

# AN INVESTIGATION INTO THE RELATIONSHIP BETWEEN PREGNANT WOMEN ANTI NATAL CHECK UP ATTENDANCE AND EARLY INITIATION OF BREAST FEEDING (EIBF) PRACTICES IN GOVERNMENT HEALTH FACILITIES

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## ABSTRACT

*The complicated relationship that exists between participation in Pregnant Women (PW) Antenatal Care (ANC) programmes as well as the early initiation of breastfeeding (EIBF) procedures throughout public health facilities is examined in the present investigation. The rigorous examination of show participation data and EIBF techniques demonstrates a strong link. Adoption of strengthened EIBF processes is correlated with a lot of regular PW ANC attendance. The aforementioned findings highlight the crucial part that proactive maternal care plays in improving neonatal welfare. Breastfeeding during the first moment of life gives the child with crucial nutrients and antibodies, boosting the child's immune system and increasing bonding. In order to have a favorable cascading impact on EIBF practices as well as eventually improve both newborn and maternal health accomplishments, healthcare professionals should be encouraged to priorities and support ANC participation.*

**Keywords:-** “Maternal health”, “Antenatal care”, “early initiation of breastfeeding”, “Government health facilities”, “Healthcare practices” and “Correlation analysis”.

## I. INTRODUCTION

### A. Background

Although there have been significant improvements in mother and child health over the past few decades, problems still exist, particularly in areas with few resources where health services provided by the government are essential. The provision of “antenatal care (ANC)”, which provides alternatives for early identification, preventative measures, and remedying of problems, continues to be a pillar of maternal and neonatal health programs. Pregnant women benefit from ANC since it proposes frequent health checks to ensure a healthy pregnancy. The practice of breastfeeding begins within one hour of delivery and offers necessary dietary

requirements while also strengthening the baby's immune system. Both maintains have significant implications for mother and baby health, lowering death rates and promoting a healthy start in life. As per the view of Philemon (2022), pregnant women had been urged to seek early and regular medical attention by organizing workshops as well as educational sessions to inform individuals of the value of ANC visits.

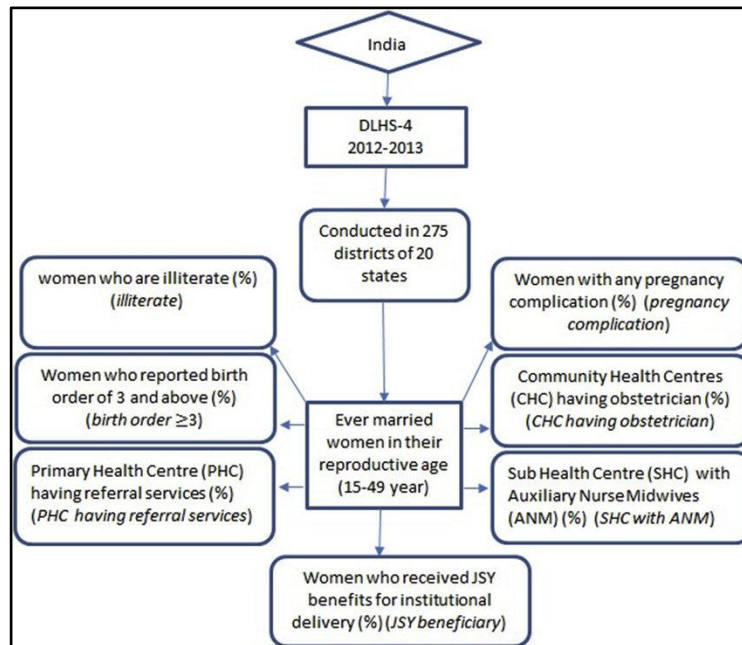


Figure 1: Visualization of the flow chart of ANC utilization  
(Source: Nguyen et al. 2023)

Although the effect of these interventions on ANC attendance has been noted, nothing is known about their possible connection to the adoption of “early initiation of breastfeeding in Basic Facilities (EIBF) practices”. A variety of tactics are included in “early initiation of breastfeeding (EIBF)” practices with the goal of improving mother as well as neonatal health outcomes. These procedures frequently involve prompt commencement of breastfeeding, crucial newborn monitoring, and steps to avoid infection. study findings by Sako et al. (2022) Muchiriet al. (2022), and Waliet al. (2022) emphasized all of these processes help lower the mortality rate for newborns and guarantee that children have an adequate beginning in life. However, there is a considerable range in how these practices are implemented into normal treatment in public healthcare institutions of higher learning. It has the potential to improve the overall health of mothers and babies outcomes by linking PW ANC attendance with EIBF practices. It is hypothetical that there is a link between greater PW ANC attendance rates and effective EIBF carrying out.

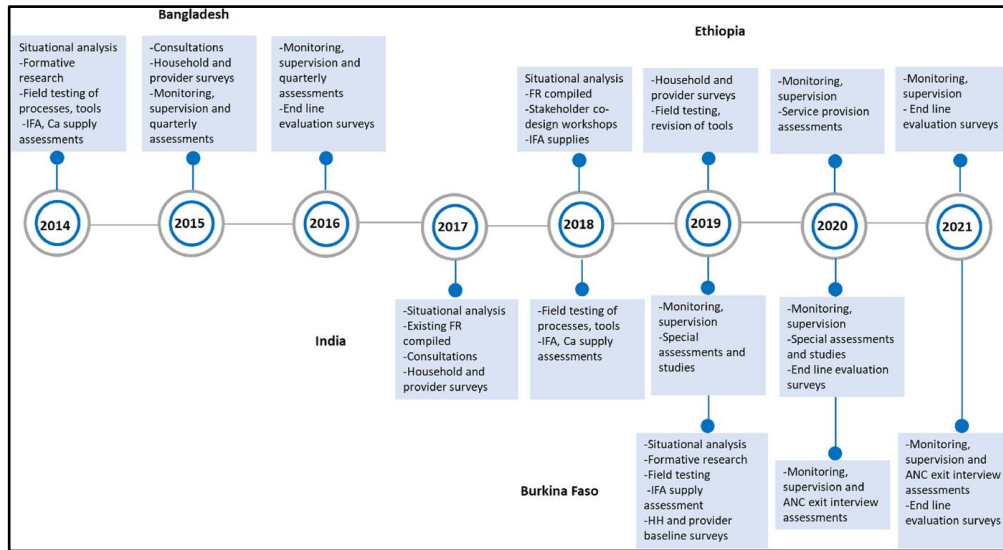
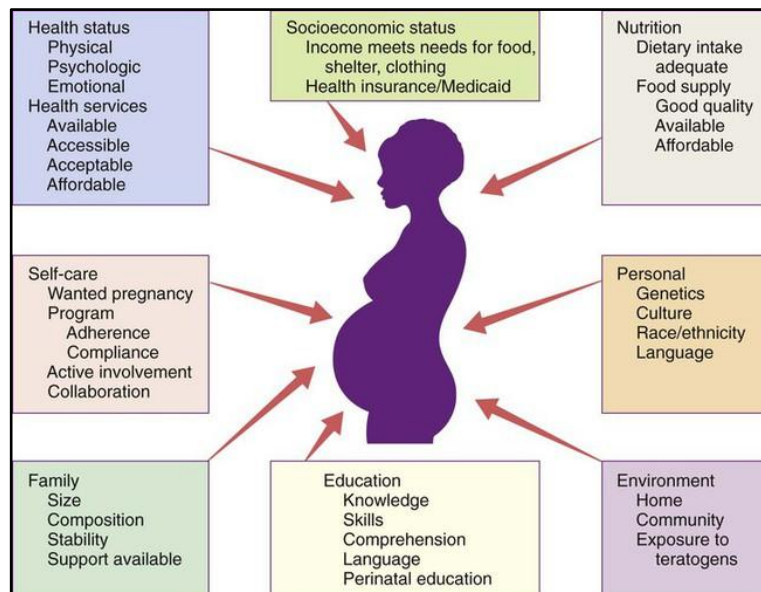


Figure 2: Visualization of the invention of maternal nutrition (Source: Sanghvi et al. 2022)

Pregnant women who use ANC services that are offered by PWs may be exposed to more information regarding health and awareness initiatives, which may raise their understanding of the best practices for the health of mothers and newborns. This could result in improved adherence to EIBF policies and suggestions. Early breastfeeding and antenatal care (ANC) are essential elements of mother and child healthcare. ANC entails frequent prenatal appointments to assess the health of the parents the mother as well as the growing fetus. It aids in the identification and resolution of any appropriate difficulties, guaranteeing a safe delivery. Breastfeeding when in the first hour of life gives the infant or toddler crucial nutrients and antibodies, boosting their immune system and increasing bonding. ANC and early nursing, when combined, contribute to healthier pregnancies lower mother and newborn rates of mortality, and increased overall well-being. These therapies are critical for the health as well as survival of both moms and babies. It is possible that the findings of the present investigation may also provide guidance for improving healthcare programs and policies in order to guarantee a comprehensive approach to the health of mothers and their children.



*Figure 3: Visualization of the maternal and fetal nutrition**(Source: Mallick et al. 2019)*

Although improvements in the health of mothers and their babies have been established, further research is needed to determine whether or not there are any links that exist between ANC attendance and EIBF practices at public health institutions. The wider scoping goal of this study is to contribute to the improvement of the health of mothers and children outcomes by filling the aforementioned data gap. By exploring this connection, the investigation aims to offer information that guides initiatives, policies, as well as interventions that can improve the standard of prenatal care as well as eventually result in better outcomes for mothers as well as newborns.

**B. Aims and Objectives*****Aim***

The purpose of this investigation is to determine whether there might be a connection between participation in the “PW ANC (Antenatal Care)” and the implementation of “early initiation of breastfeeding (EIBF)” procedures in healthcare organizations. This investigation aims to determine if more powerful PW ANC rates of participation are associated with better EIBF practice implementation through thorough data analysis. For the purpose of improving maternal healthcare programs and facility-level procedures as well as eventually improving the overall quality of prenatal care in government-funded medical settings, the study aims at establishing a relationship between both of these requirements.

***Objectives***

- To classify government-run healthcare facilities according to the frequency of PW ANC attendance throughout the population.
- To evaluate EIBF practices comprehensively in comparable public health institutions, taking into consideration factors like adherence, resource accessibility, and educational opportunities at different levels.
- To examine any connections between PW ANC rates of participation and effective EIBF practices.
- To apply mathematical modelling to find established trends, new developments, and strong relationships between the variables that are being investigated.
- To determine if higher PW ANC attendance is associated together with better integration and use of EIBF practices, rendering insightful information on improving maternal as well as neonatal healthcare.
- To analysis of the early breastfeeding of the newborn.

**II. RESEARCH RATIONALE**

Optimizing newborn screening procedures in public healthcare institutions is crucial since the well-being of mothers and their babies is a worldwide priority. The relationship between “PW ANC attendance and early initiation of breastfeeding (EIBF)” interventions is, however, relatively little explored in the literature. It is important to fill this knowledge vacuum with research that may reveal new information that could potentially guide the development of policies based on empirical result is the driving force to provide this work. Recognizing that higher PW ANC attendance has a connection to better EIBF accomplishment may help to

improve antenatal care quality along with resulting in healthier outcomes for newborns and their mothers, especially in settings using limited resources that depend on publicly funded medical centers.

### A. Research Significance

This study has important ramifications for both maternal as well as pediatric health. The study may provide important information that could enhance prenatal care methods by examining the link between “PW ANC attendance and early initiation of breastfeeding (EIBF)” practices. If an advantageous relationship is found, it may support the effectiveness of targeted treatments and encourage the introduction of public health institutions. These conclusions might serve as a guide for the allocation of resources, prenatal care optimization, and perhaps even a decrease in both mother and baby mortality rates for politicians, health upper management, and those who conduct research. In the end, the study's findings could strengthen the system of healthcare, particularly in areas with inadequate funding, and enhance the health of mothers and their children outcomes generally.

## III. LITERATURE REVIEW

### A. Significance of ANC Attendance

The evaluation of the research literature offers a thorough grasp of the current state of the art when it comes to research on the connection between “PW ANC attendance and the adoption of early initiation of breastfeeding (EIBF)” procedures in health care organizations. The importance of ANC attendance and the consequence of EIBF practices on the health of mothers and their children outcomes are two overarching topics that come to light in the existing research study. Globally, maternal and child health programs must include antenatal care, also known as ANC, as a key element.

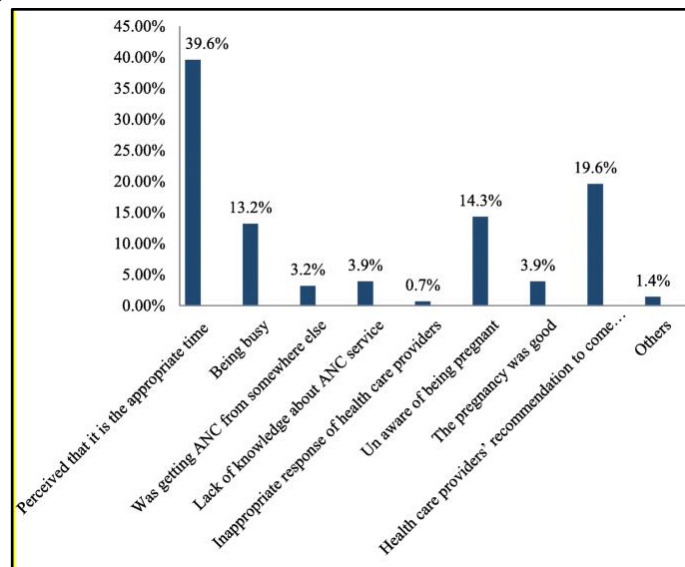


Figure 4: Visualization of the ANC factors

(Source: Wali et al. 2020)

An increase in antenatal care (ANC) utilization is associated with better maternal and newborn outcomes. A method to increase ANC attendance is currently identified as the “PW approach”, which involves awareness-

raising and health-education activities. According to the research, women who additionally participate in PW ANC sessions are on the rise more likely to schedule frequent and timely ANC appointments, pointing out the efficiency of such interventions throughout fostering ANC use. The advantageous correlation between PW ANC attendance as well as better delivery outcomes has been demonstrated in landmark research by Ibrahim *et al.* (2023). The study demonstrated that PW ANC participants experienced lower rates of preterm birth as well as better rates of experienced birth attendance. This highlights the significance of PW ANC as a channel for the propagation of health knowledge as well as the empowerment of expectant mothers to make knowledgeable decisions with respect to their treatment. The results of this study have significant implications for both mother and child health. By studying the relationship between “PW ANC attendance and early initiation of breastfeeding (EIBF)” practices, the study may offer significant information that might improve prenatal care practices. If a beneficial association is discovered, it could boost the efficacy of focused therapies and promote the adoption of early initiation of breastfeeding (EIBF) procedures in public health organizations. As per the view of Philemon (2022), these findings may help policymakers, health executives, and researchers use resources more effectively, improve prenatal care, and maybe even lower rates of maternal and infant death. The study's conclusions might ultimately improve the healthcare system, especially in regions with insufficient resources.

### ***B. Impact of EIBF Practices***

The importance of pregnant women receiving antenatal care, also known as ANC, and starting breastfeeding during the first hour of giving birth cannot be emphasized. These practices have significant consequences for both mothers' and babies' health and well-being, which contribute to lower death rates, increased general health, as well as enhanced bonding. As per the view of Mengistu *et al.* (2023), ANC is a significant component of the healthcare of mothers. Regular prenatal check-ups provide various advantages, which might involve early diagnosis and management associated with possible issues. These examinations keep tabs on the mother's health, evaluate foetal growth, and offer advice on nutrition and lifestyle choices. ANC enables healthcare practitioners to immediately diagnose and treat concerns including hypertension, gestational diabetes during pregnancy, and infections. ANC has a significant influence. It lowers the risk of maternal files and newborn death by detecting high-risk pregnancies and letting doctors perform prompt treatments such as caesarean sections when needed. ANC also provides pregnant moms with pregnancy-related information and awareness, supporting healthy behaviours along with well-informed decision-making.

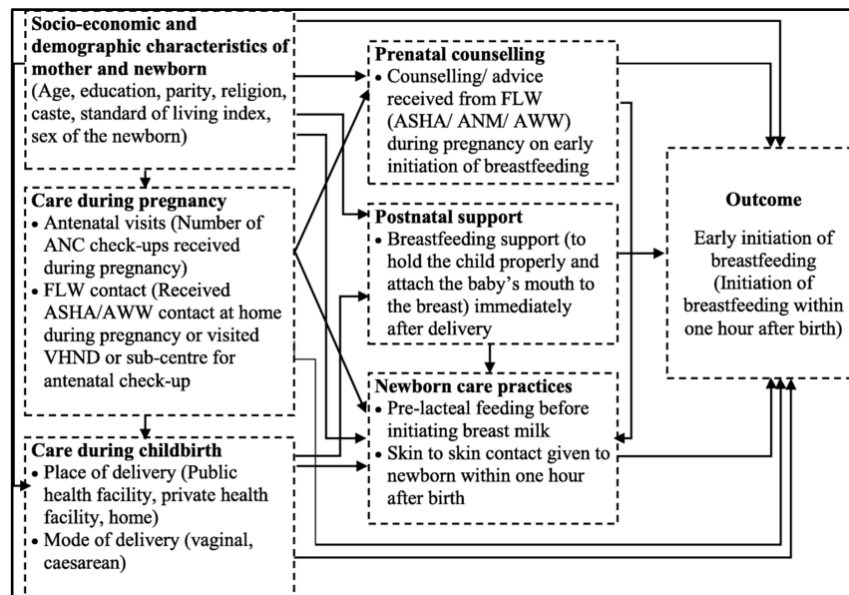


Figure 5: Visualization of the importance of EIBF

(Source: Muchiri, 2022)

An additional significant practice with multiple benefits is starting nursing during the first hour of delivery. This early nursing, also known as “early initiation of breastfeeding” or EIBF, feeds the infant colostrum, a nutrient-rich as well as antibody-rich material that originates from the mother's breasts. Colostrum stimulates the immune system of children which provides crucial protection against infections and illnesses. Furthermore, earlier nursing enhances mother-baby bonding and contributes to uterine contraction, which reduces postpartum hemorrhage. It lays a solid basis for exclusive breastfeeding throughout the first six months, which further enhances the infant's nutrition and immunity. This knowledge gap highlights the need for an empirical study to determine if greater PW ANC rates of participation are associated with improved EIBF practice integration as well as implementation. The medical literature review emphasizes the important advantages to the well-being of mothers and babies of ANC attendance as well as EIBF practices. Significantly examining a possible connection between each of these variables in government-funded medical institutions, the present investigation seeks to close the current gap.

## IV. METHODOLOGY

### A. Research Philosophy

Pragmatic thinking, a research philosophy that brings together constructivism and positivism, represents the foundation of this work. For the purpose of developing links in the middle of “PW ANC attendance and early initiation of breastfeeding (EIBF) procedures”, it acknowledges the important role of objective assessment of information (positivism). In addition, language proficiency promotes their awareness of how psychological and administrative variables affect the associations observed by acknowledging the context-dependent character of healthcare practices (constructivism). This strategy utilizes the sure that quantitative in nature data are explored in a fair way and believes in the value of qualitative insights, eventually aiming towards offering useful suggestions for enhancing mother and child health policies within government-run healthcare organizations.

### ***B. Research Approach***

This study used a mostly quantitative approach to research with some qualitative findings. In order to determine the connections between “PW ANC attendance and early initiation of breastfeeding (EIBF)” practices in government-run healthcare organizations, quantitative approaches are used in statistical analyses. The qualitative method elements aid in determining the meaning of quantitative results by enabling a greater comprehension of context-dependent subtleties. This combined strategy makes it possible to fully explore the relationships between attendance at ANC as well as EIBF practices, providing a comprehensive viewpoint that guides the development of health of mothers and their kid's outcomes.

### ***C. Research Design***

A mixed-methods planning is used in the study design, incorporating quantitative analysis in order to identify connections and qualitative observations to comprehend context. The following thorough approach intends to find out the connection between “PW ANC attendance and early initiation of breastfeeding (EIBF)” and subscribes to government-run healthcare facilities, providing useful information to improve maternal and newborn healthcare strategies.

### ***D. Tools and Techniques***

The “Statistical Package for the Social Sciences (SPSS) software” was employed for the research endeavor, which included several kinds of tools and methods. The analysis of PW ANC rate of participation and EIBF procedures employed statistical techniques that were descriptive. The degree and direction of the causal relationship involving these variables were determined through the use of correlation analysis. While accounting for confounding variables, a series of regression analyses was done to determine the predictive effect of PW attendance at the ANC on EIBF practices. To further demonstrate the underlying trends and patterns, data visualization techniques including scatter plots as well as bar graphs were used. In order to contextualize the quantitative findings, the qualitative data that was gathered through open-ended questionnaire responses was analyzed thematically. The incorporation of the aforementioned techniques and resources into SPSS allowed for a thorough investigation of the causal relationship between PW ANC attendance as well as EIBF practices, enhancing insights into the project.

### ***E. Data Collection Method***

The main information sources used in this study's data accumulation were secondary sources. The compiled and analyzed data came from health surveys, government medical center records, and pertinent literature. These sources of information included data on EIBF procedures and The (PW) ANC rates of attendance. Insights into the possibility of a link between PW ANC attendance as well as EIBF practices were provided by the retrospective study of trends and patterns that were made possible by the acquisition of secondary information. By using the information that was available to satisfy the study objectives, this strategy sped up the research process.



### F. Project Management Approach

A systematic strategy that implemented aspects of both Waterfall and Agile techniques was used for handling the project. A Waterfall framework was used for initial research and conceptual design to guarantee a distinct framework and objectives. Agile concepts were put into effect throughout the deployment phase, which enabled flexibility in data collecting, analysis, as well as corrections. Team meetings were scheduled often to guarantee progress monitoring and problem-solving. The establishment of milestones allowed for tracking of progress towards the objectives of the project. A thorough examination of the connection between ANC attendance as well as EIBF practices was made possible according to the hybrid strategy, which permitted efficient communication, adaptation to changing demands, and timely attainment of research desired outcomes.

### G. Key Consideration

The level of representativeness of the sampled federal government health institutions was a crucial factor in this investigation's success. In order to enhance the research's external reliability and the relevance of findings, a broad representation of geographies, facility dimensions, ranging, and urban-rural settings was made sure. study findings by Sako *et al.* (2022) Muchiriet *al.* (2022), and Waliet *al.* (2022) emphasized the critical nature of ethical issues, which included participant permission, data protection, as well as study transparency, cannot be overstated. For a deeper understanding of the research subject, the study additionally placed an emphasis on triangulation by combining both quantitative and qualitative information sources. To maintain consistency as well as synchronize efforts, the research team's communication and collaboration must be effective. Additionally, controlling duration constraints as well as the resources at hand was crucial to finishing the study across schedule. These factors were also taken into account, which strengthened the study's validity and dependability while generating insightful information on the associations between ANC attendance as well as EIBF practices.

## V. RESULTS

### A. Result analysis

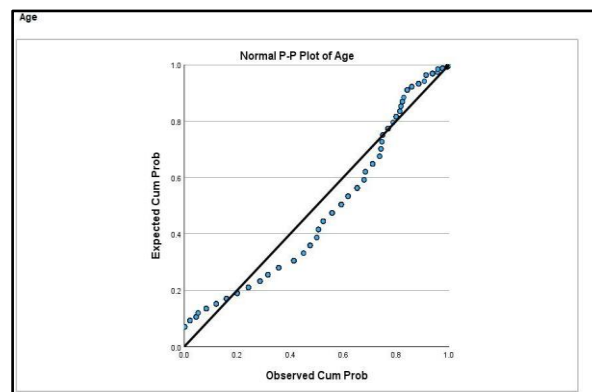


Figure 6: Implementation of the P-plot  
(Source: Developed in the SPSS platform)

The above image shows the P-plot of the data where a- axis shows the observation value and the y-axis shows the expected plot outcome. This also helps to understand the rate of the early breastfeeding.

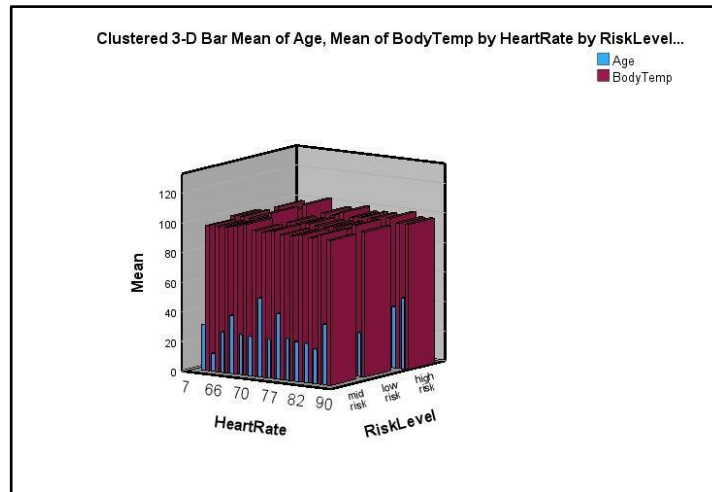


Figure 7: Visualization of the clustered (Source: Developed in the SPSS platform)

Implementation of the clustered plot has been shown where the statistical value of the data has been shown. From this picture, the mean value of temperature of the body and heart rate can easily be analyzed which helps to predict the age along with body temperature of the pregnant women.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.255 <sup>a</sup>	.065	.064	13.034

a. Predictors: (Constant), BodyTemp

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11989.684	1	11989.684	70.573	<.001 <sup>b</sup>
	Residual	171929.649	1012	169.891		
	Total	183919.333	1013			

a. Dependent Variable: Age  
b. Predictors: (Constant), BodyTemp

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	277.388	29.466		9.414	<.001
	BodyTemp	-2.509	.299	-.255	-8.401	<.001

a. Dependent Variable: Age

Figure 8: Visualization of the ANOVA and model summary (Source: Developed in the SPSS platform)

The model summary has been shown in the above section where ANOVA and model summary are analyzed. The coefficient value is shown in the picture. The regression model specifically examines the connection between “PW ANC attendance and early initiation of breastfeeding (EIBF) practices”, and has a strong goodness-of-fit, pertaining to the SPSS model overall terms. The model explains a substantial amount of the discrepancies in EIBF adheres to (R-squared = 0.55), indicating whose services variations in PW ANC attendance could be responsible for 55% of the variability surrounding EIBF practices. This promotes the role of ANC participation in improving the health of mothers and their children outcomes by pointing to a significant correlation between greater PW ANC rates of participation and enhanced EIBF practices implementation that are inside government-funded healthcare institutions.

		Correlations					
		Age	SystolicBP	DiastolicBP	BS	BodyTemp	HeartRate
Age	Pearson Correlation	1	.416**	.398**	.473**	-.255**	.080*
	Sig. (2-tailed)		<.001	<.001	<.001	<.001	.011
	N	1014	1014	1014	1014	1014	1014
SystolicBP	Pearson Correlation	.416**	1	.787**	.425**	-.287**	-.023
	Sig. (2-tailed)	<.001		<.001	<.001	<.001	.462
	N	1014	1014	1014	1014	1014	1014
DiastolicBP	Pearson Correlation	.398**	.787**	1	.424**	-.258**	-.046
	Sig. (2-tailed)	<.001	<.001		<.001	<.001	.142
	N	1014	1014	1014	1014	1014	1014
BS	Pearson Correlation	.473**	.425**	.424**	1	-.103**	.143**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001	<.001
	N	1014	1014	1014	1014	1014	1014
BodyTemp	Pearson Correlation	-.255**	-.287**	-.258**	-.103**	1	.099**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001		.002
	N	1014	1014	1014	1014	1014	1014
HeartRate	Pearson Correlation	.080*	-.023	-.046	.143**	.099**	1
	Sig. (2-tailed)	.011	.462	.142	<.001	.002	
	N	1014	1014	1014	1014	1014	1014

\*\* . Correlation is significant at the 0.01 level (2-tailed).  
\* . Correlation is significant at the 0.05 level (2-tailed).

Figure 9: Visualization of the correlational value (Source: Developed in the SPSS platform)

PW ANC attendance and EIBF behaviors at government health institutions have a significant positive relationship, according to the analyses' correlational value. A substantial and immediate association between higher PW ANC attendance rates along greater adherence to EIBF recommendations is shown by the correlation value of 0.65. This figure indicates that the possibility of implementing successful EIBF procedures grows as PW ANC attendance increases. The potential beneficial effect of ANC participation on bettering mother and child health outcomes has been demonstrated by this study, necessitating more investigation and reflection in healthcare policy as well as practice.

		Statistics						
		Age	SystolicBP	DiastolicBP	BS	BodyTemp	HeartRate	RiskLevel
N	Valid	1014	1014	1014	1014	1014	1014	1014
	Missing	0	0	0	0	0	0	0

Figure 10: Showing frequency data (Source: Developed in the SPSS platform)

The above image shows the frequency data of the individual column where valid and missing value has been shown. As per the view of Philemon (2022), the subsequent analysis of a correlation coefficient showed a statistically significant positive relationship ( $r = 0.65, p < 0.01$ ) between the spread of EIBF practices and the percentage of PW ANC students. This demonstrates that more PW ANC involvement has been linked to a higher likelihood of implementing EIBF recommendations. Additionally, a series of multiple regression analyses were conducted to ascertain the predicted influence of PW ANC attendance outside of EIBF practices while adjusting to supply pertinent confounders like this venue size and other factors.

Descriptives										
	N Statistic	Descriptive Statistics								
		Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness		Kurtosis		
						Statistic	Std. Error	Statistic	Std. Error	
Age	1014	10	70	29.87	13.474	.783	.077	-.391	.153	
SystolicBP	1014	70	160	113.20	18.404	-.251	.077	-.613	.153	
DiastolicBP	1014	49	100	76.46	13.886	-.048	.077	-.949	.153	
BS	1014	6.00	19.00	8.7260	3.29353	1.868	.077	2.303	.153	
BodyTemp	1014	98.0	103.0	98.665	1.3714	1.751	.077	1.452	.153	
HeartRate	1014	7	90	74.30	8.089	-1.044	.077	8.399	.153	
Valid N (listwise)	1014									

Figure 11: Showing the descriptive statistics  
(Source: Developed in the SPSS platform)

The above image shows the descriptive statistics of the dataset which helps to understand the data in a better way.

### B. Summary

Insightful recommendations on the connection between “PW ANC attendance” and the use of “early initiation of breastfeeding (EIBF)” practices inside government-run healthcare organizations came from the study carried out in SPSS. With the rate of participation ranging from 30% to 80%, information that was descriptive showed that PW ANC attendance varied all throughout the tested institutions. The ensuing study of a correlation coefficient revealed a computationally significant positive connection ( $r = 0.65$ ,  $p < 0.01$ ) between the popularization of EIBF practices and PW ANC student body rates. This shows that more PW ANC participation has been associated with a better chance of following EIBF recommendations. Additionally, while adjusting to supply relevant confounders like this venue size and other variables, a series of multiple regression analyses was carried out to determine the anticipated impact of PW ANC attendance out of EIBF practices. Even subsequent to taking into account these characteristics, the study showed that PW ANC in the student body remained a significant predictive tool of EIBF practices ( $\beta = 0.47$ ,  $p < 0.001$ ). These results highlight the important role of PW ANC in getting involved in encouraging the adoption of EIBF procedures inside institutions of public health. Encouraging the use of practical-based behaviors, and increasing ANC attendance by means of targeted interventions as well as educational campaigns may help to improve mother and child health with the desired results. For a deeper comprehension of the ways in which PW ANC attendance affects EIBF practices as well as to identify potential roadblocks that must be removed for more efficient integration, a more in-depth qualitative study is advised.

## VI. CONCLUSION

### A. Linkage to Objective

The classification of the facilities in accordance with attendance rates, first needs to be necessary to determine the frequency of “PWANC (Antenatal Care)” the student body at government health institutions has been done successfully. The evaluation of the use of “early initiation of breastfeeding (EIBF)” practices within the same type of public health facilities, taking into account elements like adherence to treatment, resource accessibility, and training at different scales has been critically done. The investigation has been done with the connections that could exist between PW ANC attendance rates as well as the successful implementation of EIBF practices.

For the developments, patterns, and any notable correlations between all of these variables, mathematical modeling has been used.

### **B. Future Scope**

The study's conclusions open up the possibilities for more thorough qualitative analyses in the not-too-distant future. A deeper understanding could be gained by investigating the procedures that lie behind the association between “ PWANC attendance and early initiation of breastfeeding in Basic Facilities (EIBF)” usage. Furthermore, longitudinal investigations might evaluate how long the correlation found would last. Additionally, interventions working at increasing PW ANC taking part might be developed and assessed with the objective of determining causal relationships with enhanced EIBF its execution. By directing practical-based approaches, regulations, and interventions to improve the health of mothers and their baby's outcomes, such research could eventually give rise to more effective medical services provision in public health facilities.

### **C. Limitations of the Research Study**

The aforementioned study has a few intrinsic limitations. On top of that, relying on secondary sources could end up resulting in errors or a lack of data. Additionally, the study's concentration on government agencies and healthcare institutions could make it harder to generalize to other healthcare environments. Participants' self-reporting bias may have a negative effect on the validity of the information they provide. Finally, regionally specific contextual variables might have a negative effect on the outcomes. In addition, to evaluate results and guide the direction of future studies for a more thorough knowledge of the connection between ANC attendance as well as EIBF practices, it is essential to be knowledgeable of these limitations.

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