Perspectives of cancer patients and palliative care health professionals regarding the content and user preferences for a text message-based intervention in palliative care in Western Uganda:

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Abstract:

Introduction:

This study explores the perspectives of cancer patients and palliative care health professionals regarding the design of a text message-based intervention in Western Uganda. Recognizing the critical role of palliative care in improving quality of life amidst resource constraints, the research investigates user preferences for message content, format, tone, frequency, language, and additional features.

Objective:

To examine the perspectives of cancer patients and health professionals about the use reminder text-message-based intervention in a palliative care setting in Western Uganda.

Methodology:

Employing a qualitative, phenomenological approach, focus group discussions with patients and healthcare providers at Mobile Hospice Mbarara and Little Hospice Hoima elicited nuanced insights aligned with the Health Belief Model.

Results:

Key findings highlight the importance of personalized, culturally sensitive messages that encompass medication adherence guidance, appointment reminders, emotional support, and health education. Participants favored concise, clear language with a caring tone, delivered weekly during mid-morning hours, and in local languages like Runyankore and English. Emphasis was placed on including warning signs, motivational content, and a contact mechanism for feedback. Both patients and professionals underscored the need for messages to foster trust, self-efficacy, and active health management. Integrating these preferences can enhance engagement, adherence, and psychosocial well-being among patients.

Conclusion:

The findings provide practical guidance for developing culturally appropriate mHealth interventions such as reminder text messages tailored to resource-limited settings, ultimately aiming to improve palliative care delivery and patient outcomes in Western Uganda.

Recommendation:

Further research should assess the effect and effectiveness of reminder text messages on the quality of life of cancer patients receiving palliative care in Western Uganda.

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Background:

Palliative care plays a critical role in enhancing the quality of life for individuals living with cancer.[1] by managing symptoms[2, 3], providing psychosocial support, and addressing spiritual needs[4-6]. In resource-limited settings such as Western Uganda, access to comprehensive palliative care services remains a significant challenge due to shortages of healthcare professionals, limited infrastructure, and economic constraints. Consequently, innovative approaches are needed to optimize existing resources and improve patient outcomes.

Mobile health (mHealth) interventions, particularly the use of SMS (short message service) or text messaging, have emerged as promising tools to support palliative care delivery in low-resource environments.[7, 8]. These interventions are cost-effective, scalable, and capable of reaching individuals in remote or underserved areas.[9]. These reminder text messages can serve multiple purposes, including prompting medication adherence, appointment attendance, symptom monitoring, and providing educational or psychosocial support.[10].

Evidence from various settings suggests that well-designed mHealth interventions can enhance patient engagement, improve adherence to treatment regimens, and foster better communication between patients and healthcare providers. However, the success of such interventions heavily depends on their acceptability, relevance, and cultural appropriateness.[8]. Importantly, understanding the preferences and needs of both patients and health professionals regarding message content, tone, format, and frequency is essential for tailoring interventions that are user-centered and effective.[11, 12].

In Uganda, the rapid increase in mobile phone ownership offers an opportunity to leverage SMS-based interventions for palliative care.[8, 13]. Yet, there remains a paucity of context-specific data on what content resonates with patients, what language and tone are appropriate, and how often messages should be sent to maximize engagement without causing fatigue or intrusion. Addressing these gaps requires exploring the perspectives of both patients living with cancer and the health professionals involved in their care. Such insights are vital for designing culturally sensitive, acceptable, and sustainable communication strategies that can be integrated into existing palliative care programs. [14, 15].

This study, therefore, aimed to fill this knowledge gap by examining the preferences of cancer patients and health professionals regarding the content, format, tone, and frequency of reminder text messages in a palliative care setting in Western Uganda. The findings are informative to the development of tailored mHealth interventions that are aligned with user expectations and context-specific needs, ultimately contributing to improved palliative care delivery in the region.

Objectives:
Main objective:

To examine the perspectives of cancer patients and health professionals about the use reminder text-message-based intervention in a palliative care setting in Western Uganda.

Specific Objectives:

1) To explore cancer patients' preferences regarding the content, format, tone, and frequency of reminder text messages in a palliative care setting in Western Uganda.
2) To assess health professionals' perspectives on the content, format, tone, and frequency of reminder text messages for supporting palliative care patients in Western Uganda.
3)

Methodology
Study Design

This study employed a qualitative, phenomenological design to identify key health education topics pertinent to cancer and palliative care, as well as to characterize the preferences of cancer patients regarding a reminder text message-based intervention. Focus Group Discussions (FGDs) were utilized to facilitate interactive dialogue, enabling participants to share their lived experiences and perspectives in a supportive environment. FGDs have proved to be effective for exploring complex phenomena and fostering synergistic group interactions, which elicited nuanced insights that might not have emerged through individual interviews.[16].

Study Setting

The study was conducted from 7th August to 20th August 2025 at Mobile Hospice Mbarara and Little Hospice Hoima, both branches of Hospice Africa Uganda, located in Western Uganda.

Study Population

Participants included:

- 32 cancer patients receiving palliative care at the two study sites.

- 12 health professionals, including 2 social workers, 2 clinical officers, and 8 nurses, providing specialist palliative care in Western Uganda.
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Eligibility Criteria

Inclusion Criteria:
- **Patients:** Confirmed cancer diagnosis, aged 18 years or older, receiving standard palliative care at the study sites for at least 30 days.
- **Health professionals:** Minimum qualification of a diploma in palliative care with at least 2 years of experience in a palliative care setting.
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Exclusion Criteria:
- Patients deemed too ill to participate.
- Patients with communication challenges, including dementia or psychological conditions that could be exacerbated by participation.

Sampling Methods

Purposive sampling was employed to select participants who met the eligibility criteria. Participants were identified from the databases of Hospice Africa Uganda, ensuring diversity in age, sex, diagnosis, and area of origin to capture a broad range of perspectives. Upon being identified, prospective participants were invited by telephone to come to the two study sites on the appointed dates.

Study Procedures

- **Participant Recruitment:** Identified participants were approached, and informed consent was obtained prior to participation in the study.
- **Focus Group Composition:**
  - *Cancer patients:* Two FGDs, each with 8 participants at each of the 2 study sites, making a total of 4 FGDs.
  - Health professionals: One FGD with around 6 participants, including a social worker, clinical officer, and three nurses.

Data Collection Instruments:

A semi-structured focus group question guide, developed by the research team using Krueger's methodology (Krueger, 1997) and refined through pilot testing (participants in the pilot were excluded from analysis), was used. This was done to ensure that common topics and themes were explored across the focus group discussions. This tool, consisting of open-ended questions, was used to obtain participants' perspectives on the content, format, tone, as well as the frequency and timing of the reminder text message.

Discussion Environment:

FGDs were conducted in quiet, comfortable rooms at each facility in both English and the relevant local dialects (Runyankore-Rukiga at Mobile Hospice Mbarara and Runyoro-Rutooro at Little Hospice Hoima). Each session lasted approximately 45 minutes and was facilitated by an experienced moderator with an assistant observer who took notes and monitored participation.

Data Recording and Transcription:

Discussions were audio-recorded, transcribed verbatim, and de-identified. Transcripts were managed using Express Scribe and Windows Media Player.

Saturation attainment:

Saturation was realized when the moderator observed that the participants were articulating similar ideas and no new concepts were emerging. When the discussion reached this level, the session was concluded. After conducting the first focus group discussion, the data were analyzed, and the key themes were identified. Thereafter, a second focus group discussion was carried out in order to explore these ideas further and also identify possible new ones. Saturation between the groups was considered attained when the second focus group discussion unearthed no new additional themes beyond those identified before. Consistency of responses within and across the groups confirmed that the main perspectives had been comprehensively identified, and no further focus group discussions were required.

Trustworthiness and Rigor:

To enhance the credibility and reliability of our qualitative findings, several strategies were implemented throughout the research process. Reflexivity was maintained by the research team through regular reflection and documentation of potential biases and preconceptions, ensuring awareness and mitigation of personal influences on data collection and analysis. Specifically, reflexive journaling served as an ongoing practice for the researchers to record their thoughts, feelings, and possible biases. Complementarily, bracketing was employed as a deliberate process where researchers systematically engaged in journaling before, during, and after data collection to acknowledge and set aside their own assumptions related to reminder text messages in palliative

care, with the aim of minimizing their influence on interpretation.

Additionally, triangulation was employed by gathering data from diverse participant groups—cancer patients and health professionals across two different sites—and through multiple focus group discussions, providing broad perspectives on the research questions. Member checking was conducted by sharing preliminary themes and interpretations with a subset of participants to verify accuracy and resonance with their experiences. An audit trail was maintained, documenting all decisions related to data collection, coding, and theme development, allowing for transparency and reproducibility of the analysis process. Additionally, peer debriefing sessions with colleagues were held regularly to challenge interpretations, enhance analytical rigor, and reduce individual bias.

These measures collectively aimed to ensure the trustworthiness of the study, providing confidence that the findings accurately reflect the perspectives of participants and are grounded in the data.

Data Analysis:

Data from focus group discussions were analyzed using thematic analysis. The FGD transcripts were reviewed several times by 2 researchers in order to familiarize themselves with the data. They then coded for important concepts or ideas. Once a consistent coding framework was formed, NVivo 9 (QSR International Pty Ltd, Doncaster, Australia) Software was used to organize and apply the above framework to all the FGD transcripts in the two categories. To ensure consistency and accuracy, 20% of the transcripts were coded by both researchers for comparison. The data was then reviewed to identify main themes related to: 1) the content of the reminder text messages, 2) the format of the messages, 3) the tone used, and 4) the timing and frequency of message delivery.

Other considerations:

All study participants provided written consent to take part in the research. Ethical approval was sought and obtained from the Research and Ethics Committee of Mbarara University of Science and Technology (MUST-2025-351). Also, administrative clearance was obtained from Hospice Africa Uganda. In order to protect participant anonymity, no names were used.

Guiding analytic theory:

This qualitative study was guided by the Health Belief Model (HBM). This model provided a valuable theoretical lens to internalize and predict health-related behaviors among cancer patients receiving palliative care, especially those in resource-limited settings, such as Western Uganda. This theory posits that an individual's effective engagement in health-promoting action is influenced by their perceptions of susceptibility, severity, benefits, barriers, cues to action, and self-efficacy.[17].

Results:

The main purpose of this study was to examine perspectives of cancer patients and health professionals on the use of reminder text messages in palliative care in Western Uganda.

For cancer patients, there were 4 focus group discussions (FGDs) across the 2 study sites of LHH and MHM, with each group having 8 participants. The majority were female, 20(64%), while males were 12(36%), and the mean age was 61 years. The most common diagnoses were: cancer of the cervix 11(34.4%), cancer of the breast 6 (18.8%), cancer of the prostate 5(15.6%), cancer of the colon 2(6.3%), and others 6(18.8%).

For palliative care health professionals, there were 2 FGDs across the 2 study sites, with each group having 6 participants. Their mean age was 42 years, and the majority were nurses 7(58.3%).

The results are categorized under 6 meta-themes.

1) The type of information (the content) preferred to be included in the reminder text messages
2) The format of the reminder text messages
3) The tone of the reminder text messages
4) The frequency of the reminder text messages
5) The preferred language in which the reminder text messages should be phrased
6) Other important features of the reminder text messages
7)

a) Responses from cancer patient participants:
The content of the reminder text messages:

Cancer patient participants from both study sites articulated several key issues they believe should be incorporated into the reminder text messages to enhance their effectiveness and relevance. Four main themes emerged from their discussions:

1) **Guidance on Medication Adherence**
A recurring concern among participants was the critical importance of medication adherence in their treatment journey. Many emphasized that clear, specific instructions could significantly improve their compliance and health outcomes. For instance, a participant from FGD 1 at MHM remarked, *"The message should include directions on how to take our drugs properly—when and how much—so that we don't miss doses or take them incorrectly. Sometimes, we forget or get confused, and these reminders can help us stay on track."* Participants expressed that such guidance could serve as a continuous support system, reinforcing the importance of consistent medication intake amidst the daily challenges they face.

2) **Reminders for Clinic Appointments and Follow-up Visits**
Participants highlighted that forgetfulness and cognitive decline, especially among older adults or those with advanced cancer disease, pose significant barriers to consistent healthcare engagement. A participant from FGD 2 at LHH explained, *"Many of us are elderly and battling advanced cancer. We often forget our appointments or get so overwhelmed that we lose track of when to go back to the hospital. Gentle reminders via text messages could help us remember our reviews and avoid missing critical follow-up visits."* Such reminders could serve as vital tools in ensuring continuity of care, reducing missed appointments, and promoting timely interventions, which are essential for effective disease management.

3) **Building Resilience and Enhancing Coping Strategies**
Beyond clinical adherence, participants expressed a strong desire for messages that bolster their emotional and psychological resilience. The burden of cancer often leads to feelings of hopelessness, financial strain, and social isolation. A participant from FGD 1 at LHH shared*, "Sometimes, I feel overwhelmed by the challenges—lack of money for transport, food, school fees for my children, and the pain. I wonder if these messages can include words of encouragement or tips to help us cope better with these difficulties*." Participants believed that supportive messages could serve as a source of motivation, hope, and psychological strength, helping them navigate the multifaceted stresses associated with their illness.

4) **Comprehensive Health Education and Self-Care Guidance**
Participants underscored the importance of receiving ongoing health education through these messages. They suggested that reminders should encompass vital aspects of their care, including routine laboratory investigations, nutrition, prevention strategies, and recognizing warning signs. A participant from FGD 2 at MHM remarked*, "The messages should be comprehensive—they should tell us how to take care of ourselves, what foods are good for us, when to do checkups, and how to identify symptoms that need urgent attention."* Such educational content could empower patients to take an active role in their health, improve self-management, and reduce complications.

In summary, cancer patient participants across both sites emphasized that well-designed reminder messages should go beyond simple prompts; they should serve as holistic tools that support medication adherence, reinforce appointment schedules, promote emotional resilience, and provide essential health education. Incorporating these elements could significantly improve patient engagement, adherence, and overall well-being.

The format of the Reminder Text Messages:

Cancer patient participants across both study sites expressed clear preferences regarding the optimal format of the reminder messages. The consensus revolved around the idea that messages should be succinct yet contain all essential information to be effective and user-friendly. Several participants emphasized the importance of brevity, noting that lengthy messages could diminish engagement and be perceived as burdensome.

A participant from FGD 2 at MHM highlighted this point, stating: *"Long messages, although detailed and informative, can be boring at times. I would prefer short and comprehensive ones."* This sentiment was echoed by many, who felt that concise messages are more likely to be read thoroughly and remembered. They suggested that messages should focus on delivering key points in a straightforward manner, avoiding unnecessary details that might overwhelm or discourage recipients from reading them fully.

Participants also stressed the importance of clarity and readability. Simple language, clear instructions, and avoiding complex medical jargon were recommended to ensure that the messages are easily understood by all, including those with limited literacy or language barriers. One participant from FGD 1 at LHH mentioned, *"The message should be easy to read and understand quickly—perhaps using simple words and short sentences—so that even someone who is busy or tired can grasp the message instantly."*

In summary, participants emphasized that the format of the reminder messages should prioritize brevity, clarity, and ease of understanding. Short, comprehensive messages are more likely to be effective, ensuring that recipients receive and act upon the information without feeling overwhelmed or disengaged.

Participants' preferences on the Tone of the Messages

Many participants emphasized the importance of maintaining a friendly and compassionate tone in the reminder messages. They conveyed a preference for messages that are simple, warm, and devoid of technical jargon or commanding language, which can sometimes feel impersonal or harsh.

A participant from FGD 1 at LHH highlighted this, stating: *"Sometimes, a message can have good intentions but is commanding and lacks a caring tone. Really, a good message should show care and concern. It should be written in simple terms."* This underscores the desire for messages that not only deliver information but also convey empathy and support, making recipients feel valued and cared for.

Participants suggested that the tone should foster a sense of encouragement and reassurance, especially considering the sensitive nature of the health-related messages. Using polite language, positive phrasing, and expressions of concern or support were recommended to enhance receptivity and motivation.

Additionally, some participants pointed out that a caring tone can help overcome potential misunderstandings or resistance, making the message more effective in prompting action. For example, incorporating expressions like "We care about your health," or "Remember, we are here to support you," were suggested as ways to reinforce a friendly and supportive tone.

Overall, the consensus was that the tone of the messages should reflect kindness, respect, and concern. Friendly, simple, and empathetic language is believed to increase engagement and positively influence behavior.

Participants' Perspectives on Message Frequency and Timing

Cancer patient participants emphasized that the timing and frequency of reminder messages are crucial factors influencing their effectiveness and receptivity.

Considering the frequency of sending messages, responses varied greatly—from three times a day to once weekly. However, a significant majority of participants favored weekly messages, preferably sent in the morning hours. One participant in FGD 2 at LHH stated: *"Very frequent messages can be nagging; they should not be too many, otherwise they will be ignored. I think one message per week or two times a week is sufficient."* Participants expressed that overly frequent messages could lead to annoyance or message fatigue, reducing their overall effectiveness. Conversely, infrequent messages might be missed or fail to serve as timely reminders. Regarding timing, most participants agreed that messages should be sent at times when recipients are most likely to be available and receptive. Early mornings or late evenings may not be ideal, as recipients might be busy or unavailable. Instead, mid-morning or early afternoon times were often preferred. Some participants suggested that timing should consider individual routines, such as work schedules or personal habits.

Participants also highlighted the importance of sending reminders sufficiently in advance to allow recipients to prepare or plan. For example, a reminder a day before an appointment was considered effective, providing enough lead time without causing unnecessary anxiety. Additionally, a few participants recommended sending follow-up messages if no response is received, to reinforce the reminder without being intrusive.

In summary, participants favored a balanced approach—sending well-timed messages at reasonable intervals that align with recipients' daily routines and preferences—maximizing both engagement and effectiveness.

Participants' perspectives on the Language of the Messages

Regarding the language used in the reminder messages, the most dominant opinion was that messages should be framed in languages commonly spoken in the area, such as Runyankore and English. Participants emphasized that using familiar languages would enhance understanding and engagement. A participant in FGD 1 at MHM stated: *"Yes,*

the messages should be in Runyankore because a big number of people didn't go to school. They can also be in English." This highlights the importance of linguistic accessibility to ensure that the messages are comprehensible to a broad audience, including those with limited formal education.

Some participants also suggested that offering messages in multiple languages or providing simple, clear phrasing could improve comprehension across diverse linguistic groups. Additionally, incorporating local dialects or culturally relevant phrases was seen as beneficial in making the messages more relatable and impactful.

Overall, participants agreed that selecting appropriate languages—primarily Runyankore and English—would be vital for effective communication and ensuring that the messages reach and resonate with the target population.

Perspectives on other features of the messages

Regarding additional features of the reminder messages, the dominant view was that messages should be personalized or individualized rather than generic. Participants believed that customized messages could significantly enhance the recipients' self-esteem and sense of being valued. One participant from FGD 1 at LHH shared: *"If it is a general message, one feels that it is for everybody, and they don't pay attention to it. Really, when one sends me a message in my name, I feel great!"*

This sentiment underscores the importance of tailoring messages to the individual, which can foster a sense of recognition and importance. Personalized messages are perceived as more engaging and likely to prompt action, as they demonstrate that the sender considers the recipient's unique circumstances.

Participants also discussed other features such as the tone of the messages—preferring friendly and respectful language—and the use of culturally appropriate content to make messages more relatable. Including motivational or encouraging phrases was seen as beneficial to motivate recipients further.

Overall, participants emphasized that incorporating features like personalization, culturally sensitive language, and encouraging tone would enhance the effectiveness and receptivity of the reminder messages.

Summary of Palliative Care Professionals' Perspectives on Reminder Text Messages for Cancer Patients:

Based on in-depth discussions with palliative care health professionals across two different sites, several key themes and insights emerged regarding the optimal content, format, tone, timing, and additional features of reminder text messages designed for cancer patients receiving palliative care.

The content of the message:

The professionals emphasized that the messages should comprehensively cover essential aspects of patient care. This includes reminders about medication adherence, which is crucial given that many patients are on complex medication regimens. As one participant noted, *"Because many of our patients are taking many drugs, they need support to stay compliant, as they can often feel overwhelmed."* In addition, the messages should incorporate health education components, such as guidance on nutrition and personal hygiene—both vital for maintaining patient strength and comfort. For example, some professionals suggested that messages could include practical tips on maintaining proper nutrition or hygiene routines. details, like a phone number or helpline, so patients can easily reach out for feedback, questions, or emergencies. A participant from MHM emphasized this need, stating, *"Many patients are overwhelmed by their medication schedules, so reminders and support are vital to help them stay on track."*

Furthermore, it is vital that the messages inform patients about warning signs or symptoms that might indicate complications or emergencies related to their condition. This proactive communication can empower patients to recognize danger signs early and seek timely assistance. As one participant from LHH explained, *"It is important to remind these patients about their common danger signs/ symptoms (palliative care emergencies), because this way, they will know what to do in case of any eventuality."*

Format of the messages:

Regarding the format and length of the messages, the consensus was that brevity and clarity are key. The messages should be short, concise, and to the point, yet comprehensive enough to cover necessary information without overwhelming the patient. A participant from LHH remarked, *"The content should be brief but comprehensive enough to cover all the vital aspects of care."* This approach helps ensure that patients read and understand the messages without feeling burdened.

Tone of the messages:

The tone of the messages should be calm, empathetic, and friendly—conveying genuine care and concern. Participants stressed that a caring tone can foster trust and reassurance, which are especially important in palliative care settings. A participant from MHM articulated this by stating, *"The best message should be that with a caring and empathetic tone."* Such a tone helps reinforce the supportive relationship between healthcare providers and patients.

Frequency and timing of the messages:

Timing and frequency of the messages were also discussed extensively. Most professionals recommended sending messages on a weekly basis, ideally during the morning hours. They believed this frequency strikes a balance between maintaining engagement and avoiding message fatigue. One participant noted, *"messages should not be very frequent because that way, the patients easily lose interest and may not easily read them. In my view, weekly messages are adequate, and they should be sent during morning hours."* Morning delivery is considered optimal as patients are more likely to read and absorb the messages at that time.

Other vital features of the messages:

In addition to content and timing, professionals highlighted the importance of personalizing messages to increase their effectiveness. Addressing patients by their names was seen as a way to foster a more personal connection, enhance self-esteem, and make the communication feel more genuine. A participant from LHH emphasized this, stating, *"When you address a patient by their name, they feel highly valued, that you know them personally, and it also raises their self-esteem."* Personalization not only improves engagement but also reinforces the patient's sense of being cared for individually.

In summary, palliative care professionals advocate for reminder messages that are clear, empathetic, personalized, and timely, covering key aspects of medication, health education, and emergency awareness, delivered in a manner that promotes trust and engagement. Implementing these insights can help enhance adherence, improve patient outcomes, and foster a supportive relationship between healthcare providers and patients in palliative care settings.

Table 1: Description of the coding tree:

Main theme	Meta-theme/ Sub-theme	Description	Illustrative quotes
1. Content of reminder text messages.	Guidance on Medication Adherence	Clear instructions on medication schedules, doses, and the importance of compliance	"The message should include directions on how to take our drugs properly—when and how much—so that we don't miss doses or take them incorrectly." (FGD participant, MHM)
	Reminders for Appointments & Follow-up	Notifications for upcoming visits, reducing missed appointments	"Many of us are elderly and battling advanced cancer. We often forget our appointments or get so overwhelmed that we lose track of when to go back to the hospital." (FGD participant, LHH)
	Building Resilience & Coping Strategies	Encouragement, motivational messages, and emotional support	"Sometimes, I feel overwhelmed by the challenges—lack of money for transport, food, school fees for my children, and the pain. I wonder if these messages can include words of encouragement or tips to help us cope better." (FGD participant, LHH)
	Health Education & Self-Care	Guidance on nutrition, hygiene, warning signs, and self-management	"The messages should tell us how to take care of ourselves, what foods are good for us, when to do checkups, and how to identify symptoms that need urgent attention." (FGD participant, MHM)

	Emergency & Warning Signs	Information on danger symptoms requiring immediate attention	"Remind patients about danger signs—so they can recognize emergencies and seek help early." (Palliative care professional)
2. Format of Messages	Brevity & Clarity	Short, concise, easy-to-understand messages	"Long messages, although detailed and informative, can be boring at times. I would prefer short and comprehensive ones." (FGD participant, MHM)
	Readability & Simplicity	Use of simple language, avoiding complex jargon	"The message should be easy to read and understand quickly—perhaps using simple words and short sentences—so that even someone who is busy or tired can grasp the message instantly." (FGD participant, LHH)
3. Tone of Messages	Friendly & Compassionate	Messages should be warm, caring, and empathetic	"Sometimes, a message can have good intentions but is commanding and lacks a caring tone. Really, a good message should show care and concern." (FGD participant, LHH)
	Respect & Positivity	Use polite language and positive phrasing to encourage engagement	"Messages should show concern and support, like 'We care about your health' or 'Remember, we are here to support you.'" (Participants)
4. Frequency & Timing	Optimal Frequency	Weekly or bi-weekly messages preferred	"Very frequent messages can be nagging; they should not be too many. One message per week or two is sufficient." (FGD participant, LHH
	Timing	Send messages in the morning or when recipients are most receptive	"Messages should be sent at times when recipients are likely to be available—mid-morning or early afternoon." (Participants)
	Follow-up & Reminders	Send additional messages if there is no response or closer to the appointment.	"Follow-up messages after some time if no reply, or a reminder a day before appointments." (Health professional)
5. Language of Messages	Use of Local & Common Languages	Messages should be in languages like Runyankore and English	"Yes, the messages should be in Runyankore because many people didn't go to school. They can also be in English." (FGD participant, MHM)
	Multilingual & Culturally Relevant	Incorporate dialects and culturally familiar phrases	"Using local dialects or culturally relevant expressions makes messages more relatable." (Participants)
6. Other Features	Personalization	Address patients by their names to foster engagement	"When you address a patient by their name, they feel highly valued, and it boosts their self-esteem." (LHH participant)
	Cultural & Motivational Content	Use culturally appropriate language and motivational phrases	"Including motivational words or culturally sensitive content can motivate patients further." (Participants)

Discussion

This study sought to explore the preferences of cancer patients and palliative care health professionals regarding the content, format, tone, timing, and other features of reminder text messages within a palliative care setting in Western Uganda. The findings provide valuable insights

into designing culturally appropriate, patient-centered mobile health interventions aimed at improving adherence, engagement, and overall well-being among cancer patients receiving palliative care.

Patients' and palliative care health professionals' perspectives on the content of the reminder text messages

Both patients and health professionals emphasized the importance of content that is comprehensive yet concise. Patients prioritized messages that include guidance on medication adherence, appointment reminders, health education, and emotional support. The recurring theme of medication adherence underscores its critical role in treatment success, especially given the complex regimens many patients face. As one patient highlighted, "the message should include directions on how to take our drugs properly—when and how much—so that we don't miss doses or take them incorrectly."

Similarly, health professionals stressed the need for messages to include warning signs and emergency cues, empowering patients to recognize and respond to complications promptly. It is a strongly held idea that mobile phone text messaging enhances adherence to medication and compliance with medical appointments, and this is in total agreement with findings of another systematic review. [18] where the potential of text messaging for medication non-adherence was demonstrated.

Beyond clinical information, patients expressed a desire for messages that bolster resilience and coping strategies, reflecting the psychosocial challenges inherent in palliative care. This aligns with existing literature indicating that emotional support can significantly influence health outcomes and patient satisfaction in resource-limited settings. [19]. Incorporating motivational and culturally relevant health education can foster self-efficacy and promote active self-management[20].

Format, Tone, and Other Features

Participants universally agreed that message brevity and clarity are essential for ensuring comprehension and engagement. Concise, straightforward language minimizes cognitive load, particularly considering potential literacy or language barriers. The preference for simple, friendly, and empathetic tones aligns with best practices in health communication, fostering trust and encouraging positive behavior change. [21]. Participants also emphasized the significance of personalization; addressing patients by their names and tailoring messages to individual circumstances can enhance self-esteem and make communication more meaningful. [22]. Such personalized approaches can be particularly impactful in culturally diverse settings, where respect and relational connection are valued. [23].

Timing and Frequency of Messages

Optimal timing and frequency emerged as critical factors influencing message effectiveness. The majority preferred weekly messages dispatched during mid-morning hours, balancing the need for timely reminders with the avoidance of message fatigue. This finding is consistent with prior research suggesting that moderate frequency and strategic timing can enhance message salience and response rates. [24]. Sending reminders sufficiently in advance allows patients to prepare and reduces anxiety, while follow-up messages for non-responses could reinforce adherence without being intrusive. [25].

Language and Cultural Relevance

The preference for messages in local languages such as Runyankore and English underscores the importance of linguistic accessibility. Utilizing familiar languages and incorporating culturally relevant content can improve comprehension and acceptance. This approach aligns with principles of culturally competent communication, which is essential in resource-limited and multilingual contexts. [26].

Incorporating the Health Belief Model (HBM)

The insights from this study can be further understood through the lens of the Health Belief Model (HBM), which posits that health behaviors are influenced by individuals' perceptions of susceptibility, severity, benefits, barriers, and self-efficacy. [17]. Tailoring messages to address these components can enhance their effectiveness. For example, messages that highlight the risks of non-adherence and potential complications target perceived susceptibility and severity, motivating patients to adhere. Emphasizing the benefits of following treatment plans reinforces positive beliefs, while culturally sensitive and straightforward messages can mitigate perceived barriers. Additionally, providing supportive and encouraging content can strengthen self-efficacy, empowering patients to take an active role in managing their health. Integrating the HBM into message design thus offers a structured approach to fostering behavior change within resource-limited palliative care settings.

Limitations and Future Directions

While this study provides valuable qualitative insights, its

findings are context-specific and may not be generalizable beyond the studied settings. Future research could explore the impact of implementing such tailored message interventions on clinical outcomes, adherence rates, and patient satisfaction through quantitative studies. Moreover, examining technological literacy, access issues, and the integration of behavioral models like the HBM will be essential for scaling up effective interventions in similar resource-limited contexts.

Conclusion

The findings of this study bring to the fore the critical importance of culturally appropriate, concise, and customized reminder text-message interventions in improving clinical outcomes through enhancing medication adherence, appointment attendance, and psychosocial support among cancer patients receiving palliative care in Western Uganda.

Implications for Practice and Policy

The insights from this study suggest that designing effective reminder text messages for patients receiving palliative care in Western Uganda should incorporate patient preferences. Developing messages that are informative, empathetic, personalized, and culturally sensitive can enhance engagement and adherence. Additionally, integrating feedback mechanisms, such as contact details and or helplines, can facilitate continuous support and problem-solving.

Further research should be conducted about barriers to ensure the feasibility and scalability of reminder text messages in this setting. Also impact of these interventions should be assessed through quantitative studies: pilot interventions and evaluation of their effects.

List of abbreviations

FGDs   Focus Group Discussions
HBM   Health Belief Model
mHealth   Mobile Health
SMS   Short Message Service

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Authors' contributions

J.B.N designed and carried out the study. He also drafted the manuscript.
J.K., E.N., E.N., and E.M reviewed and edited the manuscript.

Data availability

The data supporting the findings of this qualitative study are not publicly available due to confidentiality and ethical reasons because they include sensitive information and personal narratives. However, de-identified extracts/excerpts and summarized data are available from the corresponding author on reasonable request.

Declarations
Ethics approval and consent to participate

All the data were de-identified before being analyzed. Ethical approval was granted by Mbarara University's Ethics Review Committee (Reg. no. MUST-2025-351). Also, administrative clearance was obtained from Hospice Africa Uganda (HAU), and informed consent was obtained from the study participants.

Consent for Publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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