PATTERN OF DONATION AND SOME HAEMATOLOGICAL INDICES OF BLOOD DONORS IN SOKOTO, NIGERIA.

By ISAAC IZ
Introduction

Problem Statement:

- 100 million people sustain life threatening injuries, and more than 5 million die for lack of blood supply yearly.
- Only 2 million out of 80 million units are donated in Sub Saharan Africa (SSA) [WHO, 2002].
- Access to safe and adequate blood and blood product remain a mirage in SSA, thirty years after the first WHO resolution (WHA28.72) to address the issue.
Introduction cont.

Causes of allogenic blood demand

- Escalating elective surgery,
- Various safety introductions in blood transfusion.
- Accidents.
- Infections like HIV and Malaria.
- Terror attacks and PPH have all conspired to ensure that allogenic blood remains very much a vital but limited asset.
Approach

- One hundred and thirty-six consecutively recruited whole blood donors engaged in the study.
- Donors were recruited having given informed consent after counseling.
- Donors were grouped according to types.
- Haematological parameters; packed cell volume, total white cell count and platelet count were assessed using standard techniques.
Study area

- Sokoto State is located in the extreme North Western part of Nigeria near to the confluence of the Sokoto River and the Rima River.

- Sokoto is, on the whole, a very hot area. maximum daytime temperatures 40 °C (104.0 °F). The warmest months are February to April when daytime temperatures can exceed 45 °C (113.0 °F).

- Report from the 2007 National Population Commission indicated that the state had a population of 3.6 million.
Methods

- Three milliliters of blood sample collected into (K2EDTA) anticoagulated blood containers.

- The determination of PCV was by using a microhaematocrit centrifuge (Hawksley, UK).

- Platelet count and Total White Cell count was determined using standard methods.
Statistics

- Statistical analyses were conducted using SPSS (version 11) software.
- Comparisons between populations were made using the Student's t-test for parametric data and the Mann-Whitney test for non-parametric data.
- An alpha value of < 0.05 denoted a statistically significant difference.
- Correlation was compared using a version of linear regression analysis.
Figure 1: Distribution of Blood Donors

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Donors</th>
<th>% of Donors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voluntary Non----</td>
<td>8</td>
<td>5.88%</td>
</tr>
<tr>
<td>Family Replacement</td>
<td>108</td>
<td>79.10%</td>
</tr>
<tr>
<td>Commercial</td>
<td>20</td>
<td>14.71%</td>
</tr>
<tr>
<td>Haematological Parameters</td>
<td>Voluntary Non-Remunerated</td>
<td>Family Replacement</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>PCV (%)</td>
<td>40.25 ± 4.46</td>
<td>41.02 ± 4.46</td>
</tr>
<tr>
<td>TWBC (x 10^9/L)</td>
<td>9.38 ± 2.00</td>
<td>6.37 ± 2.79</td>
</tr>
<tr>
<td>PLC (x 10^9/L)</td>
<td>390.23 ± 64.70</td>
<td>271.44 ± 109.10</td>
</tr>
</tbody>
</table>

**Key:**

PCV = Packed Cell Volume

TWBC = Total White Cell Count

PLC = Platelet Count
<table>
<thead>
<tr>
<th>Haematological Parameters</th>
<th>Voluntary Non-Remunerated</th>
<th>Commercial Remunerated Donors</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCV (%)</td>
<td>40.25± 4.46</td>
<td>28.10±4.15</td>
<td>5.28</td>
<td>0.0001</td>
</tr>
<tr>
<td>TWBC (x 10⁹/L)</td>
<td>9.38±2.00</td>
<td>5.39±3.44</td>
<td>2.89</td>
<td>0.11</td>
</tr>
<tr>
<td>PLC (x 10⁹/L)</td>
<td>390.23±64.70</td>
<td>132.50±40.30</td>
<td>10.37</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Key:

PCV = Packed Cell Volume

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Table 3: Comparison of Haematological values of Family Replacement and Commercial remunerated donors

<table>
<thead>
<tr>
<th>Haematological Parameters</th>
<th>Family Replacement</th>
<th>Commercial Remunerated Donors</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCV (%)</td>
<td>41.02± 4.46</td>
<td>28.10±4.15</td>
<td>8.82</td>
<td>0.0001</td>
</tr>
<tr>
<td>TWBC (x 10^9/L)</td>
<td>6.37±2.79</td>
<td>5.39±3.44</td>
<td>1.27</td>
<td>0.20</td>
</tr>
<tr>
<td>PLC (x 10^9/L)</td>
<td>271.44±109.10</td>
<td>132.50±40.30</td>
<td>3.99</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Key:
PCV = Packed Cell Volume
TWBC = Total White Cell Count
PLC = Platelet Count
Discussion

- Commercially remunerated blood donors make up (14.71%).
- They are often associated with the following problems:
  - High Prevalence of TTIs [Ejele OA et al 2005].
  - They may be poor in health and undernourished;
  - They are more likely to give blood more often than recommended,
  - They have high risk behaviors.
Discussion

- Voluntary non remunareted donors make up 5.88% in this study.
- Family replacement donors constituted a significant number of blood donors (79.41%).
- The disadvantages of this method of blood donation include;
- Patients or their relatives are under intense strain and providing blood puts additional responsibility and stress on them.
Discussion

- Undue pressure may cause members of the family to give blood, even when they know that donating blood may affect their own health.

- Or even at risk of transmission of TTIs.

- It is difficult for a country’s transfusion needs to be met solely relying on family replacement donations [Bates I and Hassall O, 2010].

- Also, there is potentially at risk of producing antibodies to clinically significant antigen/s by spouse.
Discussion

- The trend of PCV and platelet count follows the pattern; commercial remunerated donors < family replacement donors < voluntary non-remunerated donors.

- A positive and significant correlation between commercial remunerated blood donation and low PCV and platelet count [Jeremiah ZA, et al. 2010].
Hindrances of accessing safe and adequate blood

- National blood transfusion services and policies are often lacking.
- Lacking of appropriate infrastructure
- Inadequate trained personnel
- Financial resources are often inadequate.
- Predominance of family replacement and
- Presence of commercially remunerated blood donors,
Challenges of safe and effective blood transfusion

- High incidence of TTIs.
- Reliance on commercial and family-replacement donors.
- Inadequate knowledge.
- Cultural hindrances – related challenges.
- Transfusion of whole blood.
- Lack of effective stewardship.
- Absence of red cell alloimmunization testing services.
- Suboptimal usage of alternatives to allogenic blood.
Challenges of safe and effective blood transfusion continue

- Absence of indication coding tool to facilitate effective use of blood products.
- Absence of evidence-based approaches to the management of major haemorrhages.
- Absence of uninterrupted power supply and challenge of cold chain management of blood product and
- Absence of regular stock of Emergency group O Negative blood for emergency use.
Conclusion

- Family and commercial remunerated donation still predominate in this study.
- The findings from this study indicates that the PCV and platelet count is significantly lower among commercial remunerated donors.
- And it re-emphasize the need to formulate policies on ways to seriously and innovatively attract and retain voluntary non-remunerated blood donors.
References


Acknowledgement

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Appreciations

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