UTTAR PRADESH JOURNAL OF ZOOLOGY

43(1): 1-4, 2022
ISSN: 0256-971X (P)

DISTRIBUTION OF ABO BLOOD GROUP AMONG SOCIO-ECONOMICALLY BACKWARD COMMUNITY OF BIRAUL BLOCK OF DARBHANGA DISTRICT, BIHAR, INDIA

CHANDRA KISHOR ROY [a*] AND AJAY NATH JHA [a]

[a] Department of Zoology, Lalit Narayan Mithila University, Darbhanga-846008, India.

AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

DOI: 10.56557/UPJOZ/2022/v43i12867

Editor(s):
(1) Dr. Sirigireddy Sivajothi, Sri Venkateswara Veterinary University, India.
Reviewers:
(1) Gourab Dewan, Bangladesh.
(2) Betrand Msemwa, Catholic University of Health and Allied Sciences, Tanzania.

Received: 05 November 2021
Accepted: 09 January 2022
Published: 10 January 2022

Original Research Article

ABSTRACT

The demand for blood and blood products has increased due to advances in medical science, Population growth and increased life expectancy. Due to this the aim of present study to determine the ABO blood group system of various community of Biraul block. Blood samples were collected by door to door survey. The frequencies of ABO blood group distribution indicated blood group B was predominant in three Castes i.e. Dusadh, Chamar and Pasi followed by O, A and AB respectively. While in Brahman and Mallah, blood group O was predominant followed B,A and AB respectively. This study helps us to know the exact distribution of blood group in various castes of Biraul block of Darbhanga.

Keywords: ABO blood group; biraul block; dusadh; chamar; pasi; Mallah.

1. INTRODUCTION

Blood groups are excellent genetic markers and are convenient and useful for population genetic studies. Though the frequency of blood group in a population is a very stable characteristic. It is affected by geographical isolation, temporal variation and genetic drift [1-6].

Blood group selection of any region can be influenced by race, ethnicity, geographical conditions, genetic drift and migration frequency of population. Environmental factors and natural selection for survival of population in that region also affect the blood group distribution. The study of distribution of blood group is of great importance for inventory management, safe blood transfusion, disease associated with blood group in specific area and preparation of donor data for organ transplantation [7,8].

There has been a lot of study conducted on this topic in different part of world like in USA, Southeast

**Corresponding author: Email: site4chandra@gmail.com;*

Saudi Arabia, Kenya, Mauritania, Thailand, Southwest Nigeria, Iran, Pakistan, Al-Azhar University in Gaza and Jordan, China. In all above studies, there is predominance of blood group O over B followed by A and AB [9-17, Qian *et al* ; 2020, Sabir *et al* ; 2021).

Study on blood group also conducted in different part of India like in Delhi, Kolkata and Bihar (Purnea District). [18,19, 5,6].

But no such study has been conducted in the Biraul Block of the Darbhanga District of Bihar. So the present work was undertaken.

2. MATERIALS ANDMETHODS

Blood sample from individuals belonging to four schedule castes (Mallah, Pasi, Chamar, Dusadh) and Brahman were collected by a door to door survey method from a sample randomly selected from the population living in different villages of Biraul Block of Darbhanga District (Bihar). The subjects were unrelated adult (more than 18 years age) i.e no two person from the same family.

ABO blood group and Rh-factor was estimated using standard methods. Finger was pricked with the sterilized needle and one drop of blood was transferred to three slides. To each drop, a drop of anti sera A, anti sera B and anti sera D was added separately. On the basis of agglutination, the blood group was detected [2,4].The percentage distribution among these subjects was calculated. Allelic frequencies were calculated according to Mourant et al. [20].

3. RESULT AND DISCUSSIONS

In the present study incidence of different blood groups is given in Tables 1, 2 and Fig 1. The incidence of blood group B was found to be highest in three castes studied i.e. Pasi, Chamar and Dusadh followed by blood group O, A and AB. But in Mallah and Brahman, percentage of blood group O was found to be highest followed by blood group B, A and AB.

In Pasi, out of 98 individuals investigated for ABO blood group, percentage of B was highest (44.89) followed by O (41.83), A (10.20) and AB (3.06). In Chamar, out of 59 individuals, percentage of blood group B was highest (49.15), followed by O (27.12), A (22.03) and AB (1.69). Dusadh (No-138) also shows the highest percentage of B (56.52) followed by O (26.81), A (8.69) and AB (7.97).

The caste Mallah (N=116) was different from all other three castes as percentage of blood group O (43.96) was found highest followed by B (39.65), A (11.22) and AB (5.17).

The caste Brahman (N=190) was also different form above three castes on percentage of blood group O (41.05) was found highest followed by B (25.78), A (18.94) and AB (14.21).

People of Indian sub-continent show a general trend of higher incidence of blood group B from A [20, 21].

In the present study, three castes Pasi, Chamar and Dusadh showed the predominance of blood group B which is in agreement with the above worker and also with Mohroo *et al*. [18].

Table 1. Distribution of ABO blood group in different population

Caste	**No. of individuals**	**Blood group B**	**Blood group O**	**Blood group A**	**Blood group AB**
Pasi	98	44	41	10	3
Chamar	59	29	16	13	1
Dusadh	138	78	37	12	11
Mallah	116	46	51	13	6
Brahman	190	49	78	36	27
Total	601	246	223	84	48

Table 2. Allelic frequency of different population

H.W. Frequency	**P**	**Q**	**R**
Pasi	0.07	0.28	0.65
Chamar	0.18	0.30	0.52
Dusadh	0.07	0.41	0.52
Mallah	0.08	0.26	0.66
Brahman	0.13	0.23	0.64

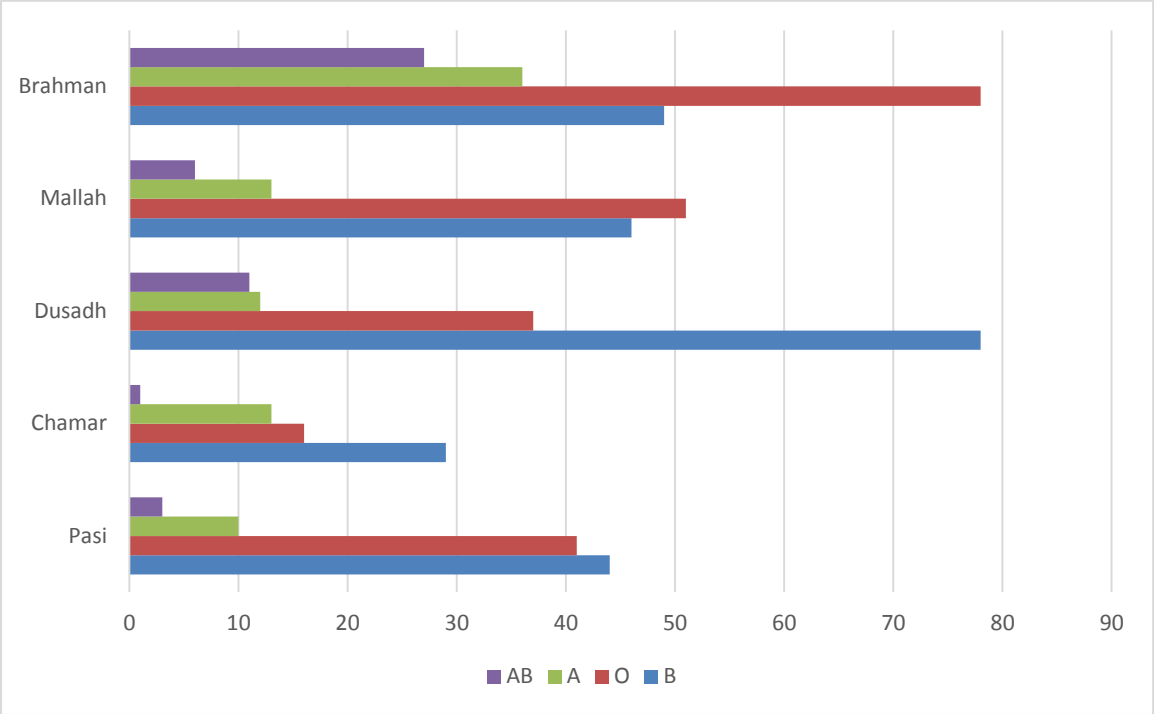

Fig. 1. Percentages of ABO blood groups in the studied populations

The present work differs from others were predominance of blood group A have been reported in the Wuhan of China (Qian *et al* ; 2020).

In the present study Brahman and Mallah population showed the predominance of blood group O over B Which is similar to that reported by Pandey *et al*. [5] in Bengali, Muslim, Kayastha, Rajput and Yadav of Purnea district and Vatsa (2002) in Oraon and Korwa of Gumla District (Jharkhand). This is also similar to studies conducted in USA, Southwest Saudi Arabia, Kenya, Mauritania, Thailand, Southwest Nigeria, Al Azhar University in Gaza and Jordan [9, 10, 11, 12, 13, 14, 15, 16, 17, 22]. The allelic frequencies are given in Table 2 indicated that distribution of ABO blood groups among studied populations follow Hardy Weinberg law.

4. CONCLUSIONS

In the present study, it has been found that the percentage of blood group B is predominant over O followed by A and AB in castes like Pasi, Chamar and Dusadh while in Brahman and Mallah, Percentage of blood group O is higher than B followed by A and AB.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCE

1. Bittles A, Smith, MT. ABO and Rh(D) blood group frequencies in the Ardspeninsula, North eastern Ireland: Evidence for the continuing existence of a major poltico religious boundary. Ann. Hum. Biol. 1991;18:253-258.
2. Pandey BN, Das PKL, Jha AK. A blood group survey in oroan of Purnia District, Bihar, India. J.Hum. Ecol. 1993;4(4):291-294.
3. Pandey BN, Das PKL, Jha AK. Incidence of mendelian traits in five endogamous populations of Purnia, Bihar, Curr. Sci. 1993; 65(12):985-986.
4. Pandey BN, Das PKL, Mishra AK, Jha AK, Pandey K, Pandey AK. Genetic studies in five endogamous population of North Bihar, J.Hum. E col. 1994;5(4):277-287.
5. Pandey BN, Vasulu TS, Das PKL, Pankaj PK. Genetic diversity and population structure among 13 endogamous population of Purnia, Kosi, Bihar. The Mankind. 2000b; 40(4):355-380.
6. Pandey BN, Mishra SK. Prevalence of parasitic infections among three tribal population of Purnia district. J. Ecobiol. 2000;12(1):33-36.
7. Vandana R, Kumar VA, Pradeep K: A Study of ABO and Rh(D) Blood Groups among Kurmi (Backward Caste) of JaunpurDistrict. Anthropologist 2009;11:305–6.

8. Suresh B, Babu Sreedhar KV, Mouli PC, et al.: Distribution of ABO and rhesus (D) blood group antigens among blooddonors at a tertiary care teaching hospital blood bank insouth India. J Clin Sci Res 2015;4:129–35.
9. Lyko J, Gaertner H, Kaviti J, Kariithi M, Akoto B. Blood-groupsystems ABO and RH in the Kenyan population. Folia Med Cracov. 1991;33(1–4):85–92.
10. Nathalang O, Kuvanont S, Punyaprasiddhi P, Tasaniyanonda C, Sriphaisal T. A preliminary study of the distribution of bloodgroup systems in Thai blood donors determined by the gel test.Southeast Asian J Trop Med Public Health 2001;32(1):204–7.
11. Garratty G, Glynn SA, McEntire R. ABO and Rh (D) phenotypefrequencies of different racial/ethnic groups in the United States. Transfusion 2004;44(5):703–6.
12. Skaik Y, El-Zyan NR. Spectrum of ABO and Rh (D) bloodgroups amongst the Palestinian students at Al-Azhar University-Gaza. Pak J Med Sci. 2006;22(3):333.
13. Hassawi DS. Allele frequency and molecular genotypes of ABO blood group system in a Jordanian population. J Med Sci. 2007;7(1): 51–8.
14. Sarhan MA, Saleh KA, Bin-Dajem SM. Distribution of ABO blood groups and rhesus factor in southwest Saudi Arabia. Saudi Med J 2009;30(1):116–9.
15. Hamed C, Bollahi M, Abdelhamid I, Mahmoud M, Ba B, Ghaber S, et al. Frequencies and ethnic distribution of ABO and Rh (D)blood groups in Mauritania: results of first nationwide study. Int J Immunogenet 2012;39(2):151–4.
16. Iyiola O, Igunnugbemi O, Bello O. Gene frequencies of ABO and Rh (D) blood group alleles in Lagos, South-West Nigeria. Egypt JMed Hum Genet 2012;13(2):147 –53.
17. Maatoghi JT, Paridar M, Shoushtari MM, Kiani B, Nori B, Shahjahani M, et al. Distribution of ABO blood groups and rhesus factor in a Large scale study of different cities and ethnicities in Khuzestan province, Iran. The Egyptian journal of Medical human genetics. 2016;17:105-109.
18. Mohroo RN, Hassan MJ. Khan S. Ahmad N. Jetley S. Distribution pattern of ABO and Rh Blood group among blood Donors at Hospital Blood bank in Delhi-An Initial step to Evaluate preparedness to fight an Epidemic. Int Arch Biomed Clin Res. 2020:6(3):PA 3-PA6.
19. Patidar GK, Dhiman Y. Distribution off ABO and Rh (D) Blood groups in India: A systematic review, ISBT science series. 2020;0:1-12.
20. Mourant AE, Kopec AC, Domainiews-kasobczak K. The distribution of human blood groups and other polymorphism 2nd Ed oxford University press, London; 1976.
21. Balakrishna A, Satyanarayana M. A study on the blood groups and Colourblindness among Yadav caste population of Andhra Pradesh, South India. J. Hum Ecol. 1994;5:135 -136.
22. Fan Q, Zhang W, Li B, Li Dd, Zhang J, Zhao F. Association between ABO blood group system and COVID-19 susceptibility in Wuhan. Front. Cell. Infect. Microbial. 2020;10:404.
DOI:10,3389/fcimb 2020.00404.