

Research Article

Evaluating Experts' Perspectives on Utilizing mHealth for Data Services in HIV Program Implementation in Cameroon

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Abstract

Introduction: The widespread adoption of mobile health (mHealth) technology has become a crucial aspect of healthcare delivery, particularly in regions with limited access to traditional healthcare systems. Cameroon, a Central African nation grappling with a high prevalence of HIV/AIDS, presents a suitable context for mHealth interventions. This study aims to assess expert opinions on the application of mHealth for data services in implementing HIV programs in Cameroon. **Methods:** Employing a mixed-methods approach, we utilized a quantitative cross-sectional design (via a survey questionnaire) and a qualitative design (through in-depth interviews). The purposive sample technique was employed to recruit health specialists from diverse organizations and healthcare facilities across the country. **Results:** Analysis of responses from mHealth experts revealed that 76% held a positive perspective on using mHealth for data services in HIV program implementation in Cameroon, while 24% expressed a negative opinion. Statistical analysis did not reveal a significant association ($p = 0.265$) between qualifications and perspectives on mHealth. Monitoring and Evaluation (M&E) experts exhibited a notable association (94.1%) with positive perspectives on mHealth utilization. In contrast, IT specialists and public health experts demonstrated slightly lower percentages (78.6% and 60%, respectively). **Conclusion:** Experts in mHealth conveyed optimism about using mHealth to provide data services for implementing HIV programs in Cameroon. The study discovered that mHealth users' perceptions were positively correlated with age group and work position. However, there was no discernible relationship between the attitudes of mHealth users and gender or educational attainment.

Keywords

Perspectives, Mobile Health, mHealth Experts, HIV/AIDS, Cameroon

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1. Introduction

mHealth (Mobile Health) technology has developed as an effective tool for healthcare delivery around the world, particularly in nations with limited access to traditional healthcare infrastructure. When it comes to addressing urgent public health issues such as Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS), mHealth is a viable way to close service gaps and improve efforts related to disease management, prevention, and treatment. The Central African nation of Cameroon is among nations with a high HIV/AIDS prevalence, which makes it a prime option for mHealth interventions. According to the Joint United Nations Program on HIV/AIDS (UNAIDS) 2022 estimates, 480,000 people in Cameroon are living with HIV/AIDS [1]. This places the country at the forefront of targeted intervention efforts. Comprehensive data collection, progress tracking, evaluations, and monitoring are crucial for effectively addressing HIV/AIDS. These practices allow for customized interventions and allow for the tracking of population needs over time. Tanue and colleagues in Cameroon found that adopting and utilizing mhealth could improve care delivery for individuals living with HIV and AIDS [2].

Ownership of mobile phones has increased significantly within the country in recent years, which presents an opportunity for innovative medical solutions [3, 4]. Leveraging mHealth initiatives like mobile applications, Short Messages Service (SMS) reminders, and data collection tools could revolutionize HIV program implementation, streamline data management, and ultimately improve the quality of care for individuals living with HIV. Even with the proven benefits of these systems in improving healthcare worldwide, many developing nations continue to use antiquated healthcare systems, which results in problems such as duplicate patient information and time wastage [5]. Similar to most developing countries, Cameroon faces considerable challenges in providing primary healthcare. In this industry, it's critical to understand what motivates experts to use mobile services and modify the offerings to meet those needs. It is therefore interesting to investigate the factors that influence normal and emergency usage habits of mHealth services experts [6]. This hesitation to adopt new technologies may stem from a desire to be up to date on skills and a lack of knowledge of the newest gadgets available in public healthcare [7].

This study aims to evaluate expert perspectives on the utilization of mHealth for data services in HIV program implementation in Cameroon. By gathering insights from experts in the field, this research aims to shed light on the feasibility and effectiveness of mHealth solutions in the context of Cameroon's HIV programs. These insights can inform policymakers, healthcare providers, and stakeholders in the design and implementation of more efficient and patient-centric HIV interventions in the country.

2. Methods

Study Design: The study utilized a mixed-methods approach, integrating both quantitative and qualitative cross-sectional design elements (in-depth interviews and a survey) to obtain perspectives from mHealth specialists regarding the application of mHealth for data services in HIV program implementation in Cameroon.

Sample size: The qualitative study involved six (06) mhealth experts, whereas the quantitative study included 51 mhealth experts, determined through Yamane's formula [8]. Our data collection process followed the theoretical saturation principle, where we contacted all mhealth experts who met our study criteria. The data collectors ceased gathering information once the new data ceased to provide further insights into our research questions.

Participants: To ensure diversity in years of experience and age, in our research, we employed a purposive sampling method in selecting participants from organizations and health facilities who met the inclusion criteria. This method was chosen due to our focus on mHealth expert users within these establishments. We excluded individuals without relevant experience and those who were not present during the data collection period.

Data Analysis: Qualitative data was inputted into MS Excel and subsequently exported to SPSS version 26 for analysis. Questionnaires with less than 85% completion were excluded. Results were presented using frequency tables and graphs. A Fisher exact test was employed to examine the relationships among variables, with a cut-off point of 0.2 for the p-value. In-depth interviews were verbatim transcribed and comprehensive field notes were added as part of the study's qualitative approach. The researchers carefully read and reread the transcripts until they were completely familiar with the content, following the fundamental steps of qualitative data analysis. To create a thorough codebook that all co-authors examined and revised based on the study objectives and highlighted categories, the authors found and coded concepts by going over multiple transcripts. After identifying and coding the themes in a different file, the researcher used a coding sort to analyze and present the data from each code. Then, just the most crucial ideas and interpretations remained from the data. The underlying meaning of the codes was used to identify a theme, and three categories were used. The information surrounding key themes was gathered, and thematic analysis was performed on the translated text. Using both inductive and deductive reasoning, the differences and similarities within codes and categories were highlighted. The themes were coded and identified in a separate file, and the researcher interpreted and displayed the data from each code based on the themes in a coding sort. Data was then condensed to only essential concepts and interpretations. A theme was identified based on the underlying meaning throughout the codes, with three categories and seven sub-categories. To ensure agreement and valida-

tion of findings, the analyzed document was shared among the research group until consensus was achieved. The process of data analysis involved using ATLAS TI software, which carefully matched the codes to the content from the provided responses, resulting in an output with codes and quotations that accurately reflect the study's findings.

To maintain confidentiality, interviewees were assured of complete anonymity. Before the study, participants were provided with comprehensive information regarding the potential benefits to themselves and the community, voluntary participation and withdrawal, the use of audio recorders, data management, and confidentiality. There was no risk involved in participating, and participants gave their verbal consent followed by written consent before the interview. All written and recorded data was securely stored in a locked location, while soft data was protected with a password.

3. Results

Characteristics of study participants: For the quantitative design, a total of 51 participants were enrolled in the study, 38 (74.5%) were males and 13 (25.5%) were females. The participants were divided into three age groups: 21 - 30 years, 31 - 40 years, and above 41 years representing 33.3%, 51.1%, and 15.6% respectively. Regarding academic qualifications of participants, the majority (65%) of respondents were master's degree holders, followed by 18% who were bachelor's degree holders, 12% were medical doctors, and a few of the respondents 6% were Doctor of Philosophy Ph.D. holders. Following the job title/position of the respondents, a majority of 20 (39%) were Program Managers, 17 (33%) were Monitoring and Evaluation (M&E) experts and 14 (28%) were Information Technology (IT) specialists. (Table 1).

Table 1. Socio-demographic Characteristics of the Study Population, (n = 51).

| Characteristic | Category | Frequency No (%) |
|------------------------|---------------------|------------------|
| Age Group | 20 – 30yrs | 17 (33.3) |
| | 31 – 40yrs | 26 (51.0) |
| | Above 41yrs | 08 (15.6) |
| | Total | 51 (100.0) |
| Gender | Male | 38 (74.5) |
| | Female | 13 (25.5) |
| | Total | 51 (100.0) |
| Academic Qualification | Bachelor Degree | 09 (2.4) |
| | Master's Degree | 33 (27.1) |
| | Medical Doctor (MD) | 06 (17.1) |
| | Ph.D. | 03 (53.4) |
| | Totals | 51 (100.0) |
| Job title | M&E | 17 (33.3) |
| | Program Manager | 20 (39.2) |
| | IT Specialist | 14 (27.5) |
| | Total | 51 (100.0) |

For the qualitative design, we had a total of six (06) mhealth experts who were interviewed. Of these six mhealth experts, four (04) were males and two (02) were female. With all of them having 5 years plus of work experience. Going by their level of academic qualification, five (05) were master's degree holders and one (01) had a PhD. Qualification (Table 2).

Table 2. Socio-demographic Characteristics of the Study Population, (n = 06).

| Participant | Gender | M-health Apps Usage Experience | Education |
|-------------|--------|--------------------------------|-----------|
| P1 | Male | 5years | Ph.D. |
| P2 | Female | 5years plus | Masters |
| P3 | Male | 5years | Masters |
| P4 | Female | 5years | Masters |
| P5 | Male | 5years | Masters |
| P6 | Male | 5years | Masters |

Outcome/Main Results: Following the analysis of responses made by mHealth experts, 76% of mHealth experts had positive perspectives towards utilizing mHealth for data services in HIV program implementation in Cameroon, while 24% of

mHealth experts had negative perspectives towards utilizing mHealth for data services in HIV program implementation in Cameroon as illustrated on Figure 1. The overall mean score was found to be 10.90 ± 3.534 with a minimum score of 1pt and

a maximum score of 18 pts.

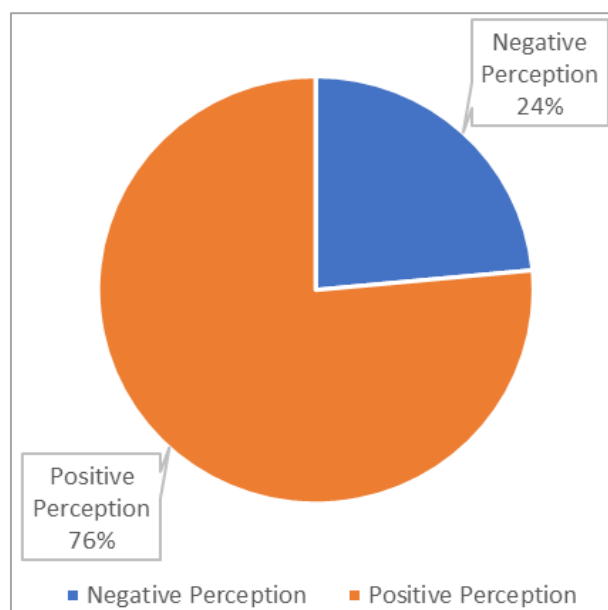


Figure 1. Expert perspectives on the utilization of mHealth in HIV implementation program in Cameroon.

Among survey participants, 90% confirmed their organizations have a history of employing mobile technology for M&E. Regarding current usage, 92% reported either current utilization or plans to use mobile technology for various purposes, including data collection, service provision, and support for M&E systems. In terms of senior leadership support for the integration of mobile technology for data services, a significant 77% of participants affirmed that their senior leadership

is in favor of this endeavor. This suggests that a considerable number of organizations have secured high-level buy-in for the utilization of mobile technology. However, it's noteworthy that 24% of participants disagreed with this assertion, indicating that some organizations may face challenges in gaining full senior leadership support, potentially due to various factors such as perceived risks or resource constraints (Table 3).

Table 3. Acceptability and usage of mobile technology for data services.

| Variables | Responses | Frequency (n) | Percentage (%) |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------|----------------|
| Organizations use mobile technology to support M&E systems? | Yes | 46 | 90.2 |
| | No | 05 | 9.8 |
| Organizations are currently using or intend to use mobile technology to collect data, provide services or support M&E systems in the coming years. | Yes | 47 | 92.2 |
| | No | 04 | 7.8 |
| Senior leadership in organizations are supportive in using mobile technology for M&E systems? | Yes | 39 | 76.5 |
| | No | 12 | 23.5 |

Participant perspectives on the integration of mHealth for data services in HIV program implementation in Cameroon showed that 6% of participants conveyed a degree of uncertainty or hesitancy ('not sure' or 'not very convinced'). This minority response highlights the presence of skepticism or reservations concerning the effectiveness of mHealth in this

context, potentially indicating the need for further investigation and addressing concerns. A significant majority, approximately 73% of respondents, expressed their conviction that adopting mobile technology would lead to more effective M&E systems, implying an expectation of enhanced overall program performance. Approximately 68% were equally

convinced that mHealth integration would result in cost-effectiveness (Figure 2).

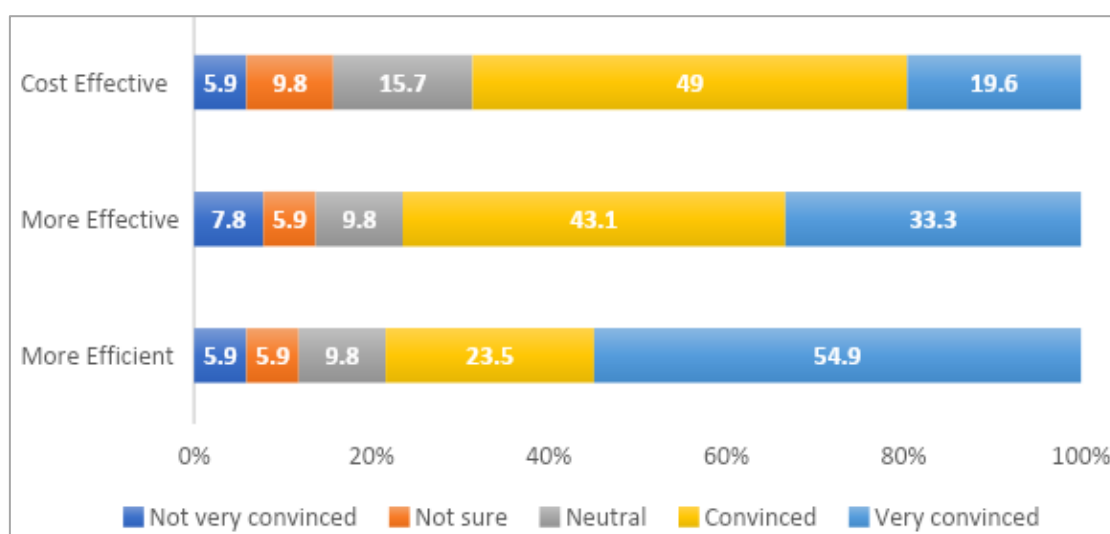


Figure 2. Conviction about the use of Mobile Technology.

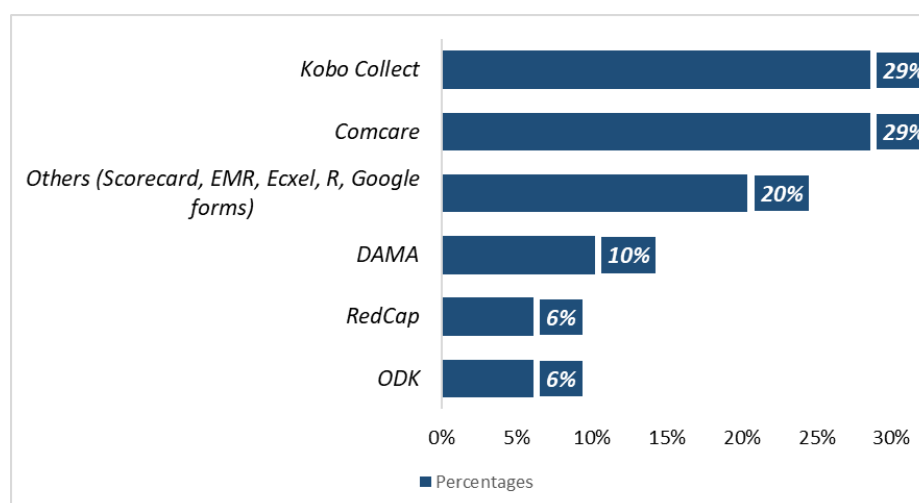


Figure 3. Commonly used applications.

Respondents were queried about their organization's past and current platform/application usage. Kobo Collect (27.5%) and ComCare (27.5%) emerged as the most frequently employed applications in program implementation in Cameroon (Figure 3). Following participants' responses from the qualitative analysis on the current data management and reporting practices on HIV programs in Cameroon, and how mHealth potentially improves these practices, participant P1 sighted that,

“mHealth has enhanced the system for infectious diseases in Cameroon, by improving the quality and coverage of health care, increasing access to health information and services, monitoring and tracking diseases, and supporting public health decision-making and response”.

Participant P2 added that

“At the corporate level, data is managed and reported using the Data for Accountability, Transparency, and Impact (DATIM) and other tools like District Health Information Software 2 (DHIS2) tool. mHealth can potentially improve this provided a good investment is made in the system by deploying the right tools and wells training end users. This will remarkably improve data quality and overall project performance and reporting”.

Furthermore, 47% of the participants highlighted that the frequent integration of mobile technology into their M&E systems contributed to better health outcomes. In contrast, 24% of respondents reported only occasional improvements in health outcomes, suggesting that consistent usage is linked to more significant positive outcomes. In terms of data quality, a majority, precisely 49%, believed that mobile technology very

frequently improved the quality of data. 47.1% of respondents reported that the frequent use of mobile technology frequently enhanced data utilization for decision-making (Figure 4). In qualitative feedback, several participants highlighted the key

advantages of incorporating mHealth technologies into HIV program implementation in Cameroon. Participant P1 sighted the following as key advantages;

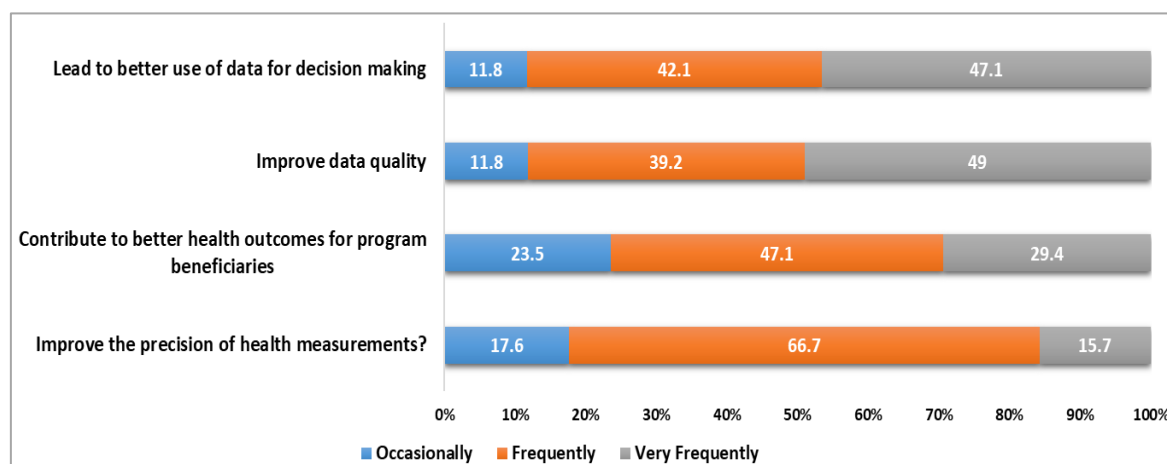


Figure 4. mHealth Contribution to Improving Project Outcomes.

“Optimization of HIV-related data management, Streamlining reporting systems, limiting paper works, Improving the quality and coverage of health care, Increasing access to health information and services, Increasing access to health education, Monitoring and tracking of different HIV program interventions per objectives, Improved health decision-making and response, Synergistic to achieving HIV epidemic control (by 2030)”.

Additionally, Participant P3 also stated:

“Access to readily available data, Availability of safe and secure data so that whenever you need to come back to it, you do not have any trouble finding what you need, another advantage is that it makes reporting easier because whoever is doing the reporting just needs to go to the database and pull out whatever is pulling out and just do one or two

pivot tables and do their reports”.

More than half of the respondents, precisely 57%, expressed that their organizations lack written policies or strategy papers concerning the integration of mobile technology into their systems and practices. A substantial 69% of respondents indicated that their organizations have not conducted any form of formal or informal evaluations of the use of mobile technology in M&E systems. Additionally, more than 27% of respondents considered the risk to be "low," indicating a more optimistic view of mHealth integration. A smaller proportion, 8%, believed there was "no risk at all." These perceptions of risk can influence the approach organizations take in implementing mHealth initiatives, considering potential challenges and benefits (Table 4).

Table 4. Expert perspectives on utilizing mHealth for data services in HIV program Implementation in Cameroon.

| Variables | Responses | Frequency (n) | Percentage (%) | p-value |
|----------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------|----------------|---------|
| Organizations have an overall written policy or strategy paper on the integration of mobile technology into their systems and practice | Yes | 22 | 43.1 | 0.166 |
| | No | 29 | 56.9 | |
| Organizations conduct formal or informal evaluations of the use of mobile technology in M&E systems. | Yes | 16 | 31.4 | <0.001 |
| | No | 35 | 68.6 | |
| My organization perceives the risk of integrating mobile technology into M&E systems. | No Risk | 04 | 7.8 | |
| | Low Risk | 14 | 27.5 | |
| | Medium | 23 | 45.1 | |

The risks identified by the respondents were classified into four primary categories: Data Security and Privacy Risk (30%), which pertains to concerns about sensitive data protection and privacy compliance; Technology Reliability and Accessibility Risk (39%), encompassing issues regarding the dependability

and accessibility of mobile technology for M&E systems; Loss and Theft Risks (22%), related to potential mobile device loss or data theft; and Cloud Storage and Synchronization Risk (9%), involving concerns about utilizing cloud-based storage and data synchronization methods (Figure 5).

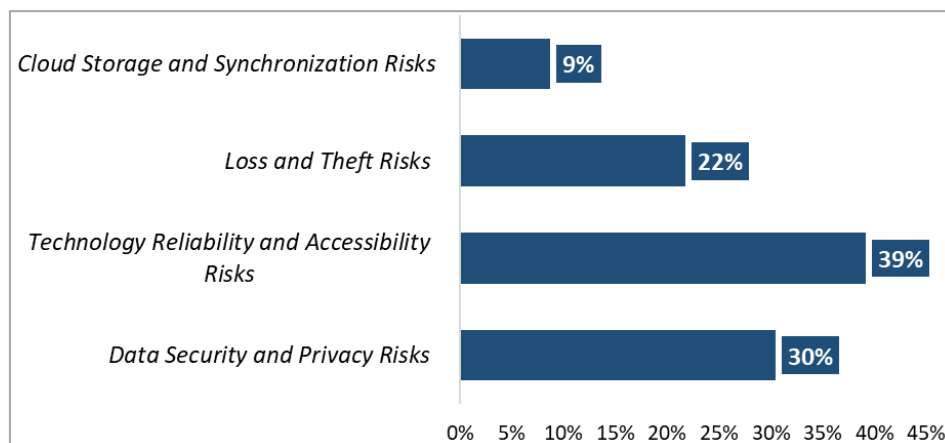


Figure 5. Categories of Risks Faced by Organizations.

Following the qualitative analysis on whether there exist privacy or security concerns associated with collecting and transmitting health data through mHealth solutions in the context of HIV programs in Cameroon and how these concerns can be addressed, participant P1 for instance stated;

“Yes, there are privacy and security concerns associated with collecting and transmitting health data through mHealth solutions in the context of HIV programs in Cameroon, especially in settings where data is being collected without an ethical clearance, or formal authorization from the Ministry of Public Health via the National AIDS Control Committee. Also, in cases with authorization loopholes tampering with the information security of health data (such as uncontrolled access to the data collection tools, password unprotected files/data) can potentially impact the health system negatively”.

“YES. There are privacy and security concerns with using mHealth, as there are currently no policies or frameworks at the national level guiding the integration of digital technology into health. These concerns can be addressed at various levels, including Firstly, the government must establish comprehensive national policies and frameworks specifically tailored to guide the integration of digital technology into the healthcare system. These should encompass data privacy, consent, and secure data handling protocols. Secondly, at the organizational level, healthcare institutions and implementing agencies should conduct thorough risk assessments. Capacity-building initiatives should be prioritized”. (P5)

Among different age groups, we observed a notable trend where experts aged between 31 and 40 years showed a significant inclination (84.6%) towards positive perspectives on the use of mHealth in this context. This suggests that individuals in this age group might be more receptive to the benefits and potential of mHealth technologies. Experts aged between 21 and 30 years also exhibited a significant proportion (64.7%) of positive views. Concerning gender, males were more associated with positive perspectives (81.6%) on the utilization of mHealth for data services in HIV program implementation in Cameroon. However, it's important to note that the statistical analysis did not reveal a significant association ($p = 0.254$). This might suggest that gender has a limited influence on the perception of mHealth in this specific domain. mHealth experts with a PhD qualification displayed an overwhelming 100% positive inclination towards mHealth utilization. They were followed by experts with master's qualifications (81.8%) and those with bachelor's qualifications (66.7%). However, it's worth mentioning that the statistical analysis did not identify a significant association ($p = 0.265$) between qualifications and perspectives on mHealth. In the context of job titles or positions, it was observed that Monitoring and Evaluation (M&E) experts were notably associated (94.1%) with positive perspectives regarding mHealth utilization in HIV program implementation in Cameroon. In contrast, IT specialists and public health experts demonstrated slightly lower percentages (78.6% and 60.0%, respectively) (Table 5).

Table 5. Association of Expert perspectives on utilizing mHealth for data services with Socio-demographic factors.

| Variable | Total number | | | f | p-value |
|----------------------|----------------|-----------------------------|-----------------------------|-------|---------|
| | Present No (%) | Positive Perspective No (%) | Negative Perspective No (%) | | |
| Age group (years) | | | | | |
| 21 - 30 | 17 (33.3) | 11 (64.7) | 06 (35.3) | 4.626 | 0.152 |
| 31 - 40 | 26 (51.0) | 22 (84.6) | 04 (15.4) | | |
| 41 - 50 | 04 (7.8) | 02 (50.0) | 02 (50.0) | | |
| Above 50 | 04 (7.8) | 00 (00.0) | 04 (100.0) | | |
| Total | 51 (100.0) | 35 (68.6) | 16 (31.3) | | |
| Gender | | | | | |
| Male | 38 (74.5) | 31 (81.6) | 07 (18.4) | 2.162 | 0.254 |
| Female | 13 (25.5) | 08 (61.5) | 05 (38.5) | | |
| Total | 51 (100.0) | 39 (68.6) | 12 (23.5) | | |
| Educational level | | | | | |
| Bachelor | 09 (17.6) | 06 (66.7) | 03 (33.3) | 3.872 | 0.265 |
| Masters | 33 (64.7) | 27 (81.8) | 06 (18.2) | | |
| Medical Doctor | 06 (11.7) | 03 (50.0) | 03 (50.0) | | |
| Ph.D | 03 (5.9) | 03 (100.0) | 00 (0.0) | | |
| Total | 51 (100.0) | 39 (68.6) | 12 (23.5) | | |
| Job title/Position | | | | | |
| M & E expert | 17 (33.3) | 16 (94.1) | 1 (5.9) | 5.851 | 0.050 |
| Public Health expert | 20 (39.2) | 12 (60.0) | 08 (40.0) | | |
| IT specialist | 14 (27.4) | 11 (78.6) | 03 (21.4) | | |
| Total | 51 (100.0) | 39 (76.4) | 12 (23.5) | | |

f = Fisher Exact test statistics

4. Discussion

The adoption of mobile health solutions can face opposition from various stakeholders, including end users and experts. Such resistance can hinder the acceptance of mHealth solutions. Therefore, it is crucial to assess experts' initial perceptions and devise an effective implementation strategy. Previous research indicates that perceived relevance can drive actual adoption behavior upon implementation of the new system. It can thus be argued that experts' positive first impressions of the application will pave the way toward a successful implementation of mHealth in HIV programs in Cameroon. The overall results of this study are similar to a study carried out by Ndibuagu in Enugu state, Nigeria. Ndibuagu observed a strong and positive perception among experts, specifically primary healthcare workers, regarding the implementation of

mHealth technologies [9].

Mobile technology is becoming a crucial aspect of the monitoring and evaluation (M&E) systems utilized by organizations today. According to the results from this study, over 90% of the experts confirmed that their organization(s) have had a history of integrating mobile technology into their M&E system. Because of its convenience and efficiency, mHealth has consistently been included in projects across the world [10, 11]. mHealth experts expressed the view that mHealth implementation could generate many benefits in HIV programs in Cameroon, with a majority (>55%) saying its implementation would make HIV program implementation in Cameroon more effective, more efficient, and cost-effective. Many organizations (92%) are currently utilizing or planning to leverage mobile technology to collect data, provide services, or support monitoring and evaluation (M&E) systems in the upcoming years. In addition, participants opined that their

organizations use mobile technology to support M&E systems, and senior leadership in their organizations is supportive of using mobile technology for M&E systems. This adds further empirical support for the benefits of health technologies highlighted by previous researchers [12]. Furthermore, more than three-quarters (87%) of respondents reported that the use of mobile technology frequently enhanced data utilization for decision-making. This demonstrates the potential for mobile technology to not only improve data quality but also facilitate its effective utilization in making informed and timely decisions, which is essential in public health and M&E practices. These findings are in line with results from a study by Ogundaini in South Africa where he established that the use of mobile phones provides an opportunity for physicians and nurses to capture quality data digitally, thereby reducing the amount of time and paper used manually, and as well as improve timely decision-making [13]. Although quantitative analysis revealed that most organizations are rapidly incorporating mobile technology in their operations, there is still a need for more work to be done to ensure the transitions from the paper-based format of data capture to an electronic method of data capture and processing most especially at the level of the health facilities.

Most of the experts noted a significant improvement in the precision of health measurements due to frequent mobile technology use in their organizations. This indicates that the consistent use of mobile technology in M&E systems can positively impact the reliability and accuracy of data collected. In contrast, only 17% reported occasional improvement, underscoring the importance of consistent mobile technology usage in enhancing health measurement precision. As such, optimal results in M&E systems for healthcare organizations require effective and consistent mobile technology use. In today's rapidly advancing technological landscape, many organizations recognize the vast potential of mobile technology to enhance their productivity, efficiency, and profitability. However, according to our study, a majority (56.9%) reported that their organization has yet to develop a comprehensive written policy or strategy outlining the specific steps necessary for seamless integration of mobile technology into their systems and practices. This aligns with work done by Nyirenda who reveals that organizations especially in Africa are reluctant to write policies for integration of mobile technology into their system, with some of the reasons being that internet and mobile phone penetration in Africa is yet to reach its peak [14]. Such a policy should take into consideration the unique needs, goals, and objectives of the organization, as well as current trends, best practices, and industry standards in mobile technology integration. Our findings revealed that a significant proportion (68.6%) of organizations engaged in monitoring and evaluation (M&E) are not formally or informally evaluating the use of mobile technology in their M&E systems. This finding however does not align with work done by Njiiri in Nairobi Kenya who in his

systematic review highlighted the importance of evaluating the use of mobile technology in organizational M&E systems and its effect if this is not done [15]. These results are surprising given the growing availability and usage of mobile devices and applications for data collection, analysis, and dissemination. The lack of evaluation may be due to various reasons such as limited resources, lack of technical expertise, or perceived difficulties in integrating mobile technology into existing M&E frameworks. Nevertheless, considering the potential benefits of mobile technology in M&E, including enhanced data quality, timeliness, and accessibility, organizations should explore and evaluate the use of mobile technology in their M&E systems. The implementation of mHealth solutions in HIV programs in Cameroon has raised concerns regarding the privacy and security of health data. Technical threats such as loss and theft risks, reliability and accessibility risks, and data security and privacy risks were identified, which could potentially impede the success of mHealth implementation. However, by addressing these concerns through mitigation strategies and educating end-users, perceived barriers can be decreased, increasing the likelihood of successful adoption. Quantitative analysis conducted on health experts confirmed the need to address privacy/security risks, as well as reliability and accessibility risks. These findings were supported by qualitative content analysis, affirming the importance of addressing privacy and security concerns in the implementation of mHealth solutions in developing countries [16, 17].

5. Conclusion

This research study discusses the perceptions of mhealth experts toward mHealth utilization in HIV program implementation in Cameroon. mHealth experts had positive perspectives towards utilizing mHealth for data services in HIV program implementation in Cameroon. There is a positive correlation between age group and job title with mHealth users' perception. The integration of mobile technology into M&E systems in health programs requires a holistic approach encompassing various critical factors, including technological infrastructure, financial sustainability, privacy, stakeholder engagement, and policies. User knowledge and training are pivotal to effectively utilizing mobile technology for data collection and evaluation. Ensuring that healthcare systems are equipped to leverage mobile technology effectively is essential for improving the quality of service provision and achieving better health outcomes.

What Is Already Known on This Topic

mHealth applications facilitate real-time data collection and reporting, enabling healthcare providers to monitor and evaluate HIV program implementation in Cameroon.

Mobile-based systems have helped monitor HIV-related indicators, such as viral load, CD4 counts, and disease progression. Such data are transmitted securely to healthcare facilities, allowing for remote monitoring and timely interventions.

mHealth tools support healthcare workers by providing access to clinical guidelines, treatment protocols, and decision support systems.

What This Study Adds

This research study evaluates mhealth experts' perspectives on HIV program implementation in Cameroon.

The study identifies factors that may influence experts' perspectives on HIV program implementation in Cameroon.

Abbreviations

AIDS: Acquired Immunodeficiency Syndrome
 DATIM: Data for Accountability, Transparency, and Impact
 DHIS2: District Health Information Software 2
 HIV: Human Immune Virus
 IT: Information Technology
 mHealth: Mobile Health
 MS Excel: Microsoft Excel
 M&E: Monitoring and Evaluation
 Ph.D: Doctor of Philosophy
 SMS: Short Message Services
 SPSS: Statistical Package for Social Sciences
 UNAIDS: United Nations Joint Program on HIV/AIDS
 WHO: World Health Organization

Author Contributions

Frankline Sanyuy Nsai: Conceptualization, Resources, Data curation, Software, Formal Analysis, Supervision, Funding acquisition, Validation, Investigation, Visualization, Methodology, Writing – original draft, Project administration, Writing – review & editing.

Palle John Ngunde: Methodology, Writing – review & editing.

Anna Longdoh Njunda: Writing – review & editing.

Nicholas Tendongfor: Methodology, Writing – review & editing.

Arrey Emmanuel Besong: Data curation, Methodology, Writing – review & editing.

Omer Njajou: Conceptualization, Supervision, Methodology, Writing – review & editing.

Conflicts of Interests

The authors declare no conflicts of interest.

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