ASSESSMENT OF THE KNOWLEDGE, ATTITUDES, AND PRACTICES OF AUXILIARY NURSE MIDWIVES REGARDING THE USE OF DIGITAL SOLUTIONS FOR ANTENATAL CARE DATA IN DISTRICT UDAIPUR

Dissertation Submitted to

The IIHMR University, Jaipur

for the partial fulfilment for the award of the degree of

Master of Business Administration (MBA)

in

Hospital and Health Management

By

Khushboo

Under the Supervision and Guidance of

Dr Mamta Chauhan

2024

Internship cum dissertation completion certificate

Letter No : KB Admin/HR 2024-25/240 Date : July 02, 2024

This is to certify that Ms. Khushboo Gupta, a student of MBA in Hospital and Healthcare Management academic year 2022-2024 at IIHMR University, Jaipur has completed her internship with Khushi Baby from 15th march 2024 to 15th june 2024.

During the internship, Khushboo did her dissertation on the topic of "**Knowledge, Attitudes, and Practices of ANM Regarding the Use of Digital Solutions for Antenatal Care Data**" in Udaipur district under the project titled "**Community Health Integrated Platform**".

Throughout the internship, she sincerely worked on all her assignments, and her overall performance was observed to be very good.

We wish her success in her future endeavors

Sincerely,

DocuSigned by:
Ajay Sharma
BEA47D4C9D504EC...

Ajay Sharma,
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Appendix D: Declaration by Student

DECLARATION BY STUDENT

I hereby declare that this dissertation titled **"Assessment of Knowledge, Attitude, and Practice of Auxiliary Nurse Midwives Regarding the Use of Digital Solutions for Antenatal Care Data in district Udaipur"** is the Bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

Khushboo

(Signature)

Khushboo

Date:

IIHMR UNIVERSITY

CERTIFICATE

This is to certify that dissertation titled "**Assessment of the Knowledge, Attitudes, and Practices of Auxiliary Nurse Midwives Regarding the Use of Digital Solutions for Antenatal Care Data in Udaipur**" is a record of the research work undertaken by Khushboo in partial fulfillment of the requirements for the award of the degree of MBA in Hospital and Health Management from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific, and analytical.

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LIST OF ABBREVIATIONS

1.	ANC	Ante Natal Care
2.	ANM	Auxiliary Nurse Midwife
3.	ASHA	Accredited Social Health Activist
4	CHIP	Community Health Integrated Platfrom
5.	Govt.	Government
6.	KB	Khushi Baby
7.	MNCHN	Maternal Newborn Child Health Nutrition
8.	MNH	Maternal Newborn Health
9.	PNC	Postnatal Care
10.	Pvt.	Privat
11.	SDG	Sustainable Development Goal
12.	SPSS	Statistical Package for Social Person
13.	WHO	World Health Organization

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ABSTRACT

This study investigates the practices, attitudes, and knowledge of Auxiliary Nurse Midwives (ANMs) in Udaipur, Rajasthan, with reference to using digital technologies for Antenatal Care (ANC) data management. ANMs play a critical role in healthcare delivery, especially in underprivileged communities where access to traditional healthcare may be limited. The purpose of this study is to evaluate the perceptions and practices of ANMs about digital solutions intended to improve the accuracy, usefulness, and efficiency of ANC data administration. A descriptive cross-sectional study was done, with 50 ANMs actively using digital technologies for ANC data collection.

The results show that 88% of ANMs are not confident in the dependability of the digital tools available today, raising possible usability and functionality issues. Despite this, the majority (63%) believe that digital methods can improve the accuracy and accessibility of ANC data. However, issues persist, with 41% expressing worries about the completeness of data acquisition and 31% having difficulty transmitting ANC data electronically. The research emphasizes how digital technology might improve the way that maternal healthcare is delivered, but it also points out certain important aspects that still need improvement, like interoperability, reliability, and data completeness. To ensure complete, efficient ANC services and to optimize the benefits of digital technologies, it is imperative that these difficulties are addressed.

CHAPTER 1: INTRODUCTION

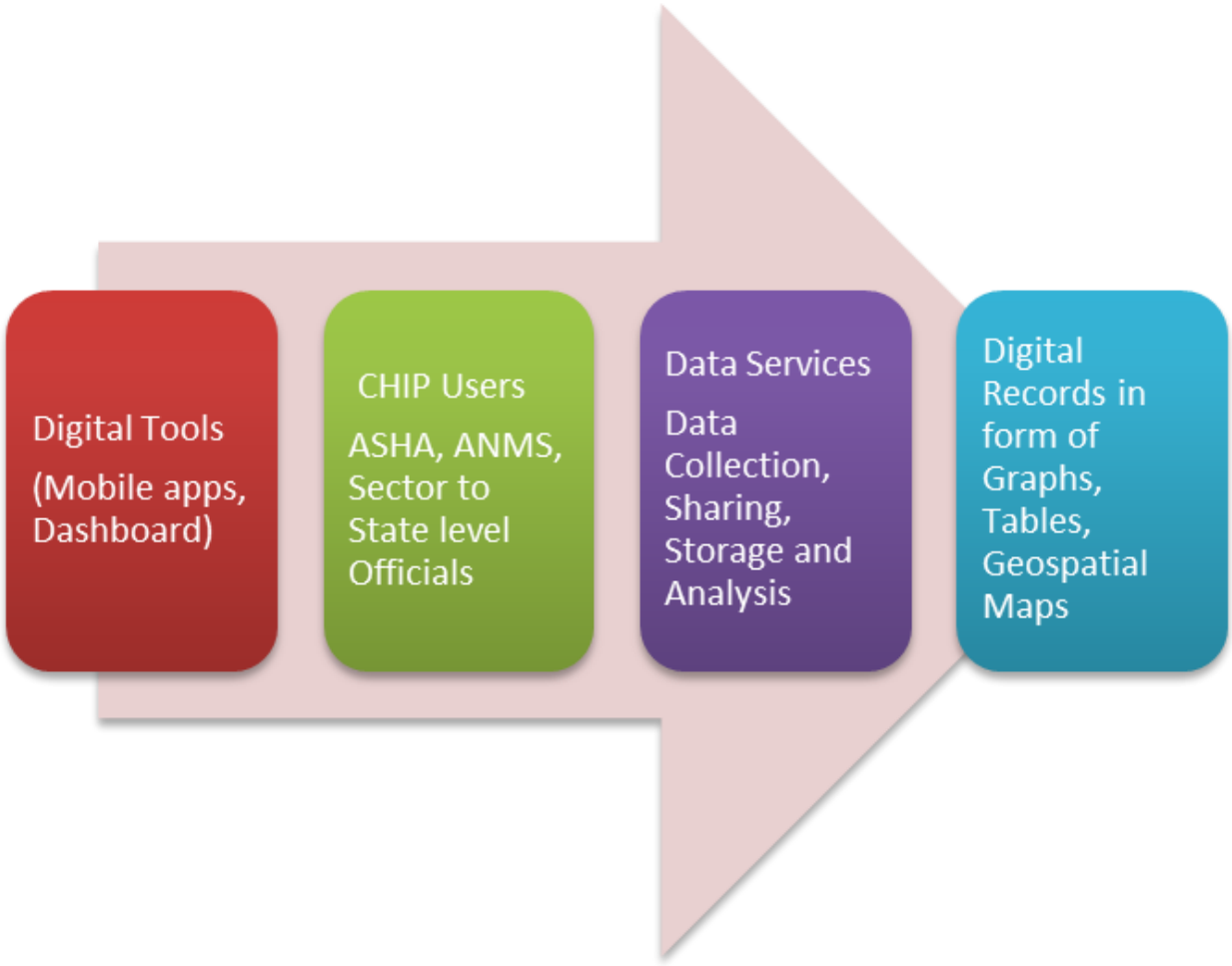
Antenatal care plays an important role in this mother and child health care as it has more of key services for the pregnancy monitoring and management. Regular antenatal visits also help health professionals to detect and address problems and to monitor the health of the mother and baby and to provide interventions when needed to make sure the pregnancy progresses well. ANMs play an important role in the provision of basic health services, especially Antenatal Care (ANC) for rural, urban and semi-urban areas. ANMs record around 200 critical indicators about pregnant women, mothers, and newborn children's health, nutrition, and immunizations. Antenatal care (ANC) provides services to manage healthy pregnancies, which is essential for the health of mothers and children.

Recently there has been a considerable interest towards Training of staff in digital data recording in antenatal care services and its inclusion within the ANC to improve data management, care coordination, and eventual enhanced quality of maternal healthcare. The use of digital tools, like mobile apps and electronic medical records, has the potential to make a real difference in how we collect, store, and use data for antenatal care. These tools can help healthcare providers gather individual information more accurately and efficiently, share data in real time, and provide valuable insights for clinical decision making. By embracing digital technologies, we can simplify antenatal care services, making them more data-driven and flexible to meet the needs of pregnant women. Khushi Baby has come up with the CHIP (Community Health Integrated Platform) which provides services through ASHA/ANM/MOIC digital health applications to tackle timely and quality data solutions. Digital Health applications are developed to play a key role in the overall integration of data. This application with multiple modules helps ASHA and ANM to reduce the number of paper-based formats to be filled multiple times, as they can easily assess the data once filled by them and it can be visible in different modules based on their eligibility.

With the help of dashboard state to sector level users can monitor and record all the process in the form of summary, line list reports, graphs and maps of different modules. CHIP has played an integral part in integrating all the health statics from state to AWC to smoothen the process of data sharing and recording all the health data without any additional paper-based records. It helps provide real time data with NFC (Near Field Communication) to safely secure and retrieve the data. These services not only help to improve the data quality and process flow, but they also help to make timely decision making which is very important in case of emergency services.

With such an innovative approach in digital health, it is insightful to understand how ANMs use digital technology to manage antenatal care information in Udaipur, Rajasthan, India. By exploring their perspectives and expertise, insight into the opportunities, challenges, and limitations of using digital tools in this context can be extracted.

Figure 1.1 Services provided by CHIP



1.1 AIM

The aim of this study is to assess the knowledge, attitudes, and practices of auxiliary nurse midwives in Udaipur about the usage of digital technologies for antenatal care data management.

1.2 OBJECTIVES

- To assess the level of knowledge among ANMs on digital solutions for antenatal care data management.
- To explore the attitudes of ANMs towards the adoption of digital solutions in their practices.

- To evaluate the current practices of ANMs in utilizing digital solutions for antenatal care data management.

CHAPTER 2: REVIEW OF LITERATURE

1. The study by Feroz et al (2017) mentioned the potential of mHealth tools to improve antenatal care and postnatal care in Low and Middle-income countries. The study gives insights into utilization of mobile health technology to improve maternal health outcomes. This study also provides many benefits related to mHealth applications, that includes improved data efficiency, real -time data monitoring and improved decision making.

2. This article “Using mHealth to Improve Usage of Antenatal Care, Postnatal Care, and Immunization: A Systematic Review of the Literature" by Watterson JL, Walsh J, and Madeka I.” offers a thorough analysis of how mobile health (mHealth) technologies are being used and how successful they are at enhancing maternity and child health care in low- and middle-income nations (LMICs). This systematic review's main goal was to evaluate the body of research on the usefulness of mobile health (mHealth) tools in improving access to and use of prenatal care, postnatal care, and childhood vaccinations by influencing patient, caregiver, and healthcare provider behavior.

3. To improve MNCH outcomes in various situations, the review seeks to offer thorough and reliable information to evaluates the efficacy of mobile health (mHealth) treatments aimed at improving maternity, newborn, and child health (MNCH) in low- and middle-income countries (LMICs), Nurmatov et al. (2014) provide a strategy for a systematic review. The paper examines how mHealth technology can enhance healthcare delivery and results for vulnerable groups, thereby addressing a critical global health challenge. Key health outcomes of relevance include birth weight and neonatal mortality, child health metrics like growth tracking and immunization coverage, and maternal health indicators including skilled birth attendance and use of prenatal care.

4. Feroz et al. (2017) conducted an in-depth review to examine the effects of mobile health applications on both prenatal and postnatal care in low- and middle-income countries (LMICs). Their results highlight the exciting possibilities of these technologies in plenty of important fields. First off, mHealth apps make it easier for new and pregnant mothers to receive important health information, especially in isolated or rural regions with limited access to traditional healthcare. These apps enhance healthcare delivery and improve mother and child health outcomes by providing tele consultation support, schedule reminders, and tools for tracking pregnancies. Better maternal health practices are also fostered by mHealth, which empowers women by advancing health knowledge and enticing active engagement in healthcare decision-making.

5. A systematic study by Feroz, Perveen, and Aftab (2016) examines the impact of mobile health (mHealth) solutions on prenatal and postnatal care utilization in low- and middle-income countries (LMICs). About the use of mobile health technologies in prenatal healthcare, the study offers some interesting conclusions: First off, mobile solutions have been essential in reducing barriers to healthcare access by providing expectant moms and new mothers with timely information and reminders. These technologies enable regular attendance at prenatal and postnatal care consultations and recommended health practices, which increases treatment regularity and consistency overall. The review also highlights how mobile health (mHealth) can improve healthcare delivery systems in resource-constrained environments. By spreading educational materials, development channels and monitoring tools.

CHAPTER 3: METHODOLOGY

3.1 RESEARCH QUESTION

What is the level of knowledge, attitude, and practice of ANM about the use of digital solutions for ANC data collection?

3.2 STUDY DESIGN

Descriptive cross-sectional study.

3.3 STUDY SETTING

Udaipur district, Rajasthan.

3.4 STUDY POPULATION

Currently working ANM in Udaipur District.

3.4 INCLUSION CRITERIA

- ANM who are using digital tool for ANC

3.5 EXCLUSION CRITERIA

- ANM who are not using digital tool for ANC

3.6 SAMPLING TECHNIQUE

Purposive sampling of 50 ANM who are using digital tool for ANC

3.7 DATA COLLECTION TOOL/ PROCEDURE

A semi-structured questionnaire was used for data collection. All the respondents were briefed about the nature of the study, its purpose, and the process of completing the questionnaire. Self-administered telephonic interview through digital questionnaires specifically designed for this study.

3.8 DATA ANALYSIS TECHNIQUE/TOOL

Data collected was checked for any incompleteness or partial filling and analysis was done.

1. Calculating frequencies and percentages for categorical variables, such as healthcare workers' preference regarding accuracy and reliability of ANC data stored digitally versus on paper.

2.Calculating frequencies in Bivariate analysis

3.9 ETHICAL CONSIDERATIONS

Informed verbal consent was obtained from all the study participants. Before beginning the interview, all the participants were informed about the purpose of the study and obtained their consent. If anyone was not willing to be a part of the study, they were not forced by any means. All the participants were explained how responses will be collected, stored, and used, and they were assured of the confidentiality of their data.

CHAPTER 4: RESULTS

4.1 Univariate Analysis

A univariate analysis was performed to determine the sociodemographic characteristics of the respondents, which are shown in Table 4.1.

Sr. No	Socio-demographic characteristics	Frequency (Percentage) (N=32)
Age of Respondents (N=32)		
1	21-30	7 (22%)
2	31-40	16 (50%)
3	41-50	7 (22%)
4	More than 50	2 (6%)
Years of experience in ANC in digital tool (N=32)		
1	1-2 year	12 (38%)
2	Less than 1 year	11 (34%)
3	Less than 6 months	5 (16%)
4	More than 2 years	4 (13%)

Table 4.1 shows that almost half of the respondents belong to the age group of 31 to 40 years and approx. one-fifth of the respondents belong to the age group of 21 to 30 and 41-50 years. Leaving a very small percentage to respondents more than 50 years of age.

The analysis of the respondents' years of experience shows that only 4 percent of the respondents had more than 2 years of experience in managing ANC data in digital tools. While thirty-eight percent of the respondents had 1-2 years of experience in managing ANC data in digital tools and, thirty percent of respondents had less than 1 year of experience.

Figure 4.1: (N=32) Training attended related to ANC

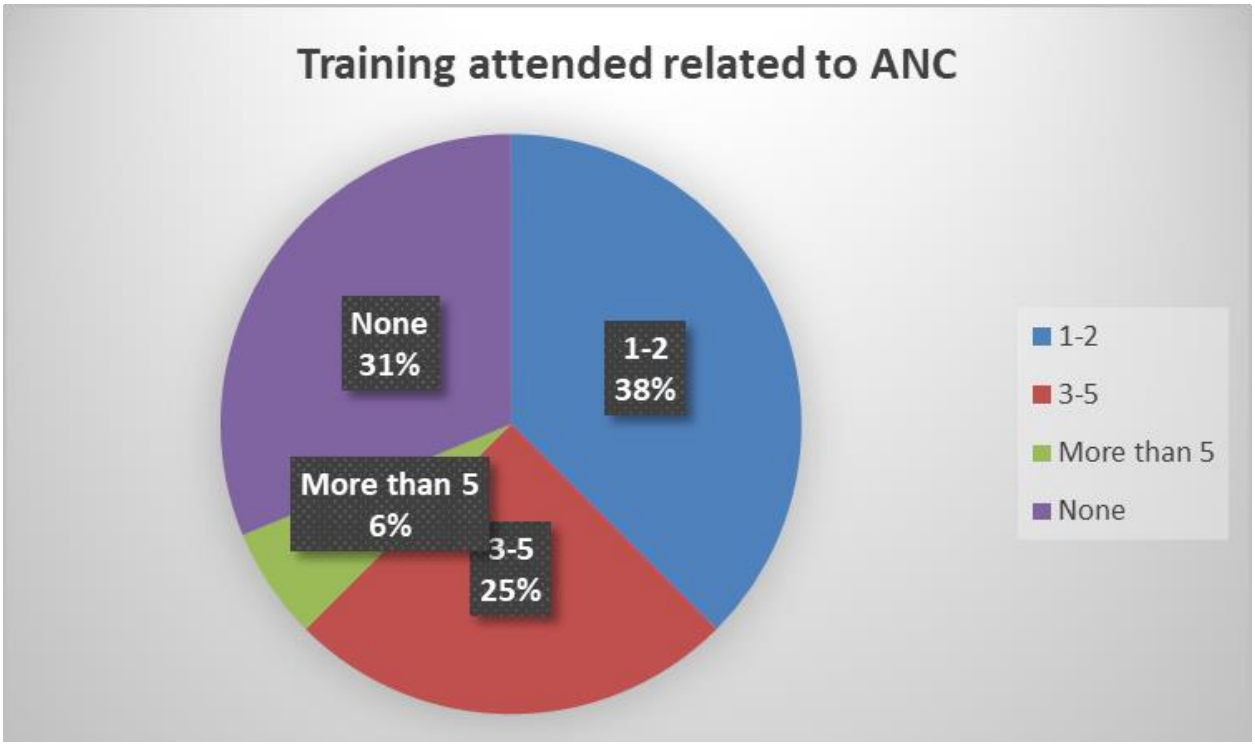


Figure 4.1 depicts that thirty-eight percent had received 1-2 training sessions. Twenty-five percent of the respondents had attended more than 3-5 ANC training sessions and only 6 percent of the respondents had attended more than 5 ANC training sessions. However, thirty-one percent of the respondents had not received any training sessions.

Figure 4.2: (N=32) Training on different application

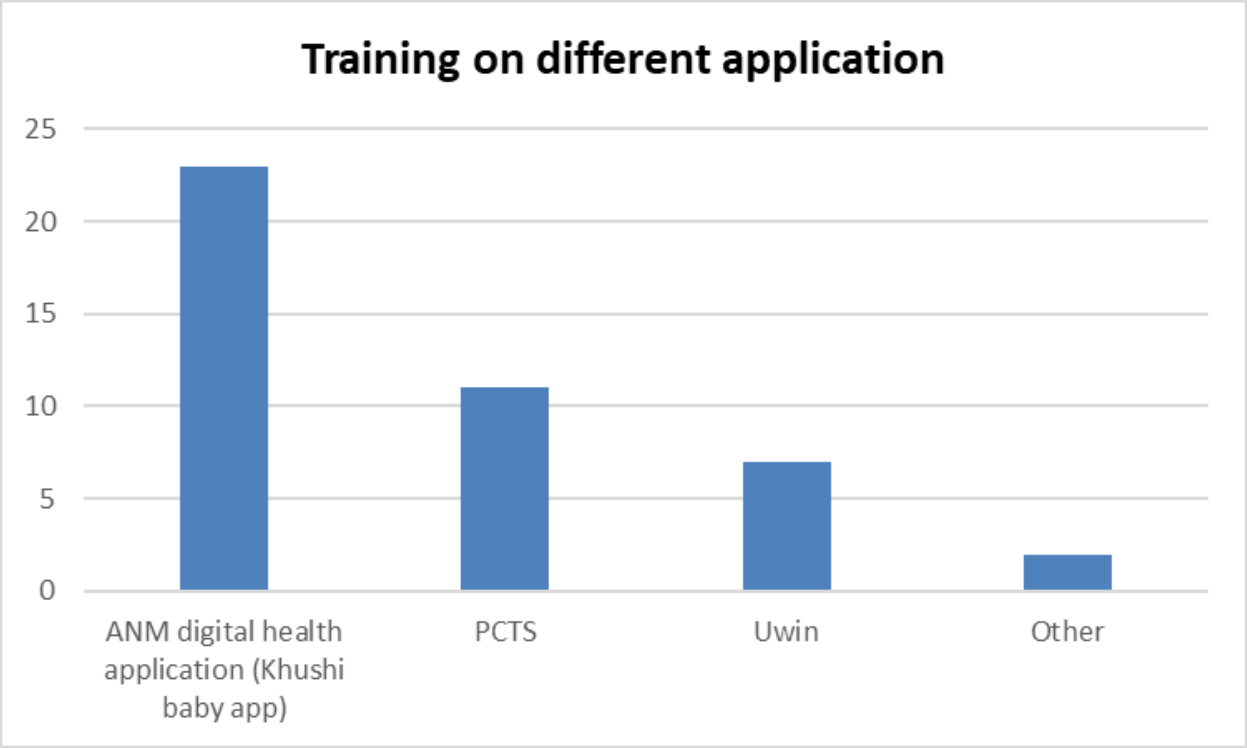


Figure 4.2 shows that T most respondents have been trained on ANM digital health (Khushi baby) application. Then following PCTS and U-win. However, a significant number are trained in other applications such as Sickle cell anemia, AB-HWC, NCD and FP-LMIS etc.

Figure 4.3: (N=32) Confident in using digital tool

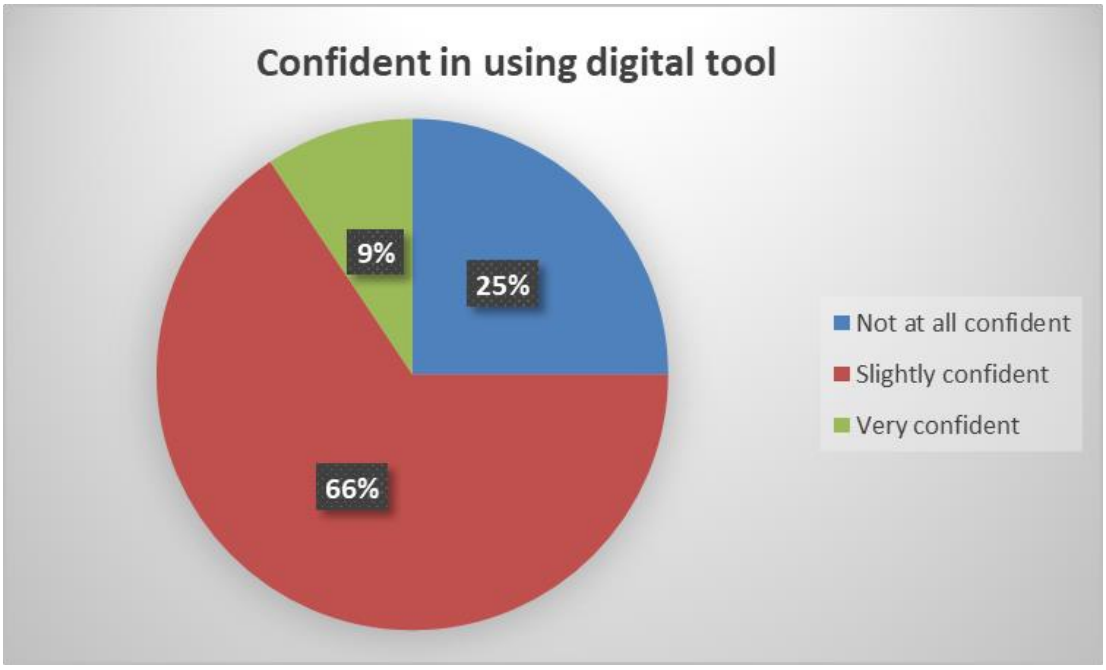


Figure 4.3 indicates that only 9 percent of the respondents are very confident. However, most of the respondents, i.e. sixty six percent, were slightly confident in using the digital tool. One fourth of the respondents falls into the category of not at all confident.

Table 4.2: (N=32) Update ANC records in digital tool

Sr. No	Update ANC records in digital tool	N=32 (%)
1	Biweekly	3 (9.38)
2	Daily	2 (9.62)
3	Monthly	5 (15.63)
4	Weekly	22 (68.75)

More than half of the ANM update their ANC records weekly, however fifteen percent of the ANM update their ANC records Monthly and almost similar number of the ANM update their ANC records in biweekly and daily.

Table 4.3: (N=32) Characteristics of digital tools for ANC

	Responses, n=32 (%)	
Characteristics	**Yes**	**No**
Reliable	28 (88)	4 (13)
Accurate & accessible data	20 (63)	12 (37)
Capture necessary data	19 (59)	13 (41)
ANC data sharing difficulties	10 (31)	22 (69)

Table 4.3 shows that almost eighty-eight percent of the respondents think that digital tools were very reliable and only thirteen percent of the respondents think digital tools were not very reliable.
Sixty-three percent of the respondents think digital tools had improved the accuracy and accessibility of ANC data and thirty seven percent of the respondents think digital tools had not improved the accuracy and accessibility of ANC data.
Fifty nine percent of the respondents mentioned that digital tools make sure that all necessary ANC data is captured, however forty-one percent of the respondents mentioned that all necessary ANC data captured doesn't captured in digital tools.
Thirty-one percent of the respondents think that there are some difficulties in sharing ANC data and sixty nine percent of the respondents think digital tools didn't have any difficulty in sharing the ANC data.

4.2 Bivariate Analysis

A bivariate analysis was conducted between the years of experience of ANM and their confidence in using the digital tools for ANC data management as shown in table 4.4.

Years of experience Vs Confident in using digital tools for ANC data management (n)			
Year of Experience	**Not at all confident**	**Slightly confident**	**Very confident**
Less than 6 months	2	3	0
6 months to1 year	1	9	1
1-2 year	4	7	1
More than 2 years	1	2	1

The bivariate analysis in the above table shows that the ANMs with less than six months of experience exhibit varying degrees of confidence; some express a slight sense of assurance, while others feel less certain of their skills. Although there is some fluctuation, there is a tendency towards greater confidence levels as experience grows to less than a year and 1-2 years. Interestingly, even ANMs with over two years of experience exhibit a wide range of confidence levels, with a small but significant minority expressing extreme confidence or no confidence at all.

No. of training sessions attended Vs Confident in using digital tools for ANC data management (n)			
Number of training session attended	**Not at all confident**	**Slightly confident**	**Very confident**
1-2 session	4	7	1
3-5 session	1	6	1
More than 5 sessions	0	2	0
No training attended	3	6	1

The bivariate analysis between the number of trainings attended and the confidence in using digital tools for ANC data management shows that those who attended 1-2 training sessions are primarily relatively confident (7 respondents), followed by those who are not at all confident (4 respondents) and extremely confident (1 responder). Those who attended three to five sessions, on the other hand, tend to feel slightly more confident (6 respondents), while fewer people (1 respondent) and (1 respondent) feel very confident or not at all confident. Significantly, respondents who attended more than five sessions showed higher confidence levels; only two felt very confident, and none. A total of two respondents expressed mild confidence. On the other hand, 6 out of the participants who did not attend any training sessions reported feeling very unconfident, followed by 3 respondents who felt somewhat confident and 1 responder who felt extremely confident.

CHAPTER 5: DISCUSSION

The study aimed to identify the pros and cons of incorporating digital solutions into ANC services by assessing their knowledge levels, adoption attitudes, and current use behaviors.

With an emphasis on both the potential and difficulties experienced by healthcare practitioners in utilizing technology to enhance service delivery, the findings offer a nuanced view on the adoption and application of digital tools in maternal healthcare.

First, the study found that a sizable percentage of ANMs (88%) don't think digital tools are reliable. This perspective raises substantial problems regarding the usability and functionality of the instruments already available to healthcare providers. Digital tools are meant to improve the handling of information efficiency and accuracy, but the high level of uncertainty among ANMs points to potential problems, such as unstable systems, complicated user interfaces, or insufficient training. Gaining ANMs' trust in the effective use of digital technologies in their daily practices requires addressing these reliability problems. Most responders (63%) stated that the accuracy and accessibility of ANC data have improved due to digital techniques, despite worries regarding reliability.

This research highlights how real-time data collection, monitoring, and analysis can be facilitated by digital technology, thereby improving healthcare delivery. Rational decision-making and quick action during pregnancy are dependent on improved accuracy and accessibility, which may lead to better outcomes for the health of the mother and child. However, a sizable minority of ANMs (37%) did not feel that data accessibility and accuracy had improved. This disparity focuses on the differences in experiences and implies that whereas some ANMs gain from digital tools, others may come over difficulties that keep them from completely improving them. Understanding these discrepancies is essential to pinpointing certain obstacles that ANMs have when embracing and employing digital technology efficiently.

The study discovered that ANMs' responses to the need to collect ANC data were not uniform. Roughly 41% of participants stated that digital methods successfully collect all required ANC data. This shows that there has been some success in utilizing digital technology to guarantee thorough data gathering during prenatal visits. However, a sizable majority (59%) voiced worries over the accuracy of collecting data, speculating that some components of ANC information would be missed or not sufficiently captured by present digital techniques.

The difficulties in obtaining complete data highlight the significance of ongoing development in the concept and use of technology. To enable evidence-based decision-making and track changes in

maternal health over time, it is vital that digital tools be improved to effectively record a wide range of ANC data. ANMs' challenges in using digital technologies to share ANC data with others is another important point the study draws attention to. About thirty-one percent of those surveyed said they had problems exchanging data, which can make it more difficult for healthcare providers to collaborate and coordinate patient treatment. Maintaining continuity of care requires seamless data sharing, especially in complicated healthcare systems where a patient's pregnancy and postpartum care may be managed by several providers. The results imply that although digital tools can facilitate data management and enhance team collaboration in the healthcare industry, current obstacles, like interoperability problems, must be resolved. For seamless data exchange to occur and for the overall standard of care given to expectant mothers to be improved, it is imperative that various healthcare systems and platforms are compatible and connected.

CHAPTER 6: CONCLUSION

The integration of digital technologies into prenatal care (ANC) services represents a noteworthy advancement in the administration of maternal healthcare, particularly in the Udaipur area of Rajasthan. This chapter examines the revolutionary potential of digital technologies such as electronic health records and mobile applications to improve the efficacy and efficiency of ANC data administration. ANMs' knowledge, attitudes, and practices about these technologies are assessed in this study to provide light on the potential and difficulties that come with their use. The results indicate that ANMs' perspectives about obtaining ANC data digitally vary.

The findings indicate that ANMs have varying perspectives on adopting digital means to collect ANC data. Questions remain regarding the reliability of these technologies and challenges with data sharing, despite the potential benefits being widely accepted in terms of improved data accessibility, accuracy, and real-time monitoring. ANMs, whose ages range from 31 to 40 and who possess varying levels of expertise, exhibit cautious optimism over the use of digital technologies, underscoring the need for targeted training and support. The findings indicate that ANMs have varying perspectives on adopting digital means to collect ANC data.

CHAPTER 7: RECOMMENDATION

Proper capacity building should be done of the ANM related to digital tools to enhance the ANM confidence of using the application and making sure to enhance the reliability and quality of the data. Providing easy to use User friendly interference is an essential component for ANM to use the digital applications. Collaboration between various sectors, including health, education, and social sectors, is essential to create a supportive environment for health workers like ANM to understand and utilize the digital tool. Advocating with policy makers to integrate the different digital tools to reduce the burden of using multiple applications. ANM with more year of experience working on Digital tool needed refresher training in appropriate time interval.

REFERENCES

1. Feroz A, Perveen S, Aftab W. Role of mHealth applications for improving antenatal and postnatal care in low and middle income countries: a systematic review. BMC health services research. 2017 Dec;17:1-1.

2. Watterson JL, Walsh J, Madeka I. Using mHealth to improve usage of antenatal care, postnatal care, and immunization: a systematic review of the literature. BioMed research international. 2015;2015(1):153402.

3. Nurmatov UB, Lee SH, Nwaru BI, Mukherjee M, Grant L, Pagliari C. The effectiveness of mHealth interventions for maternal, newborn and child health in low–and middle–income countries: Protocol for a systematic review and meta–analysis. Journal of global health. 2014 Jun;4(1).

4. Feroz A, Perveen S, Aftab W. Role of mHealth applications for improving antenatal and postnatal care in low- and middle-income countries: a systematic review. BMC health services research. 2017 Dec;17:1-1.

5. Noordam AC, Kuepper BM, Stekelenburg J, Milen A. Improvement of maternal health services through the use of mobile phones. Tropical Medicine & International Health. 2011 May;16(5):622-6.

6. Tamrat T, Kachnowski S. Special delivery: an analysis of mHealth in maternal and newborn health programs and their outcomes around the world. Maternal and child health journal. 2012 Jul;16(5):1092-101.

7. Feroz A, Perveen S, Aftab W. Role of mHealth solutions in improving antenatal and postnatal care attendance in low and middle income countries: a systematic review. 2016.

8. Adedeji T, Fraser H, Scott P. Implementing electronic health records in primary care using the theory of change: Nigerian case study. JMIR medical informatics. 2022 Aug 11;10(8):e33491.

9. Usmanova G, Lalchandani K, Srivastava A, Joshi CS, Bhatt DC, Bairagi AK, Jain Y, Afzal M, Dhoundiyal R, Benawri J, Chaudhary T. The role of digital clinical decision support tool in improving quality of intrapartum and postpartum care: experiences from two states of India. BMC pregnancy and childbirth. 2021 Dec;21:1-2.

10. Misago N, Habonimana D, Ciza R, Ndayizeye JP, Kimaro JK. A digitalized program to improve antenatal health care in a rural setting in North-Western Burundi: Early evidence-based lessons. PLOS Digital Health. 2023 Apr 17;2(4):e0000133.

11. For female health workers in India, a new digital tool puts data at their fingertips UNICEF Article

12. Muliokela R, Uwayezu G, Tran Ngoc C, Barreix M, Tamrat T, Kashoka A, Chizuni C, Nyirenda M, Ratanaprayul N, Malumo S, Mutabazi V. Integration of new digital antenatal care tools using the WHO SMART guideline approach: experiences from Rwanda and Zambia. Digital Health. 2022 Feb;8:20552076221076256.

INFORMED CONSENT

I would like to thank you for giving your time for this interview. My name is Khushboo Gupta and I'm from IIHMR University, Jaipur and currently doing my dissertation from Khushi Baby. I would like to ask you about the knowledge, attitudes, and practices of Auxiliary Nurse Midwives (ANMs) regarding the use of digital solutions for managing antenatal care (ANC) data in Udaipur. It will involve answering questions related to your experiences and practices with ANC data management using digital health applications. The interview will take about 10 to 15 minutes. The answers and information you give us will be kept completely confidential. Your participation is entirely voluntary, and you have the right to withdraw from the survey at any time without penalty. If you have any questions during the survey or wish to end the discussion at any point, please feel free to do so Would you like to participate in the interview?

Name
Address
Date

ANNEXURE

Questionnaire

Section 1: Demographic Information

1. Your AGE
   - A. 21-30
   - B. 31-40
   - C. 41-50
   - D. More than 50

2. Years of experience in managing Digital ANC data
   - A. 6 months-Less than 1 year
   - B. 1-2 years
   - C. Less than 6 months
   - D. 2 years or more

3. Training attended related to ANC,
   - A. 1-2 sessions
   - B. 3-5 session
   - C. More than 5 sessions
   - D. None

Section-2 Knowledge

4. How familiar you are with a digital tool for ANC
   - A. Very familiar
   - B. Less familiar
   - C. Not familiar

5. Which of the following digital solutions have you been trained to use for ANC (multiple choice)
   - A. ANM digital health application (Khushi baby app)
   - B. PCTS
   - C. U Win
   - D. Other

6. Which of the following digital solutions are you using for ANC (multiple choice)
   A. ANM digital health application (Khushi Baby)
   B. PCTS
   C. U win
   D. Other

7. How confident do you feel in using digital solutions for antenatal care data management?
   A. Not at all confident
   B. Slightly confident
   C. Very confident

7. What do you find as the main benefits of using digital methods for ANC (multiple choice)
   A. Improved accuracy
   B. Faster data retrieval
   C. Easier data sharing
   D. Easier data finding
   E. Other

8. What are the main challenges you face in managing ANC data? (multiple choice)
   A. Difficulty in accessing records
   B. Time-consuming data entry
   C. Lack of training
   D. Data loss or damage
   E. Other

10. Do you think digital data collection is reliable
   A. Yes
   B. No

Section 3: Practices

11. How often do you update ANC records in digital tool
   A. Daily
   B. Weekly
   C. Monthly
   D. Biweekly

12. Have you faced difficulties in sharing ANC data with others using digital health applications

A. Yes

B. No

13. Do you think the use of digital solutions has improved the accuracy and accessibility of antenatal care data?

A. Yes

B. No

14. Does digital tool ensure that all necessary ANC data is captured

A. Yes

B. No

15. Does data collection in a digital tool offer special features to validate the data you enter, such as checking for missing entries or out-of-range values?

A. Yes

B. No

Section 4: Attitudes

16. What are the primary advantages of using digital tool for ANC (multiple choice)

A. Real-time data entry and retrieval

B. Reduced errors through validation checks

C. Improved data completeness and timeliness

D. Enhanced data security

17. How do you think the digital tool can be further improved to optimize ANC data management practices? (multiple choice)

A. Enhanced user training

B. Enhanced user training

C. Better technical support

D. Other

18. Would you recommend the increased use of digital solutions for managing antenatal care data to other health care workers

A. Yes
B. No
C. May be