



Lebohang Radebe

Wits RHI

Health worker perceptions of the effects of heat on their wellbeing, performance and quality of care in Tshwane, South Africa

Lebohang Radebe, Darshnika Pemi Lakhoo, Jean le Roux, Rose Refilwe Lamola, Nondumiso Mbatha, Ijeoma Solarin, Celeste Madondo, Shobna Sawry, Matthew Chersich, Nasser Fardousi, Veronique Filippi, Gloria Maimela, for the HIGH Horizons Study Group



University of the Witwatersrand
WITS RHI



Background



Figure 1: Location of the City of Tshwane
(Source: City of Tshwane, 2016⁴ and Vector Stock)

Research Question: What is the effect of heat on Healthcare Worker **Wellbeing, Performance** and **Quality of Care** in two Tshwane Health Facilities?

Table 2.2. The present-day climate of Tshwane: Seasonal and annual averages for minimum, maximum and mean daily temperatures (°C). These averages were calculated over the period 1961-1990, using the gridded station data of the CRUTS3.1 data set.

Variable	Winter	Spring	Summer	Autumn	Annual
Minimum temperature (°C)	3.9	12.5	16.1	10.7	10.8
Maximum temperature (°C)	20.5	26.5	28.2	24.6	24.9
Average temperature (°C)	12.2	19.5	22.2	17.6	17.8

Summer:

- December – February
- Wet and hot

Winter:

- June - August
- Dry and cold

City of Tshwane. “City of Tshwane Climate Risk and Vulnerability Assessment”. 2015
City of Tshwane. “City of Tshwane Climate Action Plan. 2021

¹ COGTA, 2020. City Profile. Cooperative Governance and Traditional Affairs (CoGTA). Available [here](#).
² Demographia, 2021. World Urban Areas. 17th Annual Edition. Available [here](#).

³ COGTA, 2020. City Profile. Cooperative Governance and Traditional Affairs (CoGTA). Available [here](#).
⁴ City of Tshwane, 2016. (Bioregional Plan for the City of Tshwane. Available [here](#).

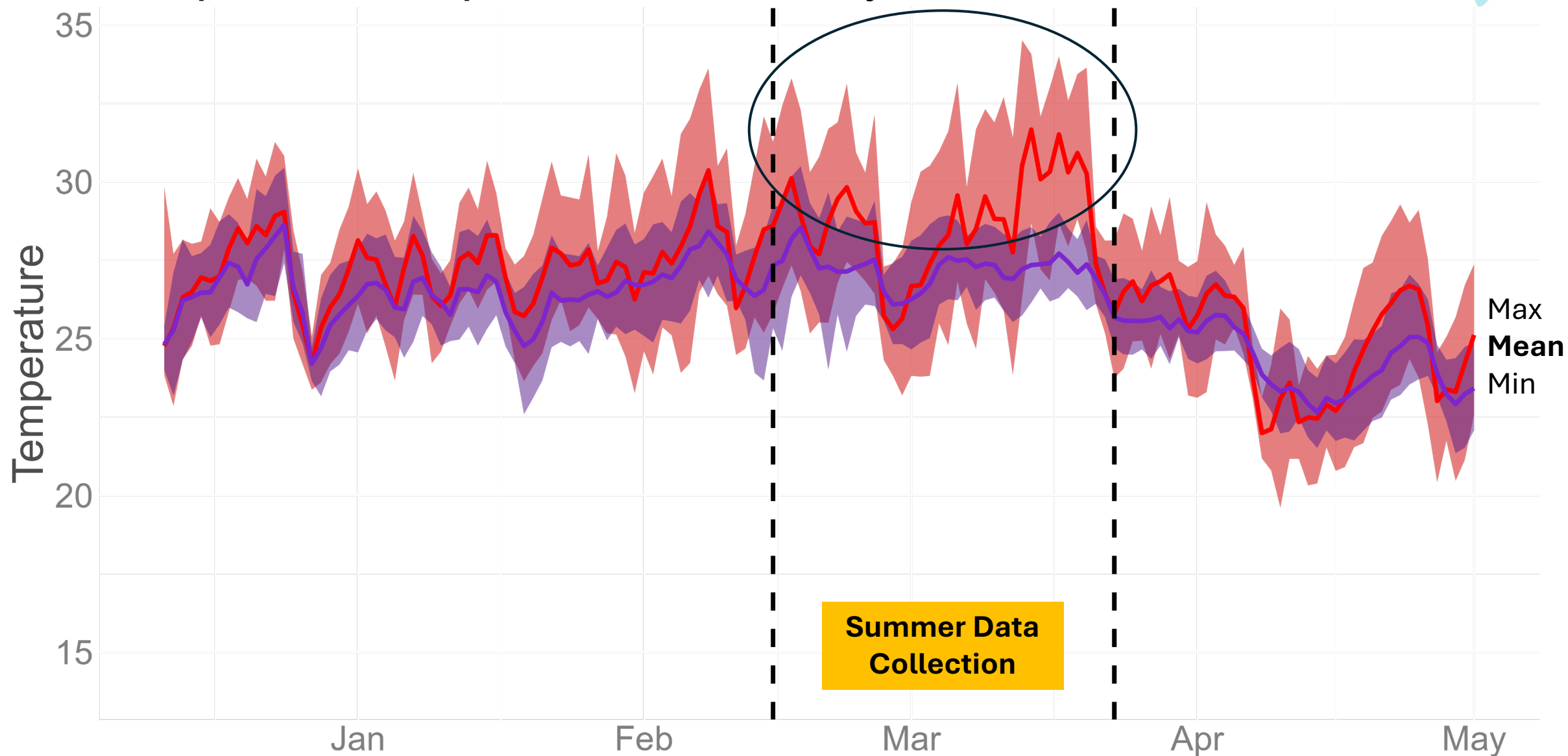
Respondents and Data Sources

	Survey	Thermal Monitoring
Number of participants	80	5 rooms (3 Hospital, 2 Community Health Centre)
% Female	99%	
Age Median (IQR)	40 (31-50)	
% Clinical staff	60%	
Total years worked Median (IQR)	11 (5.4-17.1)	
% Based in hospital	68%	



Health Workers and their **Current Work Environment**

Temperature Exposure Over Study Period



Site ■ Clinic ■ Hospital * Excl. neonate

Perceived Effects of Heat on Wellbeing

Thinking about the hottest day in the last week, ...

21% reported severely sweating

Hospital: 19% | **Clinic:** 27%

15% reported being extremely thirsty

Hospital: 7% | **Clinic:** 31%

24% reported being so tired they wanted to take a break

Hospital: 22% | **Clinic:** 27%



22% reported being very uncomfortable on the hottest day in the last week

Hospital: 15% | **Clinic:** 38%

5% were so uncomfortable they wanted to quit their jobs

Hospital: 0% | **Clinic:** 15%

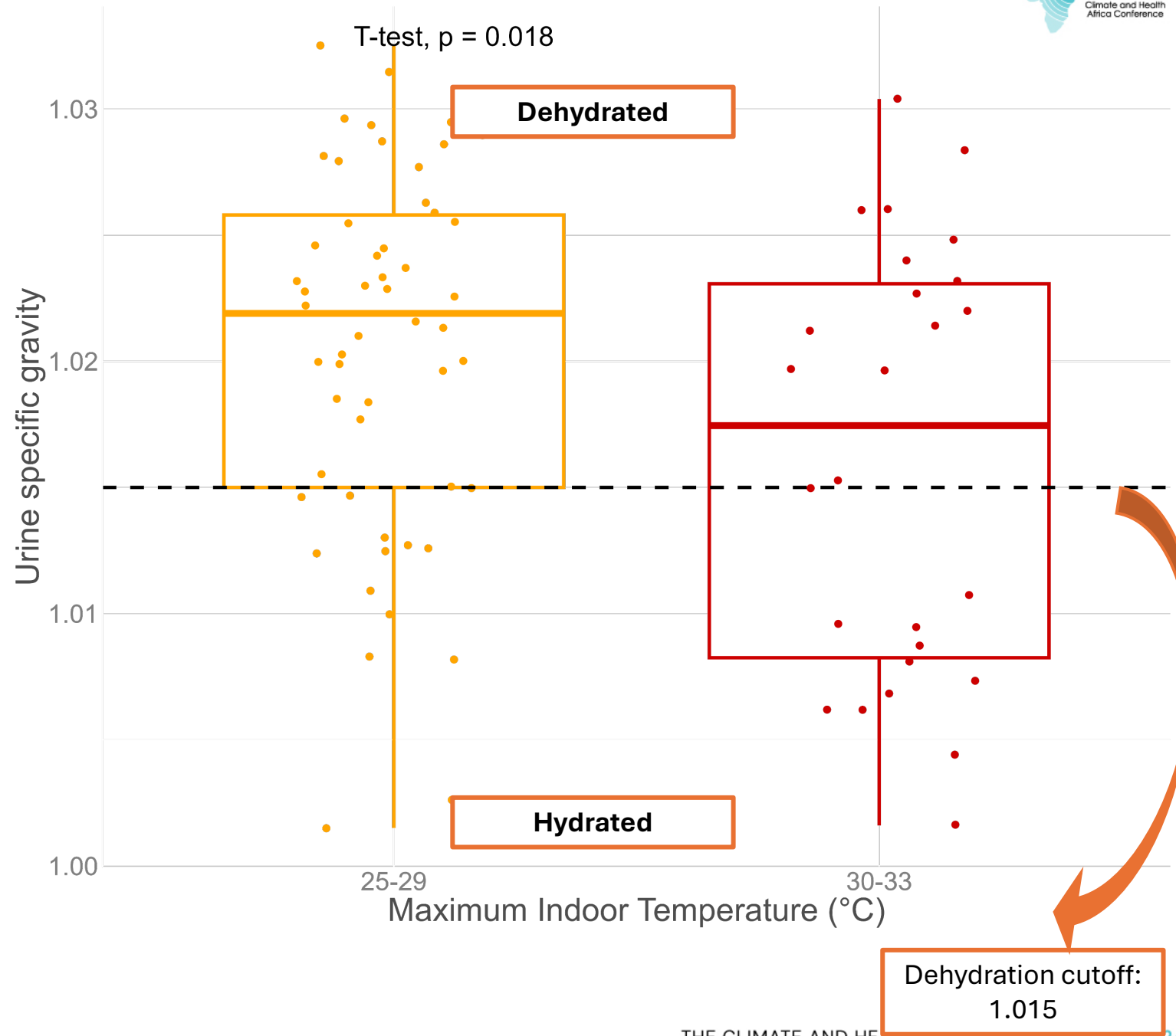
71% reported experiencing heat stress

Hospital: 63% | **Clinic:** 88%

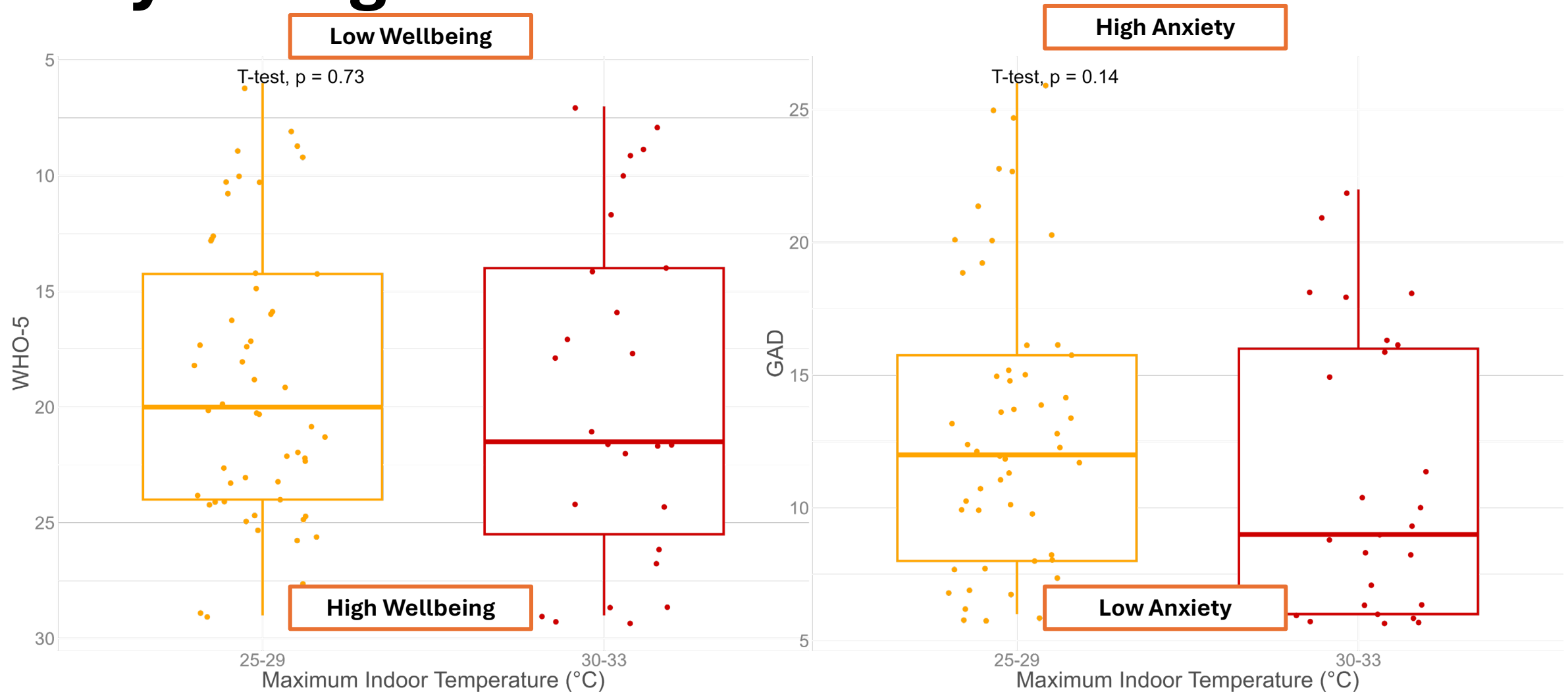
Dehydration

Urine Specific Gravity

- **66%** of respondents were dehydrated (**Hospital:** 76% | **Clinic:** 58%)
- Some evidence of more severe dehydration on summer days when maximum temperature is not too hot



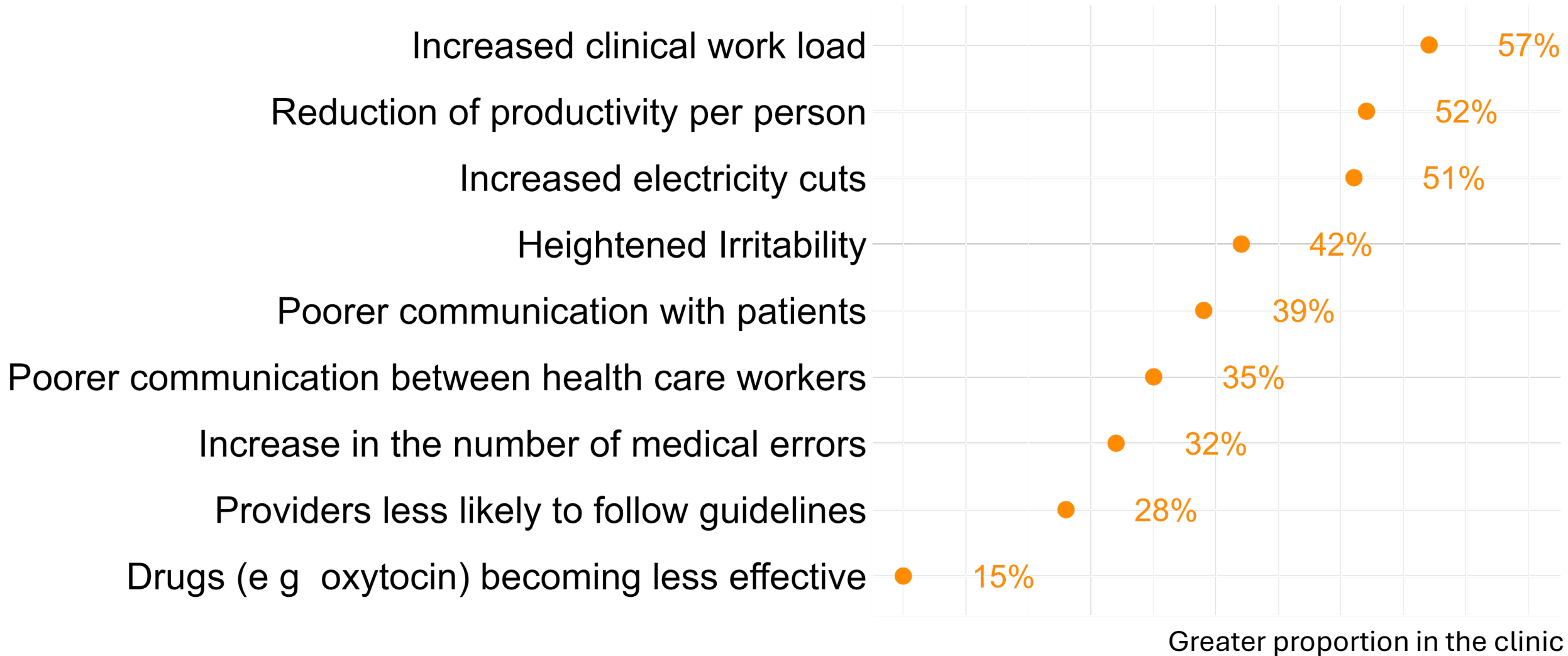
Psychological Effects of Heat



No relationship between WHO-5 and GAD and heat exposure

Heat and Performance and Quality of Care

Thinking about the last heatwave that occurred in your area, how often did you observe any of the following...



Availability of Heat Adaptations

Water

15%

Functioning air conditioning

21%

Cold refrigerated water

26%

Fans

42%

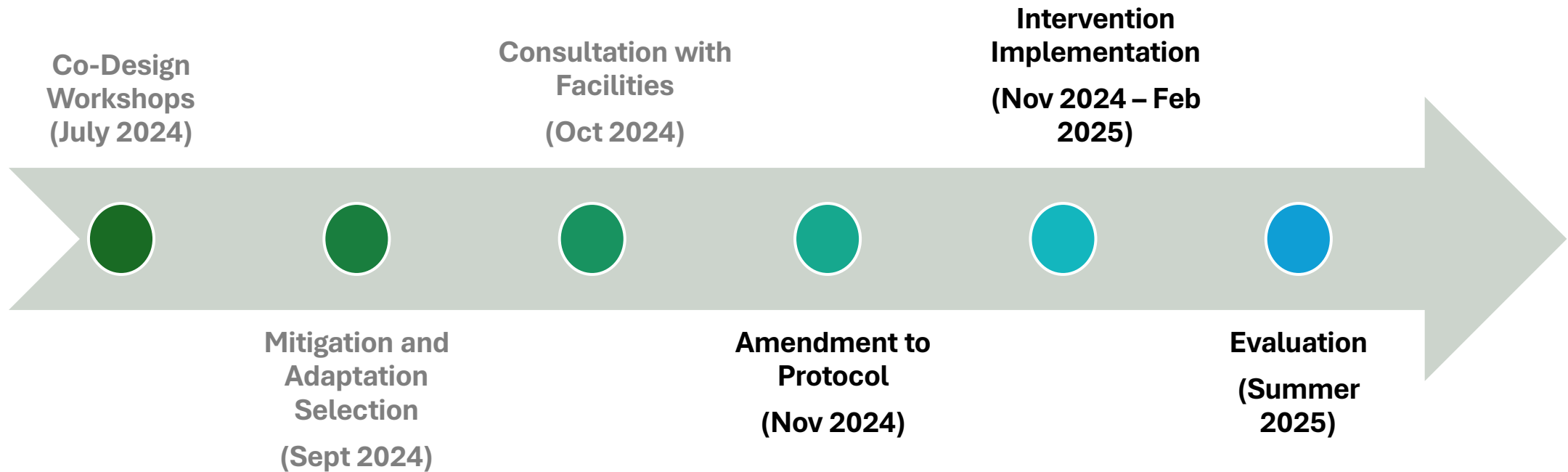
Shading devices to reduce direct sunlight

45%

Never/Rarely

- 66% report having few or no trees near the clinic/ward

Next Steps





Thank you to all the healthcare workers who shared time and experiences with us, and to the facility managers, clinic committee, District of Tshwane, Community Advisory Board (CAB) and the funders for making this work possible.



HIGH Horizons has received funding from the European Union's Horizon Framework Programme under Grant Agreement No. 101057843. Project partner LSHTM is funded by UKRI Innovate UK reference number 10038478.