



**36th South African
NATIONAL BLOOD
Transfusion Congress**

22 – 25 August 2022 - Durban

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Haematological reference ranges in blood donors served by the National Blood Service Zimbabwe (NBSZ), Harare branch

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Background

- Haematological reference ranges are used for laboratory results interpretation to promote diagnostic accuracy and sound clinical decision-making.
- Prior to year 2000, the National Blood Service Zimbabwe (NBSZ) used to internally perform haematological tests using the Coulter Count haematology analyser as required for blood donors and therapeutic patients.
- The internal performance of haematological tests was temporarily shelved in preference of outsourcing the service due to persistent machine breakdown and unsustainability of running costs for the haematological tests.

Background continue

- However, in 2016, NBSZ resumed performing full blood count parameters for some of its blood donors.
- Currently the NBSZ is using reference ranges that it obtained from other laboratories without verification which may compromise the quality of its results.
- Ideally, NBSZ is supposed to use haematological reference ranges defined by reference limits which are obtained from measurements on blood donors.
- These reference ranges have not yet been established by NBSZ.

Objectives

- This study is a comprehensive determination of haematological reference ranges of healthy voluntary non-remunerated blood donors in Zimbabwe.
- The specific objectives of the study are:
 - to determine the reference ranges for blood donors at the NBSZ Harare branch catchment area by
 - sex and age categories.

Hypothesis

- The hypothesis is that:
 - the reference ranges for NBSZ blood donors have changed since the last time that they were determined by Mandisodza et al in 2006.

Methods

- Study design was cross-sectional experimental study
- A total of 505 healthy participants, 284 (56.4%) males and 221 (43.8%) females were recruited as per NBSZ`s donor enrolment and assessment guidelines.
- All the blood samples were collected using spray coated K2EDTA plastic tubes separately from the routine blood donor screening tests.
- For each blood sample, a full blood count (FBC) was determined using the Mindray BC-30s haematology machine.
- Medians for haematological reference values were determined at 2.5th and 97.5th percentiles and
- compared with reagent manufacturer-based values adopted by our laboratory from European and Western countries.

Results

- There was a significant difference between:
 - the results obtained by Mandisodza et al in 2006
 - the reference ranges currently used by NBSZ
 - and the results obtained in this study

Conclusions

- The differences of the reference ranges between gender is significant.
- The difference between currently used ranges and currently obtained reference ranges is significant.

Recommendations

- There is need to design a study for determining reference ranges for the Zimbabwean population.
- NBSZ can use the currently determined reference ranges because:
 - they are age and gender categorised and
 - the population size is bigger than the one done by Mandisodza et al in 2006.

Acknowledgements

- National Blood Service Zimbabwe
- Medical Research Council of Zimbabwe
- Blood donors in Zimbabwe
- Core-Investigators:

²Vincent Kampira, ¹Miriam Zuze, ¹Tanyaradzwa Kahonde, ¹Ripai Govo, ¹Andrew Masiyiwa, ¹Melody Mawire, ⁵David Zezai, ³ChancelarKafere, ¹Lucy Marowa, ¹Dr Tonderai Mapako, ⁴Dr Aaron Maramba.

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2. Mutare Provincial Hospital
3. Paul-Ehrlich-Institute
4. University of Zimbabwe College of Health Sciences
5. Data Explorer Consultancy

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Thank you

