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ORIGINAL RESEARCH

Willingness to use digital application to increase awareness and enhance uptake of family planning services amongst women of reproductive age in Zambia

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ABSTRACT

Introduction: Despite progress over the last decade, uptake of family planning services remains a challenge in Zambia. Interventions delivered by mobile phone could help increase uptake and continuation of contraception, particularly among hard-to-reach populations. The aim of this study was to investigate willingness of women of reproductive age to using a mobile based application to improve uptake to family planning services in selected communities of Zambia.

Methods: A cross-sectional study was conducted in two selected communities of Mumbwa district between October-November 2021. Community Health Volunteers were responsible for mapping households within the catchment areas and administering survey questionnaires. Descriptive statistics were calculated for dichotomous and categorical variables. To assess associations between categorical variables, Chi-square tests were performed. All data analyses were carried out using STATA version 14.2.

Results: A total of 449 participants were surveyed, from Bulungu Urban Health Centre (UHC) and Najanjoli Rural Health Centre (RHC). Most participants were between 15 and 24 years (42.54%). Only 2.46% of participants reported no formal education, with the majority having attained a secondary school level of education (52.13%). Half of households (51.70%) possessed phones, among which only 30% (126/440) were smartphones. Furthermore, 83.41% (367/450) were willing to receive family planning messages via phones. A much higher proportion of unemployed participants (73.02%; P<005), those who accessed services from Bulungu UHC (60.33%: p<005) and married women (83.65%: p<005) were willing to receive planning messages on phones.

Conclusion: This study demonstrates strong willingness to use digital application to increase awareness and enhance uptake of family planning services amongst women of reproductive age in rural settings of Zambia. These findings support the feasibility of implementing digital/phone-based strategies in community health systems to increase access to health care. Further research is needed to design and evaluate scalable mobile health solutions tailored to the local context.

Keywords: Willingness, family planning, phone-based interventions, Zambia.

Abstract in Español at the end of the article

INTRODUCTION

Contraception stands as a pivotal global public health intervention, vital for enhancing maternal health, preventing unplanned pregnancies, reducing unsafe abortions, and curbing maternal mortality rates [1, 2]. According to a 2021 study, approximately 1.2 billion women worldwide had a need for contraception, with 163 million of them not currently using any method, indicating a significant gap between demand and use [3]. Sub-Saharan Africa (SSA) still exhibits low rates of contraceptive uptake [2, 4, 5].

In Zambia, access to modern contraceptives among married women has shown a consistent upward trend, rising from 9% in 1992 to 53% in 202024 [6]. This significant increase can be attributed to the dedicated efforts of the Zambian government, supported by organizations such as the United Nations Population Fund (UNFPA) and other stakeholders, who have invested substantial resources into family planning initiatives [7]. Additionally, in 2012, the government launched a multi-sectoral integrated Family Planning (FP) scale-up program, reaffirming its commitment to implement the resolutions of the London 2012 FP summit. However, there are significant urban-rural differences in accessing health services for contraceptives, especially in rural areas with high teenage pregnancy contributing to 71% of teenage pregnancy compared to 29% of urban adolescents in 2018 [8-10].

One of the key challenges to uptake of contraceptive and family planning services is communication barrier which often leads to misinformation on potential side effects, various methods to enhance use and choice [11]. A recent study used demographic and health survey data reported high prevalence of unmet need for family planning in Zambia at 20%, especially amongst women aged 25–34 and 35–49 compared with those aged 15–24 years. The study found age and exposure to media-based family planning messages were significantly associated with unmet need for family planning among married women [12]. Thus, improving access to information to family planning messages among women at household level can help address some of these barriers and reduce unmet need for family planning in Zambia.

Zambia has made significant strides in digital transformation, with widespread mobile connectivity and government commitment to digital initiatives. However, challenges such as geographic and gender-based disparities in digital access, as well as deficiencies in digital literacy, persist [13]. The World Health Organization [14] has recognized the potential of digital health in advancing national healthcare objectives, leading to the development of a Digital Health Strategy in Zambia. Such strategic investments in healthcare have the potential to enhance service delivery, support research and education, and yield substantial dividends for Zambia's healthcare system.

Mobile health (mHealth) is increasingly vital for improving maternal, neonatal and child health globally [15]. By providing targeted client communication through mobile phones, women can access crucial healthcare information, potentially increasing the adoption of family planning services and improving health outcomes [16]. Systematic reviews have shown that mHealth interventions can enhance family planning service uptake, retention in care, adherence to treatment, and utilization of facility-based services, particularly in low- and middle-income countries [16-18]. However, as noted in one review in Africa, the success of these interventions depends on addressing barriers like poor connectivity, lack of phones, and lack of stakeholder engagement. But when these are overcome, mHealth can empower CHWs to deliver more effective and personalized family planning services, ultimately strengthening community health systems and improving reproductive health outcomes [19]. Studies investigating willingness of women to use digital applications are limited in Zambia. This study aimed to understand whether women are willing to listen to family planning messages in local dialects from their mobile phones in selected rural district in Zambia.

METHODS

Study design, setting and target population

Between October and November 2021, we employed a cross-sectional study design in Mumbwa district, located in the Central province of Zambia. Mumbwa district was purposefully selected based on Ministry of Health's recommendation in addition to its rural setting and challenges to accessing care. Within this district, two catchment areas where the following health facilities, Bulungu urban clinic and Najanjoli Rural Health Centre are located, were purposively selected due to their high catchment population. The population of Mumbwa as of 2022 was 332,237 of which 167,134 were females [20]. The research participants in this study were pregnant women aged between 15 and 49 years. Including women aged 15 years and above in this study is crucial due to the recognition that adolescence (15-19 years) marks a significant transitional period into reproductive age. Adolescent girls are more vulnerable to sexual and reproductive health (SRH) issues, including early pregnancies, which carry higher health risks compared to older age groups [21]. By capturing this age group, the study aims to address critical SRH challenges and provide insights necessary for designing targeted interventions that can help mitigate the adverse outcomes associated with adolescent pregnancies. This inclusiveness aligns with global health strategies emphasizing the need to improve adolescent reproductive health services to reduce maternal and child mortality [22].

Sample size

The sample size for this study was determined based on standard statistical considerations aimed at ensuring the reliability and validity of the results. A conservative estimated proportion of 0.50 was used, representing

maximum variability and ensuring the largest required sample size in the absence of specific prior data on the target outcome. The calculation was conducted at a 95% confidence level with a 5% margin of error, offering a high degree of precision in estimating the true proportion of women willing to use digital applications for family planning services.To compensate for potential nonresponses and incomplete data, the initially calculated sample size was inflated by 10%, resulting in a final required sample of approximately 420 participants. This approach provided a statistically sound foundation for the study's objectives while accommodating practical considerations such as response rates and variability in participant engagement.

Recruitment of participants

To identify eligible participants, community health volunteers assisted in mapping out households within the catchment area, focusing on women of reproductive age. In cases where more than one eligible participant was found in a household both members were interviewed if they each provided consent. A convenient sampling method was employed.

Data collection

Data collection was carried out using a phone-based questionnaire. The survey was administered by trained data collectors. A google form containing 47 questions was used to develop and refine questions and later a phone survey to capture responses from participants. These questions were not based on a Likert scale but included a mix of response types, such as yes/no and other question formats. The survey also explored phone coverage in the area to assess mobile phone accessibility for family planning messages. Regarding the socio-demographic characteristics, the survey included questions on age, marital status, education level, and employment status, among others. The socio-behavioral factors examined included family planning awareness and mobile phone use to assess participants' willingness to engage with family planning messages via mobile phones. The survey took approximately 30 minutes to complete, considering the number of questions.

To ensure clarity and validity, the survey was pretested in 15 participants. The data collection was done through pragmatic sampling in the community, where households with no eligible participants were skipped, and the next eligible household was visited. The socio-behavioral questions were adapted from Nkangu et al [23] and was pretested on 15 participants for clarity and context validation.

Data analysis

Descriptive statistics were computed using frequencies and percentages for dichotomous and categorical variables. A Chi-square test was used to explore associations between categorical variables, with a significance level set at 0.05 to determine statistically significant relationships. For dichotomous variables, such as having access to phones and willingness to listen to family planning messages via phone, a rank sum test was applied to assess associations with continuous variables. In cases where expected values in contingency tables were less than five, Fisher's exact test was used as an alternative to the Chi-square test.

Regarding missing data, missing values in the analysis were not a concern as Stata uses complete case analysis, which automatically excludes incomplete cases. All responses were analyzed, and there was no missing data in the final dataset used for the analysis. If any categories were merged, for example, the "unemployed" category included not only individuals without formal employment but also housewives and students, this was clearly noted in the analysis section. Similarly, if any counts were collapsed or coded to generate binary outcomes for the Chi-square analysis, such changes were explained in the methodology. The study was approved by the University of Zambia Biomedical Research Ethics Committee (UNZABREC), reference number 2345-2022, and the National Health Research Authority (NHRA).

RESULTS

Baseline characteristics of the participants

Table 1 presents the characteristics of the participants. A total of 449 participants were surveyed, drawn from Bulungu Urban Health Centre (UHC) and Najanjoli Rural Health Centre (RHC). Most participants fell within the 15 to 24 age range, constituting 42.54% (191/449), while the minority were aged 35 to 49, accounting for 19.15% (86/449) of the sample. Regarding pregnancy history, most participants (62.56%, 279/446) reported having two or more pregnancies, while only 8.97% (40/446) had no pregnancy history. In terms of education, 2.46% of participants had no formal education, with the majority having attained secondary school education (52.13%, 233/447). Employment status showed a high rate of unemployment, with 70.60% (317/449) of the respondents being unemployed.

Table 1. Characteristics of the participants in the survey.

Variables	Frequency (%) (n=449)
Age (in Years)	
15 to 24	191 (42.54)
25 to 34	172 (38.31)
35 to 49	86 (19.15)
Total number of Pregnancies	
Less than one	40 (8.97)
One	127 (28.48)
Two or more	279 (62.56)
Education	
None	11 (2.46)
Primary	191 (42.73)
Secondary	233 (52.13)
Higher Education	12 (2.68)

Employment Status	
Unemployed	317 (70.60)
Employed	132 (29.40)
Health Facility	
Bulungu UHC	293 (65.99)
Najanjoli RHC	151 (34.01)
Marital Status	
Married	362 (80.62)
Not Married	87 (19.63)
Distance	
Less than 10 Km	312 (69.64)
10 Km – 50 Km	126 (28.13)
More than 50 Km	10 (2.23)
Have a Phone	
No	199 (48.30)
Yes	213 (51.70)
Willingness to listen to family planning messages via the phone	
No	78 (17.41)
Yes	370 (82.59)
Used Family Planning before?	
No	180 (40.27)
Yes	267 (59.73)
Willing to receive FP messages via the phone	
No	73 (16.59)
Yes	367 (83.41)
Frequency of listening family planning messages	
Daily	106 (27.89)
Bi-weekly	32 (8.42)
Weekly	44 (11.58)
Monthly	198 (52.11)
Preferred language for listening to family planning messages	
Bemba	22 (5.84)
English	39 (10.34)
Nyanja	124 (32.89)
Tonga	165 (43.77)
Other	27 (7.16)

The survey covered two health facilities, with a higher representation from Bulungu UHC (65.99%, 293/444) compared to Najanjoli RHC (34.01%, 151/444). Majority of participants were married (80.62%, 362/449). Accessibility to health services was generally good, with 69.64% (312/448) of participants living less than 10 km from the nearest health facility. Regarding phone accessibility, 51.70% (213/422) of households possessed phones. Among the participants, 48.30% (199/412) did not own a phone. Willingness to listen to family planning (FP) messages via the phone was high, with 82.59% (370/448) open to receiving such information.

A majority proportion of participants (59.73%, 267/447) had used family planning before, and 83.41% (367/440) expressed willingness to receive FP messages via the phone. The preferred frequency of listening to FP messages varied, with the majority preferring to listen monthly (52.11%, 198/380). In terms of language preference for FP messages, most participants preferred local language including Tonga (43.77%, 165/377) and Nyanja (32.89%, 124/377).

Factors associated with owning a mobile phone

The study examined participant characteristics based on phone status (N=422). Results revealed that most women with mobile phones were aged 15 to 24, while the smallest proportion fell within the 35 to 49 age range, constituting only 11.27%. Most women with mobile phones had attained only up to primary level education (34.67%) and primarily accessed services at Nanjanjoli Rural Health Clinic (68.4%). Most were married (86.38%), lived less than 10 km from the health facility, and did not own smartphones (65.88%). Additionally, a significant portion of these women, 82.94%, reported not having contacted a doctor or health facility via mobile phone, although 91.08% expressed willingness to do so. Moreover, the majority were open to receiving family planning (FP) messages (86.19%), with nearly half (47.85%) willing to receive them weekly.

Most women with mobile phones had experienced two or more pregnancies (67.92%) and deliveries (55.71%). Notably, factors such as age, education, health facility, marital status, distance to the health facility, willingness to listen to FP messages via phone, frequency of listening to FP messages, number of pregnancies, and deliveries were all found to be statistically significant ($p < 0.05$). See Table 2.

Factors associated with willingness to listen to family planning messages

The willingness to listen to family planning messages among participants varied across different demographic factors, such as age, education, employment status, and marital status. Participants aged 15-24 years were more willing (44.96%) to listen family planning messages compared to those aged 25-34 (35.97%) and 35-49 (19.07%). However, the difference between these age groups is not statistically significant ($p = 0.112$). Education also played a role, with participants having up to primary education showing slightly higher willingness (47.95%) compared to those with secondary or higher education (52.05%), though this difference was not statistically significant. Employment status emerged as a critical factor, with a much higher proportion of unemployed participants (73.02%) willing to listen to family planning messages compared to their employed counterparts (26.98%). Additionally, those who accessed services from Bulungu Urban Clinic (60.33%) were more willing (39.67%) to receive FP messages compared to participants from Najanjoli RHC were more willing (39.67%). Marital status was another influential factor; married participants were more willing (83.65%) compared to unmarried ones (16.35%) to receive family planning messages (Table 3).

Table 2. Factors associated with owning a mobile phone.

Variables	Has a phone (N=422)		P-value
	No (N=199)	Yes (N=213)	
Age (in Years)			
15 to 24	60 (30.15)	116 (54.46)	
25 to 34	88 (44.22)	73 (34.27)	
35 to 49	51 (25.63)	24 (11.27)	<**0.001**
Education			
Primary	69 (34.67)	119 (56.40)	
Secondary/Higher	130 (65.33)	92 (43.60)	<**0.001**
Employment Status			
Unemployed	148 (74.37)	153 (71.83)	
Employed	51 (25.63)	60 (28.17)	0.561
Health Facility			
Bulungu Urban Clinic	189 (96.92)	67 (31.60)	
Najanjoli RHC	6 (3.08)	145 (68.40)	<**0.001**
Marital Status			
Married	150 (75.38)	184 (86.38)	
Not Married	49 (24.62)	29 (13.62)	**0.004**
Distance			
Less than 10 Km	163 (82.32)	122 (57.28)	
10 Km – 50 Km	27 (13.64)	89 (41.78)	
More than 50 Km	8 (4.04)	2 (0.94)	<**0.001**
Willingness to listen FP messages via the phone			
No	20 (10.31)	29 (13.81)	
Yes	174 (89.69)	181 (86.19)	0.282
Frequency of willingness to listen FP messages via the phone			
Daily	59 (32.60)	43 (23.12)	
Bi-weekly	17 (9.39)	15 (8.06)	
Weekly	100 (55.25)	89 (47.85)	
Monthly	5 (2.76)	39 (20.97)	<**0.001**
Number of pregnancies			
None	22 (11.11)	11 (5.19)	
1	63 (31.82)	57 (26.89)	
2+	113 (57.07)	144 (67.92)	**0.027**
Number of deliveries			
None	17 (8.81)	60 (28.57)	
1	52 (26.94)	33 (15.71)	
2+	124 (64.25)	117 (55.71)	<**0.001**

All tests utilized the Chi Square test; statistically significant values in bold

DISCUSSION

In this study, we assessed the willingness to use mobile application to listen to family planning messages among women of reproductive age in a selected health areas in Mumbwa district. Most women owned a non-smart phone than smart phone, and overall majority of women with phones were from Najanjoli RHC (68.40%) compared to participants in Bulungu UHC (31.60%). Furthermore, the majority of those that have phones were aged 15 to 24 years (54.46%), with primary education (56.40%). The findings in the study show that 86.19% are willing to listen to family planning messages via the phone.

The willingness to utilize digital applications for accessing family planning information was high in this study, including in rural areas. These findings align with such as Cartwright et al. (2022), which demonstrated significant interest in leveraging technology to support contraceptive behavior in the United States [24]. Moreover, studies from other regions, like by Yousef et al. (2021) in rural Kenya, showed a 95% willingness

among women to use digital health tools for family planning [25]. Our finding suggests feasibility of implementation digital/phone-based strategies in community health systems, particularly strategies that address community level issues which affect adolescent's ability to access SRH services such as cultural norms, stigma and distance or transport costs to the health facilities [26].

Table 3. Factors associated with willingness to listen to family planning messages.

Variables	Willing to listen to Family Planning Message (N=422)		P-values
	No (N=199)	Yes (N=213)	
Age (in Years)			
15 to 24	24 (32.88)	165 (44.96)	
25 to 34	35 (47.95)	132 (35.97)	
35 to 49	14 (19.18)	70 (19.07)	0.112
Education			
Primary	26 (35.62)	175 (47.95)	
Secondary/Higher	47 (64.38)	190 (52.05)	0.054
Employment Status			
Unemployed	41 (56.16)	268 (73.02)	
Employed	32 (43.84)	99 (26.98)	**0.004**
Health Facility			
Bulungu Urban Clinic	66 (91.67)	219 (60.33)	
Najanjoli RHC	6 (8.33)	144 (39.67)	<**0.001**
Marital Status			
Married	49 (67.12)	307 (83.65)	
Not Married	24 (32.88)	60 (16.35)	**0.001**
Distance			
Less than 10 Km	63 (86.30)	243 (66.39)	
10 Km – 50 Km	9 (12.33)	114 (31.15)	
More than 50 Km	1 (1.37)	9 (2.46)	**0.003**
Has Mobile Phone(make sure to specify that this means non-smart phones)			
No	20 (40.82)	174 (49.01)	
Yes	29 (59.18)	181 (50.99)	0.282
Has a smartphone			
No	13 (36.11)	133 (70.00)	
Yes	23 (63.89)	57 (30.00)	<**0.001**
Willing to use phone and connect to Doc/Health facility			
No	17 (23.29)	93 (25.34)	
Yes	56 (76.71)	274 (74.66)	0.711
Used Family planning before			
No	40 (54.79)	136 (37.16)	
Yes	33 (45.21)	230 (62.84)	**0.005**
Number of pregnancies			
None	11 (15.28)	29 (7.95)	
1	19 (26.39)	106 (29.04)	
2+	42 (58.33)	230 (63.01)	0.143
Number of deliveries			
None	17 (8.81)	60 (28.57)	
1	52 (26.94)	33 (15.71)	
2+	124 (64.25)	117 (55.71)	<**0.0001**

All tests utilized the Chi Square test; statistically significant values in bold

Our study found that women aged 15 to 24 years were more likely than older age groups to own mobile phones and willing to utilize family planning services via phone (44.96%). This finding aligns with Feroz et al. (2021), who observed that mobile phones significantly enhance access to family planning information and services, particularly among young women [27]. The predominance of this age group in our study suggests that younger women, who are generally more comfortable with technology, may find phone-based platforms both accessible and preferable to traditional healthcare methods. Conversely, older adults often face cognitive and motivational barriers that complicate their effective use of mHealth [28]. The openness of the 15 to 24-year-old demographic to digital health tools is therefore crucial for the success of mHealth interventions, especially in rural settings where young women represent a significant portion of the population needing family planning services.

Furthermore, women accessing services from Najanjoli rural health center were more receptive to phone-based platforms compared to those at Bulungu urban health center, emphasizing the distinct challenges and opportunities in rural versus urban settings when leveraging mobile health (mHealth) technologies for family planning services. In rural areas like Najanjoli, women often face significant barriers to accessing healthcare facilities, such as long distances, poor transportation infrastructure, and a shortage of healthcare providers, which limits their opportunities for face-to-face consultations. Consequently, phone-based platforms emerge as a crucial alternative, offering a convenient and accessible means for receiving family planning information and services [25, 29, 30]. This higher receptiveness to digital interventions in Najanjoli aligns with Agbenyo's (2022) findings, where rural women, facing these logistical challenges, found mobile health interventions more appealing and practical [31].

Additionally, rural women may confront social and cultural barriers that complicate traditional health-seeking behaviors, such as societal norms that limit their autonomy in accessing family planning services or stigmas related to visiting health facilities for reproductive health [32, 33]. In such contexts, phone-based services provide a private and confidential option, enabling women to manage their reproductive health discreetly and empowering them to make informed decisions without fear of judgment or social repercussions. The results suggest that mHealth technologies have significant potential to enhance access to improve knowledge and awareness of family planning services in rural Zambia, particularly where geographical and cultural barriers are prevalent and uptake. This is supported by previous studies indicating the effectiveness of mHealth interventions in resource-limited settings [36]. The higher receptiveness among rural women in this context may be attributed to the convenience and privacy these interventions offer, helping to overcome barriers, providing personalized support, and counseling.

Additionally, we found that a significant proportion of unemployed women (73.02%) were open to listening to family planning messages via their phones. This is contrary to other findings that suggest that employment status plays a critical role in the adoption and continued use of digital health interventions [8], typically implying that those who are employed are more likely to engage with such technologies. In this study, the category of "unemployed" included not only those without formal employment but also housewives and students. This broader classification provides a nuanced perspective, highlighting that even those traditionally labeled as "unemployed" may still be highly receptive to digital health platforms for family planning, challenging conventional assumptions about employment and technology use in health interventions.

Interestingly, the study did not find a significant association between educational level and the willingness to listen to family planning messages via the phone, however majority of the participant willing to listen to family planning messages had a secondary or tertiary level of education (52.05%), despite other research suggesting that education impacts phone ownership and usage. This highlights the need for further exploration into how education and employment, possibly in conjunction, influence the adoption of mHealth services.

Majority of women who did not own smartphones (70%) were not willing to listen to family planning (FP) messages via mobile devices, underscoring the significant role of technology access in the adoption of mHealth services. However, our findings revealed a paradox: despite owning smartphones, many women exhibited reduced odds of being willing to listen to FP messages through these devices. This suggests that mere access to technology does not guarantee its effective utilization for health-related purposes. One potential explanation for this trend is the disparity in education levels among smartphone owners. Research indicates that educational attainment influences how individuals engage with and trust digital health platforms. Women with lower educational backgrounds may lack the digital literacy necessary to navigate mHealth applications effectively, resulting in hesitation or reluctance to use their smartphones to listen to FP messages. This aligns with the insights that emphasized that successful mHealth technology adoption requires targeted efforts to raise awareness, build knowledge, and promote use across the general population, ultimately enhancing acceptance and integration [37, 38].

Moreover, the finding underscores the importance of not only providing access to smartphones but also ensuring that women are equipped with the skills and knowledge necessary to confidently use these devices for health-related purposes. Addressing this gap requires targeted educational interventions that enhance digital literacy, alongside culturally sensitive communication strategies tailored to the specific needs and concerns

of women in different contexts [21, 23, 39]. By doing so, mHealth interventions can become more effective in empowering women to take control of their reproductive health through mobile technology. This approach aligns with the emphasis made in the WHO (2024) report, which highlights the need to expand access to digital technologies while also investing in digital health literacy and engagement among women. The report further notes that the autonomy gained through digital technology enables women to manage personal health matters on their own terms, access vital information, and foster social connections [38].

To enhance the effectiveness of mobile health (mHealth) interventions for family planning services among women of reproductive age in Zambia, a multifaceted approach is essential. First, targeted educational programs should be implemented to improve digital literacy, equipping women with the necessary skills to navigate mobile applications confidently. Developing or contextualizing culturally sensitive messaging and strategies in collaboration with the community and local community leaders and validating the messages with the Ministry to address social barriers that hinder access to family planning services [23]. Additionally, improving access to smartphones and mobile data through subsidies or partnerships with mobile network providers can help bridge the technology gap [39-42]. Incorporating employment and economic empowerment initiatives will further support women's financial independence, enabling them to access and utilize mobile health services effectively [43]. Finally, establishing continuous evaluation and feedback mechanisms will ensure that mHealth interventions remain relevant and responsive to the needs of women [44]. By adopting these recommendations, stakeholders can empower women to take control of their reproductive health through mobile technology, contributing to improved health outcomes and gender equality in Zambia.

To the best of our knowledge, this is the first study looking at women's willingness to use digital application to increase awareness of family planning services in Mumbwa district of Zambia. Our study adds to the limited evidence exploring willingness of women of reproductive age to using digital applications. However, this study has some limitations, among them is the reliance on participants' self-reporting, which introduces the potential for data bias. Besides, the survey was conducted by interviewers, therefore even with neutral interviewers, interviewer and social desirability bias could have caused some respondents to give affirmative answers. Participants were recruited from the health facility, therefore excluding women with limited access to health care. Therefore, generalizing these findings requires taking these constraints into account.

Conclusion

This study demonstrates strong willingness to use digital application and the potential of mobile-based applications to increase awareness and enhance uptake of family planning services amongst women of reproductive age in rural settings of Zambia. Finding a high prevalence of mobile phone ownership, especially among adolescents and younger women, indicates readiness to engage with digital health interventions. These findings support the feasibility of implementing digital/phone-based strategies in community health systems to enhance uptake of family planning services and other services. Further research is needed to design and evaluate scalable mHealth solutions tailored to the local context. Integrating mHealth solutions into community health systems including for family planning programs can enhance equitable uptake to services and support global women's health initiatives.

DECLARATIONS

Publication consent

Not applicable.

Competing interests

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Author contributions

CJ, MK and MN were involved in conceptualising the design of the study. CJ, MK and MN were involved in the design of the study. CJ, and SS were involved in data collection and data analysis. CJ and SS did draft of the manuscript. MN, MK, MA and SY reviewed the manuscript. All the co-authors read and approved the final manuscript.

Data availability

The dataset utilized and/or analysed in this study is accessible and can be obtained from the corresponding author CJ, upon making a reasonable request.

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Disposición a utilizar aplicaciones digitales para aumentar la concienciación y mejorar la aceptación de los servicios de planificación familiar entre las mujeres en edad reproductiva en Zambia

RESUMEN

Introducción: A pesar del progreso en la última década, la adopción de servicios de planificación familiar sigue siendo un desafío en Zambia. Las intervenciones mediante teléfonos móviles podrían ayudar a aumentar tanto el acceso como la continuidad en el uso de métodos anticonceptivos, especialmente entre poblaciones de difícil acceso. El objetivo de este estudio fue investigar la disposición de las mujeres en edad reproductiva a utilizar una aplicación móvil para mejorar el acceso a los servicios de planificación familiar en comunidades seleccionadas de Zambia.
Métodos: Se llevó a cabo un estudio transversal en dos comunidades seleccionadas del distrito de Mumbwa entre octubre y noviembre de 2021. Los voluntarios de salud comunitaria fueron responsables de mapear los hogares dentro de las zonas de cobertura y de aplicar los cuestionarios de la encuesta. Se calcularon estadísticas descriptivas para variables dicotómicas y categóricas. Para evaluar asociaciones entre variables categóricas, se realizaron pruebas Chi-cuadrado. Todos los análisis de datos se realizaron utilizando STATA versión 14.2.
Resultados: Se encuestó a un total de 449 participantes, procedentes del Centro de Salud Urbano de Bulungu y del Centro de Salud Rural de Najanjoli. La mayoría de los participantes tenían entre 15 y 24 años (42.54%). Solo el 2.46% de los participantes reportó no tener educación formal, mientras que la mayoría había alcanzado nivel de educación secundaria (52.13%). La mitad de los hogares (51.70%) poseía teléfonos, de los cuales solo el 30% (126/440) eran teléfonos inteligentes. Además, el 83.41% (367/450) estaba dispuesto a recibir mensajes de planificación familiar por teléfono. Una proporción mucho mayor de participantes desempleados (73.02%; $p<0.05$), aquellos que accedieron a servicios en la Clínica Urbana de Bulungu (60.33%; $p<0.05$) y mujeres casadas (83.65%; $p<0.05$) estaban dispuestos a recibir mensajes de planificación por teléfono.
Conclusión: Este estudio demuestra una fuerte disposición al uso de aplicaciones digitales para aumentar la concientización y mejorar el acceso a servicios de planificación familiar entre mujeres en edad reproductiva en zonas rurales de Zambia. Estos hallazgos respaldan la viabilidad de implementar estrategias digitales o basadas en teléfonos dentro de los sistemas de salud comunitaria para mejorar el acceso a los servicios de salud. Se requiere más investigación para diseñar y evaluar soluciones de salud con telefonía móvil escalables y adaptadas al contexto local.

Palabras clave: Disposición, planificación familiar, intervenciones basadas en teléfonos, Zambia.

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