



Awareness about blood groups and donation among tribal students in Arunachal Pradesh, India

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Abstract:

Many deaths due to shortage of blood can be avoided if blood donors are available. Lack of donors may be because of the lack of awareness of many issues about blood donation. Students consists a large and healthy group who are able to provide a large number of blood donation. Therefore, understanding the various factors contributing to awareness and practices of blood donation among college students is important. The goal of the present study was to find out the knowledge and awareness of blood donations among students belonging to different tribes. Methods: The survey was conducted among 543 students which made up of 214 males (39.41%) and 329 females (60.58%) belonging to different tribes. The study was conducted within a span of 25-30 days, from March 2023 to April 2023 at Dera Natung Government College Itanagar, Arunachal Pradesh. Statistics & Results: The result showed that about 98.52% of the students had sufficient knowledge about blood donation. But hardly 12.33% of them actually donated. The data showed no significant difference in percentage of awareness among different tribes while a slight variation was observed in the donation pattern across the tribes. Conclusion: The study sample has relatively good knowledge about blood donation. However, their practice of blood donation was poor. Thus, there is a need to spread awareness among general population and students about blood donation to keep up a regular blood supply.

Keywords: Blood donation, students, awareness, tribe, Arunachal Pradesh.

INTRODUCTION

There is no greater act of humanity than donating blood. According to the American Red Cross, one pint of blood can save up to three lives. Millions of lives are saved every year by transfusion of blood and blood products in patients suffering from life-threatening conditions, and during complex medical and surgical

procedures. It also has an important, life-saving role in maternal and child care and during the emergency response to accidents and natural disasters.

Unfortunately, in India, there is a huge demand which is met with a short supply. Every two seconds, a person in India requires blood. India needs four crore units of blood every

year but only 40 lakh units are available (India Today 2019¹). “India has the world's largest shortage of blood, with all states together battling a huge shortage of 41 million units and demand is rising” (Sharma, 2019). “India is heavily dependent on replacement blood donation, wherein family or friends are asked to donate blood in lieu of the units given to a patient. This has cause lot of stress to family members to find blood donors on their own. A culture of voluntary blood donation remains a distant dream in India, predominantly because of the misconceptions, misinformation and ignorance about the effect and safety of blood donation (Sadasivan, 2019).

In this scenario, there is serious need to raise awareness of the need for regular blood donations to make sure the quality, safety and availability of blood and blood products for patients in need. Educating students about blood donation would motivate them to become a blood donor after they reach the suitable age, they can also help in creating awareness and ask others to donate blood. College students can serve as a readily available pool of voluntary blood donors and help tide away some of the scarcity of blood and blood products. “Young students are healthy, active, dynamic, resourceful, and receptive and constitute a greater proportion in the Indian population. Those young students have to be encouraged, inspired and motivated to

¹ India Today (2019). World Blood Donor Day: Busting 13 myths you hold about blood donation. India Today Web Desk, New Delhi, 2019 June 14. Retrieved from <https://www.indiatoday.in/education-today/gk-current-affairs/story/13-myths-blood-donor-day-5-facts-1260090-2018-06-14> accessed on 27 October 2019

donate blood voluntarily on a regular basis” (Desai & Satapara, 2014). Hence, assessing their knowledge and awareness toward blood donation may help identify gaps which will be addressed.

Education plays a major role in making decisions to donate blood voluntarily. “With respect to education of the respondents, it has been found that willingness to donate does increase significantly with the levels of education” (Tscheulin & Lindenmeier, 2005). Students are therefore a highly appropriate potential population in which to recruit more blood donors. Regular awareness programmes and blood donation lectures in colleges at regular intervals will certainly increase knowledge of blood donation.

In Arunachal Pradesh voluntary donation rate is comparatively very low. Thus, “the state has struggled to meet the blood requirements by more than 50%” (Sharma, 2019). Some organizations such as Arunachal Voluntary Blood Donor Organization, Arunachal Vivekananda Yuva Shakti, Arunachal Pradesh Society for Education and Development, Arunachal Pradesh State AIDS Control Society are pioneering in blood donation campaign in different parts of the state but their support for the requirement of blood is still insufficient thereby compelling the blood banking services to depend on replacement type of blood donation. In Arunachal Pradesh there were 13 blood banks functional centers in 2019. All these blood banks were attached to hospital. Unfortunately, some of the centers are facing acute problems in maintaining its blood bank in the absence of regular electricity supply to the hospital and thus contributing to

the shortage of blood. Despite regular voluntary blood donation camps, the state still faces blood crisis, as about 5,000 units are collected annually against requirement of about 15,000 units². Thus, there is a need to explore the different factors that can contribute toward voluntary blood donation.

Arunachal (the Land of Dawn) is located in the extreme north-eastern corner of India. It is bordered by Bhutan on the west, China (Tibet) on the north and north-east, Myanmar on the east and south-east and the States of Assam and Nagaland to its south. The State has a territory of 83,743 square kilometer. It is the homeland for a large number of tribes that exhibit cultural heterogeneity in spite of having some common cultural and linguistic elements (Chaudhuri & Tayeng, 2015). Of the many communities, the more prominent ones (due to their numerical strength) are the Nyishi, Adi, Galo, Apatani, Mishmi, Tagin, Khampti, Khamiyang, Singpho, Tangsa, Nocte, Wangcho, Monpa, Sherdukpen, Aka, Bugun, Bangro, Yobin, Memba, Nah, Puroik, Meyor, Sartang and Miji.

Over the years several extensive studies have been conducted to understand the biological aspect of the Arunachalee tribes at different times by different scholars. Some of the significant works on serology and biochemical traits includes Bhattacharjee (1954) on the blood group of the Abor (now Adis); Kumar (1955; 1975) on blood group and

secretor frequency among the Gallong (now Galo); Bhattacharjee (1957) on the ABO, MN, and ABH secretion among the Noctes; Kar (1975) on the Rh blood group among the Adis of Pasighat; Duarah (1979) on the distribution of ABO, MN and Rh blood groups among the Mishmis; Duarah (1980) on the ABO blood groups of the Sulung (now Puroik) of Subansiri District; Kotal et al. (2003) on the frequency and distribution of ABO and Rh (D) blood group among Digaru Mishmis;. However, the most extensive anthropological research on the different tribes of Arunachal Pradesh covering the various physical, biological, and genetic aspects - Anthropometry, Blood groups, PTC taste sensitivity, and Dermatoglyphics was done by M. C. Goswami and P. B. Das in 1990 in their work *The People of Arunachal Pradesh: A Physical Survey*. All these works are valuable piece of sources to be consulted for any analysis of blood frequency and distribution among the different tribes of Arunachal Pradesh.

No doubt several studies have been undertaken to look at the distribution of blood groups among different tribes over the years. No attempts have been done to understand the factors that influence the behavior of blood donation among different tribes. There is no study ever of this nature that has been undertaken in this part of the country. Hence, the study has provided a bird's eye view of the level of knowledge of the student community belonging to different tribes in the capital city of Arunachal Pradesh. The findings of this study will, therefore, be an eye-opener to blood banks operating in the state and policy makers in their effort to create

² Arunachal Pradesh to get 3 new blood banks, The Time of India, February 20, 2019

awareness and to motivate more and more donors to opt as voluntary blood donors.

MATERIALS AND METHODS

The survey was conducted among 543 students made up of 214 males (39.41%) and 329 females (60.58%) belonging to different tribes. The study was conducted within a span of 25-30 days, from March 2023 to April 2023 at Dera Natung Government College Itanagar, Arunachal Pradesh.

After the sortation of 543 students thoroughly, it was found that the students belonged to 12 different tribes –Nyishi, Apatani, Adi, Galo, Tagin, Monpa, Wangcho, Tangsa, Nocte, Khampti, Memba and Aka as shown in Table I. However, due to the geographical location of the study, the students belonging to Nyishi tribes were extensively higher in number as compared to the rest. As such among the selected sample were Nyishi (302) > Galo (57) > Apatani (47) > Monpa (37) > Adi (33) > Tagin (33) > Tangsa (11) > Nocte (7) > Memba (6) > Khampti (5) > Wancho (3) > Aka (2).

Therefore, the total number of selected samples for analysis were (302+57+47+37+33+33+11+7+6+5+3+2) = 543.

It was a cross-sectional, observation study. The survey included structured questionnaires addressing tribe, sex, awareness of the student regarding their blood type, how they knew their blood type and being a blood donor. The collected data were presented in text, tables and histograms. Analysis was performed by using the percentage.

RESULTS

A total of 543 students participated in the study, of whom 214 (39.41%) were male and 329 (60.58%) females. Almost all participants were aware of their blood groups. Only one student was unsure of his blood groups. The most common blood group reported was O+ve (210), A+ve (163), B+ve (119), AB+ve (36), O-ve and AB-ve reported 3 each with A-ve (1) and B-ve (nil). The distribution of the blood groups as reported by the students is summarized in Table I.

Table I. Representation of ABO blood groups among students belonging to different tribes

Tribe	Total	Sex		Blood Groups							
		Male	Female	O+ve	O-ve	A+ve	A-ve	B+ve	B-ve	AB+ve	AB-ve
Nyishi	302	107	195	126	0	89	0	62	0	19	0
Galo	57	28	29	20	2	17	0	13	0	2	2
Apatani	47	23	24	15	0	16	0	11	0	4	0
Monpa	37	11	26	12	0	10	0	12	0	3	0
Adi	33	18	15	13	1	12	0	6	0	1	0
Tagin	33	14	19	11	0	9	1	7	0	4	1
Tangsa	11	2	9	5	0	2	0	3	0	1	0
Nocte	7	2	5	1	0	5	0	1	0	0	0
Memba	6	4	2	2	0	1	0	3	0	0	0
Khampti	5	2	3	2	0	2	0	1	0	0	0
Wangcho	3	1	2	1	0	0	0	0	0	2	0
Aka	2	2	0	2	0	0	0	0	0	0	0
Total	543	214	329	210	3	163	1	119	0	36	3

Table II. Representation of Blood Donation Awareness among students

Tribe	Total	Blood Donation Awareness			
		Aware	Percentage	Unaware	Percentage
Nyishi	302	296	98.01	6	1.99
Galo	57	56	98.24	1	1.74
Apatani	47	46	97.87	1	2.12
Monpa	37	37	100	0	0
Adi	33	33	100	0	0
Tagin	33	33	100	0	0
Tangsa	11	11	100	0	0
Nocte	7	7	100	0	0
Memba	6	6	100	0	0
Khampti	5	5	100	0	0
Wangcho	3	3	100	0	0
Aka	2	2	100	0	0
Total	543	535	98.52	8	1.47

The level of awareness and knowledge among students under study is shown in above table. Overall awareness percentage is 98.52%. There was no significant difference in percentage of awareness among different tribes since almost all tribes showed more than 97% of awareness. Only 1.47% of the populations were unaware of blood donation.

Table III. Representation of Blood Donation among students belonging to different tribes

Tribe	Total	Blood Donation			
		Donated	Percentage	Not donated	Percentage
Nyishi	302	27	8.94	275	91.05
Galo	57	11	19.29	46	80.70
Apatani	47	6	12.04	41	87.23
Monpa	37	2	5.40	35	94.59
Adi	33	9	27.27	24	72.72
Tagin	33	6	18.18	27	81.81
Tangsa	11	0	0	11	100
Nocte	7	0	0	7	100
Memba	6	5	83.33	1	16.66
Khampti	5	1	20	4	80
Wangcho	3	0	0	3	100
Aka	2	0	0	2	100
Total	543	67	12.33	476	87.66

The prevalence of blood donors was less, out of the 543 student participants, only 12.33% were actually donated so far. While 87.66% were not donated, though all of them felt that they should donate blood. Out of 67 students who donated blood, Nyishis have the highest donors of 27 (though only represent 8.94% of their total population) while Wangcho, Tangsa and Nocte have 0 donors (though their sample size were also less). Statistically, the Memba with 83.33% and the Adi with 27.27% shows more donation of blood as compared to other tribes' percentage wise.

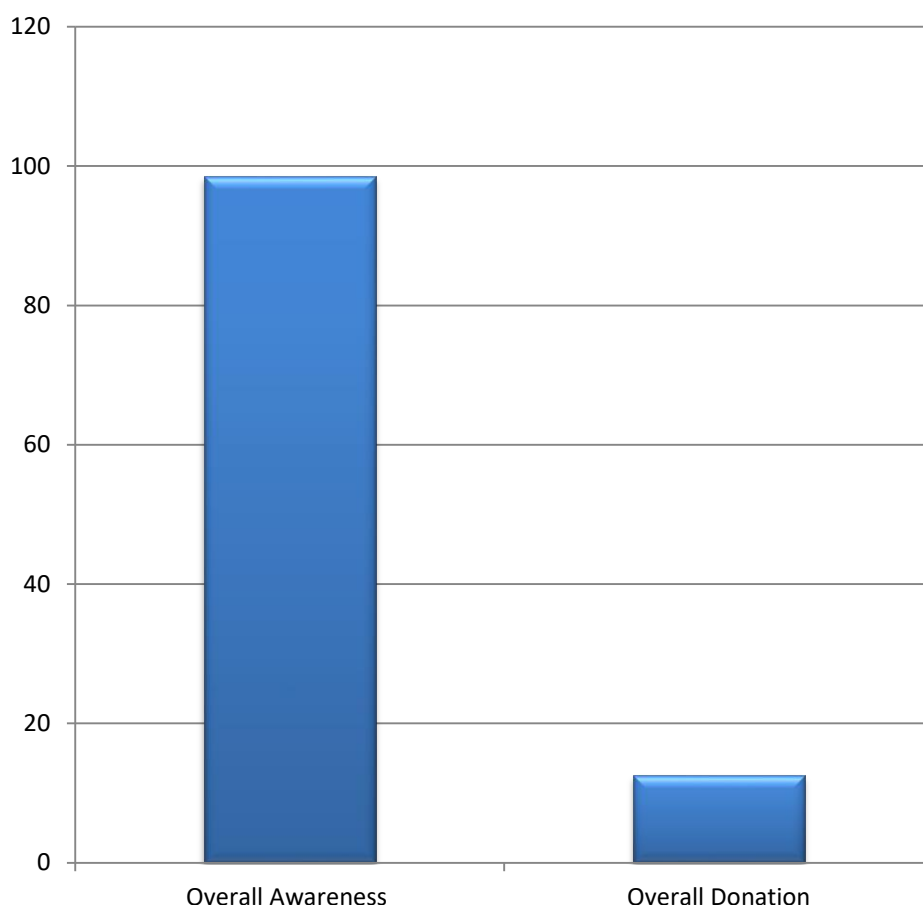


Fig I. Histogram depicting overall percentage of Awareness and Donation among students

The data showed similarity in overall awareness while a slight variation was observed in the donation pattern across the communities. The percentage of donor among the Nyishi is only 8.94% of the total population though 98.1% of them aware of the blood donation. Among the Galo community, 98.24% of the total sample have aware of the blood donation however only, 19.29% have donated. Among Apatani students, 97.87% had shown a good level of knowledge but only 12.04% donated the blood. The percentage of donor among the Monpa is only 5.40% of the total population though 100% of them aware of the blood donation. Among Adi students, 100% had shown a good level of knowledge and showed the highest percentage of donation i.e., 27.27%, whereas Tagin, Tangsa, Nocte, Khampti, Wanghcho, and Aka showed by 18.18%, 0%, 0% 20%, 0% and 0% respectively. Among donated the

Memba had shown highest percentage of 83.33% followed by Adi 27.27% while the lowest was observed among Tangsa, Nocte and Akas with 0% each.

Table IV. Representation of various sources of knowing blood groups among students

Tribe	Total	Source of Knowing Blood Group							
		School	%	Medical	%	Documents	%	Curiosity	%
Nyishi	296	159	53.71	69	23.31	17	5.74	51	17.22
Galo	56	30	53.57	12	21.42	6	10.71	8	14.28
Apatani	46	31	67.39	5	67.39	4	8.69	6	13.04
Monpa	37	19	51.35	11	29.72	1	2.70	6	16.21
Adi	33	14	42.42	14	42.42	3	9.09	2	6.06
Tagin	33	23	69.69	4	12.12	2	6.06	4	12.12
Tangsa	11	7	63.63	3	27.27	0	0	1	9.09
Nocte	7	6	85.71	1	14.28	0	0	0	0
Memba	6	5	83.83	0	0	1	16.66	0	0
Khampti	5	4	80	1	20	0	0	0	0
Wangcho	3	0	0	2	66.66	0	0	1	33.33
Aka	2	1	50	0	0	0	0	1	50
Total	535	299	55.88	122	22.80	34	6.35	80	14.95

With regard to the sources of information of blood group and donation, the common sources of information about blood group and donation reported by the participants were school (55.88%), followed by medical (22.80%), through curiosity (14.95%), and documents (6.35%). Nyishi showed more percentage of school as their source of information. In contrast to Nyishi, Wangcho showed highest percentage of medical than school source. Excluding Wangcho, all tribes prefer and have highest percentage of school than any other sources. A very small proportion (6.53%) of population had known the blood group and donation through document source.

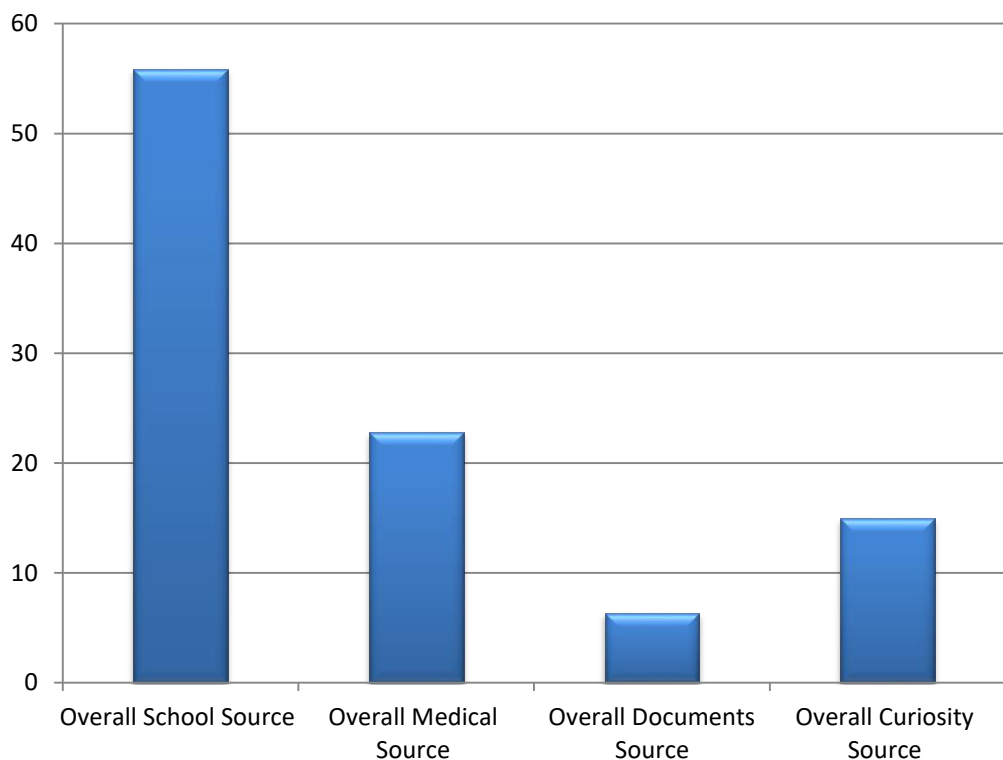


Fig II. Histogram depicting overall percentage of student's sources of knowing blood group.

DISCUSSION

The study reflects similar levels of knowledge and awareness regarding blood donation among different tribes. Five hundred and forty-three students were enrolled in the study, out of which 39.41% were male and 60.58% were female. After sorting the students thoroughly, it was found that the students belonged to 12 different tribes - Nyishi, Galo, Adi, Apatani, Tagin, Monpa, Tangsa, Nocte, Khampti, Wancho, Memba and Aka. Due to geographical location of the study area, the students belonging to Nyishi tribes were extensively higher in number.

The study participants were found to have good overall knowledge about blood donation (98.52%). There was no significant difference in percentage of awareness among different tribes since almost all tribes showed more than 97% of awareness. Only 1.47% of the populations were unaware of blood donation. Out of the 543 student participants, only 12.33% were actually donated so far. While 87.66% were not donated, though all of them felt that they should donate blood. Out of 67 students who donated blood, Nyishis have the highest donors of 27 (though only represent 8.94% of their total population) while Wangcho,

Tangsa and Nocte have 0 donors (though their sample size was less). Statistically, the Memba with 83.33% and the Adi with 27.27% shows more donation of blood as compared to other tribe percentage wise. Nevertheless, there was not much difference in the pattern of blood donation among various tribes.

With regard to the sources of information of blood donation, the common sources of information about blood donation reported by the participants were school (55.88%), followed by medical (22.80%), through curiosity (14.95%), and documents (6.35%). Nyishi showed more percentage of school as their source of information. In contrast to Nyishi, Wangcho showed highest percentage of medical than school source. Excluding Wangcho, all tribes prefer and have highest percentage of school than any other sources. A very small proportion (6.53%) of population had known the blood donation through document source. This highlights the fact that more emphasis should be given to educational institution-based awareness programs for blood donation and the inclusion of this topic in school and college curriculum. Sadasivan (2019) write “for India to attain sustainability and adequacy of blood, it is vital for the future generation to not only understand the importance of blood donation but to also culturally imbibe voluntary blood donation as a social norm. One cannot emphasize enough the role of youth in shaping this change to reduce the demand-supply inconsistencies in our blood system”.

CONCLUSION

This study revealed that the study population has relatively good knowledge about blood donation. However, the prevalence of blood donation among the students is still low. The fact that only 12.33% (67) out of the 543 students had donated blood previously, indicates that the college students, who are a very potential source for voluntary blood donations, have been poorly tapped.

This study also revealed that half of the students found out their blood group through blood test being done for school purpose followed by medical purpose. Very few percentages of the students had their blood test done out of curiosity to know their blood group. Our study found the blood group distribution pattern occurring as O>A>B>AB. We observed from our study that the most common blood group among the tribal students was O+ve (210), followed by A+ve (163), B+ve (119), AB+ve (36), O-ve and AB-ve reported 3 each with A-ve (1) and B-ve (nil).

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Tables and Figures:

Table 1: Representation of ABO blood groups among students belonging to different tribes

Table 2: Representation of Blood Donation Awareness among students

Table 3: Representation of Blood Donation among students belonging to different tribes

Table 4: Representation of various sources of knowing blood groups among students

Fig 1: Histogram depicting overall percentage of Awareness and Donation among students

Fig 2: Histogram depicting overall percentage of student's sources of knowing blood group.