

DISSERTATION REPORT

AT

National Health Mission, Madhya Pradesh

A REPORT ON

**BRIDGING THE TECHNOLOGICAL DIVIDE: ANALYZING THE CHALLENGES
AND BENEFITS OF DIGITAL HEALTH TOOLS FOR MATERNAL CARE DELIVERY
BY AUXILLARY NURSE MIDWIVES (ANMs) AND COMMUNITY HEALTH
OFFICER (CHOs) IN MADHYA PRADESH, WITH A FOCUS ON ANMOL**

BY

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PG/22/079

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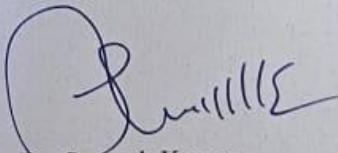
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The Candidate has successfully carried out the study designated to her during internship training and her approach to the study has been sincere, scientific and analytical.

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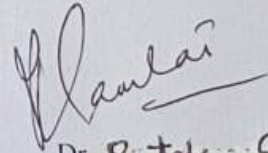


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Madhya Pradesh, with a focus on ANMOL.**

18th June 2024

at

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She comes across as a committed, sincere & diligent person who has
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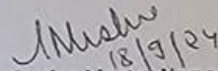
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Date: 15/10/2024

Dr. Prateeksha Khambra

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List of Abbreviations

S.No.	Abbreviation	Meaning/ Full-Form
1	IIHMR	International Institute of Health Management Research
2	NHM	National Health Mission
3	NRHM	National Rural Health Mission
4	NUHM	National Urban Health Mission
5	RMNCH+A	Reproductive-Maternal-Neonatal-Child and Adolescent Health
6	MMR	Maternal Mortality Rate
7	IMR	Infant Mortality Rate
8	TFR	Total Fertility Rate
9	GDP	Gross Domestic Product
10	AYUSH	Ayurveda, Yoga & Naturopathy, Unani, Siddha, Sowa Rigpa and Homeopathy
11	ANM	Auxiliary Nurse Midwives
12	CHO	Community Health Officer
13	MCH	Maternal and Child Healthcare
14	RCH 1	Reproductive and Child Health-I
15	JSY	Janani Suraksha Yojana
16	JSSK	Janani Shishu Suraksha Karyakaram
17	WHO	World Health Organisation
18	MHealth	Mobile Health
19	ANMOL	ANM Online
20	HRP	High Risk Pregnancy
21	EDD	Expected Date of Delivery

ABSTRACT

This paper explores the use and outcomes of the ANMOL program, a digital health technology intended to improve Madhya Pradesh, India's MCH services. ANMOL was developed in response to the increasing focus on digital health technologies, with the goal of streamlining the data management procedures for ANMs and CHOs, two important frontline healthcare providers. This study aims to evaluate both the challenges and benefits experienced by these healthcare providers in using the application, shedding light on its effectiveness and areas for improvement.

Using a cross-sectional quantitative research design, data were collected from a sample of 60 healthcare providers, evenly split between ANMs and CHOs, across various healthcare facilities in the region. The study employed structured questionnaires to gather insights into the frequency of use, satisfaction levels, technical challenges, and overall confidence in using the ANMOL application. Descriptive statistics were used to analyze the data, revealing critical trends and user experiences.

The results show a significant difference between ANMs' and CHOs' experiences. Higher levels of confidence and satisfaction with the ANMOL application were typically noted by CHOs, who highlighted enhanced data accuracy and expedited service delivery as major advantages. ANMs, on the other hand, who do more daily data entry, reported moderate to poor confidence, citing frequent technical problems such as connectivity issues, app crashes, and unhappiness with the offered tablets. Additionally, both groups reported a strong preference for ANMOL over conventional paper-based approaches, although acknowledging the higher workload associated with using the digital tool, especially given its potential to improve data accuracy and retrieval efficiency.

The study also reveals notable disparities in the efficacy of training, with ANMs indicating a higher need for improved training than CHOs. The aforementioned gap implies that although the ANMOL application holds great promise to transform healthcare delivery, its efficacy is largely dependent on the quality of training provided and the resolution of the technical obstacles that hinder its optimal utilization.

In summary, the ANMOL app is a critical advancement toward the digitalization of maternity and child healthcare in India. Targeted interventions are necessary to solve the issues this study found in order for it to reach its full potential. To lessen the workload stress on healthcare professionals, recommendations include streamlining the application, offering more comprehensive training catered to the unique needs of ANMs, and enhancing the technical infrastructure. This study adds to the growing conversation on improving healthcare delivery

through technology by providing insightful information on the practicalities of implementing digital health technologies in resource-constrained environments.



ORGANIZATION INTRODUCTION

One of the most important public health projects in India is the National Health Mission, which was started by the government with the goal of enhancing healthcare quality, affordability, and accessibility throughout the country. This mission was initially intended to address the health needs of rural people, with a particular focus on vulnerable and underserved groups who have historically had limited access to healthcare services. It was initially established as the NRHM in 2005. Through the establishment of a decentralized, community-owned health delivery system, the NRHM aimed to close the gap that exists between the rural people and basic healthcare services. This strategy placed a strong emphasis on the value of empowering local communities and improving the responsiveness of healthcare to the particular requirements of each area.

In 2013, the Government of India broadened the goal to encompass the NUHM in recognition of the increasing health issues in urban regions. As a result of this growth, the comprehensive NHM was created, bringing together issues related to rural and urban health into one cohesive system. The goal of the NHM is to provide everyone in India with equitable, reasonably priced, and high-quality healthcare services. It places a strong emphasis on bolstering the public health infrastructure, incorporating several health factors such as education, nutrition, and sanitation, and making sure that healthcare services are responsive to the demands of the populace and held accountable.

RMNCH+A, Communicable and Non-Communicable Diseases, and enhancement of the health systems in rural and urban regions are the key programmatic components. The goal of the NHM is to provide everyone with equitable, reasonably priced, high-quality healthcare services that are also accountable and sensitive to the requirements of the public.

Vision of the NHM

Attainment of Universal Access to Equitable, Affordable and Quality health care services, accountable and responsive to people's needs, with effective inter-sectoral convergent action to address the wider social determinants of health.

Core Values

- ✓ Safeguard the health of the poor, vulnerable and disadvantaged, and move towards a right based approach to health through entitlements and service guarantees.
- ✓ Strengthen public health systems as a basis for universal access and social protection against the rising costs of health care.
- ✓ Build environment of trust between people and providers of health services.
- ✓ Empower community to become active participants in the process of attainment of highest possible levels of health.
- ✓ Institutionalize transparency and accountability in all processes and mechanisms.
- ✓ Improve efficiency to optimize use of available resources.

Objectives of NHM

1. Reduce MMR to 1/1000 live births.
2. Reduce IMR to 25/1000 live births.
3. Reduce TFR to 2.1.
4. Prevention and reduction of anemia in women aged 15–49 years.
5. Prevent and reduce mortality & morbidity from communicable, non- communicable; injuries and emerging diseases.
6. Reduce household out-of-pocket expenditure on total health care expenditure.
7. Reduce annual incidence and mortality from Tuberculosis by half.
8. Reduce prevalence of Leprosy to <1/10000 population and incidence to zero in all districts.
9. Annual Malaria Incidence to be <1/1000.
10. Less than 1 per cent microfilaria prevalence in all districts.
11. Kala-azar Elimination by 2015, <1 case per 10000 populations in all blocks.



State profile

Madhya Pradesh, with 3,08,000 square kilometers, is India's second largest state. located in the north-central region of the country and is bounded by the plains of the Ganga-Yamuna in the north, the Aravalli range in the west, the plains of Chhattisgarh in the east, the Tapti valley, and the Maharashtra plateau in the south. It accounts for almost 6% of India's population and ranks 24th in literacy. With a population density of 236 individuals per square kilometer, tribal groups account for approximately 22.27% of the total population. The state has a lot of geographical, social, and cultural diversity, making it a priority for national development initiatives. This attention is owing to its low Human Development Index, literacy issues, poor infrastructure, a shortage of healthcare staff, and weak health outcomes.

The Mission of the State

Every person residing in the state of Madhya Pradesh will be equipped with the knowledge and abilities needed to maintain their own health, as well as equitable access to cost-effective healthcare that is accessible to them and improves their quality of life, allowing them to lead healthy, productive lives. As a result, it can be seen that the State's mission is essentially divided into two parts: providing equitable access to high-quality, reasonably priced healthcare and equipping residents of the State with the knowledge and skills necessary to maintain their health. Madhya Pradesh shares the National Rural Health Mission's vision. Consequently, the adapted vision components to be followed by the State are provided as follows: - Equip people with the knowledge and skills they need to be healthy. Provide adequate healthcare to the rural population across the state, with a special emphasis on the worst-performing regions, which have poor public health indicators and/or infrastructure. These districts will receive special attention. These include: Dindori, Damoh, Sidhi, Badwani, Anuppur, Chhindwara, Rewa, Betul, Raisen, Seoni, Chhatarpur, Morena, and Sheopur.

Increase public health spending from 0.89% to 2-3% of GDP, along with better community finance and risk-pooling arrangements. Make structural changes to the health system so that it can manage more funding and support laws that will improve public health administration and service provision in the state. Incorporate AYUSH into the public health system and revitalize regional health customs. Efficient incorporation of health issues via decentralized administration at the district level, encompassing health factors such as nutrition, safe drinking water, gender, and social issues. Resolve discrepancies between districts. Set and meet deadlines for your goals and inform the state's citizens of your accomplishments. Increase rural residents' access to fair, inexpensive, dependable, and efficient primary health care, especially for impoverished women and children

SECTION 1

BRIDGING THE TECHNOLOGICAL DIVIDE: ANALYZING THE CHALLENGES AND BENEFITS OF DIGITAL HEALTH TOOLS FOR MATERNAL CARE DELIVERY BY ANMs AND CHO_s IN MADHYA PRADESH, WITH A FOCUS ON ANMOL APPLICATION

INTRODUCTION

MCH has long been a priority on India's national health agenda, and the RCH-I initiative, launched in 1997, provided tremendous momentum. Recognizing the essential need to improve healthcare accessibility, affordability, and effectiveness, particularly among vulnerable rural communities, the Indian government established the NRHM in 2005. This mission, which was eventually absorbed into the larger NHM in 2013, focused heavily on reproductive, maternal, neonatal, child, and adolescent health issues. Key NHM programs, such as JSY and JSSK, have helped improve healthcare delivery and lower maternal and infant death rates across the country.

Concurrent with these endeavors, the worldwide ascent of digital health technologies offered novel prospects for enhancing healthcare systems. In an effort to close gaps in healthcare access and attain universal health coverage, the WHO supported the use of digital health in 2005. Digital health, which the World Health Organization defines as "the cost-effective and safe use of information and communication technologies in support of health and health-related areas," has since emerged as a key component of initiatives aimed at improving the efficiency, equity, and quality of healthcare services, especially in environments with limited resources.

India has adopted digital health solutions as a way to address obstacles in healthcare delivery because of its large and diverse population. Due to the increasing use of mobile phones and the internet in rural regions, mHealth is becoming a practical way to reach underprivileged populations. CHOs and auxiliary nurse midwives ANMs are two frontline healthcare providers essential to this strategy. These professionals work at the community level, offering crucial services pertaining to vaccines, infectious and non-communicable illnesses, and maternity and child health.

To assist these frontline workers, the Government of India launched the ANMOL application, an Android-based mHealth tool that replaces old paper-based data with a more efficient digital approach. The ANMOL program enables ANMs to digitally register beneficiaries, monitor pregnancies, manage health data, and make timely referrals. In Madhya Pradesh, the program has been adapted as MPANMOL and connected with the facility module of the RCH portal, allowing CHOs to enter and manage maternal health services data at higher levels of care.

The purpose of this report is to examine the advantages and disadvantages of ANMs and CHOs in Madhya Pradesh using and implementing the ANMOL application. This study intends to find

ways to enhance the functioning of the application and maximize its integration into the state's maternity and child healthcare delivery systems by looking at their experiences. By means of this analysis, the paper will provide significant insights to the current endeavors aimed at augmenting the delivery of digital health services in India, hence ameliorating the health consequences for mothers and children residing in rural communities.

SECTION 2

RATIONALE

As the healthcare environment changes, the incorporation of digital technologies into public health systems is increasingly regarded as a vital aspect in improving service delivery and health outcomes. The ANMOL application is one such innovation targeted at changing the way MCH services are handled and delivered. ANMOL marks a considerable change from traditional paper-based approaches by allowing for digital data entry, real-time monitoring, and streamlined communication, promising increased efficiency and accuracy in healthcare provision. However, the effectiveness of such digital tools is not exclusively determined by their design and functioning; it is also critical to understand how these technologies are accepted and used by frontline healthcare personnel. ANMs and CHOs, who are essential in the implementation of MCH services, are the key users of ANMOL. Their perspectives, difficulties, and experiences with this technology are crucial to its long-term effectiveness and influence.

It's critical to investigate the ways in which ANMs and CHOs engage with the ANMOL application, given the heterogeneity of healthcare settings and the wide range of digital literacy among healthcare personnel. The necessity to evaluate ANMOL's usability and any obstacles to its efficient usage, in addition to its technological efficacy, is what motivated this investigation. Such an assessment is essential for finding implementation gaps, guiding required changes, and guaranteeing that the application actually fulfills user needs.

Furthermore, it is becoming more crucial to comprehend the real-world difficulties experienced by healthcare practitioners as Madhya Pradesh integrates the ANMOL program with the RCH site and customizes MPANMOL. By resolving these issues, the application can be improved to better serve the National Health Mission's objectives and enhance the outcomes for maternal and child health.

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This study will provide evidence-based suggestions for improving the efficacy of the ANMOL application, as well as insightful information about the practical deployment of digital health technologies in a real-world context. In the end, the results will reinforce the overarching goal of strengthening healthcare delivery and improving health outcomes by utilizing digital health advances.

OBJECTIVES

1)To Identify Challenges in Using the ANMOL Application:

Investigate the specific obstacles that ANMs and CHOs face while using the ANMOL application for maternal and child health services. This includes examining technical difficulties, operational challenges, and issues related to the user interface.

2)To Assess the Usability of the ANMOL Application:

Evaluate the usability of the ANMOL application by exploring user experiences, focusing on navigation, ease of data entry, overall user satisfaction, and how these factors impact the effectiveness of healthcare delivery.

3)To Explore the Perceived Benefits of the ANMOL Application:

Analyze the benefits reported by healthcare providers, particularly improvements in data management, service delivery, and the accessibility of maternal and child health services, as facilitated by the ANMOL application.

SECTION 3

RESEARCH METHODOLOGY

Research Design:

This study employs a cross-sectional quantitative approach to examine the challenges and benefits associated with the Anmol application. This design allows for a snapshot of the experiences of ANMs and CHOs currently using the application in Madhya Pradesh.

Sampling Technique:

Convenience sampling was employed to select ANMs and CHOs actively using the Anmol application across various healthcare facilities in Madhya Pradesh. A sample size of 30 ANMs and 30 CHOs was targeted for inclusion in the study.

Data Collection:

Data was collected through a structured questionnaire distributed to ANMs and CHOs. Consent was obtained from all the participants. The questionnaire addressed challenges and benefits related to Anmol application.

Data Analysis:

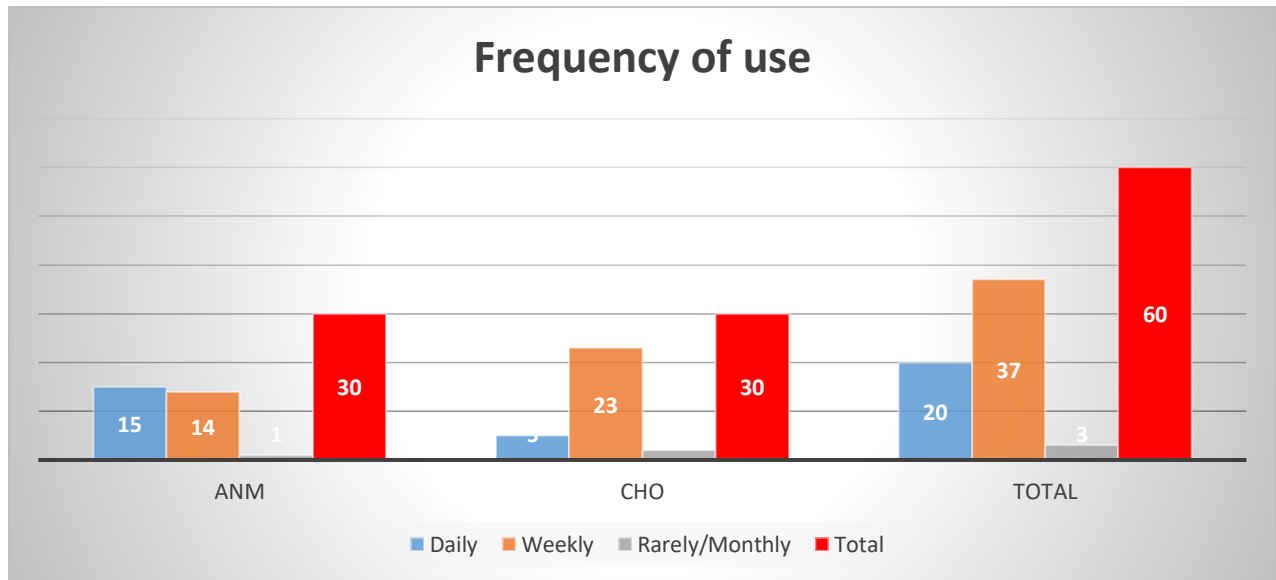
Quantitative data obtained from the questionnaire was analyzed using descriptive statistics to summarize responses and identify trends.

Time Frame:

The study is conducted over a three-month period. This timeframe allows for adequate data collection and analysis while ensuring that the findings are relevant and timely.

SECTION 4
ANALYSIS OF COLLECTED DATA

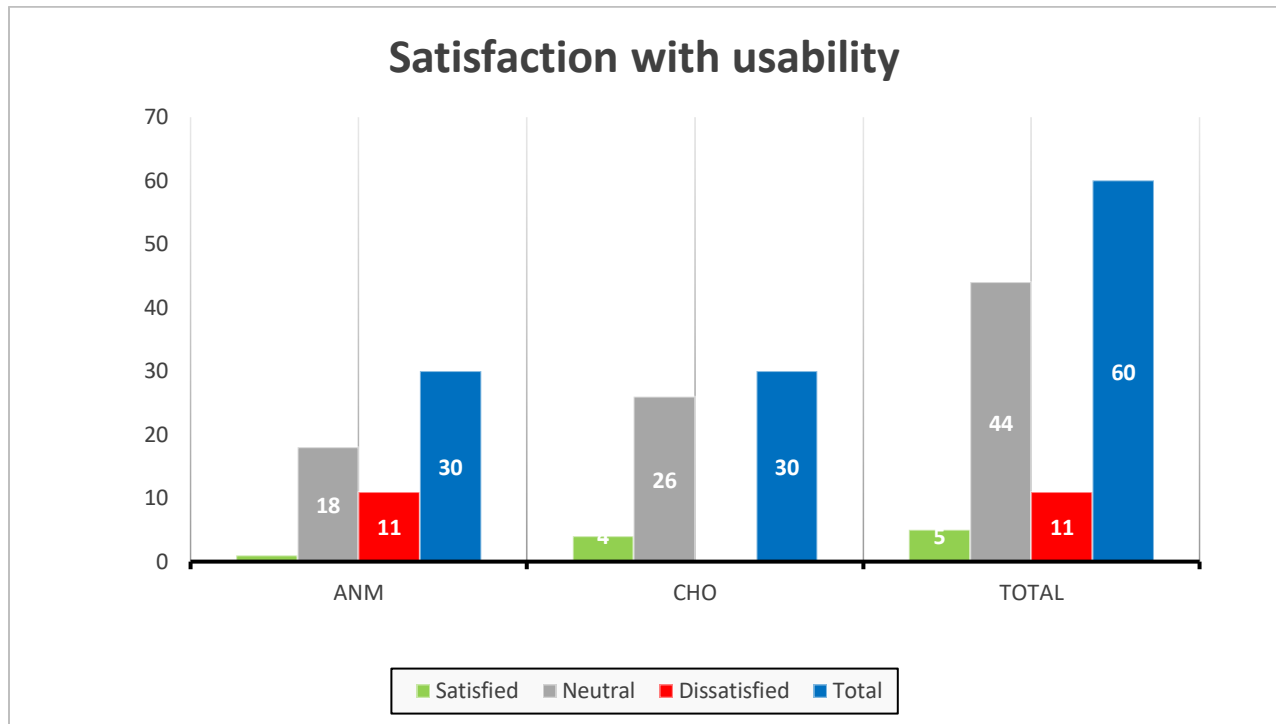
Frequency of use



Interpretation

- ✓ The bar chart shows that ANMs use the ANMOL app on a daily basis, whereas CHOs use it on a weekly basis. Overall, both groups actively utilize the app, although their usage habits differ significantly.
- ✓ Daily Use by ANMS: ANMs who use the ANMOL on a daily basis are more likely to rely on it in their job. This could be attributed to the nature of their duties, which may necessitate more continuous data entry and monitoring.
- ✓ Weekly Use by CHOs: Significant weekly use by CHOs may indicate that their jobs require periodic data entry or app usage, maybe corresponding with specialized reporting or supervisory functions that do not require daily involvement with the app.

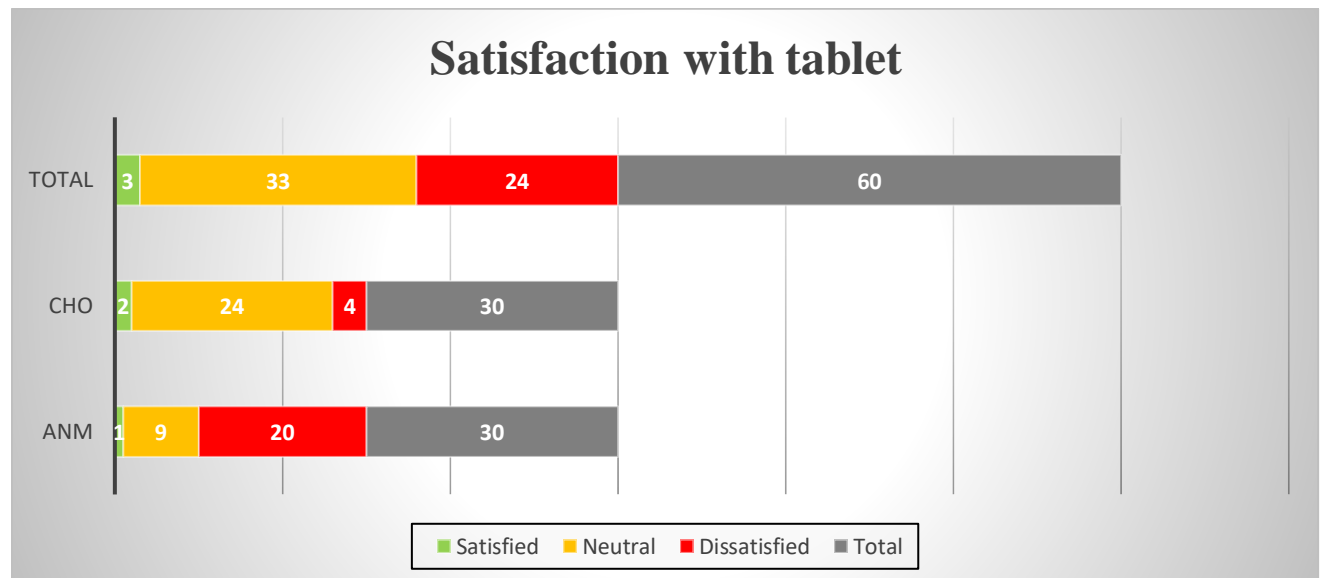
Satisfaction with Usability



Interpretation

- ✓ The ANMOL application's usefulness was found to have varying degrees of satisfaction across CHOs and ANMs. Three levels of satisfaction were assigned to the responses: neutral, dissatisfied, and satisfied.
- ✓ The discrepancy in satisfaction ratings suggests that although CHOs are usually happier with the ANMOL app's use, ANMs have difficulties that lead to a higher percentage of discontent. The fact that neither group gave a definitive answer could indicate that, despite the application's functionality, it is not very user-friendly or does not cater to every user's demands.

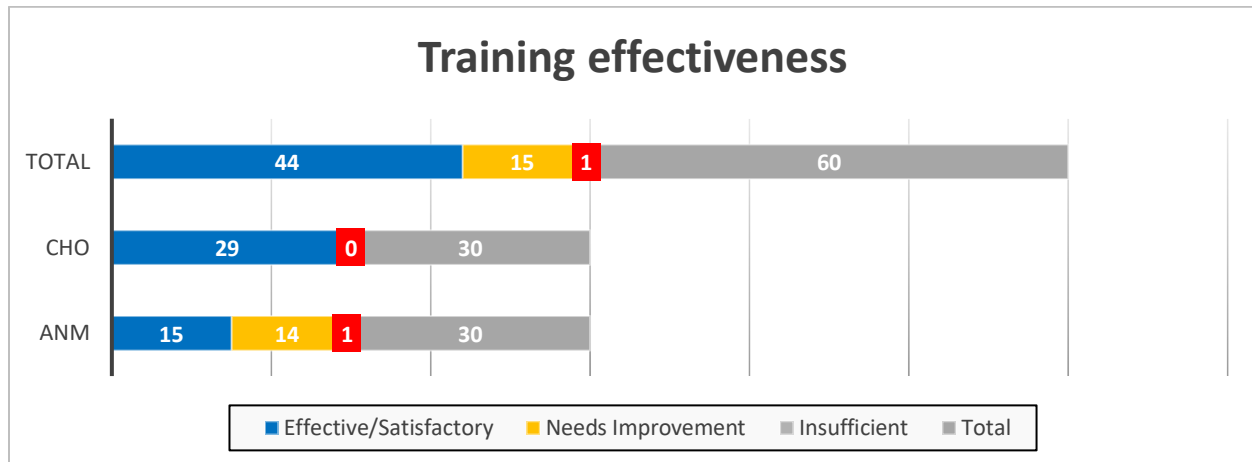
Satisfaction with Tablet



Interpretation

- ✓ The data shows that ANMs and CHOs had significantly different degrees of satisfaction with tablet use. While 66.67% of ANMs are dissatisfied with the tablet, 80% of CHOs had a neutral experience.
- ✓ Only a small fraction of participants from both groups expressed satisfaction with the tablets, indicating potential issues with the devices that might be affecting usability or performance.
- ✓ ANMs' discontent with tablets may stem from problems linked to their profession, training, or device functionality. The CHOs' neutral stance suggests that while they may not be completely satisfied, they aren't facing the same level of challenges as the ANMs.

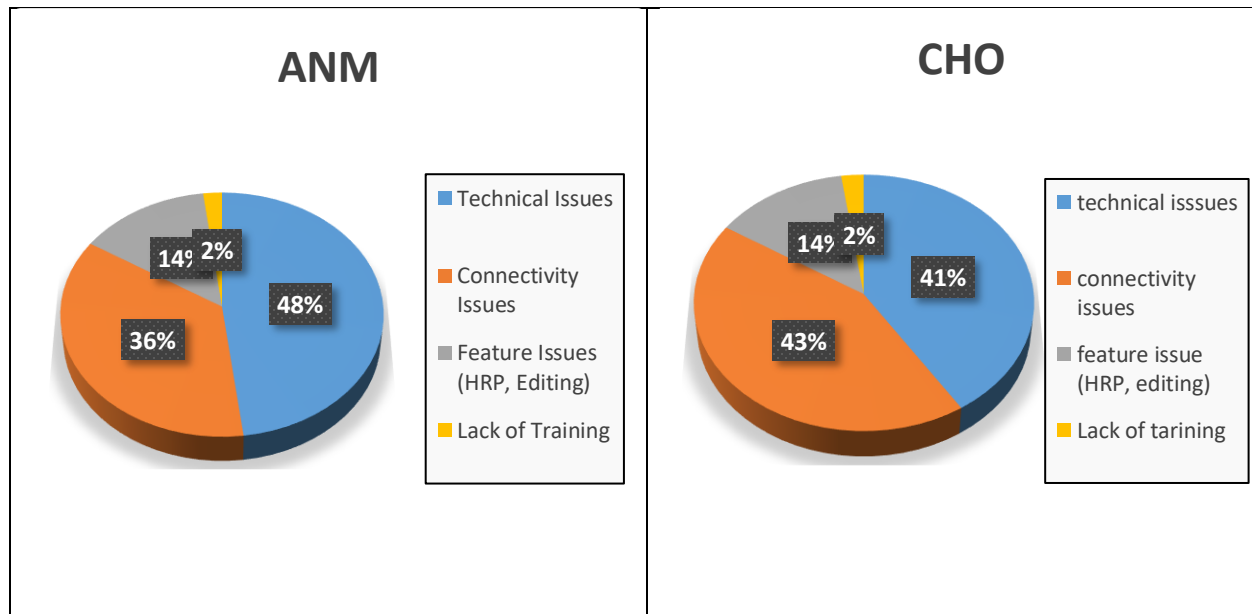
Training Effectiveness



Interpretation

- ✓ The results suggest that a considerable proportion of CHOs (96.67%) thought training was satisfactory or successful, although a lesser proportion of ANMs (50%) shared the same opinion. This discrepancy raises the possibility that CHOs were more prepared or open to receiving training.
- ✓ A significant proportion of ANMs (46.67%) feel that training needs to be improved, suggesting that there may be some gaps in the techniques, training materials, or delivery that haven't adequately addressed their needs.
- ✓ The fact that no CHO expressed the opinion that the training was insufficient, as reported by 3.33% of ANMs, highlights the need for specific improvements to be made to ANM training programs.
- ✓ This discrepancy could be brought about by distinct job functions, past tool-related experience, or specific challenges that ANMs deal with on a daily basis.

Primary Challenges

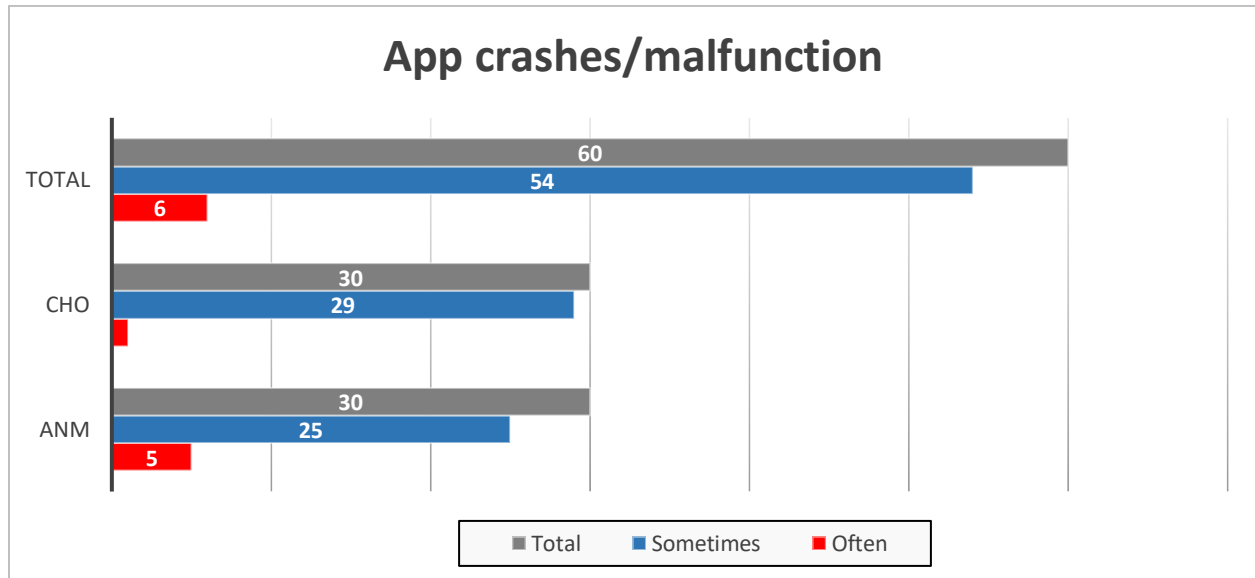


Interpretation

- ✓ **Technical Issues:** Technical concerns were highlighted as a primary challenge by 80% of ANMs and 60% of CHOs respectively. This identifies a substantial area for improvement in the ANMOL application's functionality and user experience.
- ✓ **Connectivity Issues:** 60% of ANMs and 63.33% of CHOs had difficulty with connectivity. Given the reliance on digital technologies, maintaining consistent and reliable connectivity is critical for the application's effectiveness.
- ✓ **Features Problems (HRP, Editing):** Approximately 23.33% of ANMs and 20% of CHOs reported issues with particular features, such as data editing and HRP management. This suggests that although these problems are not as common as technical or network concerns, a considerable number of consumers nonetheless find them to be a substantial hurdle.
- ✓ **Lack of Training:** A small proportion (3.33% for both ANMs and CHOs) mentioned that they had difficulty due to a lack of training. This implies that although most users do not

prioritize training concerns, there can still be a small number of instances in which users feel unprepared to use the program efficiently.

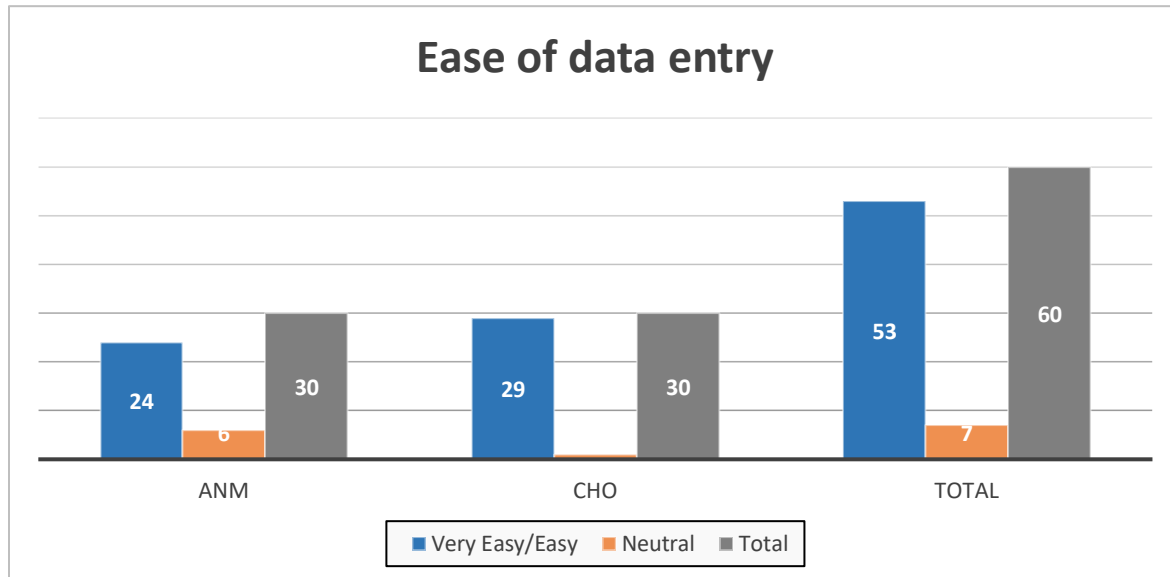
App Crashes / Malfunction



Interpretation

The majority of ANMs and CHOs (90% of total responders) report occasional app breakdowns or malfunctions. This shows that, while the application is typically stable, technical faults occur frequently enough to affect a large number of users. The fact that only a few ANMs reported frequent problems suggests an issue that may be limited to specific devices or settings.

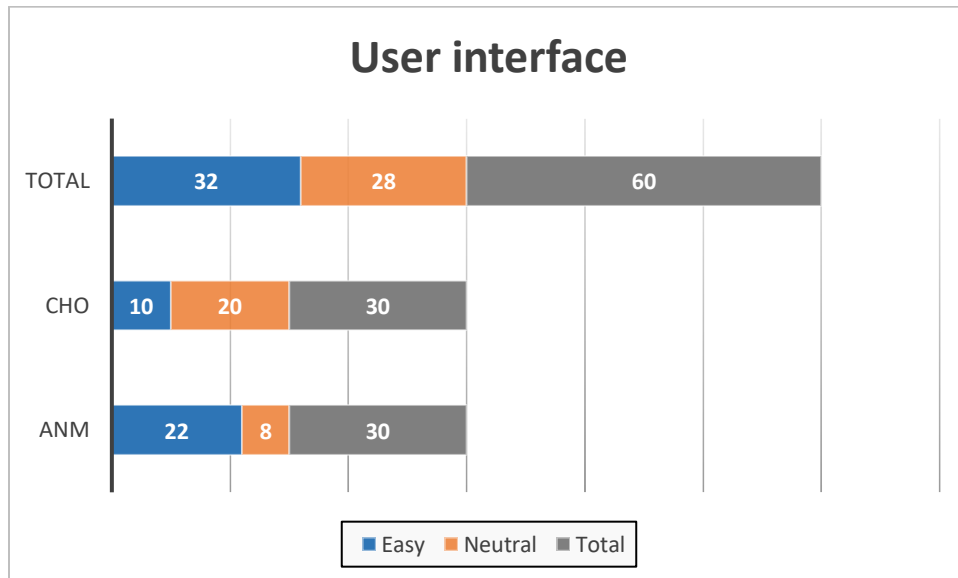
Ease of Data Entry



Interpretation

- ✓ A large proportion of responders, particularly CHOs, regard data entry in the ANMOL program to be very easy or easy.
- ✓ This favorable feedback shows that the program is typically user-friendly when it comes to data entry, which is critical for maintaining consistent and accurate recording.
- ✓ However, the presence of a small number of neutral responders shows that some components of the data entering process could be enhanced, either by more intuitive design or further user training.

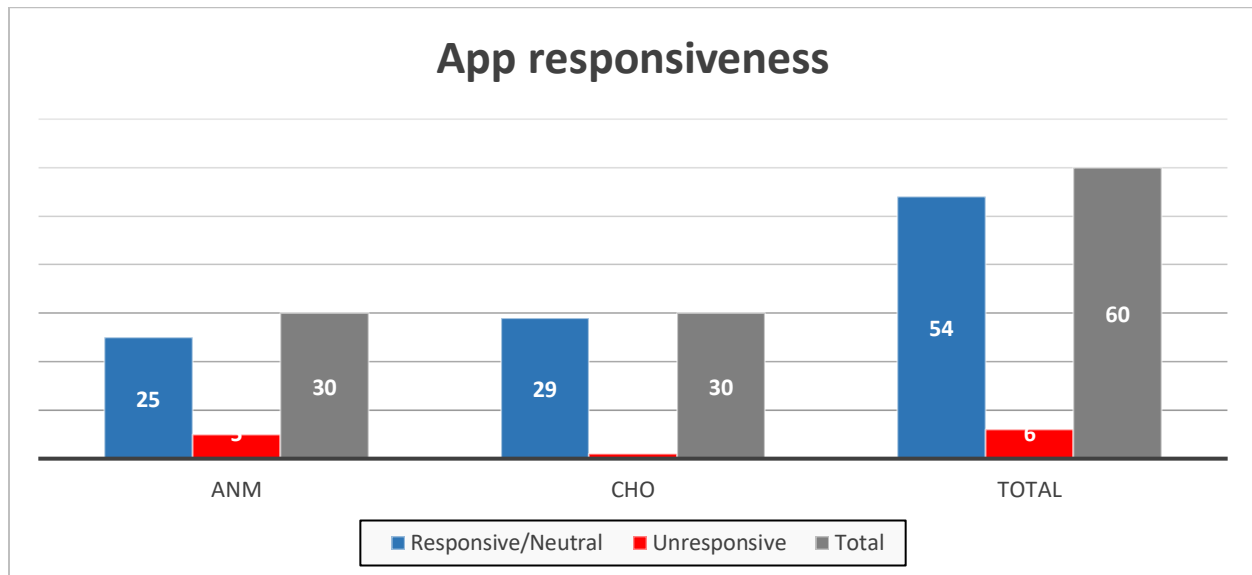
User Interface (Navigation)



Interpretation

- ✓ The majority of ANMs found the user interface easy to navigate, whereas a larger portion of CHOs felt neutral about it.
- ✓ This difference might indicate that CHOs, despite their familiarity with the application, may encounter more challenges in navigation, or they might have higher expectations for user interface design compared to ANMs.
- ✓ The difference in perception suggests that improvements could be made in the application's navigation to make it more intuitive, particularly for CHOs.

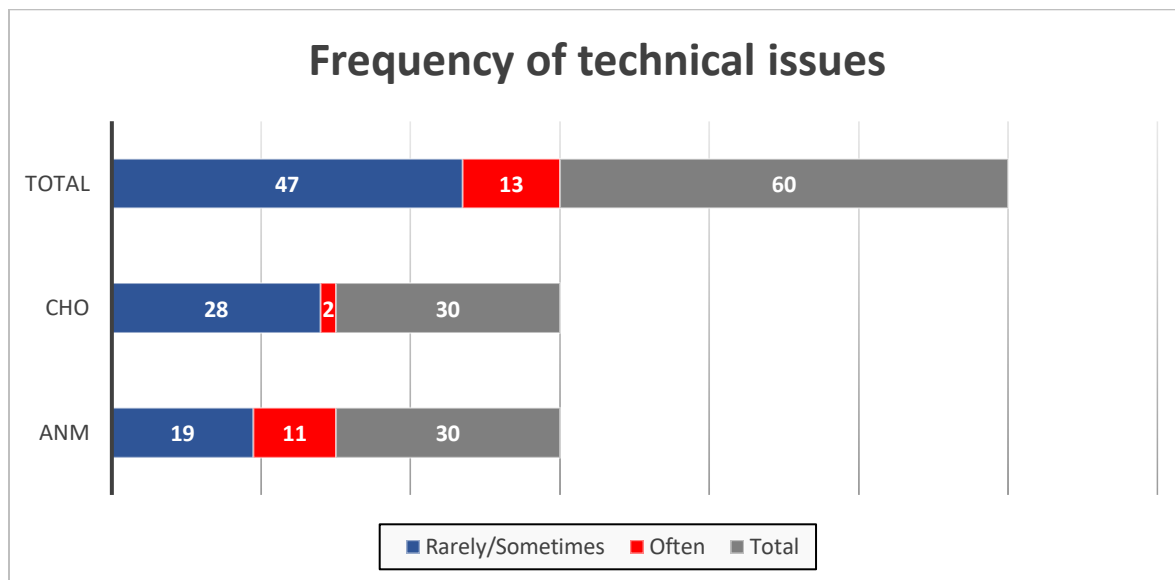
App Responsiveness



Interpretation

- ✓ The vast majority of CHOs and ANMs had either neutral or positive opinions about the responsiveness of the ANMOL application.
- ✓ A tiny portion of ANMs, nonetheless, reported experiencing problems with the application's responsiveness, which may be a sign of occasional issue with performance, perhaps associated with particular circumstances like hardware or network connectivity.
- ✓ The fact that only one CHO described the app as unresponsive raises the possibility that CHOs experience fewer problems because they have better technology, connectivity, or app familiarity.

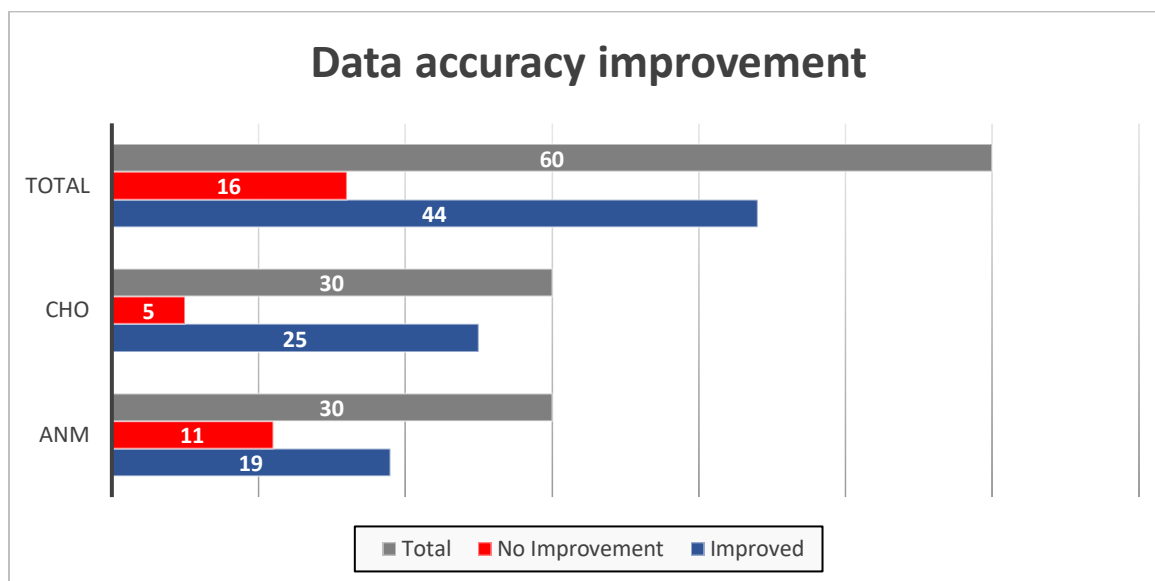
Frequency of Technical Issues



Interpretation

- ✓ The majority of ANMs and CHOs claimed that technical issues with the ANMOL application occur rarely or occasionally, with CHOs reporting fewer issues than ANMs.
- ✓ This disparity could be attributed to variances in the conditions under which people use the app, such as device quality, network reliability, or the specific tasks they complete with the program.
- ✓ The increased frequency of difficulties among ANMs may indicate a need for improved assistance or infrastructure to reduce disruptions.

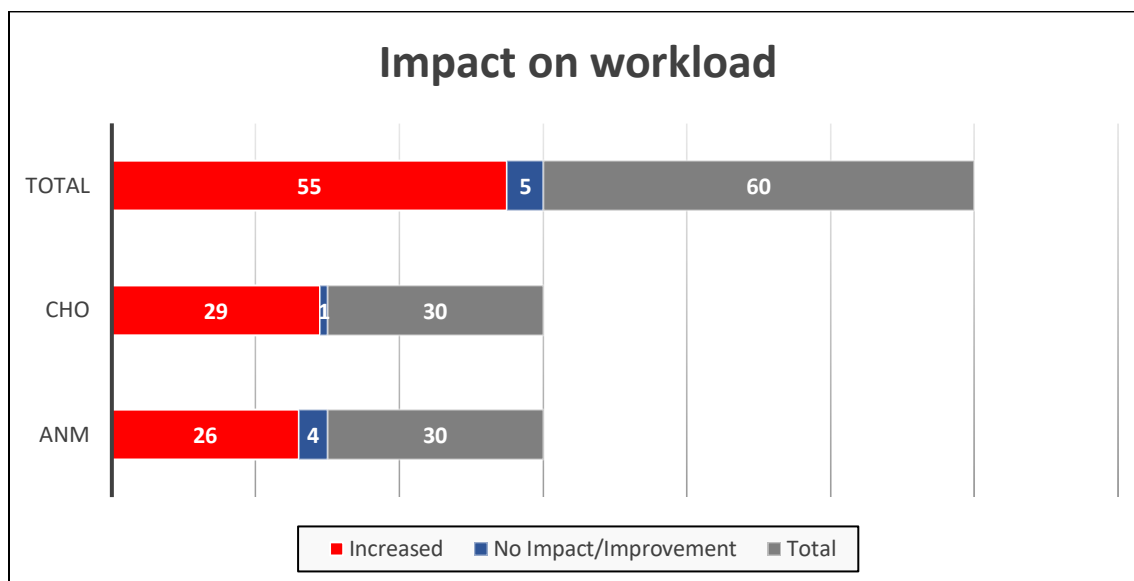
Data Accuracy Improvement



Interpretation

- ✓ The majority of ANMs and CHOs agreed that the ANMOL application enhanced data accuracy.
- ✓ However, CHOs reported a higher percentage of improvements than ANMs. This could indicate that CHOs are either better trained or more skilled at utilizing the application, resulting in more accurate data entry.
- ✓ The significantly greater percentage of ANMs who did not see any improvement could reflect difficulties in adapting to the technology, or issues with data entry methods that require additional development.

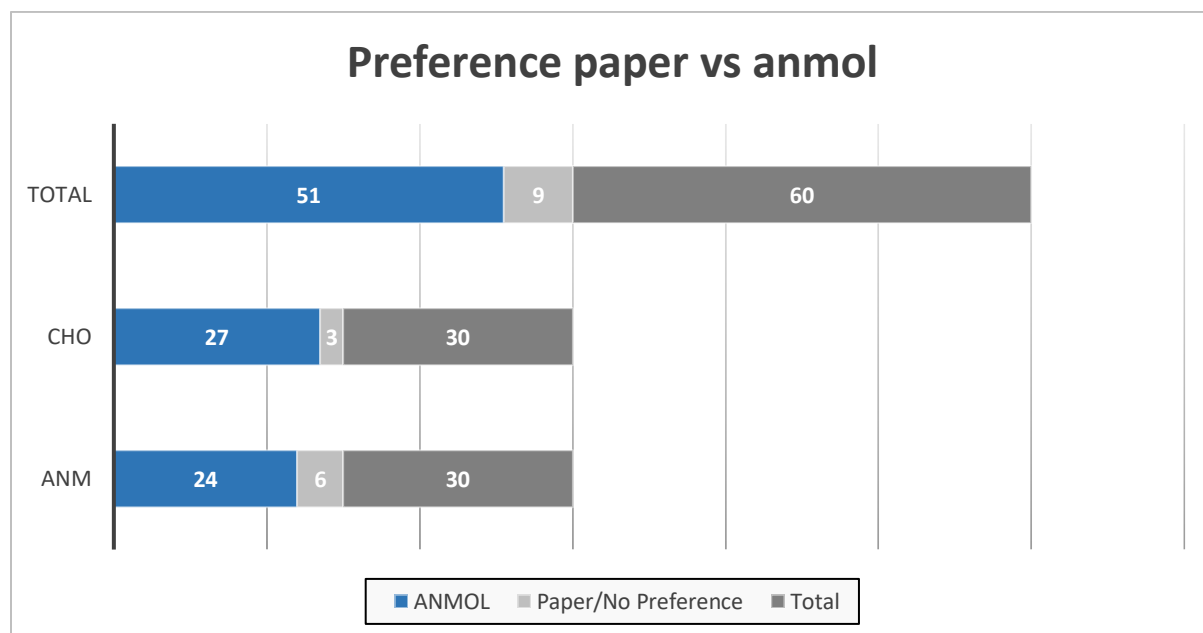
Impact on Workload



Interpretation

- ✓ The workload impact data indicates that employing the ANMOL application has resulted in a notable increase in workload for both ANMs and CHOs.
- ✓ ANMs reported a higher workload 26 out of 30 (86.7%), and CHOs reported a higher workload 29 out of 30 (96.7%).
- ✓ Just a small percentage—four ANMs and one CHO—reported no impact or improvement. The majority of users thought that the application increased their workload, according to the data.
- ✓ This increase might result from having to enter data into both traditional registers and the ANMOL app, which would demand more work and time spent on administrative duties.

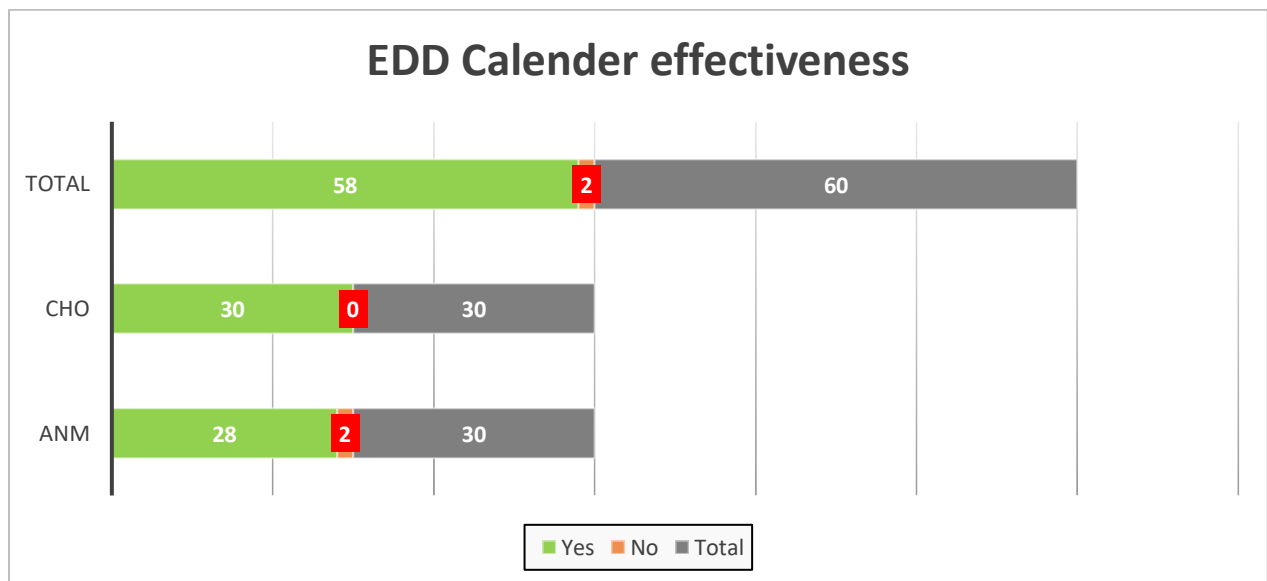
Preference: Paper vs. ANMOL



Interpretation

- ✓ Data on the ANMOL application's preference over conventional paper-based methods shows that ANMs and CHOs both strongly choose the ANMOL app.
- ✓ In particular, the ANMOL app is preferred over paper by 24 out of 30 ANMs (80%) and 27 out of 30 CHOs (90%).
- ✓ Three CHOs and six ANMs, a smaller percentage of responders, said they had no choice or preferred the paper technique.
- ✓ The overwhelming preference for ANMOL implies that users find the digital tool valuable even in the face of obstacles like rising workloads or technical problems.
- ✓ This preference may be influenced by the ease of digital data entry, simpler data retrieval, and possible increases in data accuracy.

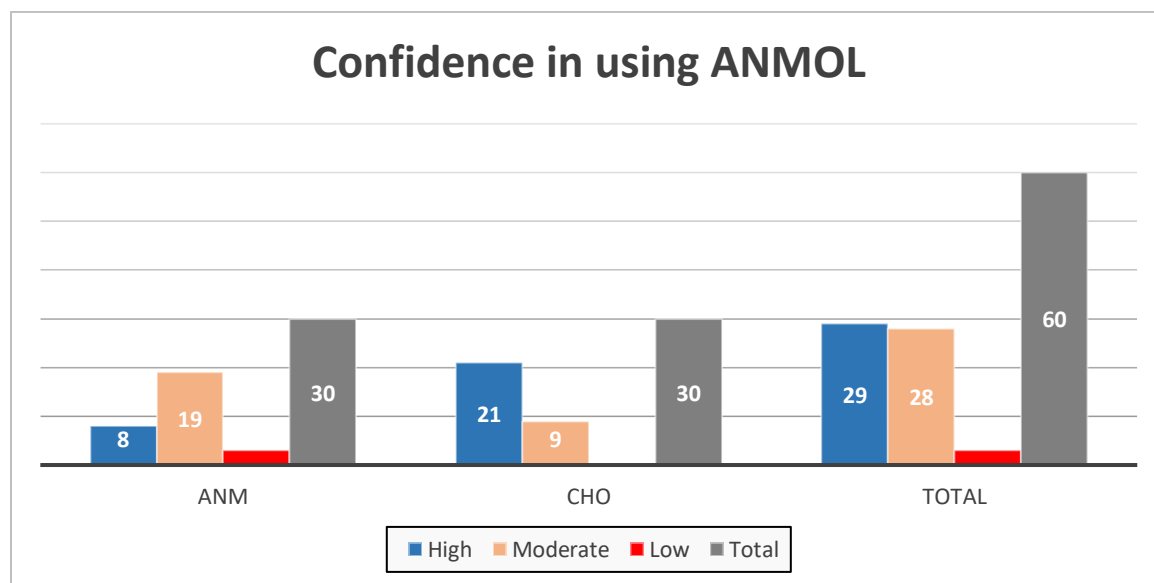
EDD Calendar Effectiveness



Interpretation

- ✓ The data shows that the ANMOL application's EDD calendar has a very high level of effectiveness.
- ✓ The vast majority of respondents said the EDD calendar worked well for them in their employment; this included all 30 CHOs and 28 out of 30 ANMs (93.3%).
- ✓ Out of all ANMs, only two (6.7%) said the calendar wasn't working, and no CHO said the same thing.
- ✓ This implies that users find the EDD calendar to be a useful tool that greatly enhances their capacity to monitor and organize pregnancy-related data.
- ✓ The high approval rate emphasizes how crucial it is to guarantee the prompt and precise delivery of maternal care, which improves planning and interventions.

Confidence in Using ANMOL



Interpretation

- ✓ When it comes to using the ANMOL application, CHOs are often more confident than ANMs, as evidenced by the overall distribution of confidence levels. It's possible that this is due to variations in their employment positions, digital tool familiarity, or training.
- ✓ The moderate level of confidence expressed by numerous ANMs implies that although they can use the program, there might be opportunities for enhancement concerning user support, training, and the application's overall usability.
- ✓ Targeted interventions are necessary to guarantee that all users receive sufficient assistance when using the ANMOL application, as evidenced by the tiny proportion of ANMs that lack confidence.

DISCUSSION

The implementation of the ANMOL application represents a significant leap towards digitalizing maternal and child healthcare services. This discussion integrates the findings from the study to understand the broader implications of using this digital tool, highlighting the challenges, benefits, and areas for improvement.

Divergence in User Experience: ANMs vs. CHOs

One of the most striking findings of this study is the divergence in the experiences between Auxiliary Nurse Midwives and Community Health Officers when using the ANMOL application. CHOs, who generally have higher educational qualifications and more extensive training, reported greater confidence and satisfaction in using the application. This is reflected in their higher usage of ANMOL for data management and service delivery, which they attribute to the application's ability to enhance data accuracy and streamline operations.

On the other hand, ANMs, who are more frequently involved in the daily use of ANMOL, expressed moderate to low confidence. Their challenges include frequent technical issues such as app crashes and connectivity problems, which disrupt their workflow and reduce efficiency. The dissatisfaction with the tablets provided for using the application further exacerbates these challenges. This indicates a disparity in how well the two groups are equipped to handle the digital transition, suggesting that ANMs may require more targeted support to fully benefit from the application.

Technical Challenges: A Barrier to Effective Use

The study reveals that technical challenges are a significant barrier to the effective use of the ANMOL application. Both ANMs and CHOs reported issues such as app crashes, slow responsiveness, and connectivity problems. These challenges not only hinder the smooth operation of the application but also contribute to an increased workload, as healthcare providers often need to revert to traditional paper-based methods when the digital tool fails.

The high frequency of technical issues points to a need for improved technical infrastructure, particularly in the areas where network connectivity may be unstable. Ensuring that the application is robust and can function effectively even in low-resource settings is crucial for its success. Additionally, providing regular updates to the software to fix bugs and improve performance can help decrease some of these technical challenges.

Training Gaps: Addressing the Needs of Frontline Workers

Another crucial area highlighted by the study is the gap in training, particularly for ANMs. While CHOs generally reported satisfaction with the training they received, a significant

proportion of ANMs felt that the training was lacking. This gap in training is likely contributing to the lower confidence levels among ANMs and their higher reported frequency of technical issues.

Effective training is essential for the successful adoption of any digital tool. The study suggests that the training provided for the ANMOL application may need to be more tailored to the specific needs and challenges faced by ANMs. This could include more hands-on sessions, follow-up training to address ongoing issues, and the development of user-friendly training materials that can be easily referenced during daily use. Additionally, peer-to-peer learning and support systems could be established to provide ANMs with ongoing assistance as they continue to use the application.

Workload Implications: Balancing Efficiency with Burden

The introduction of the ANMOL application has had mixed effects on the workload of healthcare providers. While the application has the potential to streamline data management and improve the accuracy of health records, it has also led to an increase in workload for both ANMs and CHOs. This is particularly concerning as it could lead to burnout and decreased job satisfaction among these frontline workers.

The increased workload can be attributed to several factors, including the need to maintain both digital and paper records, the time taken to troubleshoot technical issues, and the additional tasks associated with data entry and management. To address this, it may be necessary to simplify the application's interface, automate more processes within the application, and reduce the duplication of work between digital and paper records. Additionally, increasing staffing levels or reallocating responsibilities could help to distribute the workload more evenly and prevent overburdening individual healthcare providers.

Benefits of ANMOL: A Step Towards Improved Healthcare Delivery

Despite the challenges, the ANMOL application has demonstrated several benefits that contribute to improved healthcare delivery. The majority of CHOs and a significant proportion of ANMs reported that the application has improved data accuracy, which is crucial for monitoring patient outcomes and planning interventions. The application's EDD calendar was particularly well-received, with most users finding it effective for managing pregnancy-related data.

The preference for ANMOL over traditional paper-based methods further highlights the potential of digital tools to enhance healthcare delivery. By reducing the time spent on administrative tasks and improving the accuracy of records, ANMOL can enable healthcare providers to focus more on patient care. However, for these benefits to be fully realized, it is essential to address the technical and training challenges identified in this study.

CONCLUSION

The integration of the ANMOL application into maternal and child healthcare services represents a critical advancement in digital health tools for frontline healthcare workers. This study has illuminated both the strengths and limitations of the application as experienced by Auxiliary Nurse Midwives and Community Health Officers.

The findings highlight the ANMOL application's potential to significantly enhance data accuracy, streamline service delivery, and reduce dependence on paper-based methods, with both ANMs and CHOs expressing a strong preference for the digital platform. However, these benefits are weakened by challenges, including frequent technical issues, inconsistent connectivity, and an increased workload associated with the dual burden of maintaining both digital and paper records. The disparity in confidence and satisfaction levels between ANMs and CHOs underscores the need for more customized training and support, particularly for ANMs, who reported lower satisfaction and greater difficulty with the application.

Moreover, the study emphasizes the importance of addressing the technical and operational barriers that hinder the full utilization of the ANMOL application. Enhancements in training, particularly focusing on the specific needs and challenges faced by ANMs, alongside improvements in infrastructure and device functionality, are critical to maximizing the application's impact.

In conclusion, while the ANMOL application has the potential to transform maternal and child healthcare delivery by improving efficiency, accuracy, and accessibility, realizing this potential fully will require targeted interventions to overcome the identified challenges. By refining the application and its implementation strategy, the ANMOL tool can become a foundation of effective healthcare delivery, leading to improved health outcomes for mothers and children across the communities it serves.

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