community members or organizations to provide basic health and medical care within their community, and can provide preventive, promotional and rehabilitation care to that community (Johns Hopkins All Children's Hospital, 2021).

Enrollment (independent variable): An active participant of a home visiting program that is in contact with program staff a minimum of once per month and has completed at least one home visit (All Babies Initiative, 2021).

Fragmented Care: The systemic misalignment of incentives, or lack of coordination, that spawns inefficient allocation of resources or harm to patients (Wen et al., 2020).

Home Visit Program: A strategy to connect directly with people who are at elevated risk or who are less likely to get health and social services from clinics or service agencies (Rural Health Information Hub, 2021).

Hospital readmission (dependent variable): Readmission to a hospital within 30 days of discharge (Bailey et al., 2019).

Infant Mortality Rate (IMR): The number of infant deaths for every 1,000 live births (ISDH, 2020).

Integrated care home visiting services: A home-visiting program that is clinically integrated in a healthcare system (All Babies Initiative, 2021).

Low Birth Weight (LBW): An infant born weighing 5.5 pounds (2500 grams) or less (ACOG, 2018).

Maternal Mortality Rate (MMR): The number of maternal deaths during a given period per 100,000 live births during the same period. (Boulware, 2017).

Perinatal Navigator: A clinically integrated specialist that can help remove barriers to care, access community resources and attend doctor's appointments with pregnant and postpartum women (All Babies Initiative, 2021).

Postpartum visit compliance (dependent variable): Having attended a postpartum visit with the participant's OB/GYN physician within 12 weeks post-delivery (ACOG, 2018).

Prenatal Care (PNC): The health care you get while you are pregnant, which includes medical care, education, and counseling (ACOG, 2018).

Preterm Birth: A birth that occurs before the 37th week of pregnancy (ACOG, 2018).

Assumptions

For this study, it was assumed that those delivering women who are defined as being enrolled in clinically integrated home visiting services have participated regularly with program staff. For the context of this study, only the relationship, if any, was assessed between enrollment in clinically integrated home visiting programs and hospital readmission and postpartum visit compliance. Following this study, the quality of the clinically integrated home visiting program should be assessed. For purpose of this study, the variable response for this portion is either 'yes' or 'no' to determine any initial relationship between postpartum visit compliance and hospital readmission.

Scope and Delimitations

This study builds upon early studies in that it examined the impact of clinically integrated home visiting programs in rural Indiana. This study analyzed Medicaid-enrolled delivering women at an Indiana hospital. The scope of the study was inclusive of 2020 – 2021 data from one Indiana hospital integrated care home visiting program. The specific aspects had not been addressed by previous research. Specific focus chosen was

due to the inception of the hospital's home visiting program in 2017 and having an established framework and data collection process in place by 2020. The 2020-2021 data set was the first and most recent shared data file at the time this study was initiated.

The boundaries of this study included an Indiana hospital's patients both enrolled and not enrolled in the integrated care home visiting program that were enrolled in Medicaid and had a delivery in the selected 2020-2021 period. More specifically, the patient data being examined required the enrolled patient to have received care at an affiliated OB/GYN provider to capture the documented postpartum visit. Theories related to this study, but were not fully investigated herein include, but are not limited to, Attribution Theory, Evidence-Based Management, and Utilization Management. The potential for generalizability was considered, but well understood that home visiting program participants are not all treated equally across program, whether clinically integrated or not.

Limitations

The limitations of this study included data, analysis, and the Indiana hospital program selected. The Indiana hospital's home visiting program that will be studied is new and may not have had properly captured accurate data in the earlier years of program inception. Additionally, many of the data collection forms rely on self-reported data from the program participant, and therefore may not always be accurate. The selected integrated care home visiting program is different from every other type of home visiting program for prenatal and postpartum women. Many diverse types of programs exist that operate in several ways to address similar issues, thus making it difficult to determine the

effectiveness at reducing hospital readmissions and increasing postpartum visit attendance without also examining the other types of programming. The results of this study may not be representative of all rural communities or applicable nationally. This study does not evaluate the depth and quality of the postpartum visit. The available data regarding postpartum readmissions is limited to the data available from the hospital under study, thus, the results of this study will not account for patients who readmitted to a different hospital.

Significance

This study is significant as it may create positive social change as it can help to identify the benefits of integrated care home visiting services for healthcare leaders to implement to increase postpartum visit compliance and reduce hospital readmission rates due to postpartum complications. The potential contributions of this study that advance practice and policy in healthcare are highlighted in the acknowledgement that by moving healthcare beyond the walls of a hospital or clinic and into patient homes, healthcare providers can more effectively address each unique patient needs to improve their health outcomes.

Summary and Conclusions

Section 1 provided the problem statement, purpose of the study, research questions and related hypotheses, theoretical foundation, nature of the study, literature review, definitions assumptions, scope, delimitations, limitations, and significance. The major themes found throughout the exhaustive literature review were identified as the following: Beyond the Walls of Healthcare, Maternal Outcomes, Obstetric Readmissions,

Postpartum Visit Compliance, Navigation Services, and Navigation Services and Decreased Readmission. Current literature identified in the above review provides an overview of home visiting programs and improved maternal/child outcomes, however, there is little or no literature on the effectiveness of integrated home visit strategies for healthcare organizations to increase low rates of postpartum visit compliance among Medicaid-enrolled Indiana women to reduce hospital readmissions (see Rodin et al., 2019).

A quantitative binary logistic regression research design was utilized in this study to understand the magnitude or impact of the dependent variables on the independent variable (Creswell & Creswell, 2020). The theory that grounded this study was the Donabedian model for quality of care. This model is based on three measures: structure, process, and outcome, each of which impact the level of quality care provided to patients. Through this model, healthcare organizations can evaluate their current structure and processes, such as integrated home visiting services, and determine if the desired outcomes are being achieved, such as reduced readmissions among post-partum women. This model was first developed in 1966 by Avedis Donabedian (Donabedian, 1966). Section two covers the Research Design and Data Collection for this study.

Section 2: Research Design and Data Collection

The purpose of this quantitative study was to evaluate if hospital readmissions can be reduced by effective integrated care home visiting services relating to postpartum visit compliance among Medicaid-enrolled women at an Indiana hospital. This section includes information on research design and rationale, methodology (population, sampling, and instrumentation/operationalization), and threats to validity (including ethical procedures).

Research Design and Rationale

The purpose of this quantitative study was to evaluate if hospital readmissions could be reduced by effective integrated care home visiting services relating to postpartum visit compliance among Medicaid-enrolled women at an Indiana hospital. The dependent variables were postpartum visit compliance (PVC) (yes/no) and hospital readmission (HospRead) (yes/no), and the independent variable will be enrollment in integrated care home visiting program (Enrolled) (yes/no). The approach included a binary logistic regression research design. A categorical prediction was used to identify the probability of an event occurring. I categorized postpartum visit compliance as either *good* = 0 or *poor* =1. Good was defined as having a completed postpartum visit with a medical provider within 12 weeks of delivery. Poor was defined as not having a completed postpartum visit with a medical provider within 12 weeks of delivery. Similarly, hospital readmission was coded as one for any number of readmissions and 0 for no readmission. The Cox and Snell R Square and Nagelkerke R Square values were calculated to explain variation between variables. A Wald Test was conducted to

understand the significance of each independent variable. The theories and/or concepts that grounded this study included the Donabedian model for quality of care. This model is based on three measures: structure, process, and outcome, each of which impact the level of quality care provided to patients. Through this model, healthcare organizations can evaluate their current structure and processes, such as integrated home visiting services, and determine if the desired outcomes are being achieved, such as reduced readmissions among post-partum women.

Methodology

Population

The selected Indiana hospital had 3,600 delivering moms in the years of 2020 and 2021, with patients receiving a comprehensive approach to their care through a team-based approach which includes perinatal navigators, lactation specialists, community health workers, and smoking cessation counselors. This approach is evidenced by the recent designation of being a Baby Friendly Hospital. To address the high rates of infant mortality in the region, the selected health system has developed and administers a perinatal navigation home visiting program as part of the All Babies Initiative (ABI). The program was designed to implement a patient centric approach aimed at yielding better health outcomes and pregnancy results especially among rural low-income women by enhancing the relationships between patients, their family members, informal caregivers, community-based advocacy, and resource groups, as well as the healthcare community.

The All Babies Initiative perinatal navigation program (PNP) embeds perinatal navigators into office-settings to identify and risk stratify pregnant and parenting families

at the highest risk for infant mortality and connect them with needed resources to ensure the greatest possibility of success. There are three keys to successful navigation implementation within a medical office setting. First, the patient must be met where they are emotionally, financially, and physically. This enables navigators and community health workers (CHW) to form a supportive relationship that increases the likelihood patients will adhere to care plans and have better outcomes. PNP has taught the project team the importance of addressing the totality of needs for patients before beginning evidence-based education. Second, integrating any program into active provider offices is difficult but is possible. Provider efficiency and office flow must be maintained to ensure workflow is not interrupted. Third, navigators fully grasp the importance of collaborating with established community resources for patients and their families especially where families are most comfortable: their own homes.

Addressing infant mortality is a community effort not a sole entity's endeavor. PNP provides a solid framework of established collaborative relationships that encompass community organizations, agencies, and institutions. Resources distribution is a partnership between the healthcare setting and community organizations, as to not duplicate the region's efforts. The placement of navigators in clinical settings (Primary care, OB, or Pediatrics) provides a platform for establishing a collegial relationship between the navigators and the providers. Being readily available to communicate needs as they arise allows both parties to collaborate on plans and concerns in the overall care of the patient for more well-rounded care. Both align in patient communication regarding their healthcare and lifestyle choices. This collaboration assists in the coordination of

care and orchestrates the best possible outcome for the patient. If healthcare compliance becomes an issue, the navigator can intervene quickly, engage the provider, and adjust the care plan based on relevant information. All care plans include models of care to address any physical, perinatal, sexual health, or behavioral health concerns.

Plans also include the education for mothers outlined in the recommendations from the American College of Obstetricians and Gynecologists (ACOG), and the Association of Women's Health, Obstetric and Neonatal Nurses on health promotion, safe sleep, breastfeeding, and other healthy habits needed to be a healthy mother. These education plans are administered on a one-on-one basis by the CHW at every home visit. The same evidence-based curriculum used by the local home visiting programs has been adopted by PNP to ensure all home visiting programs in the region are consistent in the education provided to families we serve. It focuses on the planning period prior to pregnancy, pregnancy, as well as the first 12 months of the infant's life. The home visiting component for instance was founded on the evidence-based curriculum. PNP is being modeled by other organizations in Indiana aspiring to replicate such services. The experience garnered by the project team throughout the thousands of touches in clinical and home settings are leveraged to build a strong rural outreach effort to identify and support patients at highest risk.

Sampling and Sampling Procedures Used

The selected Indiana hospital collected the data from provider visits, billing records, and HRSA data collection forms (Background, Prenatal, and Parent/Child). The sampling inclusion criteria were patients who delivered at the selected hospital within

2020 to 2021 who have Medicaid. There were no data exclusion criteria. Access to the data was obtained through a data use agreement with the hospital. Prior to analyzing the data, Walden University IRB approval was needed. Once access to the data set was obtained, a power analysis was conducted to determine sample size.

I used a simple random sampling technique for this study. This technique allowed the same probability of individuals being selected to be a part of the sample. Perinatal navigation staff employ risk stratification and assessment tools and systematically use a documentation system for documentation at every encounter with families they support. The program administrators can mine these data and related patient outcomes as needed. These programs averaged between 600 and 800 encounters, during the first quarter of 2020, at patients' homes, in conjunction with office visits, or at community locations. The home visiting program was able to provide deidentified data on the enrolled participants that was then matched to the patients at the obstetric clinic for postpartum visit compliance. Additionally, the maternal and child health department of the selected hospital was able to provide data for all patients who delivered at the facility, which was then matched with enrolled home visiting navigation participants, as well as hospital readmission data.

The limitations and challenges that were addressed while conducting this study included protected health information and role separation as I am currently employed by the selected hospital. Similarly, access to this data was tied to my employment. If my employment status were to have change prior to the completion of this study, access to the data would have been limited. Measuring the success of this program in the region

must be sensitive to an individual patient as well as the social context in which that patient lives—the community-at-large—to grasp fully the impact of perinatal navigation services. Tracking a patient longitudinally throughout their participation in PNP is reliant on the success of the relationship build with the navigator, and/or community health worker assigned to their care. Accordingly, proper measurement of success will be understanding how these services augmented the care given at the clinics and the providers' ability to effectively manage and adhere to the patient's respective care plans particularly all preventive recommendations, leading to better care for the patient.

For purposes of this study, data was collected from an Indiana Hospital's home visiting program, maternal and child health department, and the healthcare system's obstetric clinic. The home visiting program was able to provide deidentified data on the enrolled participants that was matched to the patients at the obstetric clinic for postpartum visit compliance. Additionally, the maternal and child health department of this hospital was able to provide data for all patients who had delivered at the facility, which was matched with enrolled home visiting navigation participants, as well as hospital readmission data. The sample of women for this study included Medicaid-enrolled women.

Instrumentation and Operationalization of Constructs

This study used a data set provided by an Indiana hospital with data collected through the associated home visiting programs. The instrumentation used to collect the data was primarily the data collection forms (Background, Prenatal, and Parent/Child) created by the HRSA. The study reviewed 2020 to 2021 program data. The

instrumentation was appropriate for the study because it included the variables chosen for review. The selected private data set from the Indiana Hospital was able to be obtained from the PNP director. The reliability of the instrument data was appropriate to the study because it adhered to the federally approved data collection process and formatting. The validity of the instrument data was unknown as it was a private dataset that had not been examined by external reviewers prior to this study. This instrument for data collection was planned to be used in future performance years for the hospital home visiting programs.

Operationalization

The operational definition of postpartum visit compliance, hospital readmission, and enrollment in Integrated Care Home Visiting Program is captured via patient medical records and included in the dataset. PVC is the variable name for postpartum visit compliance, hospread is the variable name for hospital readmission and enrolled was the variable name for enrolled in integrated care home visiting program. Each of these variables are measured and recorded as being either “yes” or “no.” The description of PVC is defined as having attended a postpartum visit with the participant’s OB/GYN physician within 8 weeks post-delivery. Hospital readmission is defined as whether the participant was readmitted to the hospital within 30 days of discharge from delivering. Additionally, the independent variable of integrated care home visiting program enrollment will be defined by whether the delivering mom is a participant in perinatal navigation services.

Data Analysis Plan

Upon gaining access to the data, the file was reviewed to ensure that there were no fields left blank and that the included participant data had a delivery date within the 2020 to 2021 timeframe. Software that was used for the initial analysis of the data was G*Power. G*Power is a statistical software used to determine the appropriate sample size for a particular data analysis. IBM's Statistical Package for the Social Sciences (SPSS) was used. SPSS is statistical software that provides interactive data analysis. I performed an initial G*Power analysis to determine the minimum needed sample size from the Indiana hospital. The first research question examined any statistically significant relationship between the Postpartum Visit Compliance and Hospital Readmission for Medicaid-enrolled women. The second research question examined if there is a statistically significant relationship between the enrollment of Medicaid-enrolled women in integrated care home visiting programs and postpartum visit compliance and hospital readmission.

RQ1: What is the relationship between postpartum visit compliance and hospital readmission among Medicaid-enrolled women at an Indiana hospital between 2020 and 2021?

> $H_0$1: There is no statistically significant difference between postpartum visit compliance rates and hospital readmission among Medicaid-enrolled women at an Indiana hospital.

H_a1: There is a statistically significant difference between postpartum visit compliance rates and hospital readmission among Medicaid-enrolled women at an Indiana hospital.

RQ2: Is enrollment of Medicaid-enrolled women in integrated care home visiting programs associated with postpartum visit compliance and mitigation of hospital readmission?

H_02: Enrollment of Medicaid-enrolled women in integrated care home visiting programs is not predictive of postpartum visit compliance and lower hospital readmissions.

H_a2: Enrollment of Medicaid-enrolled women in integrated care home visiting programs is predictive of postpartum visit compliance and lower hospital readmissions.

The analysis plan for this study included statistical tests, rationale, and findings. To address the research questions in this quantitative study, the approach included a binary logistic regression research design. A categorical prediction was used through the classification table to identify the probability of an event occurring. Postpartum visit compliance was categorized as either *excellent/good* = 0 or *fair/poor* =1. Similarly, hospital readmission was coded as one for any number of readmissions and 0 for no readmission. The Cox and Snell R Square and Nagelkerke R Square values obtained explained variation between variables. A Wald Test was conducted to quantify the significance of each independent variable. The procedures that were used to account for two different statistical analyses were appropriate because of the two research questions

and their differing independent and dependent variables. There were no covariates nor confounding variables. Key parameter estimates, confidence intervals, odds ratios, etc. were reported from SPSS software outputs.

Threats to Validity

The threats to external validity could have had potential effects on the results of this study. For example, for purposes of this study, the variable of Postpartum Visit Compliance is one that that hospital can query within their Electronic Medical Record without having to rely on the program participant's self-reported answer if the visit occurred within the health system. If the postpartum visit occurred outside of the health system, the program relies on the participant to self-report. Additionally, the 'enrolled' variable simply shows if someone is enrolled in home visiting navigation services. It does not define the duration of enrollment or even when enrollment first started (prenatally or in the postpartum period). An additional threat to validity is the period of the retrospective dataset. The data that will be analyzed is from 2020 and 2021, which encompasses the COVID-19 pandemic. Many individuals had to forgo preventative care in the peak of the pandemic as healthcare systems were overrun with sick patients, potentially impacting whether a postpartum woman attended their postpartum visit within the recommended 8-week window after delivering.

Ethical Procedures

This study used a private dataset from an Indiana hospital. The data set was obtained from the PNP director. IRB approval from Walden University was attained prior to conducting analysis, including the G*Power analysis. The dataset was deidentified

before I received the data. The deidentification met the deidentification method described by the HIPAA Privacy Law Act, specifically §164.514(b)(2), by removing all eighteen types of identifiers. The data file, while in my possession, was password protected. The retrospective nature of this study minimized any ethical concerns as the recruitment materials and processes were not applicable at the individual level. Program participants consent to the home visiting program and agree to data collection procedures and the use of the data for program and service enhancement. I was employed by the organization under study at the time of the study, which may have posed as a potential conflict of interest due to a tendency to want to have positive results for the organization. Mitigation to this conflict was conducted by masking the name of the organization and removing identifiers back to the program.

Summary

The research design of this study was a binary logistic regression. The methodology of this study consisted of a statistical review and analysis of the 2020 to 2021 dataset provided by an Indiana hospital's home visiting program. The hospital provided deidentified data on the enrolled participants that were matched to the patients at the health system's obstetric clinic for postpartum visit compliance. Additionally, the maternal and child health department of the Indiana hospital was able to provide data for all patients who have delivered at the facility, which were matched with enrolled home visiting navigation participants, as well as hospital readmission data. Section 2 provided the research design and rationale, analysis methodologies, threats to validity and ethical procedures. Section 3 will review the collection of the selected secondary data.

Section 3: Presentation of the Results and Findings

The purpose of this quantitative study was to evaluate if hospital readmissions can be reduced by effective integrated care home visiting services relating to postpartum visit compliance among Medicaid-enrolled women at an Indiana hospital. This section contains the data collection process used for the secondary data set, data analysis results, and the summary of findings. The questions that were used to address the research problem identified in the purpose of the study and their corresponding null and alternative hypotheses are as follows:

RQ1: What is the relationship between postpartum visit compliance and hospital readmission among Medicaid-enrolled women at an Indiana hospital between 2020 and 2021?

$H_0$1: There is no statistically significant difference between postpartum visit compliance rates and hospital readmission among Medicaid-enrolled women at an Indiana hospital.

H_a1: There is a statistically significant difference between postpartum visit compliance rates and hospital readmission among Medicaid-enrolled women at an Indiana hospital.

RQ2: Is enrollment of Medicaid-enrolled women in integrated care home visiting programs associated with postpartum visit compliance and mitigation of hospital readmission?

$H_0$2: Enrollment of Medicaid-enrolled women in integrated care home visiting programs is not predictive of postpartum visit compliance and lower hospital readmissions.

H_a2: Enrollment of Medicaid-enrolled women in integrated care home visiting programs is predictive of postpartum visit compliance and lower hospital readmissions.

Data Collection and Secondary Data Set

The selected Indiana hospital provided a data file (and associated dictionary) for the data source for this study. The file was provided in an Excel spreadsheet titled "Postpartum Study Data." The period for data collection was inclusive of Medicaid-enrolled women who gave birth between January 1, 2020, and October 31, 2021, at the selected Indiana hospital. Data for the file was pulled from patient medical records and there were no recruitment efforts or concerns with the response rates with the secondary data. There were no discrepancies in the use of the secondary data set from the plan presented previously in Section 2.

The baseline descriptive and demographic characteristics of the sample included case IDs, patient age, enrollment in Home Visiting Program (noted as enrolled in the data set), delivery date, birth outcome, premature, delivery type, low birth weight (noted as LBW in the data set), number of days after delivery postpartum visit took place (noted as postpartum visit days in the data set), postpartum emergency department visit date (noted as OBED date in data set), chief complaint for emergency department visit (noted as complaint in the data set), outcome of emergency department visit (noted as outcome in the data set). The sample represented the population of interest and included 1,653

Medicaid-enrolled women who gave birth at the selected Indiana hospital from January 1, 2020, to October 31, 2021. The selected hospital is responsible for delivering two-thirds of the region's babies and is therefore a good representation of the population of interest (ISDH, 2019).

The statistical assessment used to assess the hypotheses for each of the research questions proposed was a binary logistic regression of the variables. The procedures used to account for this analysis was due to the multiple factors influencing the patient outcome. There was no basic univariate analysis, covariates, or confounding variables. Using SPSS, the analyze option was used to review descriptive statistics and frequencies to create tables in the software. The median age of the sample of Medicaid-enrolled women was 26 years of age, while 452 (27.3%) of the 1,653 deliveries were cesarean section and the remaining were vaginal deliveries. Of these 1,653 deliveries, 156 were premature, 139 resulted in a low birth weight for the infant, and fourteen resulted in stillbirths.

Results

Descriptive statistics and related data visualizations were reviewed for the variables included in RQ1 and RQ2 using SPSS analysis output. The total sample of patients examined was 1,653. Of the 1,653 Medicaid-enrolled women who delivered between January 1, 2020, and October 31, 2021, 542 were enrolled in clinically integrated home visiting services, 1,182 attended their postpartum appointment, and twenty-six were readmitted to the hospital in the postpartum period.

Figure 1

Medicaid-Enrolled Women

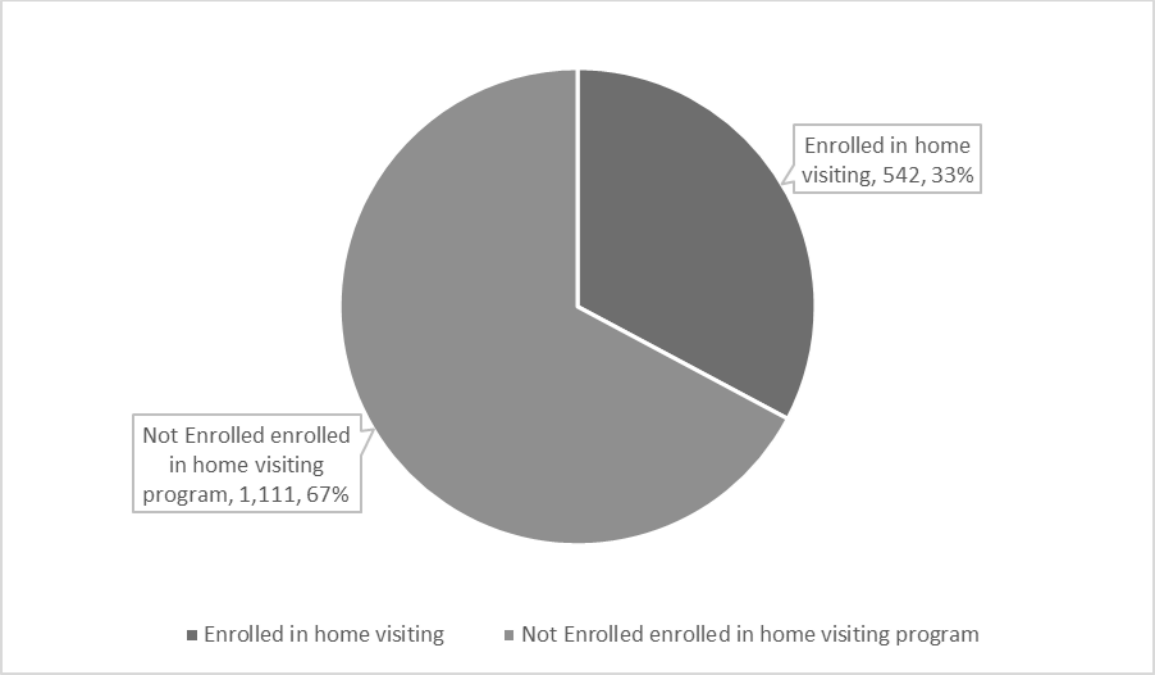

Figure 1 shows the number and percentage of Medicaid-enrolled women examined in this study who were enrolled in a home visiting program (33%) compared to those who were not (67%) in this study.

Figure 2

Enrolled vs. Non-Enrolled

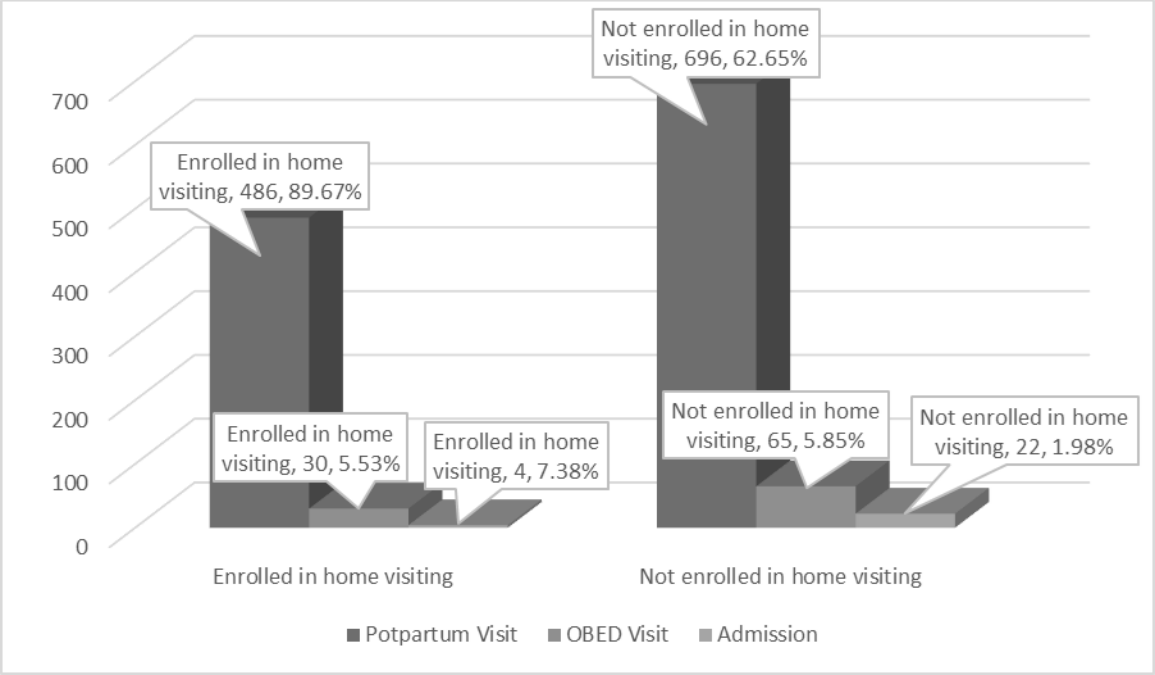

Figure 2 depicts a comparison of women who were enrolled in home visiting services and those who were not. The variables examined included whether they completed a postpartum visit, if they returned to the emergency department within 30 days of delivery, and if they were readmitted to the hospital within 30 days of delivery. Of those women who were enrolled in home visiting services, 89.67% completed a postpartum visit, 5.53% visited the emergency department, and 7.38% were readmitted to the hospital. In contrast, only 62.65% of nonenrolled women completed a postpartum visit, 5.85% visited the emergency department, and 1.98% were readmitted to the hospital postpartum.

After data file was reviewed for the variables included in RQ1 and the variables included in RQ2, I used SPSS to run a binary logistic regression analysis (SPSS: Analyze ➔ Regression ➔ Binary Logistic) for the research questions with the accompanying statistics options chosen in SPSS: Hosmer-Lemeshow goodness-of-fit and Confidence Intervals at 95%.

After analyzing the data set, the null hypothesis was accepted and shown to be the true hypothesis. The analysis yielded results showing no statistically significant relationship between having completed a postpartum visit and hospital readmission among Medicaid-enrolled women at an Indiana hospital between January 1, 2020, and October 31, 2021.

RQ1: What is the relationship between postpartum visit compliance and hospital readmission among Medicaid-enrolled women at an Indiana hospital between 2020 and 2021?

$H_0$1: There is no statistically significant difference between postpartum visit compliance rates and hospital readmission among Medicaid-enrolled women at an Indiana hospital.

H_a1: There is a statistically significant difference between postpartum visit compliance rates and hospital readmission among Medicaid-enrolled women at an Indiana hospital.

RQ2: Is enrollment of Medicaid-enrolled women in integrated care home visiting programs associated with postpartum visit compliance and mitigation of hospital readmission?

$H_0$2: Enrollment of Medicaid-enrolled women in integrated care home visiting programs is not predictive of postpartum visit compliance and lower hospital readmissions.

H_a2: Enrollment of Medicaid-enrolled women in integrated care home visiting programs is predictive of postpartum visit compliance and lower hospital readmissions.

Table 4

Variable Statistics

								95% C.I. for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	Postpartum Visit	1.672	.155	116.463	1	.000	5.323	3.929	7.211
	OBED Visit	-.140	.257	.297	1	.586	.869	.525	1.438
	Admission	-1.200	.599	4.009	1	.045	.301	.093	.975
	Constant	-2.001	.142	197.453	1	.000	.135		

a. Variable(s) entered on step 1: Postpartum Visit, OBED Visit, Admission.

Table 5

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1936.663[a]	.089	.125

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Table 6

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	2.582	2	.275

After analyzing the data set, the null hypothesis was rejected, and the alternative hypothesis was shown to be the true hypothesis. The analysis yielded results showing a statistically significant relationship between enrollment in an integrated care home visiting program and postpartum visit compliance among Medicaid-enrolled women at an Indiana hospital between January 1, 2020, and October 31, 2021.

As shown in Table 5 above, the significance and relationship between the variables examined in RQ1 and RQ2 are presented. The B value predicts the change in log odds for every unit of change in the predictive variable. For every 1 unit increase in enrollment (i.e., going from nonenrolled to enrolled), the postpartum visit compliance is 1.672 times more likely to occur. Additionally, the *p* value is shown to be statistically significant at 0.00. The variable OBED visit is found to not be statistically significant, while the variable Admission is found to be slightly significant.

As shown above in Table 5, the model Chi-Square test is statistically significant at 2.582, and the model is determined to be significant over the null model. Similarly, Table 6 provides a *p* value of 0.275 and is indicating non-significance, suggesting a good fit for the model.

Summary

After the secondary dataset was quantitatively analyzed, I was able to review the study's two research questions, understand the statistically significant relationships between enrollment in an integrated care home visit program and postpartum visit compliance and hospital readmission among Medicaid-enrolled women who delivered between January 1, 2020, and October 31, 2021.

The results for RQ1 (What is the relationship between postpartum visit compliance and hospital readmission among Medicaid-enrolled women at an Indiana hospital between 2020 and 2021?) were that there was not a statistically significant relationship between postpartum visit compliance and hospital readmission. The null hypothesis (there is no statistically significant difference between postpartum visit compliance rates and hospital readmission among Medicaid-enrolled women at an Indiana hospital) was accepted. The alternative hypothesis (there is a statistically significant difference between postpartum visit compliance rates and hospital readmission among Medicaid-enrolled women at an Indiana hospital) was rejected.

The results for RQ2 (Is enrollment of Medicaid-enrolled women in integrated care home visiting programs associated with postpartum visit compliance and mitigation of hospital readmission?) were that there is a statistically significant relationship between being enrolled in clinically integrated home visiting programs and postpartum visit compliance. The null hypothesis (enrollment of Medicaid-enrolled women in integrated care home visiting programs is not predictive of postpartum visit compliance and lower hospital readmissions) was rejected. The alternative hypothesis (enrollment of Medicaid-enrolled women in integrated care home visiting programs is predictive of postpartum visit compliance and lower hospital readmissions) was accepted. Section 4 contains the purpose of the doctoral research study, the reason the study was conducted, the key findings and interpretations of such, limitations of the study, recommendations for future studies, and applications to professional practice, and implications for social change.

Section 4: Application to Professional Practice and Implications for Social Change

The purpose of this quantitative study was to evaluate if hospital readmissions can be reduced by effective integrated care home visiting services relating to postpartum visit compliance among Medicaid-enrolled women at an Indiana hospital. To address the research questions in this quantitative study, I used a binary logistic regression research design using a secondary data set from a hospital in Indiana. This study is significant in that it identifies the benefits of integrated care home visiting services for healthcare leaders to implement to increase postpartum visit compliance and reduce hospital readmission rates due to postpartum complications, creating positive social change.

Through the secondary data analysis that was conducted, RQ1 (What is the relationship between postpartum visit compliance and hospital readmission among Medicaid-enrolled women at an Indiana hospital between 2020 and 2021?) showed that there was not a statistically significant relationship between postpartum visit compliance and hospital readmission. RQ2 (Is enrollment of Medicaid-enrolled women in integrated care home visiting programs associated with postpartum visit compliance and mitigation of hospital readmission?) showed that there is a statistically significant relationship between being enrolled in clinically integrated home visiting programs and postpartum visit compliance.

Interpretation of the Findings

The data analysis findings expanded the literature review presented in Section 1 of this study. The major themes found throughout the exhaustive literature review were identified as the following: beyond the walls of healthcare, maternal outcomes, obstetric

readmissions, postpartum visit compliance, navigation services, and navigation services and decreased readmission. Current literature identified in the review conducted in Section 1 provided an overview of home visiting programs and improved maternal/child outcomes, however, there was little or no literature on the effectiveness of integrated home visit strategies for healthcare organizations to increase low rates of postpartum visit compliance among Medicaid-enrolled Indiana women to reduce hospital readmissions (see Rodin et al., 2019). This result of this study expands findings from early studies in that it examined the impact of clinically integrated home visiting programs in Indiana for Medicaid-enrolled women that delivered between January 2020 and October 2021. The specific aspects had not been addressed by previous research. Specific focus chosen was due to the inception of the hospital's home visiting program in 2017 and having an established framework and data collection process in place by 2020. The 2020 to 2021 data set was the first and most recent shared data file at the time this study was initiated. The conducted data analysis adds to the literature by identifying a relationship between the independent and dependent variables included in RQ2.

In terms of the theoretical framework, the study's findings align with the Donabedian model, as noted earlier in this work. The Donabedian model for quality of care is based on three measures: structure, process, and outcome. Through this model, healthcare organizations can evaluate their current structure and processes, such as integrated home visiting services, and determine if the desired outcomes are being achieved, such as reduced readmissions among post-partum women. The Donabedian model is applicable and can be used to make sense of the literature review and data

analysis. The data analysis showed statistical significance between enrollment in clinically integrated home visiting program and postpartum visit compliance as the desired outcome. However, there was no statistical significance found between enrollment in clinically integrated home visiting programs and hospital readmissions, as shown by Table 4.

The scope of the study allowed for analysis and interpretation of the data provided in the secondary quantitative dataset. The findings showed no statistically significant relationship between postpartum visit compliance and hospital readmission, however, there was a statistically significant relationship between being enrolled in clinically integrated home visiting programs and postpartum visit compliance.

Limitations of the Study

The limitations of this study included data, analysis, and the Indiana hospital program selected. The Indiana hospital's home visiting program that was studied began in 2017 and had established a standard of data collection beginning in January 2020 and may not have had properly captured accurate data in the earlier years of program inception. Additionally, many of the data collection forms rely on self-reported data from the program participant, and therefore may not always be accurate as there is a possibility for bias by the participant. The selected integrated care home visiting program is different from most other types of home visiting programs for prenatal and postpartum women in that it is clinically integrated in the hospital and outpatient clinical settings. This provides an advantage in allowing the program to collaborate with the participant's care provider as well as having access to patient medical records. Many distinct types of programs exist

that operate in several ways to address similar issues, thus making it difficult to determine the effectiveness at reducing hospital readmissions and increasing postpartum visit attendance without also examining the other types of programming, such as being health department lead instead of being integrated in a healthcare organization.

The results of this study may not be representative of all rural communities or applicable nationally. The determinants of health many vary across the state of Indiana as well as from state to state. The potential for generalizability was considered, but well understood that home visiting program participants are not all treated equally across programs, whether clinically integrated or not. This is due to conducting an initial risk assessment to identify the participant's needs that then determines how the program staff will collaborate specifically with the participant on reducing their risk factors to improve their health outcomes. In this study, I did not evaluate the depth and quality of the postpartum visit. A postpartum visit should include a detailed examination of the whole person, physical and mental wellbeing. The available data regarding postpartum readmissions is limited to the data available from the hospital under study, thus, the results of this study will not account for patients who readmitted to a different hospital or followed up with a medical provider for their postpartum visit outside of the selected healthcare system. Furthermore, in this study I examined women who delivered between January 1, 2020 and October 31, 2021, a time the encompasses the entirety of the coronavirus (COVID-19) pandemic that may have impacted the number of families who were comfortable with home visiting services, which had gone virtual for a large portion of this time, as well as being uncomfortable in returning for a postpartum follow-up

appointment with their OB/GYN. More than 40% of respondents in a study done at Johns Hopkins forwent medical care from March through mid-July 2020 due to many reasons such as fear of COVID-19 transmission and financial concerns during the pandemic (Anderson et al, 2021). Lastly, the postpartum visit compliance data was populated from the health system's OB/GYN practice data and does not include any postpartum visit that may have been completed with a primary care provider or another provider outside of the health system's OB/GYN practice.

Recommendations

In this study I examined enrollment in a clinically integrated home visiting program, postpartum visit compliance, and hospital readmission among Medicaid-enrolled women who delivered at an Indiana hospital from January 1, 2020, to October 31, 2021. Recommendations for further research include expanding the review to analyze birth outcomes of these women reviewed with variables such as NICU admission, premature, low birth weight, failure to thrive, well-child visit compliance, etc. Through expanding the review, analyzing additional variables and/or assessing non-COVID-19 pandemic years, it could benefit interested parties to provide the expanded context of clinically integrated home visit program success.

Another option for additional research could be to analyze the same independent and dependent variables of this study in the future with a wider timeline of study participants beyond the COVID-19 pandemic years and as the program will have been established for a longer period. Previous literature identified in the above review provides an overview of home visiting programs and improved maternal/child outcomes, however,

there has been little or no literature on the effectiveness of integrated home visit strategies for healthcare organizations to increase low rates of postpartum visit compliance among Medicaid-enrolled Indiana women to reduce hospital readmissions (see Rodin et al., 2019). This study helps fill this gap that was identified at the time of writing.

Implications for Professional Practice and Social Change

A competitive strategic approach for health care administrators leading various health care organizations is in many ways dependent on preventative care approaches prior to an emergency department visit or negative health outcomes. For example, early education, assessment, and assistance associated with patient risk factors could lead to a decrease in unnecessary emergency department use and an improvement in health outcomes (Sheikh, 2019). This study offers health care administrative and clinical professionals' practical evidence and understanding of the relationship between enrollment in clinically integrated home visiting program, postpartum visit compliance, postpartum hospital readmissions, and what could continue to be examined in the future as it relates to the health outcomes associated for those enrolled in home visiting programs. Throughout the literature review process, areas that support the professional practice of health care as it relates to postpartum outcomes and clinically integrated home visiting services were identified. After the review, it was understood that clinically integrated home visiting programs may be an avenue for reducing associated patient risk factors prior to the time of delivery as well as postpartum education and resource connection (see Swoboda et al, 2018).

The results of this study yield no statistically significant relationship between postpartum visit compliance and hospital readmission; however, there is a statistically significant relationship between enrollment in clinically integrated home visiting programs and postpartum visit compliance for the January 1, 2020, to October 31, 2021, Medicaid-enrolled women who delivered at an Indiana hospital. The findings of this research allow healthcare professionals further understanding of the statistical significance between enrollment in clinically integrated home visiting programs, postpartum visit compliance, and hospital readmission. By using this evidence, healthcare leaders can better understand the statistically significant relationship between the enrollment in clinically integrated home visiting program and postpartum visit compliance variables in the selected Indiana hospital dataset. Healthcare leaders can use this information to argue for or against further advancing the role of clinically integrated home visiting programs and the impact it has on the maternal/child health service line within healthcare systems.

In this study, I reviewed the literature on clinically integrated home visiting programs, postpartum visit compliance, and hospital readmissions and analyzed a data set provided by an Indiana hospital for Medicaid-enrolled women who delivered between January 1, 2020, and October 31, 2021, to understand the relationship between the variables. This study's findings have impacts for positive social change as it relates to expanding beyond the walls of hospitals and into the homes to meet patients where they are. This study is significant in that it allows healthcare professionals to identify the benefits of integrated care home visiting services for healthcare leaders to implement to

increase postpartum visit compliance and reduce hospital readmission rates due to postpartum complications, creating positive social change.

Conclusion

In conclusion, in this study I reviewed the literature on clinically integrated home visiting programs, postpartum visit compliance, and hospital readmissions and analyzed a data set provided by an Indiana hospital for Medicaid-enrolled women who delivered between January 1, 2020, and October 31, 2021, to understand the relationship between the variables. The purpose of this quantitative study was to evaluate if hospital readmissions could be reduced by effective integrated care home visiting services relating to postpartum visit compliance among Medicaid-enrolled women at an Indiana hospital. The questions that were used to address the research problem identified in the purpose of the study were as follows:

RQ1: What is the relationship between postpartum visit compliance and hospital readmission among Medicaid-enrolled women at an Indiana hospital between 2020 and 2021?

RQ2: Is enrollment of Medicaid-enrolled women in integrated care home visiting programs associated with postpartum visit compliance and mitigation of hospital readmission?

The reason the study was conducted, the key findings and interpretations of such, limitations of the study, recommendations for future research, and applications to professional practice and implications for social change, have each been reviewed herein.

Through the literature review, professional practice of health care as it relates to postpartum outcomes and clinically integrated home visiting services is more understood by healthcare professionals. It demonstrated practical application by presenting that clinically integrated home visiting programs may be an avenue for reducing associated patient risk factors prior to the time of delivery as well as postpartum education and resource connection.

Through the secondary data analysis that was conducted, RQ1 (What is the relationship between postpartum visit compliance and hospital readmission among Medicaid-enrolled women at an Indiana hospital between 2020 and 2021?) showed that there was not a statistically significant relationship between postpartum visit compliance and hospital readmission. RQ2 (Is enrollment of Medicaid-enrolled women in integrated care home visiting programs associated with postpartum visit compliance and mitigation of hospital readmission?) showed that there is a statistically significant relationship between being enrolled in clinically integrated home visiting programs and postpartum visit compliance. The statistical assessment used to evaluate the hypotheses for each of the research questions proposed was a binary logistic regression of the variables. The theory that grounded this study was the Donabedian model for quality of care that is based on three measures: structure, process, and outcome. Through this model, healthcare organizations can evaluate their current structure and processes, such as integrated home visiting services, and determine if the desired outcomes are being achieved, such as reduced readmissions among post-partum women.

This study's findings have impacts for positive social change as it relates to expanding beyond the walls of hospitals and into the homes to meet patients where they are. This study is significant in that it can help to identify the benefits of integrated care home visiting services for healthcare leaders to implement to increase postpartum visit compliance and reduce hospital readmission rates due to postpartum complications, creating positive social change. Recommendations for further research include expanding the review to analyze birth outcomes of these women reviewed with variables such as NICU admission, premature, low birth weight, failure to thrive, well-child visit compliance, etc. Through expanding the review, analyzing additional variables and/or assessing non-COVID-19 pandemic years, it could benefit interested parties to provide the expanded context of clinically integrated home visit program success.

References

ACOG. (2018). Optimizing postpartum care. *ACOG Committee Opinion 736*. https://www.acog.org/-/media/project/acog/acogorg/clinical/files/committee-opinion/articles/2018/05/optimizing-postpartum-care.pdf

All Babies Initiative. (2021). About Us. https://www.allbabies.org/

Alliance for Strong Families and Communities. (2020). Social determinants of health issue brief. https://alliance1.org/web/resources/pubs/social-determinants-health-issue-brief.aspx

Amjad, S., Voaklander, D., Ospina, M. B., MacDonald, I., Chandra, S., Chambers, T., & Osornio-Vargas, A. (2019). Social determinants of health and adverse maternal and birth outcomes in adolescent pregnancies: A systematic review and meta-analysis. *Pediatric & Perinatal Epidemiology*, *33*(1), 88–99. https://doi.org10.1111/ppe.12529

Anderson K., McGinty E., Presskreischer R., Barry C. Reports of forgone medical care among US adults during the initial phase of the COVID-19 pandemic. *JAMA, 4*(1): e2034882. https://doi.org.10.1001/jamanetworkopen.2020.34882

Bailey, M., Weiss, A., Barrett, M., and Jiang, J. (2019). Characteristics of 30-day all-cause hospital readmissions, 2010-2016. *Agency for Healthcare Research and Quality.* https://www.hcup-us.ahrq.gov/reports/statbriefs/sb248-Hospital-Readmissions-2010-2016.jsp

Balaban, R. B., Galbraith, A. A., Burns, M. E., Vialle-Valentin, C. E., Larochelle, M. R., & Ross-Degnan, D. (2015). A patient navigator intervention to reduce hospital

readmissions among high-risk safety-net patients: A randomized controlled trial. *Journal of General Internal Medicine*, *30*(7), 907–915. https://doi.org.10.1007/s11606-015-3185-x

Boulware D. R. (2017). Recent Increases in the U.S. Maternal Mortality Rate: Disentangling trends from measurement issues. *Obstetrics and gynecology, 129*(2), 385–386. https://doi.org.10.1097/AOG.0000000000001879

Bureau of Indiana Workforce. (2020). *Unemployment rates by Indiana county*. http://www.stats.indiana.edu/profiles/profiles.asp?scope_choice=b&county_changer2=Regr:1

Butkus, R., Rapp, K., Cooney, T., & Engel, L. (2020). Envisioning a better U.S. health care system for all: Reducing barriers to care and addressing social determinants of health. *Annals of Internal Medicine, 172*(2), S50–S59. https://doi.org/10.7326/M19-2410

Cesta, T. (2014). Community case management - Thinking beyond the hospital walls. *Hospital Case Management*, *22*(6), 79–82.

Clapp, M. A., Little, S. E., Zheng, J., Robinson, J. N., & Kaimal, A. J. (2018). The relative effects of patient and hospital factors on postpartum readmissions. *Journal of Perinatology*, *38*(7), 804–812. https://doi.org/10.1038/s41372-018-0125-8

County Health Rankings. (2020). https://www.countyhealthrankings.org

Creswell, J. & Creswell, J. (2018). *Research design: Qualitative, quantitative, and mixed methods* (5th ed.). Sage

Dodge, K., Goodman, W., Bai, Y., O'Donnell, K., & Murphy, R. (2019). Effect of a community agency-administered nurse home visitation program on program use and maternal and infant health outcomes: A randomized clinical trial. *JAMA Network Open, 2*(11), e1914522. https://doi.org/10.1001/jamanetworkopen.2019.14522

Donabedian, A. (1966). Evaluating the quality of medical care. The Milbank Memorial Fund Quarterly, 44(3), 166–206. https://doi.org.10.2307/3348969

Elrod, J. & Fortenberry Jr., J. (2017). Peering beyond the walls of healthcare institutions: A catalyst for innovation. *BMC Health Services Research, 17*(1), 35–38. https://doi.org.10.1089/jwh.2018.7568

Green, B., Sanders, M., & Tarte, J. (2018). Effects of home visiting program implementation on preventive health care access and utilizaiton: Results from a randomized trial of healthy families Oregon. *Prevention Science, 2020* (21), 15–24. https://doi.org.10.1007/s11121-018-0964-8

Handler, A., Zimmermann, K., Dominik, B., & Gerland, C. (2019). Universal early home visiting: A strategy for reaching all postpartum women. *Maternal and Child Health Journal*, *23*(10), 1414–1423. https://doi.org.10.1007/s10995-019-02794-5

Hannan J. APN telephone follow up to low-income first time mothers. *Journal of Clinical Nursing*. *2013;22*(1–2):262–270. https://doi.org.10.1111/j.1365-2702.2011.04065.x

Heitzman, M., Weitzel, J., Kroll, S., & Zabler, B. (2019). Client experiences in a prenatal home visiting program: A prenatal care coordination program evaluation. *Public Health Nursing, 36*(5), 653–659. https://doi.org/10.1111/phn.12631

Hostetter, M. & Klein, S. (2019). Improving health for women by better supporting them through pregnancy and beyond. *Transforming Healthcare.* https://doi.org/10.26099/st8x-kf47

Indiana Hospital Association. (2017). *CAH map*. https://ihaconnect.org/Indiana-Hospitals/Pages/Critical-Access-Hospitals-Maps.aspx

Indiana Primary Health Care Association. (2017). *Health professional shortage area & medically underserved area designations*. http://www.indianapca.org/page/20

Indiana State Department of Health. (2017). *Suicide in Indiana report 2011-2015.* https://www.in.gov/isdh/files/Suicide_Report_2017_final_revised7.10.17.pdf

ISDH. (2019). *Count of OB-GYN providers by county.* Indianapolis, IN: Indiana State Department of Health. https://hub.mph.in.gov/en_AU/dataset/count-of-ob-gyn-providers-by-county

ISDH. (2017). *Outcome Indicator Percentages by County of Residence and Race/Ethnicity of Mother.* Indianapolis, IN: Indiana State Department of Health. https://www.in.gov/isdh/reports/natality/2017/tbl32_t.htm

ISDH. (2020). Infant mortality: Central southwestern hospital region 2018. Indianapolis, IN: Indiana State Department of Health. https://www.in.gov/health/mch/files/Central-Southwestern-Region-IMR-Fact-Sheet-2018.pdf

Johns Hopkins All Children's Hospital. (2021) Healthy start: Get involved. St. Petersburg, FL: Johns Hopkins Medicine. https://www.hopkinsallchildrens.org/Community/Healthy-Start/Get-Involved

Kangovi, S., Mitra, N., Norton, L., Harte, R., Zhao, X., Carter, T., Grande, D., & Long, J. A. (2018). Effect of community health worker support on clinical outcomes of low-income patients across primary care facilities: A randomized clinical trial. *JAMA internal medicine*, *178*(12), 1635–1643. https://doi.org/10.1001/jamainternmed.2018.4630

Kitzman, P., Hudson, K., Sylvia, V., Feltner, F., & Lovins, J. (2017). Care coordination for community transitions for individuals post-stroke returning to low-resource rural communities. *Journal of Community Health*, *42*(3), 565–572. https://doi.org/10.1007/s10900-016-0289-0

Kumar, N. R., Raker, C. A., Ware, C. F., & Phipps, M. G. (2017). Characterizing social determinants of health for adolescent mothers during the prenatal and postpartum periods. *Women's Health Issues : Official Publication of the Jacobs Institute of Women's Health*, *27*(5), 565–572. https://doi.org/10.1016/j.whi.2017.03.009

La Rosa, M., Ludmir, J., & Levine, L. (2017). The impact of an outreach program among a low-income population on postpartum follow up. *International Journal of Pregnancy & Child Birth, 2*(2), 29–31. https://doi.org/10.15406/ipcb.2017.02.00012

McKenney, K. M., Martinez, N. G., & Yee, L. M. (2018). Patient navigation across the spectrum of women's health care in the United States. *American Journal of*

Obstetrics and Gynecology, *218*(3), 280–286. https://doi.org/10.1016/j.ajog.2017.08.009

McMorrow, S., Dubay, L., Kenney, G., Johnston, E., & Alvarez Caraveo, C. (2020, May). *Uninsured new mothers' health and health care challenges highlight the benefits of increasing postpartum Medicaid coverage*. Urban Institute. https://www.urban.org/sites/default/files/publication/102296/uninsured-new-mothers-health-and-health-care-challenges-highlight-the-benefits-of-increasing-postpartum-medicaid-coverage_0.pdf

Milani, H., Amiri, P., Mohsey, M., Monfared, E., Vaziri, S., Malekkahi, A., & Salmani, F. (2017). Effect of health care as the "home visiting" on postpartum depression: A controlled clinical trial. *International Journal of Preventative Medicine, 8*(20), 1–6. https://doi.org/10.4103/2008-7802.204003

Nourse, S., & Paauwe-Weust, J. (2021). Patient navigators in the healthcare setting. *MEDSURG Nursing*, *30*(1), 48–52.

Postpartum Support International. (n.d.) *Postpartum Support International*. https://www.postpartum.net

Rodin, D., Silow-Carroll, S., Cross-Barnet, C., Courtot, B., & Hill, I. (2019). Strategies to promote postpartum visit attendance among medicaid participants. *Journal of Women's Health, 28*(9), 1246–1253. https://doi.org/10.1089/jwh.2018.7568

Rural Health Information Hub. (2021). *Home Visiting Programs*. https://www.ruralhealthinfo.org/toolkits/transportation/2/models-to-overcome-barriers/home-visiting-programs

Sheikh S. (2019). Risk factors associated with emergency department recidivism in the older adult. *Western Journal of Emergency Medicine, 20*(6), 931–938. https://doi.org/10.5811/westjem.2019.7.43073

StatsIndiana. (2018). *Counties in profile*. http://www.stats.indiana.edu/profiles/profiles.asp?scope_choice=a&county_changer=18000

Swoboda, C., Benedict, J., Hade, E., McAlearney, A., & Huerta, T. (2018). Effectiveness of an infant mortality prevention home-visiting program on high-risk births. *Public Health Nursing, 35*(6), 551–557. https://doi.org/10.1111/phn.12544

Szafranska, M., Begley, C., Carroll, M., & Daly, D. (2020). Factors associated with maternal readmission to hospital, attendance at emergency rooms or visits to genreal practitioners within three months postpartum. *European Journal of Obstetrics & Gynecology and Reproductive Biology, 254*(2020), 251–258. https://doi.org/10.1016/j.ejogrb.2020.09.018

Tandon, D., Mackrain, M., Beeber, L., Topping-Tailby, N., Raska, M., & Arbour, M. (2020). Addressing maternal depression in home visiting: Findings from the home visiting collaborative improvement and innovation network. *PLoS ONE, 15*(4), e0230211. https://doi.org/10.1371/journal. pone.0230211

Wen, T., Krenitsky, N., Clapp, M., D'Alton, M., Wright, J., Attenello, F., Mack, W., & Friedman, A. (2020). Fragmentation of postpartum readmissions in the United States. *American Journal of Obstetrics and Gynecology, 223*(2), 252. https://doi.org/10.1016/j.ejogrb.2020.09.018

Yee, L., Martinez, N., Nguyen, A., Haijar, N., Chen, M., & Simon, M. (2017). Using a patient navigator to improve postpartum care in an urban women's health clinic. *Obstet Gynecol, 129*(5), 925–933. https://doi.org/10.1097/AOG.0000000000001977