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Comparison of IQ Levels of Individuals with Their Blood Groups among Medical Professionals

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Abstract: The association between blood groups and intelligence quotient dates back to ages with various studies reporting contradicting results. The present study aims to assess The association between blood groups and intelligence quotient among health science students. This is a descriptive cross sectional study conducted at Rajah Muthiah Medical College Chidambaram, Tamilnadu. The study participants included MBBS, DENTAL and NURSING students whose Blood group and Rh-typing were determined and IQ levels assessed using Wechsler adult intelligence scale. This study concluded that there was no significant association between blood group and intelligence quotient.
Keywords: Blood group, Rh factor, intelligent quotient, wechsler adult intelligence scale.

INTRODUCTION

Intelligence is a measure of general cognitive functioning capturing a wide variety of different cognitive functions [1]. It is a theoretical ability that affects all sorts of mental activities, no matter what are the subject of the activity and its shape [2]. Intelligence is a construct generally associated with the capacity to learn [3]. Intelligence is an abstract word and hypothetical formation which does not refer to something tangible owned by the individual [2]. Intelligence is the best individual predictor of academic achievement [3]. Understanding and contributing improves by virtue of the brain's ability to link, and best investment. And this is the top of human thinking which distinguishes this marvellous creature [2].

The investment of this ability is not of the same quantity and the same way in all humans, but it differs according to their levels of intelligence [2]. In the theory of successful intelligence, intelligence is defined as one's ability to achieve success in life in terms of one's personal standards, within one's socio-cultural context [4]. Many studies conducted on intelligence. Some of them say that it is hereditary and others contend that it is an educated and environmental [2].

Man has many different abilities which include measurable and non-measurable ones. These abilities could be an indicator to achieve practical and academic scores [5]. Intelligence cannot be measured directly but its effects can be inferred and through results of mental tests. According to this, intelligence is the common denominator between mental processes and its connection with intelligence to varying degrees [2].

In the last 20 years there has been increasing evidence that blood groups have a function and play a biological role. This biological role often does not relate to the red cell, but to the presence of chemical moieties on other cells that were initially identified as a red cell antigen [6]. The prevalence of ABO alleles is different in different populations, and many studies have shown a correlation between the occurrences of some diseases and different genotypes of ABO blood groups [7] the clinical significance of the ABO blood group system extends beyond transfusion medicine and several reports have suggested an important genetical involvement of blood groups to various diseases [5]. They form the basis for hereditary relation to blood groups. Blood groups and their significance have been increasingly investigated. In addition to scientific research, popular curiosity is also increasing regarding its association with personality and intelligence [7]. Human behaviour to a great extent is outcome of blood chemistry meaning thereby different constituents of the blood and their proportion regulates human behaviour [5] thus the question arises. When blood groups is hereditary which relates to the blood groups of parents, then what prevents here the presence of a relationship

between IQ and heredity that is genetic biological in its origins [2]. The association between the ABO blood group system and personality has been narrated by many authors but very few studies show association of blood group and academic performance or intelligence [5]. Thus the present study was conducted among the medical students at Rajah Muthiah Medical College of Annamalai University in Chidambaram with objectives of assess association between and blood groups and Intelligent Quotient.

MATERIALS AND METHODS

The present study is a descriptive cross-sectional study with qualitative study component. The study was conducted among the health science students in RMMCH, Annamalai University, Chidambaram, Tamilnadu. The study population consists of all the first year students of medicine, dentistry and Nursing. The study was ethically approved by the ethical committee of the institute and written informed consent was obtained from all the study participants. The study period was from August 2017 to July 2018. The study tools used were determination of blood group and Wechsler adult intelligence scale. The data was entered in a structured questionnaire containing socio-demographic details, blood groups and Intelligence quotient score of each Participant.

The student's blood group were determined and intelligence score were assessed in the department of physiology, RMMCH, Annamalai University, Chidambaram. During each session the participants were informed about the aim of the study and about the guarantee of anonymity and confidentiality and the need for written consent. The participation was entirely on a voluntary basis. The students were encouraged to participate and motivated to express their Responses. It was emphasised that all data collected will be strictly confidential and would be used for scientific purposes only. All the students who agreed to participate were provided written informed consent.

Among the study participants (10-15) participants were taken for each session. In every session the student's blood group and Rh- typing were determined. The students were taken for assessing the intelligent quotient by using performance scale of weschler adult intelligence scale. The scale consists of five sub test such as Picture completion, Block design, Picture arrangement, Digit symbol, and Object assembly. Apart from Blood groups and IQ assessment details the socio-demographic details of each student was also collected which included age, sex, course, both parents occupation and educational qualification along with annual income. The time taken for each student for complete assessment ranged between 30-45 minutes. Efforts were made to minimise under reporting by tracking the students by their mobile numbers.

STATISTICAL ANALYSIS

The data collected was compiled and entered in Microsoft excel. It was analysed using SPSS version 21. The socio-demographic details were analysed using descriptive statistics and association between variables were assessed using ANOVA and Chi square tests.

RESULTS

The present study conducted at Rajah Muthiah Medical College, Chidambaram. Totally three hundred students participated in the study. The participants included 151 MBBS students (50.3%), 50 dental students (16.7%) and 99 nursing students (33%). The overall female students were more than male students constituting 69.9% of the study participants.

Among the study participants majority of the students had their fathers' education status as graduates (79%) of whom majority were involved in skilled occupations (76.7%). Similarly the mothers' education was also graduates as the majority but the most of them were employed in unskilled occupation unlike the fathers. About 84.3% of the participants had done their schoolings in state board of education.

Table-2: Distribution of blood group among the study participants

Blood group	Course			Total
	BDS	MBBS	NURSING	
A	9(18)	31(20.5)	18(18.2)	58(19.3)
B	20(40)	49(32.5)	36(36.4)	105(35)
AB	2(4)	9(6)	6(6.1)	17(5.7)
O	19(38)	62(41.1)	39(39.4)	120(40)
Total	50(100)	151(100)	99(100)	300(100)

Among the students majority had Blood group O (40%) followed by the group B (35%) in all the three course participants. out of 300 participants 278(92.7%) were Rh positive. The Iq scores of each candidate was calculated using Wechsler adult intelligence scale scores. About 193(64.3%) had average IQ levels. Among the higher scores 15 and 6 had high average and superior IQ levels respectively. 72(24%) of them had low average levels.

Table-1: Socio demographic distribution of study participants

Socio demographical details	N(%)
Age	17.93±0.7 yrs
Sex: Male Female	91(30.1) 209(69.9)
Course: MBBS DENTAL NURSING	151(50.3) 50(16.7) 99(33)
Father education Illiterate Literate Primary Secondary Higher Education Graduate	 3(1) 4(1.3) 1(0.3) 31(10.3) 24(8) 237(79)
Mother education Illiterate Literate Primary Secondary Higher Education Graduate	 8(2.7) 13(4.3) 4(1.3) 26(8.7) 44(14.7) 205(68.3)
Father occupation Skilled Semi-skilled Unskilled	 230(76.7) 50(16.7) 20(6.7)
Mother occupation Skilled Semi-skilled Unskilled	 134(44.7) 1(0.3) 165(55)
Board State CBSE Others	 253(84.3) 45(15) 2(0.7)

Table-3: Distribution of Rh factor among the study participants

Rh	Course			Total
	BDS	MBBS	NURSING	
Positive	44(88)	143(94.7)	91(91.9)	278(92.7)
Negative	6(12)	8(5.3)	8(8.1)	22(7.3)
Total	50(100)	151(100)	99(100)	300(100)

Table-4: Distribution of Intelligence quotient range among the study participants

IQ range (“deviation IQ”)	Intelligence quotient classification	Course			Total
		BDS	MBBS	NURSING	
70-79	Borderline	6(12)	1(0.7)	7(7.1)	14(4.7)
80-89	Low average	22(44)	18(11.9)	32(32.3)	72(24)
90-109	Average	21(42)	117(77.5)	55(55.6)	193(64.3)
109-119	High average	0	12(7.9)	3(3)	15(5)
120-129	Superior	1(2)	3(2)	2(2)	6(2)
Total		50(100)	151(100)	99(100)	300(100)

Table-5: Comparison between blood group and intelligence quotient of the study participants

	A	B	AB	O	Total
70-79	2(3.4)	6(5.7)	0	6(5)	14
80-89	16(27.6)	30(28.6)	4(23.5)	22(18.3)	72
90-109	35(60.3)	64(61)	13(76.5)	81(67.5)	193
110-119	5(8.6)	5(4.8)	0	5(4.2)	15
120-129	0	0	0	6(5)	6
Total	58	105	17	120	300

Table-6: Comparison between Rh and Intelligence quotient of the study participants

IQ level	Rh Positive	Rh Negative	Total	P -value
70-79	10	4	14	0.02*
80-89	68	4	72	
90-109	179	14	193	
110-119	15	0	15	
120-129	6	0	6	
Total	278	22	300	

In the comparison of blood groups and Intelligence quotient majority of the all the groups had average IQ levels and 6 among the 'O' blood group were superior IQ scorers. On analysis of association between blood groups and Intelligence quotient using Chi square test resulted in no significant differences among them ($p>0.05$). Yet there is significant association between Rh and Intelligence quotient ($p <0.05$).

DISCUSSION

We have come a long way since the early reports of statistical association of ABO Blood Groups and various Diseases and the ensuing vitriolic debates [6]. The present study reports that O blood group is most commonly found among the study participants followed by B group. This is similar to the study by agarwal *et al*. [8]. This is in accordance to the study by das et al which also stated O blood group as the predominant group followed by B group [9]. This result contraindicates the results of study done by Reddy *et al*. which reports A group as the most prevalent [10] many Indian studies report the higher prevalence of O blood group which supports the present study[11].

The current study reports that there is no association between blood groups and Intelligence quotient of the study participants. This is similar to the study by Ananadarajan *et al*. which concludes stating no real correlation between blood groups and academic scoring [6]. It is contraindicated in a study by Atoom et al which reports higher IQ levels among AB blood group [2]. The Rh factor of the study population has significant influence on their IQ levels with Rh positive showing higher IQ.

The strengths of the study are reduced chances of observer's bias as it is done by a single person and the larger sample size of the study. The study tool of Wechsler adult intelligence scale adds to the quality of the study. The limitation involves gender acting as the confounding factor in assessment of Iq levels as the study population has a female preponderance.

Inspite of the shortcomings the study paves a pathway for more researches in evaluating the genetically influence of blood group antigens in one's intelligence and personality.

CONCLUSION

The fortunate thing of this study is inclusion of a well-defined aim, a large sample size, a scientific method of determining blood group and assessing intelligent quotient level using Wechsler adult intelligence scale. Though our study showed that there was a variation in the intelligence quotient between the blood group A,B,AB,O .There was no significant association ($p < 0.05$) found between any blood group and intelligence quotient. So, the conclusion of this study was that there was no real correlation between blood group and intelligence quotient. This result not only proves but also adds to the curiosity of further research ideas.

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