

# THE DISTRIBUTION OF ABO AND RHESUS BLOOD GROUPS AMONG INDIGENES OF IJAW ETHNIC GROUP IN NIGER DELTA REGION, NIGERIA.

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## ABSTRACT

The ABO and Rhesus blood group series is the commonest and most important blood group series. In order to determine its distribution among the indigenes of Ijaw ethnic group in Niger Delta Region, Nigeria, a retrospective study of records of blood groupings from 1046 subjects comprising blood donors, blood recipients, patients attending routine antenatal care as well as individuals who presented for routine medical examinations, over a five year period (2005-2009), was done. Overall, blood group O (65.30%) was the highest, followed by blood group B (19.03%), and blood group A (13.57%) while blood group AB (2.10%), was the least. For the Rh (D) distribution, 95.70% were Rh-positive while 4.30% were Rh-negative. The distributions, according to gender, as well as according to site of study, follow the same trend as that of the general studied population. The results from this study will be useful to health planners and service providers.

**KEY WORDS:** Blood group, Ijaw, Ethnic, Nigeria.

## INTRODUCTION:

The ABO and Rhesus blood group series is the commonest and most important blood groups series. It is of importance in blood transfusion services (Molison,1979), in relation to diseases such as cardiovascular diseases (Shamim et al, 2002), diabetes mellitus (Nwafor and Onugha,2001), erythroblastosis (Komar-Szymborska et al, 1993), organ transplantation (Egawa et al,2004), as the strongest predictors of national suicide rate (Lester,2005) and genetic marker of obesity (Hein et al 2005). They are also useful in population genetic studies, researching population migration patterns, as well as resolving certain medico-legal issues particularly of disputed parentage before the advent of DNA analysis (Sokolov, 1993; Dean,2007). Although the pattern of ABO blood group distribution of the populations in Nigeria has severally been reported as O>A>B>AB, there are however, still some discrepancies especially among ethnic or tribal populations (Onwukeme 1990).

This study therefore, aims at generating basic data on the distribution of ABO and Rhesus blood groups among the indigenes of Ijaw ethnic group in the Niger Delta region of Nigeria which will be useful to health planners and service providers.

## MATERIALS AND METHODS:

### Study Areas:

This is a retrospective study of records of blood groupings of blood donors, blood recipients, and patients attending routine antenatal care as well as individuals who presented for routine medical examinations, over a five year period (2005-2009), in three randomly selected study sites (health facilities) in Bayelsa state. Site1 was Federal Medical Centre (FMC), Yenagoa; site 2, General hospital, Nembe; and site 3, General hospital Brass. These hospitals cover and service Urban, sub-urban, and rural populations in five of the eight Local Government Areas in the state. Non Ijaw indigenes were excluded from the study. Also, all entries were double- checked by each author and repeat entries eliminated. Data from a total of 1046 subjects comprising 672(64%) males, and 374(36%) females were used for the study, after satisfying the inclusion criteria. Of these, contributions from each site were 500(site 1), 412(site 2), and 134(site 3). Their blood groupings were done by standard tile methods as described by Dacie and Lewis (2001).

## RESULTS

The results of the study are as stated in table1 and table 2. It shows a dominance of blood group O

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(65.30%), followed by B(19.03%), A(13.57) and AB(2.10%), while 95.70% are Rhesus positive and 4.30% rhesus negative, for the entire studied population. The results obtained for the both sexes as well as for the different locations studied show a distribution trend and

percentage frequency similar to that of the entire studied population. Generally, the pattern of the ABO blood group distribution for the population studied is O>B>A>AB; and Rh+ > Rh-.

**Table1: Distribution of ABO and Rh blood groups in the three sites studied**

| ABO   | Site 1<br>% (n) |      |        | Site 2<br>% (n) |      |        | Site 3<br>% (n) |      |        |
|-------|-----------------|------|--------|-----------------|------|--------|-----------------|------|--------|
|       | Rh+             | Rh-  | Total  | Rh+             | Rh-  | Total  | Rh+             | Rh-  | Total  |
| A     | 9.80            | 0.00 | 9.80   | 15.78           | 0.24 | 16.02  | 19.40           | 0.75 | 20.15  |
| B     | 15.40           | 0.60 | 16.00  | 20.15           | 0.97 | 21.12  | 23.13           | 0.75 | 23.88  |
| AB    | 1.20            | 0.00 | 1.20   | 2.19            | 0.24 | 2.43   | 4.48            | 0.00 | 4.48   |
| O     | 69.60           | 3.4  | 73.00  | 56.55           | 3.88 | 60.43  | 50.00           | 1.49 | 51.49  |
| Total | 96.00           | 4.00 | 100.00 | 94.67           | 5.33 | 100.00 | 97.01           | 2.99 | 100.00 |

**Table2: Gender distribution of ABO and Rhesus blood groups in the population studied.**

| BLOOD GROUP | Total subjects<br>% (n) |      |        | Male subjects<br>% (n) |      |        | Female subjects<br>% (n) |      |        |
|-------------|-------------------------|------|--------|------------------------|------|--------|--------------------------|------|--------|
|             | Rh+                     | Rh-  | Total  | Rh+                    | Rh-  | Total  | Rh+                      | Rh-  | Total  |
| A           | 13.38                   | 0.19 | 13.57  | 11.31                  | 0    | 11.31  | 17.11                    | 0.54 | 17.65  |
| B           | 18.26                   | 0.77 | 19.03  | 16.67                  | 1.04 | 17.71  | 21.12                    | 0.27 | 21.39  |
| AB          | 2.01                    | 0.10 | 2.10   | 1.04                   | 0    | 1.04   | 3.74                     | 0.27 | 4.01   |
| O           | 62.05                   | 3.25 | 65.30  | 66.07                  | 3.87 | 69.94  | 54.81                    | 2.14 | 56.95  |
| Total       | 95.70                   | 4.30 | 100.00 | 95.09                  | 4.91 | 100.00 | 96.78                    | 3.22 | 100.00 |

## DISCUSSION

The first discovery that the frequencies of the blood groups differ from one population to another was made in the Caucasians (Seeley et al, 1998), while the American blacks similarly have frequencies of blood group A 27%, B 20%, AB 4% and O 49% respectively (Conteras and Lubenko, 2001). In Nigeria, there are few reports on the frequencies of the ABO blood groups among ethnic groups/tribes. Worledge et al (1974), reported that the trend in frequencies among Yoruba and Hausa are O> A > B >AB. However, among the Gwari tribe of Abuja and the Rubuka tribe of Plateau state, all of northern Nigeria, group O has been reported to have the highest frequency in the other blood groups in those states (Onwukeme 1990). However, in a similar study on 34 ethnic groups, predominantly from northern Nigeria, Kulkarni et al (1985) observed that although the trend in the entire studied population was O>B>A>AB, as well as Rh+ > Rh-, as observed in this present study, there was much variation in the distribution of the blood groups in the different ethnic groups.

**Table 3. Frequency of blood group (ABO) and Rh antibodies in some Nigerian populations.**

| Population          | Frequency (%) |       |      |       |       |      | Reference                      |
|---------------------|---------------|-------|------|-------|-------|------|--------------------------------|
|                     | A             | B     | AB   | O     | Rh+   | Rh-  |                                |
| Ijaw Ethnic group   | 13.57         | 19.03 | 2.10 | 65.30 | 95.70 | 4.30 | <b>Present study</b>           |
| Northern Nigeria    | 23.05         | 25.95 | 4.40 | 46.60 | 96.36 | 3.64 | Kulkarni et al (1985)          |
| Ibadan              | 21.6          | 21.4  | 2.8  | 54.2  | 95.2  | 4.8  | Omotade et al. (1999)          |
| Ogbomosho           | 22.9          | 21.3  | 5.9  | 50.0  | 96.7  | 3.3  | Bakare et al. (2006)           |
| Benin (Niger Delta) | 23.7          | 20.1  | 3.0  | 53.2  | 93.88 | 6.12 | Enosolease and Bazuaye, (2008) |
| Abraka              | 22.0          | 18.7  | 2.1  | 57.2  | 98.0  | 2.0  | Odokum                         |

|                                      |       |       |      |       |       |      |                           |
|--------------------------------------|-------|-------|------|-------|-------|------|---------------------------|
| (Niger Delta)                        |       |       |      |       |       |      | a et al. (2007)           |
| Port Harcourt (Niger Delta)          | 22.65 | 19.02 | 2.10 | 56.30 | 92.73 | 7.27 | Nwauche and Ejele, (2004) |
| Port Harcourt (Niger Delta)          | 22.9  | 17.0  | 4.84 | 55.16 | 96.77 | 3.23 | Zaccheaus, 2006           |
| Niger Delta University (Niger Delta) | 22    | 22    | 7    | 49    | 98    | 2    | Egesie et al, (2008)      |

Studies in the Niger Delta region of Nigeria, (Table 3) on multiethnic populations such as students in tertiary institutions (Zaccheaus,2006; Odokuma et al 2007; Egesie et al, 2008), blood donors and hospital patients (Nwauche and Ejele,2004; Enosolease and Bazuaye,2008), all show similar distribution pattern of blood group O>A > B > AB, which disagree with the result of this study, possibly due to the mono-ethnic characteristic of the population used for this study. Here, a predominance of blood group O, followed by group B, with group AB being the least, in the order O>B>A>AB, was observed. This further affirms the assertion that frequency figures are valid only for the specific population from which they are derived (Mourant et al., 1976). Also, the dominance of blood group O as well as rhesus positive antigen, as in other reported Nigerian populations, has been emphasized further, by this study.

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