Guidance note

Guidance note:

Evidence-based communication strategies for protecting communities from extreme heat in Tanga and Unguja cities in Tanzania

Climate Centre

Table of contents

Acknowledgements 3

1. Introduction 4

2. Behaviour change principles for heat action 6

3. Audience communication cards 8

3.1 Older people (60+ years) 9
- Priority actions 9
- Message example 9
- Channels and messengers 9
- Communication ideas 9

3.2 Outdoor/casual workers 10
- Priority actions 10
- Message example 10
- Channels and messengers 10
- Communication ideas 10

3.3 People with health conditions 11
- Priority actions 11
- Message example 11
- Channels and messengers 11
- Communication ideas 11

3.4 Pregnant women 12
- Priority actions 12
- Message example 12
- Channels and messengers 12
- Communication ideas 12

3.6 Children 13
- Priority actions 13
- Message example 13
- Channels and messengers 13
- Communication ideas 13

4. Timing of communication 14

5. Next steps 15

Bibliography 16

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1. Introduction

The Tanzania Red Cross Society (TRCS) conducted heat risk perception studies in the cities of Tanga and Unguja, surveying 866 community members in 2024 to assess how people understand and respond to extreme heat. This guidance note aims to share key information from that study and suggest strategies that can be used to improve heat risk perception, behaviour change communication.

Based on the risk perception surveys, **older people, outdoor/casual labourers, the unemployed, people with health conditions, pregnant women and youth** are identified as groups at elevated risk of extreme heat. These individuals will be the primary target audiences for the communication guidance.

The heat perception survey findings underscore the importance and potential impact of improving heat awareness. There are many self-protective actions that can reduce the impact of extreme heat on people, preventing heat-related illnesses and deaths. If people have greater heat risk perception, and are persuaded and empowered to take self-protective actions, they are likely to see reduced impacts and improved health.

The study found that the relationship between age and education was significant, with individuals with formal education as well as older people expressing concern about extreme heat compared to younger people and those without formal education. This underscores the need to consider demographics when designing knowledge awareness interventions. Younger people should be targeted with information on extreme heat. Most of the young people interviewed were engaged in outdoor activities such as boda boda riding (fast, affordable motorcycle taxis that are a major source of youth employment in Tanzania). Consequently, they are highly exposed to extreme heat.

The majority of people were knowledgeable about the impacts of extreme heat. However, less than half reported changing their behaviour to address its consequences. This shows a gap in turning knowledge into action. One of the reasons for this inaction could be the belief that extreme heat is God's will or 'natural change' – a perception that is widely held in religious communities in Tanga and Unguja that can reduce the motivation to act.

Most of the people surveyed in Tanga and Unguja can name two or three symptoms of heat exposure as well as two or three mitigation strategies to avoid its adverse effects. While casual labourers and unemployed people could typically name more symptoms and strategies, people with existing health conditions tended to be able to name fewer ways to cope with the heat and its effects. This highlights a key gap which means that messaging needs to convince people that heat impacts are preventable and equip them with specific actions that are relevant to their lived realities and effective at reducing the impacts.

In terms of changing behaviour, only one-quarter of the people surveyed in Tanga and Unguja 'always' change their behaviour during hot weather, while more than half do 'sometimes'. These results are mainly influenced by education and age. Younger people are less likely to 'always' change their behaviour during hot weather, while people aged 50–65 and 65+ are most likely to 'never' change their behaviour. The study shows that most people surveyed in Tanga and Unguja have experienced unusually hot weather and see extreme heat as a

problem in their area, but perceptions of severity and vulnerability vary sharply by age, occupation, education and health status. Casual labourers, unemployed people and older adults tend to rate the heat as more severe and to consider themselves highly at risk. Younger people and those without formal education aren't as concerned about extreme heat and are, therefore, less likely to discuss heat risk with others.

These findings mean that communication campaigns must: (a) target segments of the community that have low perceived risk but high exposure (especially youth and people without formal education); (b) close the intention–action gap by making actions specific, easy and clearly impactful; and (c) directly address religious and practical barriers that prevent people from turning awareness into behaviour change.

2. Behaviour change principles for heat action

Research on behaviour change communication highlights the importance of producing messages that are personally relevant, specific and actionable. The following research-based principles can help guide communication in order to improve risk perception and encourage people to take self-protective action.

1. Keep messages simple. Focus on including a maximum of three actions in each message to avoid overwhelming the recipient. In Tanga and Unguja, many people are already aware of some symptoms and coping strategies but struggle to remember and apply multiple recommendations during hot days. Simple, repeated messages with one to three clear actions are more likely to be used in practice.

2. Explain the impacts. People have a hard time envisioning the impacts of abstract numbers such as temperatures (e.g., 40°C). It's important to clearly communicate the consequences of the temperature or other heat-related metrics (e.g., at this temperature, just 30 minutes of sun exposure could lead to fainting).

3. Pair risks with actions. Messages that only explain the health consequences of extreme heat risk overwhelming the audience. The audience needs to believe that they can do something about the risk (McLoughlin *et al.,* 2023). Therefore, these messages should be paired with actions that are relevant and effective. For example, "Heatwaves are deadly. You can lower your body temperature right now by soaking your feet in cool water or placing a damp cloth on your neck." Survey and qualitative findings show that warnings that only describe danger, without concrete steps, are one reason why people do not act on early warning information.

4. Personalize the message. One of the biggest communication challenges is the belief that "heat is dangerous for others, but not for me". Reminding people of their past unpleasant experiences with extreme heat (e.g., a headache brought on by spending too much time in the sun during the last heatwave) can help overcome this optimism bias (Valkengoed & Steg, 2019).

5. Address barriers head on. Behaviour change is more likely to occur when barriers to action are removed. Therefore, messaging that addresses potential barriers is more likely to result in action. For example, "If you don't have access to air conditioning or fans during hot nights, open windows for some time and use a wet towel on your skin to stay cool."

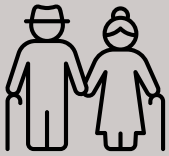
6. Connect individual action with structural solutions: In the survey, community members and experts repeatedly stressed tree planting, better urban planning and improved water supply as essential for coping with the heat. Communication should link personal actions (drinking water, resting in the shade) with support for collective measures (planting and maintaining trees, keeping neighbourhoods clean, advocating for water points and shaded public spaces) so people see their behaviour as part of a broader solution.

In Tanga and Unguja, barriers include frequent electricity blackouts, limited access to water, low-income households living in poorly ventilated structures, and a common belief that extreme heat is 'God's will' and cannot be changed. Messages should: (1) offer low-cost, no-electricity actions; and (2) acknowledge religious beliefs while emphasizing that protecting one's health, family and environment is consistent with faith-based values. It should be noted that religious leaders are critical actors and are highly regarded as champions of change in both cities.

Beyond messaging, it is also important to make it easy for people to take the appropriate action by making heat-protective behaviours the default. For example, systems that require people to deliberately choose NOT to receive alerts (opt out) rather than to choose to receive them (opt in) reduce friction. Another example is opening cooling centres in or bringing cooling equipment to the places where people work outdoors rather than asking them to step away from their work to go to a cooling centre across town – an unrealistic ask.

Lastly, it's also critical to co-develop and test messages with target groups and refine them based on feedback. Continually checking for understanding, and asking people whether they remembered the messages and if they took action based on them can improve messages and ensure their efficacy in the future (Grothmann *et al.,* 2017).

3. Audience communication cards



3.1 Older people (60+ years)

In Tanga and Unguja, 28 per cent of the people surveyed were older people, consisting of those aged 50–65 years (21 per cent) and 65+ years (7 per cent). Over half of the people aged over 50 consider themselves to be 'very much' at risk from heat. People over the age of 65 were more likely than other age groups to be bothered by the heat in the morning (20.3 per cent compared to 9.5 per cent of 18–30 year olds), evening (27.1 per cent compared to 10.9 per cent of 18–30 year olds) and at night (74.6 per cent compared to 69.2 per cent of 18–30 year olds).

Despite the relatively high level of risk awareness, people over the age of 65 were the most likely of any age group to never change their behaviour during hot weather (18.6 per cent of their age bracket) followed by people aged 50–65 (13 per cent of their age bracket). While they feel very at risk and suffer at night, they are relatively unlikely to change their behaviour.

High susceptibility to heat, yet lower awareness of heat-related health risks poses barriers to action that messaging must overcome. In addition, older people may have a higher prevalence of chronic illnesses and face limited mobility that places them at higher risk still.

PRIORITY ACTIONS

1. Drink water at regular intervals, even when not thirsty.
2. Pour water on the face and neck frequently to reduce body temperature.
3. Stay in the coolest available space during the hottest hours of the day (11am to 3pm).
4. Keep bedroom doors and windows open to improve nighttime airflow.
5. Reduce outdoor activity during peak heat hours.

MESSAGE EXAMPLE

"Today will be very hot, especially from late morning to afternoon. Heat can make you dizzy, weak and even seriously ill. This is especially true for older adults aged 60 and above. Encourage your parents and grandparents to drink lots of water, even if they're not thirsty. Advise them to frequently pour water on their faces and necks to reduce their body temperature. If they feel unwell, contact a healthcare professional immediately."

CHANNELS AND MESSENGERS

Those surveyed tend to find weather information through television (TV), radio, word-of-mouth and social media. However, older people and people with existing health conditions seem to more strongly prefer word-of-mouth. Around half of the people aged 65+ favoured this form of communication (47.5 per cent) compared to around one-quarter of those aged 18–30 (25.8 per cent).

Since older adults prefer word-of-mouth, effective messengers and channels could include community health workers, mosque and church announcements, home visits by volunteers, community meetings and local TV and radio programmes. Messages should invite children and neighbours to help older people implement actions (e.g., by offering them water, checking on them in the evening).

COMMUNICATION IDEAS

1. Spread heat risk messages to older adults via community leaders and TRCS volunteers. Give local leaders and volunteers a script to follow to guide them during home visits, check-ins, Friday prayers and community meetings.
2. Broadcast radio programmes and messages for older adults in hot weather. Ask older adults and healthcare workers to do short interviews on mitigating the dangers of heat to add context to the broadcasts.
3. Share short videos on social media featuring older adults talking about extreme heat.

3.2 Outdoor/casual workers

Outdoor/casual workers are often engaged in informal jobs such as street vending, daily wage labour and construction work, which tend to be low-paying, high-risk and lack social protection.

Most outdoor/casual workers surveyed (80.3 per cent) are aware of increases in temperature in Tanga and Unguja, and most likely to consider themselves 'somewhat' (44.6 per cent) or 'very much' (45.2 per cent) at risk of heat impacts. They are also the most likely to be concerned about others' exposure to heat (79.6 per cent). More than any other employment group, outdoor/casual workers tend to attribute increasing temperatures to climate change, urbanization and deforestation.

They are also the most likely of any occupation to respect heat warnings. Efforts should be strengthened to reach to this group during dangerous heat conditions, along with providing them with public shade and rest opportunities.

PRIORITY ACTIONS

1. Be aware that extreme heat is dangerous to health.
2. Take short shade breaks regularly.
3. Drink water frequently.
4. Pour water on your face and neck often to reduce body temperature.
5. Use sun protectors to avoid heat impacts.
6. Recognize the signs of heat-related illness.
7. Check on your co-workers for signs of heat-related illness.
8. Organize informal buddy systems at worksites where workers check each other for signs of heat illness and remind one another to take shade breaks and drink water.

MESSAGE EXAMPLE

"Between 12–5pm, today's heat could be dangerous. Protect yourself: drink water every 20 minutes, take 10-minute breaks in the shade every hour, and stop work immediately if you feel dizzy or weak."

CHANNELS AND MESSENGERS

Across both cities, outdoor/casual workers tend to get their messages through radio (66.9 per cent), social media (27.4 per cent) and public displays (14.6 per cent). Business owners are more likely to use newspapers (9.7 per cent) as the best way to spread information about the dangers of heat in their community. Effective messengers and channels could include briefings to employers, driver associations and community groups.

Because outdoor/casual workers already take the heat seriously and are more likely than other groups to change their behaviour and respect the warnings, communication should position them as 'heat safety champions' who can spread self-protective practices at workplaces and in public spaces.

COMMUNICATION IDEAS

1. Give safety briefings to employers and employees at construction sites and outdoor markets.
2. Spread messages through trade unions, workers' associations, community and religious leaders.
3. Post short videos of outdoor/casual workers on social media and in workers' WhatsApp groups.
4. Make posters for boda boda and other taxi drivers and position them at sites where drivers often gather.

3.3 People with health conditions

People with pre-existing health conditions perceive heat as more severe and largely consider themselves at risk, yet can name fewer coping strategies and tend to receive heat alerts later than those without health conditions. This combination of high vulnerability and lower preparedness makes tailored, repeated messaging crucial.

Like older adults, people with an existing health condition seem to more strongly prefer word-of-mouth as the priority communication channel. Concerningly, around half as many people with a health condition received an alert one week in advance (13.2 per cent) than people without a health condition (27.5 per cent). In addition, one-quarter of people with a health condition received the alert one day before an extreme heat event (25.3 per cent) versus 20 per cent of people without a health condition.

PRIORITY ACTIONS

1. Learn about the health impacts of heat.
2. Discuss with community health workers and other health providers how hot weather interacts with your medicines and conditions, and when to seek urgent care (e.g., sudden dizziness, chest pain, confusion).
3. Provide heat messages at hospitals and clinics so that patients can receive them when going for routine medical checks. Visuals and word-of-mouth communication during these health visits helps to convey critical messages.
4. Minimize indoor heat with low-cost methods e.g., using fans and opening windows and doors.
5. Avoid warm clothing.
6. Reschedule activities away from peak heat hours.
7. Use community cooling spaces where available.

MESSAGE EXAMPLE

"When heat is strongest at midday, use wet cloths to cool your body, drink water often, and rest in shaded community spaces if your home is too hot."

CHANNELS AND MESSENGERS

Effective messengers and channels could include TV, radio, local non-governmental organizations and community health workers. Because many people with health conditions rely on clinics and hospitals, integrate brief, repeated heat advice into routine visits and waiting room information, especially before and during the hot season.

COMMUNICATION IDEAS

1. Arrange community meetings after prayers with snacks and information sharing.
2. Put posters in public places and health facilities.
3. Start a social media campaign with short videos of trusted community members.

3.4 Pregnant women

Most respondents mentioned children and pregnant women as being especially affected by the heat. It was highlighted that some pregnant women experience high blood pressure because of the heat and are hospitalized, but often when checked in an air-conditioned ward their blood pressure had returned to normal.

Focus group discussions noted that pregnant women often continue heavy domestic and caregiving work during hot periods so may have limited opportunities to rest or access cooler spaces, even when they're aware of the risks.

PRIORITY ACTIONS

1. Plan household tasks so that the heaviest work (such as cooking with charcoal, fetching water or trips to market) is done during the cooler hours, and ask family members to share tasks when heat is strongest.
2. Increase hydration.
3. Reduce heat exposure (indoors and outdoors).
4. Look for early symptoms of heat illness.

MESSAGE EXAMPLE

"During pregnancy, heat affects your body faster. Today is very hot. Please drink water often, stay in the coolest space available, and rest during the midday heat. If you feel a headache or any nausea or weakness, seek care immediately."

CHANNELS AND MESSENGERS

Pregnant women look for weather information on social media, by word-of-mouth or via TV and WhatsApp.

Effective messengers and channels could include midwives, doctors and mothers' support groups.

COMMUNICATION IDEAS

1. Train health workers to deliver tailored talks during routine check-ups.
2. Feature testimonials from local mothers in TV and radio programmes about staying safe during hot weather.
3. Make animated videos and infographics to show key heat protection actions for pregnant women.
4. Send SMS reminders on the dangers of heat linked to antenatal visits.
5. Complement digital content with printed leaflets and group talks at antenatal clinics and women's groups, recognizing that not all pregnant women regularly use social media or smartphones.

3.6 Children

Healthcare professionals report increased skin problems, including boils, and respiratory issues in children during hot periods as well as disrupted sleep and reduced appetite. Since most children rely on caregivers at home and school to protect them, messages should equip parents, carers and teachers with simple routines to keep children cooler at home, on the way to school and in classrooms and playgrounds.

PRIORITY ACTIONS

1. Drink water frequently.
2. Reduce sports and other outdoor activities during peak heat times.
3. Use sunscreen when outside.
4. Avoid warm clothing.
5. Cool class-rooms by opening windows and doors, using curtains or sheets of paper on sun-facing windows, and allowing short, shaded breaks during peak heat times.

MESSAGE EXAMPLE

"Children can be affected by the heat faster than adults. Protect children by providing drinking water, ventilating indoor spaces like school classrooms, and avoiding outdoor activities during the hottest part of the day."

CHANNELS AND MESSENGERS

Effective messengers and channels could include parents, peers, student environmental groups, school administrators and staff.

COMMUNICATION IDEAS

1. Arrange a project with an association of mural/graffiti street artists in the city, involving local students.
2. Link school heat awareness days with practical actions such as planting and caring for shade trees in school yards, and simple experiments showing how shade and light clothing reduce heat impacts.
3. Set up a heat awareness and safety competition with student organizations.
4. Support schools to hold heat awareness days and share heat warnings in class and assemblies.

4. Timing of communication

Effective heat communication depends not only on what is communicated, but also when messages are delivered. Communication should begin before the heat season, continue through the event and include post-event learning.

The heat season in Tanzania runs from December to March and peaks in February. Pre-season communication is essential for priming the population to take action in advance of the hottest months of the year. Repeated exposure to simple self-protective actions before heat events improves recall and increases the likelihood that people act during alerts (Ebi *et al.,* 2004).

In Tanga and Unguja, around three-quarters of people report receiving weather forecasts mainly via TV and radio. This same group identifies TV, radio and word-of-mouth as the best ways to spread information. However, many outdoor/casual workers struggle to follow scheduled news broadcasts, and some people with health conditions receive alerts later than others – often only one day before a heat period or on the day it begins. Heat communication plans should therefore combine mass media with flexible, community-level channels (mosques, churches, workplaces, health facilities, SMS and WhatsApp groups) and ensure that highly vulnerable groups are among the first to receive the warnings.

Early warning messages should be delivered close enough to the event to create a sense of urgency, while still allowing time to store water, adjust schedules and identify cooling options. Heat warning studies show that same-day reminders, especially in the morning, significantly improve self-protective behaviours such as increased hydration and reduced outdoor activity (Mehiriz *et al.*, 2018; Li et al., 2024). The study confirms that people want alerts to clearly state not only that extreme heat is coming but also who is most at risk, what symptoms to look out for, and concrete actions they can take with the resources that they have.

These messages must align with daily planning routines and are critical for converting risk awareness into self-protective actions. In addition, short reminder messages during peak heat hours act as behavioural cues, helping people to pause risky activities and adopt self-protective actions in real time. Finally, post-event learning strengthens future responses by identifying gaps in message clarity, channel effectiveness and behavioural barriers.

5. Next steps

While this document brings together the results of heat risk perception surveys with research on behaviour change communication, further work is required to turn these guidelines into a communication campaign. The messages in this document can be developed into multi-channel, context-specific communication materials for local organizations such as the TRCS, civil society and other humanitarian organizations in Tanga and Unguja to adapt and use effectively. Local organizations responsible for implementing communication initiatives in both cities can use the guidance in this document to gather ideas for a comprehensive communication campaign, outlining further details on timelines, phases and specific communication channels.

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Glossary

Extreme heat: An umbrella term for unusually high daytime and/or nighttime temperatures, sometimes combined with other factors like humidity, wind or solar radiation, that create above-normal heat stress compared to local climate conditions. What is considered 'extreme' varies by region, depending on the typical climate.

Heatwave: One form of extreme heat is called a 'heatwave' – a period when temperatures, or temperature combined with other factors such as maximum temperature, nighttime temperature and humidity are unusually high and hazardous to human health and well-being. However, there is no single, universal definition for a heatwave because different temperatures have varying impacts in different parts of the world. For example, in London, United Kingdom, a high of 28°C is considered to be a heatwave, while in the plains of India the temperature must be higher than 40°C to qualify as a heatwave.[1] Heatwave definitions can vary even within a country due to differences in climate, geography, topography, population vulnerability and observed health impacts.[2] Heatwaves must be defined using thresholds that correspond to local weather conditions and their impact on human health and systems.

Hot weather: Refers to a period when the temperature is above the normal or average temperature for a specific location and time of year but does not reach an extreme level that impacts human health and well-being.

1 https://preparecenter.org/resource/city-heatwave-guide-for-red-cross-red-crescent-branches/

2 https://www.preventionweb.net/understanding-disaster-risk/terminology/hips/mh0501?utm_source=undrr&utm_medium=redirect&utm_campaign=hips&utm_content=MH0501


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