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A cross Sectional Study to Evaluate Perception of Rh-Negative Blood Group's Importance among the Medical Undergraduates Having Rh-Negative Blood Groups

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ABSTRACT

A rare blood is the one which lacks a high-frequency antigen as well as the one who lacks multiple common antigens. Youngsters play vital role in blood donations all over and thus it is necessary to assess their knowledge on their own blood groups being rare. Medical students reside in the healthcare environment and their knowledge of being Rh-negative blood group themselves is of prime importance. To assess the knowledge of medical students about negative blood groups and their importance. To know their attitude and acceptance regarding negative blood groups. The study was conducted in the first and second year MBBS students from a medical college and tertiary care hospital in Western part of India. MBBS students from first and second professional years were included in this study. There were 580 responses out of which 36 were having negative blood groups (6.2%), all of them were included in this study. After taking written informed consent and getting the responses from the students, data was entered in microsoft excel 2019 and was analysed using Epi Info version 7.2.1. Data is presented in frequencies and percentages, charts and graphs. About 38.9% had B-negative blood group while 33.3% had O-negative blood group. About 47.3% have donated blood minimum once in their lifetime. For 77.8% knew their blood group was rare and 80.6% knew about the emergency contacts of getting the blood. For 16.7% had misconception about the negative blood group interfering with fertility. About 83.3% knew about the Rh incompatibility during pregnancy. According to 77.8% knew that O-negative being universal donor, 97.2% knew AB positive being the universal receiver, 66.7% knew about AB negative being the rarest blood group and 39.4% knew the time gap between two blood donations is of 3 months. More than half participants know about the negative blood group and their importance while their attitude and acceptance quite unsatisfactory.

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Key Words
Medical students, Rh-negative, rare blood group, blood donation

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INTRODUCTION

Red blood cells diversify based on their antigenic structures located on the extracellular surface of their membranes. Different blood groups has been described the ABO and Rh blood group system has most important significance in transfusion[1]. ABO system used to find out blood groups and Rh system is used to assess whether the blood group is positive or negative, i.e., RBC surface of an individual having an immunogenic D antigen is Rh positive and absence of immunogenic D antigen is Rh negative[2]. In contrast to the ABO system, anti-Rh antibodies are normally not present in blood of individuals with D negative RBCs, unless the circulatory system of these individuals has been exposed to D positive RBCs. These immune antibodies are immunoglobulin G (IgG) in nature and can cross the placenta. Prophylaxis is given against Rh immunization using anti-D immunoglobulin for pregnant Rh negative mothers who have given birth to Rh positive child.

Rh negative blood group being rare its importance and applications must be known to all having Rh negative blood group themselves. From transfusion point of view, a rare blood is the one which lacks a high-frequency antigen as well as the one who lacks multiple common antigens[3].

Youngsters play vital role in blood donations all over[4] and thus it is necessary to assess their knowledge on their own blood groups being rare. Medical students reside in the healthcare environment and their knowledge of being Rh negative blood group themselves is of prime importance. The awareness among non-medical graduates was found to be suboptimal in various studies[5]. Thus, encouraged this study to know the awareness among the medical graduates.

Aims and objectives:

- To assess the knowledge of medical students having negative blood groups
- To know their attitude and acceptance regarding negative blood groups

MATERIALS AND METHODS

The cross sectional study was conducted in the first and second year MBBS students from a medical college and tertiary care hospital in Western part of India. MBBS students from first and second professional years were included in this study.

A semi-structured validated questionnaire was used to assess the knowledge of the MBBS students and qualitative question guide was used to know their attitudes and practices.

There were 580 responses out of which 36 were having negative blood groups (6.2%), all of them were included in this study. After taking written informed consent and getting the responses from the students, data was entered in microsoft excel 2019 and was analysed using Epi Info version 7.2.1. Data is presented in frequencies and percentages, charts and graphs.

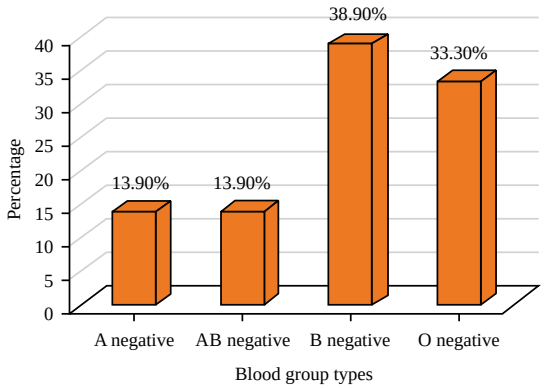

Fig. 1: Type of blood group

RESULTS

Age range was 18-24 years, with a mean age of 20.8±1.45 years. Most common age was 21 years with 12 participants (33.3%) followed by 22 years with 7 participants (19.4%). There were 25 males (69.4%) and 11 females (30.6%) in our study. In the students with negative blood groups, the number of males were significantly higher than females in our study ($p = 0.019$) (Fig. 1).

Out of 36 participants with negative blood groups, most common was B negative with 14 participants (38.9%) followed by O negative with 12 (33.3%) and A negative and AB negative blood groups with 5 participants each (13.9%).

We observed that 3 participants had chronic illness (8.3%), with one case each (2.8%) of sickle cell anemia, autoimmune hypothyroidism and dust skin allergy.

For 24 participants had knowledge about one of their family members including parents having negative blood groups (66.7%) while 12 participants didn't have any knowledge regarding it (33.3%).

Out of 36 participants, only 9 had donated their blood (25%). According to 6 participants donated blood once (16.7%), one had donated twice (2.8%) and 2 participants had donated thrice in their lifetime (5.6%) (Table 1).

We observed that the majority of the participants knew about their Rh-negative blood group being rare (77.8%) while rest 8 participants were unaware (22.2%).

Out of 29 participants had knowledge about emergency blood donation contacts if they ever needed Rh-negative blood (80.6%).

Out of 3 participants were unaware of their Rh-negative blood group being a genetic factor (8.3%), while 6 had a misconception that Rh-negative blood group can affect their fertility (16.7%).

Table 1: Study questions and their responses

Questions	Responses (yes)	Responses (no)
Have you ever donated blood	9 (25%)	27 (75%)
Do you know that your blood group is rare	28 (77.8%)	8 (22.2%)
Do you know any sources which can donate you blood in case of an emergency	29 (80.6%)	7 (19.4%)
Is a negative blood type genetic	33 (91.7%)	3 (8.3%)
Does negative blood group affect the fertility	6 (16.7%)	30 (83.3%)
Do you know any blood bank which can stores negative blood	9 (25%)	27 (75%)
Do you know any complications during pregnancy with negative blood group	30 (83.3%)	6 (16.7%)

Table 2: Study questions and their responses

Questions	Correct answers	Incorrect answers
Which of the following blood group is considered a universal donor	O Rh-ve-28 (77.8%)	O Rh+ve-8 (22.2%)
Which is the rarest blood group	AB Rh-ve-24 (66.7%)	O Rh-ve-12 (33.3%)
Which blood group is the universal platelet donor	AB Rh-ve-10 (27.8%)	Rest-26 (72.2%)
Which of the following blood group considers a universal receiver	AB Rh+ve-35 (97.2%)	O Rh+ve-1 (2.8%)
A normal healthy person can again donate blood after how many months	3 months-25 (69.4%)	6 months-11 (30.6%)
Fresh hold blood transfusions is done within how much time of collection	24 hours-8 (22.2%)	Rest-28 (77.8%)

Only 9 participants had knowledge about blood banks that store Rh-negative blood group (25%). Majority of the participants knew about the problem of Rh incompatibility during pregnancy (83.3%) (Table 2).

We observed that majority of the participants had good knowledge about blood groups, with participants giving correct answers for O Rh negative being universal donor (77.8%), AB Rh positive being the universal receiver (97.2%), AB Rh negative being the rarest blood group (66.7%) and time gap of 3 months between two blood donations (39.4%).

We observed that they had poor knowledge about AB Rh negative being the universal platelet donor (27.8%) and time for fresh hold blood transfusions after collection being 24 hrs (22.2%).

Participants suggested that we can form a social media group on whatsApp and facebook for negative blood donors where people can register themselves and volunteer for blood donation as and when required.

Participants also advised to maintain a state wise Rh negative blood group register to have contact details of all Rh-negative people for easy access.

DISCUSSIONS

Mean age of medical students in the present study was 20.8±1.45 years while Chauhan *et al*.[6] in their study found the mean age of 20.42±1.38 years.

Periyavan *et al*.[7] in their study done in South India found that Rh-D blood group frequency was 94.20% positive and 5.79% negative. In the present study 6.2% had Rh negative blood group out of all. Also in a systematic review on ABO and RH blood grouping in India, Patidar and Dhiman[8] found that out of total 112 studies from 23 states of India a total of 1 429 996 donor's data was analysed. Overall distribution of the A, B, O and AB blood groups in India is 23·16, 34·10, 34·56 and 8·18%, respectively. Rh (D)-positive and Rh (D)-negative population are 94·13 and 5·87%, respectively. Kanko and Woldemariam[9] noticed that 26 (6.2%) of the total study population was found Rh D negative. In the present study the prevalence of negative blood group in descending order is B>O>A and AB negative blood groups. Kanko and Woldemariam[9] revealed that 2.1, 1.9, 1.2 and 1% of the study population with blood groups O>A>B>AB negative. About 47.3% have donated blood minimum once in their lifetime. Out of 77.8% knew their blood group was rare and 80.6% knew about the emergency contacts of getting the blood. About 83.3% knew about the Rh incompatibility during pregnancy. Their knowledge was improved on such aspects. However, 16.7% had misconception about the negative blood group interfering with fertility and 39.4% knew the time gap between two blood donations is of 3 months.

About 77.8% knew that O negative being universal donor, 97.2% knew AB positive being the universal receiver, 66.7% knew about AB negative being the rarest blood group. Out of 13.9% participants have AB negative blood group in the given study. The universal blood type for platelet transfusions is AB Negative and one of the rarest of all blood types, only 1% of the population has this special blood type. Platelets from AB negative donors can be used for any patient in need and so are encouraged to donate Plasma or Platelets[10]. In the present study only 27.8% knew about the AB negative being the universal platelet donor.

Lake[11] observed that there is a shortage of Rh-negative blood groups blood sometimes in the blood banks, similar findings were observed by RO Gilcher and McCombs[12] who suggested to maintain a blood group directory of voluntary blood donors to avoid this shortage. In the present study participants advised to maintain a state wise Rh negative blood group register to have contact details of all Rh-negative people for easy access.

Troughton and Young[13] suggested that the conservation of Rh-Negative O titre whole blood (LTOWB) is essential for emergency trauma management where there is no time that can be spent to wait for ABO and RH typing of the patients and top

wait for blood transfusion. This is a life saving measure by transfusing the cases with Rh-Negative O titre whole blood (LTOWB) which is universal donor.

Ethical consideration: No harm to the patients was done as it was a data based research. Permissions were taken from IEC (institutional ethics committee). Data analysed have no names disclosed in research paper.

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