Articles

Participatory design of Short Message Service (SMS) text message to promote mammography among women in Santa Fe, Argentina

Desenho participativo de uma mensagem de texto de Serviço de Mensagens Curta (SMS) para promover a mamografia entre as mulheres em Santa Fé, Argentina (resumo: p. 17)

Diseño participativo de un mensaje de texto de Servicio de Mensajes Cortos (SMS) para promover la mamografía entre las mujeres de Santa Fe, Argentina. (resumen: p. 17)

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We describe results of the design process of the content of the SMS messages to promote mammography. We conducted four online focus groups with women aged 50 or more (n=14). We used participatory techniques to debate the advantages and disadvantages of different options for the five structural elements of the SMS message. Our results showed that women argued that the opening line should provide clear information about the topic of the SMS message. SMS messages should include the woman's name, information about who and how to get a mammogram and use a health institution as a sender. The closing line should encourage women to get a mammogram. A personalized SMS could be a good way of inviting women to perform the mammography. The content must be carefully designed to provide clear information about how to schedule an appointment.

Keywords: Breast cancer. Screening. Text messages. Qualitative research. Argentina.

Introduction

Breast cancer (BC) is a leading cause of death among women worldwide. It is estimated that close to 1,200,000 new cases are produced each year, implying more than 500,000 deaths[1]. In Argentina in 2020, 6,821 deaths occurred due to this disease, and it is estimated that around 22,000 new cases were diagnosed. Reducing the presence of risk factors associated with BC can contribute to a decrease the likelihood of developing the disease. However, early detection remains the most effective strategy for reducing its burden[2].

In alignment with international guidelines[2], the Argentinean National Breast Cancer Prevention Program (NBCPP) has adopted a strategic approach of conducting mammography screenings every 2 years for women aged 50-69 years[3]. The program has set as goal to achieve a coverage rate of 70% among target population, the minimum estimated to reach a reduction in the BC incidence and mortality. In Argentina, BC screening is available free of charge for women. However, screening is opportunistic and despite several effort to promote mammography screening coverage remain low.

The literature showed that women encounter barriers to access to mammography at multiple levels: the personal level (e.g. financial and geographical constraints) the interpersonal level (e.g. family responsibilities); and the health system level (e.g., health service organization)[4,5].

In addition, literature underscores a common barrier to women's participation in BC screening: a lack of knowledge, awareness, and understanding regarding the screening process[6,7]. In line with this, a recommended strategy for improving screening coverage involves the proactive deployment of invitation systems[8]. Numerous studies have assessed the effectiveness of mobile phone text messages in enhancing medication and screening adherence[9]. They have also demonstrated their effectiveness in reducing non-attendance rates at preventive healthcare centers in low- and middle-income countries (LMIC)[9]. SMS messages offer several advantages including simultaneous delivery to patients, suitability for low-internet signal areas, and a reduced need for staff[10]. SMS messages are easy to use and useful for patients[11,12].

Relying on the Health Belief Model (HBM), we posit that harnessing SMS as a way for an invitation and a reminder concerning the significance of early detection could effectively serve as an action cue to increase BC screening coverage. The HBM elucidates the rationales behind limited involvement in preventive health programs, accomplished through the examination of motivating factors and hindrances[13]. The model relies on two fundamental pillars: belief in the health-improving or illness-preventing consequences of a specific action, and the modification of this belief by socio-demographic attributes (such as age, gender, ethnicity, socio-economic status, personality, and knowledge). In addition, external cues—comprising events, individuals, or elements acting as catalysts (referred to as action cues)—can prompt shifts in behavior[13]. Based on a comprehensive meta-analysis[14] aimed at identifying factors that influence mammography participation rates, action cues—such as formal invitations, and reminders—were strongly correlated with increased BC screening participation rates.

However, sending an SMS message about BC can be complex due to the emotional response it may elicit and the possibility of it serving as an obstacle instead of a facilitator[15]. Research has emphasized that such messages must be concise, culturally appropriate, and easy to understand, while also avoiding upsetting the recipient[16-18]. Failure to consider patients' opinions on SMS content and design can hinder the acceptability, effectiveness, and scalability of SMS-based health interventions[19-21].

We report the results of the formative research stage of a larger implementation project aimed to evaluate the effectiveness of SMS to increase BC screenings among women 50 to 69 years of age in the province of Santa Fe, Argentina.

We described the participatory development process of SMS content, focusing on the identification of linguistic and stylistic preferences related to the promotion of mammograms.

Materials and methods

Study design and theoretical perspective

These results are derived from a mixed-methods study comprising three phases: formative research aimed at designing the content of the SMS messages; a pilot randomized controlled trial to assess the effectiveness of the SMS messages to increase BC screening; and a post-implementation evaluation[22]. In this paper, we present the results of our formative research, which used a qualitative approach to explore text message construction and gain insights into how participants interpret mammography promotion messages.

We used focus group discussions (FGs) to encourage participants to share their content preferences, including their evaluations of both the potential positive and negative aspects of each message component. These assessments were rooted in their awareness of the sociocultural dynamics and prevailing viewpoints within their community[23]. The linguistic elements we evaluated considered subjective aspects that could enhance the persuasive power of language in relation to the target behavior, which is getting a mammogram[24].

Alerts, prompts, and cues serve as strategic stimuli aimed at eliciting desired actions and reactions from users. In accordance with the Elaboration Likelihood Model (ELM)[24], the effectiveness of a message can be attributed to two primary pathways: the central route and the peripheral route. The persuasiveness of a message hinges on whether it undergoes central or peripheral processing, a determination influenced by an individual's motivation and cognitive resources. Messages founded on robust, compelling arguments are more likely to facilitate enduring attitude changes when processed via the central route. While, messages relying on peripheral cues tend to leverage swift, emotional, and often intuitive decision-making processes.

To create persuasive SMS messages, we employed participatory methods to identify essential elements for engaging women with the action promoted by the message[25]. We focused on language triggers that capture their attention through emotions while avoiding negative emotions (e.g., fear). We also sought to incorporate triggers related to

message personalization (the woman's name), social norms, and the infusion of a sense of urgency, all of which motivate quick decision-making. We emphasized the importance of maintaining a clear message, avoiding complex terms and hard-to-understand wording. Finally, we asked women to point out elements to enhance the message's credibility.

Setting

The study was conducted in Santa Fe, a province in the center region of Argentina, with a population of 3,556,522. Among them, 336,051 are females aged 50 to 69. An 83% of women from Santa Fe aged 30 to 64 use a cell phone. Among those aged over 65, the percentage is 78%[26].

For BC prevention, the province has a network of 803 public health services, including 635 municipal Primary Healthcare Centers (PHCs) and 142 hospitals. The public health system has 24 mammograms (4 per 10,000 women in the target age range) located in urban areas[27]. These services are available to individuals with private/social security healthcare coverage, as well as those reliant solely on public healthcare. In 2018, only 20% of Santa Fe women aged 50 to 69 had public health insurance (35). Before automated SMS messages, healthcare professionals recommended mammograms.

Participants

We conducted four online focus groups (FGs) with 14 participants. Inclusion criteria were women aged 50 to 69, users of the health care system in Santa Fe, and cell phone users. We included three participants from nearby cities like Paraná (30km from La Capital city of Santa Fe province) because they were users of the health care system in Santa Fe. Exclusions comprised women currently or previously treated for breast cancer (BC) or other health conditions, those working in the healthcare system of Santa Fe, as well as those reporting difficulties using cell phones for communication.

We employed two distinct recruitment strategies: Firstly, we employed targeted advertisements aimed at individuals from Santa Fe on popular social media platforms like Facebook and Instagram. This approach yielded successful recruitment of 11 participants. Concurrently, we also employed snowball sampling, leveraging connections with fellow researchers based in Santa Fe to facilitate access to the local population. Three participants were recruited, each one included in a different focus group.

The final sample size guarantee a minimum number of participants recommended per virtual FGs[28] and to achieve theoretical saturation regarding the assessment of the message components messages. We used age as stratification criteria, variable considered crucial in understanding the differences in cell phone usage[29].

Each FG was compound as follows:

• FG1: Three women aged 50-55.

• FG2: Three women aged 56-69.

• FG3: Four women aged 50-55.

• FG4: Four women aged 56-69.

Data collection

We structured the FG's guide into two parts: first, the women's presentation (age, job, who they lived with, and cell phone and SMS use) and, using HBM dimensions, we asked them about their beliefs and practices related to BC. Second, we invited participants to draft a text message to promote mammogram. They were asked to describe the key elements of their proposed message, the characteristics of the woman targeted, and how the words utilized might persuade her; next, different options were presented for each of the components of the message (depicted in Figure 1): (1). Opening: This entails using appropriate terms of address in accordance with cultural norms and ensuring suitability for SMS communication in Spanish. (2). Recipient: We considered the advantages and disadvantages of including the recipient's name. (3). Sender: We determined the source of the message that lends legitimacy to the content. (4). Focus of the message: We addressed preferences regarding how to invite women to undergo mammography and how to refer to the target population within the SMS. (5). Closing and cue to action: We included a sentence to emphasize the message's relevance and serve as a trigger for scheduling a mammography appointment.

For each, participants were asked to indicate their preference and debate the advantages and disadvantages of each one. Each FG ended with an SMS constructed based on the options preferred by most participants.
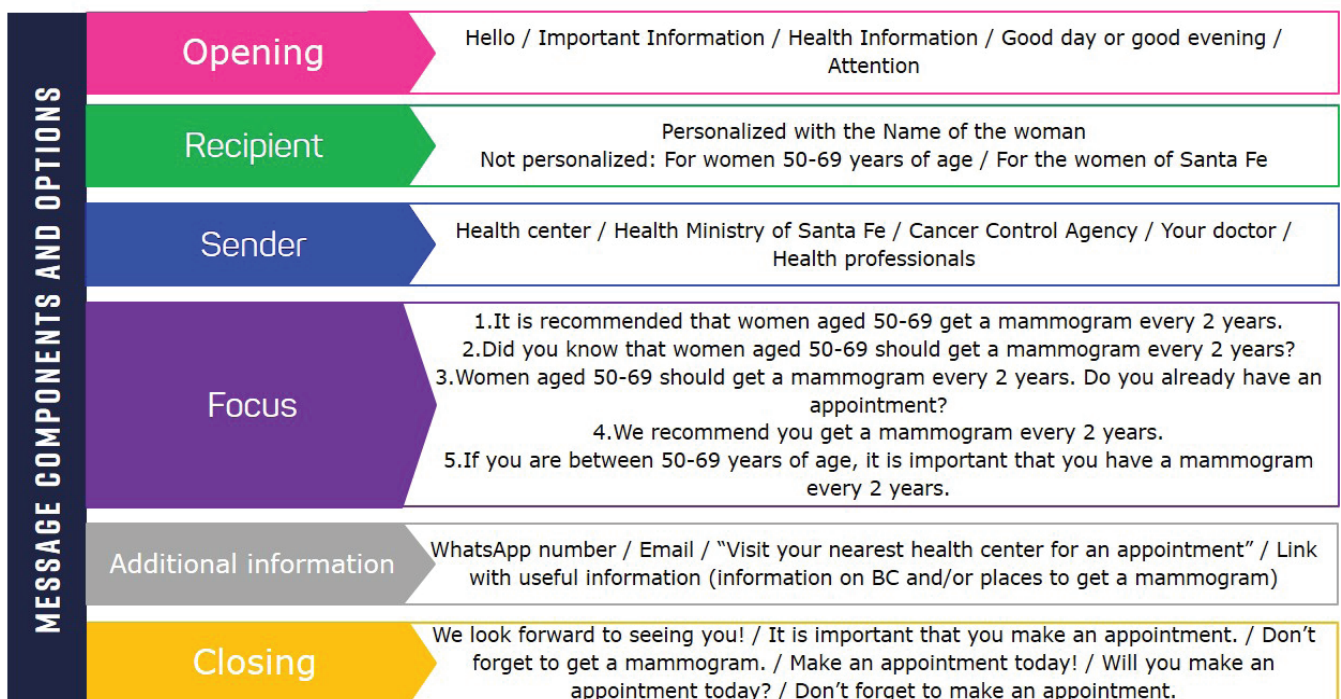

Figure 1. SMS message components and options.

Data collection was conducted from April 7 to 24, 2021. Each group session lasted, on average, 90 minutes. Two female researchers (moderator and observer) with specialized training in social sciences oversaw the FGs. Neither of these researchers resided in Santa Fe, nor did they maintain any affiliations with healthcare institutions, authorities, or participants. The research grant was provided by the National Institute of Cancer as part of the promotion of implementation research in cancer prevention. The study was led by an independent Research Center associated with the National Scientific and Technical Research Council (CONICET in Spanish).

Analytic approach

Each FG was audio recorded, with the prior consent of the participants, and was later transcribed. Thematic analysis was employed to identify preferences regarding the various options for the components of the SMS message. To do this, arguments in favor of and against each option were coded. To create the final message, the option for each component with the highest number of arguments in favor and the lowest number of arguments against was identified. To analyze knowledge, attitudes, and beliefs, we utilized the constructs of the Health Belief Model (HBM), which were later recoded based on the emerging data. Data was processed using the RQDA (R-based Qualitative Data Analysis for R software, package version 0.2-8)[30,31].

Ethical considerations

The study protocol, received approval from the provincial bioethics committee under the jurisdiction of the Ministry of Health of Santa Fe (Registration No. 923/20). Prior to participating in the FG, women provided verbal informed consent, which was subsequently recorded in audio format. They were provided with guidance on the utilization of the platform for participation, ensuring anonymity. Additionally, each group was expressly instructed to uphold the confidentiality of the topics discussed.

Results

Participant characteristics

Fourteen women participated; their average age was 55.7 years. Among them, 79% had a partner (11/14), 50% (7/14) had finished tertiary education. A little over 70% participated in the labor market as teachers, self-employed individuals, and administrative workers, with only one person being unemployed. Two participants were retired, and another was dedicated to care of the home. All had had a gynecologist consult in the last 12 months and 13 had had a mammogram in the last 12 months through providers of the private health care system.

Everyone was familiar with how to send/receive SMS text messages, but they did not use them frequently. Instead, they commonly turned to social media platforms like WhatsApp, Facebook, and Instagram to communicate and search for information related to health topics.

[Regarding the use of SMS] I tend to use Facebook more, for instance, and I got into healthy eating pages on Instagram... (FG4, 56 to 69 years old)

Table 1. Participant characteristics

		n	%
Total		14	100
Age	50 - 55 years old	7	50
	56 - 69 years old	7	50
Has a partner	Yes	11	79
	No	3	21
Lives with	Partner and children	8	57
	Children and other relatives	3	22
	Partner	2	14
	Alone	1	7
Educational level	Primary	3	21
	Secondary	7	50
	Tertiary	4	29
City of Residence	Santa Fe	10	72
	Paraná	3	21
	Rosario	1	7
Last gynecological consult	Less than 1 year ago	2	14
	One year ago	12	86
Last mammogram	Less than 1 year ago	2	14
	One year ago	11	79
	More than 2 years ago	1	7
Type of health coverage	Private/social security	13	93
	Public	1	7
Age Mean:	55.7 years old		
Age Range:	47- 66 years old		

Acceptability of SMS

All the participants use SMS and read them even when they come from unknown numbers. Although they use more WhatsApp, no group rejected the idea of using SMS to promote mammograms. Only one woman commented that she would find it a little invasive, but still, acceptable given that the purpose is health care related (FG4).

All the participants possessed a telephone they were exclusive users of and that was not shared with other family members. In this way, receiving SMS related to their health was in no way seen as a confidentiality problem.

FG1 and FG3 valued positively using different means (such as social networks, internet, radio, or television) to offer health information and to promote mammograms. They highlighted the need to reach the population "through different channels, every little bit helps" (FG3). In one of the groups, the women accepted SMS as a reminder and characterized the message as a gesture of care on the part of the health system towards women:

I would feel looked out for (receiving an SMS) instead of having a piece of paper on my refrigerator saying I have a mammogram on such and such a date, two months later I have a gynecologist appointment, another paper for the cardiologist. As a person, I'd like to be told "Remember you have to go to the gynecologist." (FG3, 56 to 69 years old)

The tone of the message and triggers to get the mammography

Regarding the general characteristics of the message, many agreed that the message should be "short and concise" (FG1, FG2 and FG4). In messages elaborated through free writing, an informal tone predominated with a marked use of the second person singular (you, in Spanish *tu/vos*). With respect to the attitude of the speaker, an imperative style was more common: "Love yourself, value yourself, take care of yourself. You are needed, we all need you" (FG3). They also incorporated elements with affective aspects to incentivize having a mammogram: "love yourself," "you are loved" (FG1, FG2, FG3, FG4), as well as volitional aspects that implicitly suggest a cost-benefit analysis and the rationality of getting a mammogram (the target behavior): "Do you want to live longer and better? Get a mammogram now!" (FG1).

Opening: capturing the woman's attention

In evaluating the options for opening the message, "Hello" was positively assessed because it proposes a conversation and locates the speaker and the recipient at the same communicational level (FG3). However, several participants found it to be imprecise and said that it would not capture their attention, as compared to other options like "Health Information" and "Important Information." In all groups these two phrases were assessed positively: "I know what it's about, it doesn't waste my time, I know I'm getting something about health, something important" (FG1). One of the groups proposed combining the two in the phrase "Important Health Information" (FG3). It should be highlighted that the word "important" was a recurring element that the participants insisted be included in the message (FG1, FG3 and FG4). The other alternatives offered as opening phrases were not favored by the groups.

Recipient: personalization of the message

The choice regarding how to address the recipient revolved around whether to personalize the message including the name of the targeted woman or to not include her name. If the name was not included, two alternatives were proposed: one focused on the region (Women of Santa Fe) and the other the age of the target population (Women Aged 50-69). Most women stated that they preferred a personalized message because it reaches them differently (FG1, FG2, FG3, FG4). Those who defined themselves as hesitant to have a mammogram identified the personalization as an extra incentive to pay attention to the message: "I thought the first option, that it says my name: 'oh my, well, they're talking to me'" (FG2).

Sender and the legitimacy of the message

The options "health center" and "health professionals" were seen positively by many of the women, especially those who had used primary healthcare centers. In general, the participants recognized the health teams of health centers to be a reliable source providing legitimate content.

> I say this as person who lives in a working-class neighborhood, in which the people identify a lot with the health center. I lean towards the health professional and health center options because they are the ones who know, and you really trust them. (FG3, 50 to 55 years old)

Another sender assessed positively was "Ministry of Health of the Province of Santa Fe." In contrast to the option of the National Ministry of Health, which was described as a "distant" figure (FG4), the provincial entity was recognized as familiar, present in different aspects of everyday life, such as the recent COVID vaccination or in documents provided in health centers:

> We use the Ministry of Health of Santa Fe a lot here. Even when you go to a dispensary, they always give you prescriptions with the stamp and logo of the Ministry of Health. (FG4, 56 to 69 years old)

The Cancer Control Agency was also evaluated positively in several groups (FG1, FG2, and FG3). The arguments in favor highlighted that it offers clear information regarding the topic of the message and speaks to the message's relevance: "It's something about cancer, something important" (FG2). A number of women also expressed negative reactions regarding the word cancer because it "scares" them (FG1) and they find it "troubling" (FG4).

Lastly, the option "Your doctor" was not well received. On the one hand, they did not find it sufficiently "encompassing" (FG2) compared with options such as "health center" (FG3) or "Ministry" (FG4). On the other, they found it strange as the sender and they felt suspicious:

> [The option] "Your doctor" is fake. I wouldn't open it because I see it's fake. My doctor writes me a different way, and also it's not "your doctor". It's the first and last name of the real doctor, so I wouldn't trust the option "your doctor" at all. (FG1, 50 to 55 years old)

Focus of the message: key content

To establish the central content of the message five options were proposed referring to two central aspects: the age range in which mammograms are recommended and the frequency with which they should be done. The different versions varied by the type of sentence (declarative, imperative, or interrogative), the use of terms to soften the medical indication for a mammogram ("it is recommended," "should," "Did you know?") and the use of singular or plural to refer to the subject of the message ("We recommend that you" vs. "It is recommended that women").

The options that "recommend" mammograms were rejected by most participants in all the groups. They were interpreted as a suggestion that leaves room for women to consider not getting the exam (FG1, FG2, FG3, and FG4). In contrast, the most accepted version in all groups was: "Women aged 50-69 should have a mammogram every two years. Do you already have an appointment?" Regarding this option, most participants highlighted the use of the imperative, and the complementary question at the end was read as an invitation to follow through in making an appointment and an indication of how to proceed (FG1, FG2, FG3, and FG4).

> I don't like this idea of recommending... I think that an issue as important as this, I'm not sure if "I recommend" that you do it. You "should" do it because it has to do with public health and the health of all women... I like the final question, it doesn't leave room for doubt: "You have to get a mammogram, do you already have an appointment?" End of discussion. (FG1, 50 to 55 years old)

Additional information

The proposed options were based on those used by Ministry of Health of Santa Fe to make an appointment: a telephone number/WhatsApp, an email address, and the indication to "Visit a health center." An additional option included was a link to information about what a mammogram is and a link with a list of places where the exam can be done, contents available on the Ministry of Health's website.

The options preferred by the women were the telephone number and email to make an appointment. Although they mentioned some possible obstacles due to lack of internet – "not everyone has internet to use WhatsApp or email" (FG3) – most indicated that these were adequate channels for obtaining an appointment without having to go to a primary health center, especially in the context of the pandemic.

> Having to go to a health center... Here to make an appointment, you must go to the Health Care Center, which isn't that direct, it has limited hours, or you must go to a more specialized center such as the Center for Medical Specialties of Santa Fe. But if you have WhatsApp or email it's easier. (FG3, 56 to 69 years old)

The options for accessing information regarding what a mammogram is and where to have them done were described as important, but not central to a text message. The option "Visit your health center" to make an appointment was regarded positively to reinforce the connection with health professionals (FG3) but was not thought to be appropriate in the context of the Covid pandemic.

Closing phrase: persuasive reinforcement

For the closing message, phrases were offered that emphasized the need to get a mammogram. The preference of the women of the different groups was the imperative option, with an exclamation point and oriented toward the immediate action of getting an appointment: "Make your appointment today!" Other options, that used phrases like "Don't forget to..." were rejected because they left room for delaying something that the women considered should be immediately taken care of: "They're going to forget" (FG1). The rest of the options were disregarded.

Final message and validation stage

Study researchers produced a draft version of the SMS message that was presented to the provincial and national health authorities. This validation stage did not present relevant divergences or inconsistencies in the results of the FGs regarding the interpretation and understanding of the proposed message. However, they noted that "Health care center" as a sender could be confusing to women because is not usual that a health care center sent this kind of SMS message. Thus, the final version used the Cancer Control Agency, a sender accepted by both women and authorities (Figure 2).
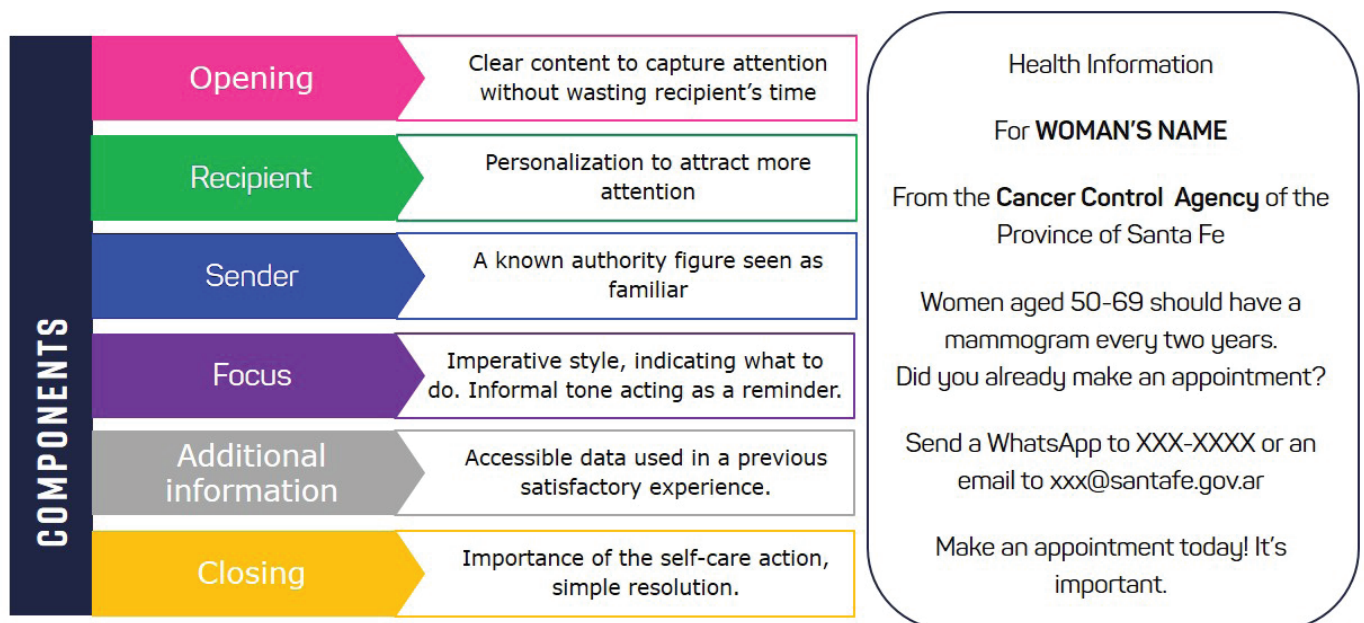

Figure 2. Components, main arguments, and final message designed

Discussion

This paper describes the women's preferences regarding the tone and style of messages, the legitimacy of the sender, the personalization of the recipient, and key information to be included in the SMS content to promote the mammography. As the main result, we found that participants in the FGs accepted receiving SMS messages regarding BC screening from health institutions. Personalizing the message by including the recipient's name was preferred. FG participants opted for an imperative tone to encourage mammography and a message that focused on providing information on who should have. As an additional trigger, they chose information about how to obtain an appointment (a WhatsApp number and email). Finally, they selected an interrogative sentence to highlight the importance of taking the test immediately.

In our results, participants expressed a preference for including the recipient's name as a means of personalizing the content. Similarly, a study on colorectal cancer screening among adults over the age of 50 in the United States[32] found that recipients tended to disregard or underestimate impersonal SMS messages. One possible explanation for this phenomenon is that recipients have a need to establish specific criteria for prioritizing the information they receive. In the context of a massive increase of information provided by different channels (such as media, social networks, etc.), people tend to equate the idea of non-personalized messaging ("not for me") to that of spam. This argument also explains the importance given by women in the FGs to the figure of the message sender. The preference for a known health institutional figure that provides legitimacy would allow them to evaluate whether a message is fake or comes from a reliable source.

In our study, a result to highlight is that women did not express concerns about confidentiality issues and mammography promotion. This contrast with the results of the study carried out with women from Jujuy (Argentina), who performed the human papillomavirus (HPV) self-collection test and received SMS to increase adherence to triage[18]. In this case, the link between HPV and sexual intercourse explains why participants preferred to omit the term "HPV" in SMS messages. On the contrary, our results showed that women defined BC as a threat and recognized the promotion of mammography as an imperative need. This may explain why confidentiality was not a major issue in the discussions about the content of the SMS. In this line, we can understand the preference for an imperative tone in the message, which also responds to this "urgency" in mammography promotion. Furthermore, our findings align with those of Kerrigan et al.'s literature review[33]. The authors discovered that while security and privacy were crucial concerns, they did not seem to impede patients' willingness to participate in SMS-based reminder programs, especially when patient privacy was ensured by allowing patients to compose their own messages.

Finally, women opted for an interrogative sentence ("Did you already make an appointment?") as an additional trigger to perform mammography. That decision is promising, as Hagoel et al.[34] assessed the intentions to undergo a Fecal Occult Blood Test and text message type (interrogative versus declarative) and found that the group who received interrogative text message reminders presented more intentions to undergo a Fecal Occult Blood Test than those who received the declarative ones. Although

our interest was to understand women's preferences about the content of the text message, their choices were consistent with the so-called question-behavior-effect (QBE) phenomenon, used by Hagoel et al to design their text messages content. That is, the very fact of asking a question about a behavior positively influences the intention to carry out that behavior. This phenomenon, which has been analyzed as a possible bias in health research surveys, has recently been used in health communication aimed at behavior change[35]. According to this, the interrogative sentence included in our SMS message could promote a reflexive self-assessment ("Should I make the appointment?") and promote the target behavior.

Limitations

Although the study provides new evidence for the participatory design of SMS text message interventions for BC prevention, it has some limitations. The participant pool was relatively limited in size, and when considering the educational levels, it becomes evident that they are overrepresented in terms of higher education compared to the broader population of Santa Fe. For context, nearly 30% of women aged 50 to 69 in the province possessed secondary education (either incomplete or complete), whereas in our sample, this figure stands at 50%. Consequently, the findings are not generalizable to all women in Santa Fe.

Despite the mentioned limitations, the study provides valuable insights into the preferences of women regarding SMS message interventions for BC prevention and offers a participatory approach to designing health communication interventions that can be adapted to different contexts and populations.

Conclusions and implications

The results of our formative research suggest that personalized messages with an imperative tone and interrogative sentences are preferred in encouraging women from Santa Fe to perform the mammography. These findings have important implications for mHealth interventions aimed at improving mammography coverage, as they highlight the need to carefully consider recipients' preferences when designing SMS-based strategies. Our research addresses this gap by providing a participatory tool that can be replicated in other contexts to adapt the message content and increase the scalability of the intervention. Therefore, our study contributes to the development of cost-effective and tailored mHealth interventions that can effectively promote preventive behaviors.

Authors' contribution

All authors actively participated in all stages of preparing the manuscript.

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Conflict of interest

The authors have no conflict of interest to declare.

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References

1. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global Cancer Statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2021; 71(3):209-49.

2. International Agency for Research on Cancer. Breast Cancer Screening. Lyon: IARC; 2017. (Handbooks Cancer Prevention; v. 15).

3. Di Sibio A, Blanco S, Andisco D, Dios Soler M, Donia M, Provenzano P, et al. Efectividad del tamizaje mamográfico en la reducción de la mortalidad por cáncer de mama. Buenos Aires: INC-MSAL; 2018.

4. Mascara M, Constantinou C. Global perceptions of women on breast cancer and barriers to screening. Curr Oncol Rep. 2021; 23(7):74.

5. Miller BC, Bowers JM, Payne JB, Moyer A. Barriers to mammography screening among racial and ethnic minority women. Soc Sci Med. 2019; 239:112494.

6. Gesink D, Filsinger B, Mihic A, Norwood TA, Sarai Racey C, Perez D, et al. Cancer screening barriers and facilitators for under and never screened populations: a mixed methods study. Cancer Epidemiol. 2016; 45:126-34.

7. Kerrison RS, Shukla H, Cunningham D, Oyebode O, Friedman E. Text-message reminders increase uptake of routine breast screening appointments: a randomised controlled trial in a hard-to-reach population. Br J Cancer. 2015; 112(6):1005-10.

8. Bulliard JL, Ducros C, Jemelin C, Arzel B, Fioretta G, Levi F. Effectiveness of organised versus opportunistic mammography screening. Ann Oncol. 2009; 20(7):1199-202.

9. Kannisto KA, Koivunen MH, Välimäki MA. Use of mobile phone text message reminders in health care services: a narrative literature review. J Med Internet Res. 2014; 16(10):e222.

10. Hall CS, Fottrell E, Wilkinson S, Byass P. Assessing the impact of mHealth interventions in low- and middle-income countries: what has been shown to work? Glob Health Action. 2014; 7(1):25606.

11. Mandrik O, Tolma E, Zielonke N, Meheus F, Ordóñez-Reyes C, Severens JL, et al. Systematic reviews as a "lens of evidence": determinants of participation in breast cancer screening. J Med Screen. 2021; 28(2):70-9.

12. Uy C, Lopez J, Trinh-Shevrin C, Kwon SC, Sherman SE, Liang PS. Text messaging interventions on cancer screening rates: a systematic review. J Med Internet Res. 2017; 19(8):e296.

13. Skinner CS, Tiro J, Champion VL. Background on the health belief model. In: Glanz K, Rimer BK, Viswanath K, editors. Health behavior: theory, research, and practice. 5th ed. New York: Wiley; 2015. p. 1-34.

14. Ritchie D, Van Den Broucke S, Van Hal G. The health belief model and theory of planned behavior applied to mammography screening: a systematic review and meta-analysis. Public Health Nurs. 2021; 38(3):482-92.

15. Vidal C, Garcia M, Benito L, Milà N, Binefa G, Moreno V. Use of text-message reminders to improve participation in a population-based breast cancer screening program. J Med Syst. 2014; 38(9):118.

16. Vrinten C, McGregor LM, Heinrich M, von Wagner C, Waller J, Wardle J, et al. What do people fear about cancer? A systematic review and meta-synthesis of cancer fears in the general population. Psychooncology. 2017; 26(8):1070-9.

17. Bonifácio LP, Souza JP, Vieira EM. Adaptação de mensagens educativas para parceiros de gestantes para uso em tecnologias móveis em saúde (mHealth). Interface (Botucatu). 2019; 23:e180250. doi: 10.1590/Interface.180250.

18. Sánchez Antelo V, Kohler RE, Curotto M, Viswanath K "Vish", Paolino M, Arrossi S. Developing SMS content to promote papanicolaou triage among women who performed HPV self-collection test: qualitative study. JMIR Form Res. 2020; 4(3):e14652.

19. Lakkis NA, Atfeh AMA, EL-Zein YR, Mahmassani DM, Hamadeh GN. The effect of two types of sms-texts on the uptake of screening mammogram: a randomized controlled trial. Prev Med. 2011; 53(4-5):325-7.

20. Odeny TA, Newman M, Bukusi EA, McClelland RS, Cohen CR, Camlin CS. Developing content for a mHealth intervention to promote postpartum retention in prevention of mother-to-child HIV transmission programs and early infant diagnosis of HIV: a qualitative study. PLoS ONE. 2014; 9(9):e106383.

21. Abroms LC, Whittaker R, Free C, Alstyne JMV, Schindler-Ruwisch JM. Developing and pretesting a text messaging program for health behavior change: recommended steps. JMIR MHealth UHealth. 2015; 3(4):e107.

22. Paolino M, Arrossi S, Pera AL, Sánchez Antelo V. Evaluación de la intervención mediante el Sistema Automático de Invitación por Mensaje de Texto (SMS) para incrementar la participación en realización de mamografías de tamizaje en mujeres de 50 a 70 años de la provincia de Jujuy. Buenos Aires: CEDES, Instituto Nacional del Cáncer; 2019.

23. McLaren L, Hawe P. Ecological perspectives in health research. J Epidemiol Community Health. 2005; 59(1):6-14.

24. Petty RE, Cacioppo JT. Attitudes and persuasion: classic and contemporary approaches. 20th ed. Abingdon: Routledge; 2018.

25. Maar MA, Yeates K, Toth Z, Barron M, Boesch L, Hua-Stewart D, et al. Unpacking the black box: a formative research approach to the development of theory-driven, evidence-based, and culturally safe text messages in mobile health interventions. JMIR MHealth UHealth. 2016; 4(1):e10.

26. Instituto Nacional de Eestadística y Censos. Censo Nacional de Población, Hogares y Viviendas 2022: resultados provisionales. Buenos Aires: INDEC; 2023.

27. Limardo L. Censo Nacional de Mamógrafos 2018. Buenos Aires: Instituto Nacional del Cáncer; 2018.

28. Davies L, LeClair KL, Bagley P, Blunt H, Hinton L, Ryan S, et al. Face-to-face compared with online collected accounts of health and illness experiences: a scoping review. Qual Health Res. 2020; 30(13):2092-102.

29. Singleton AC, Raeside R, Partridge SR, Tat-Ko J, Sum SCM, Hyun KK, et al. Supporting breast cancer survivors via text messages: reach, acceptability, and utility of EMPOWER-SMS. J Cancer Surviv. 2022; 16(6):1165-75.

30. Huang R. R-based qualitative data analysis. R package version 0.2-8 [Internet]. Montreal: RQDA; 2016 [citado 18 Set 2023]. Disponível em: https://rqda.r-forge.r-project.org/

31. R Core Team. R: a language and environment for statistical computing [Internet]. Vienna: R Foundation for Statistical Computing; 2020 [citado 18 Set 2023]. Disponível em: https://www.r-project.org/

32. Weaver KE, Ellis SD, Denizard-Thompson N, Kronner D, Miller DP. Crafting appealing text messages to encourage colorectal cancer screening test completion: a qualitative study. JMIR MHealth UHealth. 2015; 3(4):e100.

33. Kerrigan A, Kaonga NN, Tang AM, Jordan MR, Hong SY. Content guidance for mobile phones short message service (SMS)-based antiretroviral therapy adherence and appointment reminders: a review of the literature. AIDS Care. 2019; 31(5):636-46.

34. Hagoel L, Neter E, Stein N, Rennert G. Harnessing the question-behavior effect to enhance colorectal cancer screening in an mHealth experiment. Am J Public Health. 2016; 106(11):1998-2004.

35. Wilding S, Conner M, Prestwich A, Lawton R, Sheeran P. Using the question-behavior effect to change multiple health behaviors: an exploratory randomized controlled trial. J Exp Soc Psychol. 2019; 81:53-60.

Descrevemos os resultados do processo de concepção do conteúdo das mensagens SMS para promover a mamografia. Quatro grupos focais on-line foram conduzidos com mulheres com cinquenta anos ou mais (n=14). Técnicas participativas foram usadas para discutir opções para cinco elementos estruturantes da mensagem SMS. As mulheres indicaram que a linha de abertura deveria fornecer informações claras sobre o assunto da mensagem SMS. As mensagens SMS devem incluir o nome da mulher, informações sobre quem e como obter uma mamografia e usar uma instituição de saúde como remetente. A sentença final deve encorajar as mulheres a fazer uma mamografia. Um SMS personalizado poderia ser uma boa maneira de convidar mulheres, embora seu conteúdo deva ser cuidadosamente projetado para fornecer informações claras sobre como agendar uma mamografia.

Palavras-chave: Câncer de mama. Triagem. Mensagens de texto. Pesquisa qualitativa. Argentina.

Describimos los resultados del proceso de diseño del contenido de los mensajes SMS para promover la mamografía. Se realizaron cuatro grupos de discusión en línea con mujeres de 50 y más años (n=14). Se utilizaron técnicas participativas para debatir las distintas opciones para cinco elementos estructurantes del mensaje SMS. Nuestros resultados mostraron que las mujeres señalaron que la línea de apertura debía proporcionar información clara sobre el tema del mensaje SMS. Los mensajes SMS deberían incluir el nombre de la mujer, información sobre quién y cómo hacerse una mamografía y utilizar una institución sanitaria como remitente. La frase final debe animar a las mujeres a hacerse una mamografía. Un SMS personalizado podría ser una buena forma de invitar a las mujeres, aunque su contenido debe diseñarse cuidadosamente para proporcionar información clara sobre cómo programar una mamografía.

Palabras clave: Cáncer de mama. Cribado. Mensajes de texto. Investigación cualitativa. Argentina.