A Study of Psychological Distress in Respect to Different Blood Types

Dr. Ashok Malhotra
University Department of Psychology
Ranchi University, Ranchi

Abstract:- The main purpose of this research was to find out the different levels of Psychological distress and the association between four blood types and depression, anxiety and stress. The Depression Anxiety and Stress Scale (DASS), developed by Lovibond and Lovibond (1995) was applied to test the research questions. The study revealed that the individuals with AB and O blood types typically experience severe to moderate depression, whereas those with A and B blood types often have mild or normal levels of depression. The Chi-Square analysis indicates that blood type A is primarily associated with moderate anxiety, B with extremely severe anxiety, AB with severe anxiety, and O with mild anxiety. Regarding stress, blood type A is predominantly associated with mild stress levels, B with extremely severe stress, AB with severe stress, and O with moderate, mild, or normal stress levels.

Keywords:- Psychological Distress, Depression, Anxiety Stress and Blood Types.

I. INTRODUCTION

Psychological distress is a state of emotions suffering characterized by symptoms of depression, stress and anxiety. It involves a depressed mood or loss of pleasure or interest in activities for long periods of time. Depressions different from regular mood changes and feelings about everyday life. It can be defining as a state or worry or mental tension caused by a difficult situation. It is a natural human response that prompt us to address challenges and threats in our life that known as stress and other symptoms like feeling of fear, dread, and uneasiness. It might cause you to sweat, feel restless and tense and have rapid heartbeat known as anxiety.

Biomarkers linked to the development of psychopathology have long been a focal point in psychiatric research. Studies have shown that factors like gender, education, race/ethnicity, and trauma can affect the onset of psychiatric disorders such as PTSD (Sayd et al., 2015). Additionally, genetic risk factors are now widely acknowledged to contribute to the development and varying presentations of neuropsychiatric disorders (Plomin and Colldge, 2001). Consequently, there has been increased research into biologically inherited factors that may impact mental health, including blood type.

A person's ABO blood type is determined by the antigens on their red blood cells: Type A blood has type B antigens, Type B blood has type A antigens, and type O blood has both antigens. Several associations have been made between ABO blood type and disease susceptibility (Dean, 2005). For instance, gastric cancer is more prevalent in individuals with type A blood. Blood type can also be linked to certain phenotypic differences. For example, individuals with type O blood often have lower levels of von Willebrand Factor, which can affect their blood clotting ability (Dean, 2005).

ABO blood type has been a focal point in numerous research studies exploring its correlation with various medical conditions. Previous research has identified a link between blood type and certain physical disorders. For instance, Wang et al. found that individuals with blood type O had a higher incidence of duodenal and gastric ulcers (Wang et al., 2012). Additionally, studies have examined how blood type might affect mental health. A 2019 study by Xu et al. suggested that certain ABO blood types could be more prone to preoperative anxiety. This study revealed that individuals with blood type AB had notably higher anxiety scores on the Hospital Anxiety and Depression Scale (HADS) compared to other blood groups. However, no significant differences were observed in depression scores among the groups (Xu et al., 2019). These findings indicate that ABO blood type may influence susceptibility to psychiatric symptoms and potentially the development of various affective disorders.

Numerous investigations revealed that samples from bipolar patients had a noticeably higher frequency of Type O blood (Masters, 1967, Mendlewicz et al., 1974, Shapiro et al., 1977, Rinieris et al., 1979, Rhimer and Arato, 1981). (In 2001, Singg and Lewi's paper revealed that people with Type O blood scored higher on the Beck Depression Inventory for depression. Two subsequent studies confirmed this finding, finding a significantly higher frequency of people with Type O blood in the Unipolar Depression sample groups (Shapiro et al., 1977, Rinieris et al., 1979). Nonetheless, a study (Beckman et al., 1978) discovered a higher incidence of Type B blood in the samples of bipolar and unipolar patients. ABO blood type and major depressive disorder were not shown to be correlated in any of the three studies (Lavori et al., 1984, Garvert et al., 2021; Hoang et al., 2021).

➢ *Objectives*

• To study the levels of Depression, Anxiety and Stress among four blood types.
• To study the association of Depression, Anxiety and Stress with the four blood types.

➢ *Research Questions*

• What are the levels of depression, Anxiety and stress among four blood types?
• What are the association of Depression, Anxiety and stress with the four blood types?

II. METHOD

According to the purpose of the present study, a total of 240 samples have been selected. There were 60 samples taken from four positive blood types (A, B, AB, and O) in Ranchi town.

➢ *Research Design*

The present study aimed to investigate psychological distress among different blood types. For the study, a quasi-experimental design was used. To check levels of psychological distress among different blood types, numbers and percentages were used, and to study the significance of the correlation, the chi-square method was used.

➢ *Tools*

In the current study, two test tools were utilized for this aim, and the following ones were taken into consideration with their respective menus mentioning their validity, reliability, and objectivity.

➢ *Personal Data Questionnaire (PDQ)*

A Personal Data Questionnaire was prepared by the investigator. Where relevant information was collected regarding the various social and demographic variables such as the name, blood types, gender, family types, religion, region, health status etc.

➢ *Depression Anxiety Stress Scale (DASS-42)*

The Depression Anxiety and Stress Scale (DASS), developed by Lovibond and Lovibond in 1995, is a 42-item self-report tool designed to measure depression, anxiety, and stress over the past week. It helps identify emotional disturbances and evaluate the severity of symptoms, as well as a patient's reaction to therapy. The DASS is a screening tool, and clinical judgment is necessary for further evaluation. High scores indicate significant distress, while low scores should not replace a thorough clinical interview. Each of the three scales has 14 items rated on a 4-point scale (0-3), with possible scores ranging from 0-42. m 0-42. The internal consistency of the subscales is high, with Cronbach's alphas of 0.94 for depression, 0.88 for anxiety, and 0.93 for stress.

➢ *Procedure*

The research tool, DASS-42, along with a personal data questionnaire, was administered to the selected sample in Ranchi town. The students were offered a questionnaire and asked to complete it. The results were then used to assess their level of depression, anxiety, and stress. Participants were rated by their ability to make an answer right or wrong. A score is awarded for each answer. The lower the score, the higher the level of depression, anxiety, and stress.

III. RESULTS AND DISCUSSIONS

The main objective of the present research was to understand the magnitude of psychological distress (Depression, Anxiety and Stress) of the individual with different blood types (A, B, AB and O) in the normal population of Ranchi town. According to the objective research, the question was formulated "What is the magnitude of Psychological distress (anxiety, depression, stress etc.) of the individual with different blood types individuals?" The above objective is explained by the following sub-points: -

➢ *The Magnitude of Psychological Distress with Respect to Depression of the Individual with Different Blood Types:*

To test this objective Depression Anxiety and Stress Scale developed by Lovibond and Lovibond (1995) was used to measure depression in this study. The magnitude of depression of the individual was levelled in normal, mild, moderate, severe and extremely severe. Based on the scores given in the manual of the test, the number, percentages and Chi-Square (χ^2) were calculated for four different blood types. The results were shown in the following Tables 1 and Figures 1: -

Table 1 Number, Percentage and Chi-Square of Depression among four Different Blood Types

Blood types	A		B		AB		O		χ^2(df)	P
	n	%	n	%	n	%	n	%		
Extremely Severe	0	0.00	0	0.00	0	0.00	0	0.00	0(0)	-
Severe	0	0.00	1	14.29	3	42.86	3	42.86	3.57*(1)	.053
Moderate	9	23.08	5	12.82	16	41.03	9	23.08	7.54*(2)	.023
Mild	8	13.79	18	31.03	18	31.03	14	24.14	22.48***(2)	.000
Normal	43	31.62	36	26.47	23	16.91	34	25.00	6.06(3)	.109

• *Note.* ***/**/*= Significant at 0.001/0.01/0.05 levels, Normal= 0-9, Mild= 10-13, Moderate= 14-20, Severe= 21-27, Extremely Severe= 28+, df= Degree of freedom. %= within the different levels of depression.
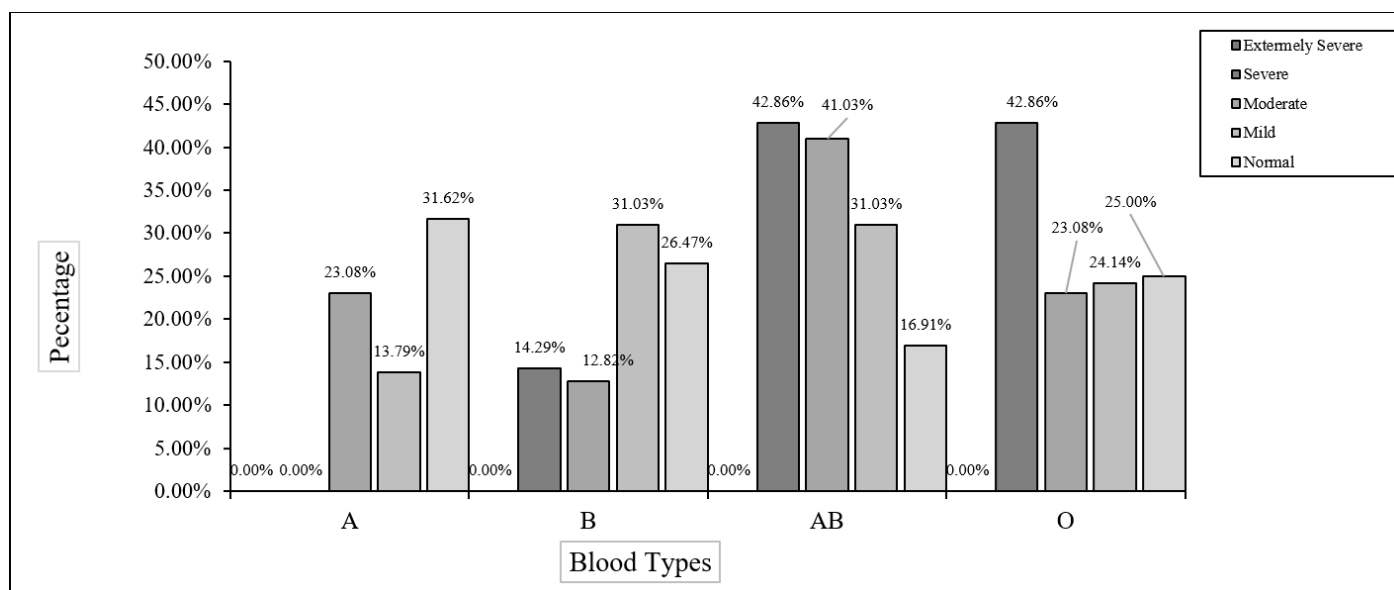
Fig 1 Percentage of People on Depression levels among four Different Blood Types

From Table 1 it can be seen that no single person with extremely severe levels of depression was found among four different blood types of the general people of Ranchi town.

The Chi-Square value of the severe level of depression was 3.571, which was significant at the 0.05 level with df = 1. It shows that severe levels of depression and four blood types (A, B, AB, and O) differ significantly. So there was a significant association between severe levels of depression and four blood types (A, B, AB, and O) among the general population of Ranchi town. Therefore, it may be said that the most severe level of depression belongs to blood types AB and O. Only 14.29% of B blood type people have severe depression, while none of the A blood type people has severe depression.

The Chi-Square value of the moderate level of depression was 7.538, which was significant at the 0.05 level with df = 2. It shows that moderate levels of depression and four blood types (A, B, AB, and O) differ significantly. So there was a significant association between a moderate level of depression and the four major blood types (A, B, AB, and O) of the general population of Ranchi town. Therefore, it may be said that the majority of the moderate level of depression belongs to blood type AB. Only 12.82% of people with blood type B experience moderate depression, while

23.08% of people with blood type A and O experience moderate depression.

The Chi-Square value of the mild level of depression was 22.483, which was significant at the 0.001 level with df = 2. It shows that the mild level of depression and the four blood types (A, B, AB, and O) differ significantly. So there was a significant association between a mild level of depression and the four blood types (A, B, AB, and O) of the general population of Ranchi town. Therefore, it may be said that the majority of the mild level of depression belongs to blood types B and AB. Only 24.14% of O blood type people have mild depression, whereas only 13.79% of A blood type people have mild depression.

The Chi-Square value of normal people was 6.059, which was not significant with df = 3. It shows that the normal level of depression and the four blood types (A, B, AB, and O) do not differ significantly. So there was no association between the normal level of depression and the four blood types (A, B, AB, and O) of the general population of Ranchi town. Therefore, it may be said that 31.62% of the normal level of depression belongs to blood type A. 26.47%, 25%, and 16.91% of the normal level of depression belong to blood types B, O, and AB, respectively.

Table 2 Number, Percentage and Chi-Square of Anxiety among four Different Blood Types

Blood types	A		B		AB		O		χ^2(df)	P
	n	%	n	%	n	%	n	%		
Extremely Severe	0	0.00	2	66.67	1	33.33	0	0.00	0.33(1)	.564
Severe	7	29.17	3	12.50	13	54.17	1	4.17	14.00**(3)	.003
Moderate	10	25.64	8	20.51	16	41.03	5	12.82	6.64*(3)	.048
Mild	12	22.64	6	11.32	5	9.43	30	56.60	30.40***(3)	.000
Normal	31	25.62	41	33.88	25	20.66	24	19.83	6.04(3)	.110

- *Note.* ***/**/*= Significant at 0.001/0.01/0.05 levels, Normal= 0-7, Mild= 8- 9, Moderate= 10-14, Severe= 15-19, Extremely Severe= 20+, df= Degree of freedom. %= within the different levels of anxiety.
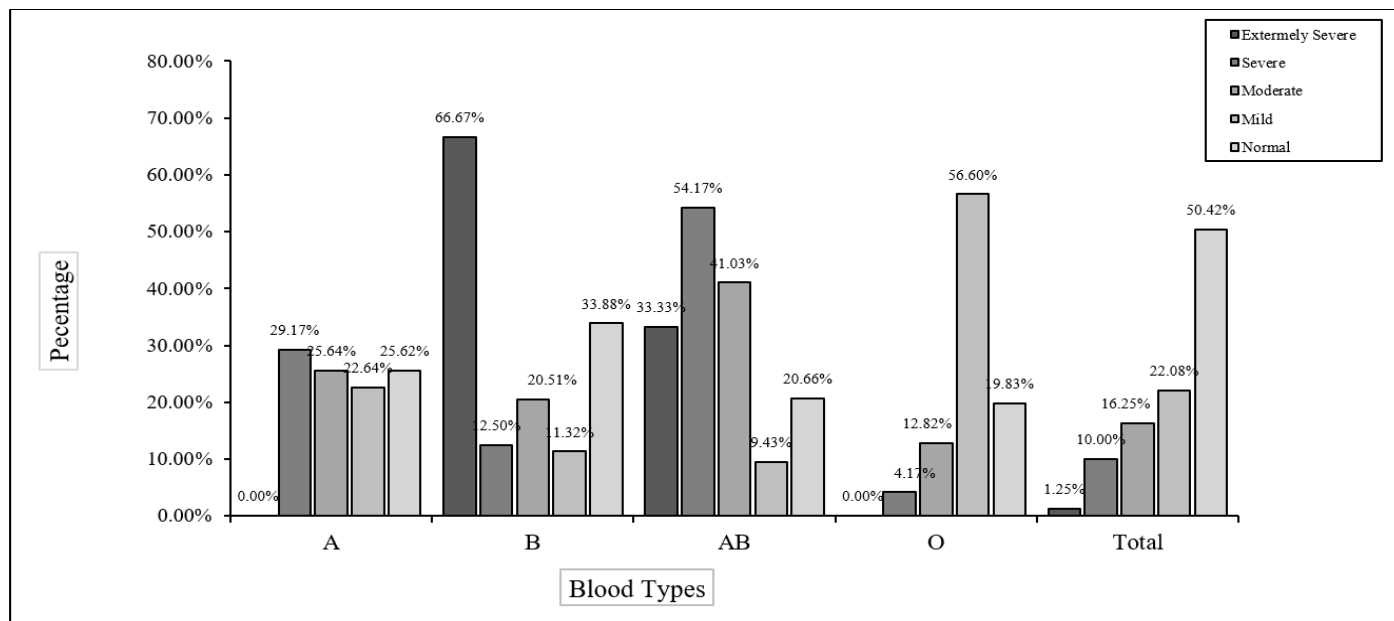
Fig 2 Percentage of People on Anxiety levels among four Different Blood Types

From Table 2 and Figure 2, it can be seen that the Chi-Square value of the extremely severe level of anxiety was 0.330, which was not significant with df = 1. It shows that extremely severe levels of anxiety and four blood types (A, B, AB, and O) do not differ significantly. So there was no significant association between extremely severe levels of anxiety and the four blood types (A, B, AB, and O) of the general population of Ranchi town. But according to the number and percentage, it may be said that most of the extremely severe level of anxiety belongs to blood type B. Only 33.33% of people with the AB blood type have extremely severe anxiety, while no one with the A or O blood type has extremely severe anxiety.

The Chi-Square value of the severe level of anxiety was 14.00, which was significant at the 0.01 level with df = 3. It shows that severe levels of anxiety and four blood types (A, B, AB, and O) differ significantly. So there was a significant association between severe levels of anxiety and four blood types (A, B, AB, and O) among the general population of Ranchi town. It may be said that most of the severe level of anxiety belongs to blood type AB (54.17%), and blood types A, B, and O were found to have 29.17%, 12.50%, and 4.17% severe levels of anxiety, respectively.

The Chi-Square value of the moderate level of anxiety was 6.64, which was significant at the 0.05 level with df = 3. It shows that moderate levels of anxiety and four blood types (A, B, AB, and O) differ significantly. So there was a

significant association between a moderate level of anxiety and four blood types (A, B, AB, and O) in the general population of Ranchi town. It may be said that most of the moderate level of anxiety belongs to blood type AB (41.03%), and blood types A, B, and O were found to have 25.64%, 20.51%, and 12.82% of the moderate level of anxiety, respectively

The Chi-Square value of the mild level of anxiety was 30.44, which was significant at the 0.001 level with df = 3. It shows that mild levels of anxiety and four blood types (A, B, AB, and O) differ significantly. So there was a significant association between a mild level of anxiety and four blood types (A, B, AB, and O) in the general population of Ranchi town. It may be said that most of the mild level of anxiety belongs to blood type O (56.60%), and blood types A, B, and AB were found to have 22.64%, 11.32%, and 9.43% mild levels of anxiety, respectively.

The Chi-Square value of the normal level of anxiety was 6.04, which was not significant with df = 3. It shows that the normal level of anxiety and the four blood types (A, B, AB, and O) do not differ significantly. So there was no significant association between a normal level of anxiety and the four blood types (A, B, AB, and O) of the general population of Ranchi town. But according to number and percentage, it may be said that blood types A, B, AB, and O were found to have 25.62%, 33.88%, 20.66%, and 19.83% mild levels of anxiety, respectively.

Table 3 Number, Percentage and Chi-Square of Stress among four Different Blood Types

Blood types	A		B		AB		O		χ²(df)	P
	n	%	n	%	n	%	n	%		
Extremely Severe	0	0.00	0	0.00	0	0.00	0	0.00	0.00	-
Severe	0	0.00	2	33.33	4	66.67	0	0.00	.667(1)	.414
Moderate	5	18.52	6	22.22	9	33.33	7	25.93	1.296*(3)	.730
Mild	20	38.46	6	11.54	13	25.00	13	25.00	12.154***(2)	.000
Normal	35	22.58	46	29.68	34	21.94	40	21.94	2.342(3)	.505

- *Note.* ***/**/*= Significant at 0.001/0.01/0.05 levels, Normal= 0-14, Mild= 15- 18, Moderate= 19-25, Severe= 26-33, Extremely Severe= 34+, df= Degree of freedom. %= within the different levels of Stress.

From Table 3 it can be seen that no single person with extreme severe levels of stress was found. among four different blood types (A, B, AB and O) of the general people of Ranchi town.
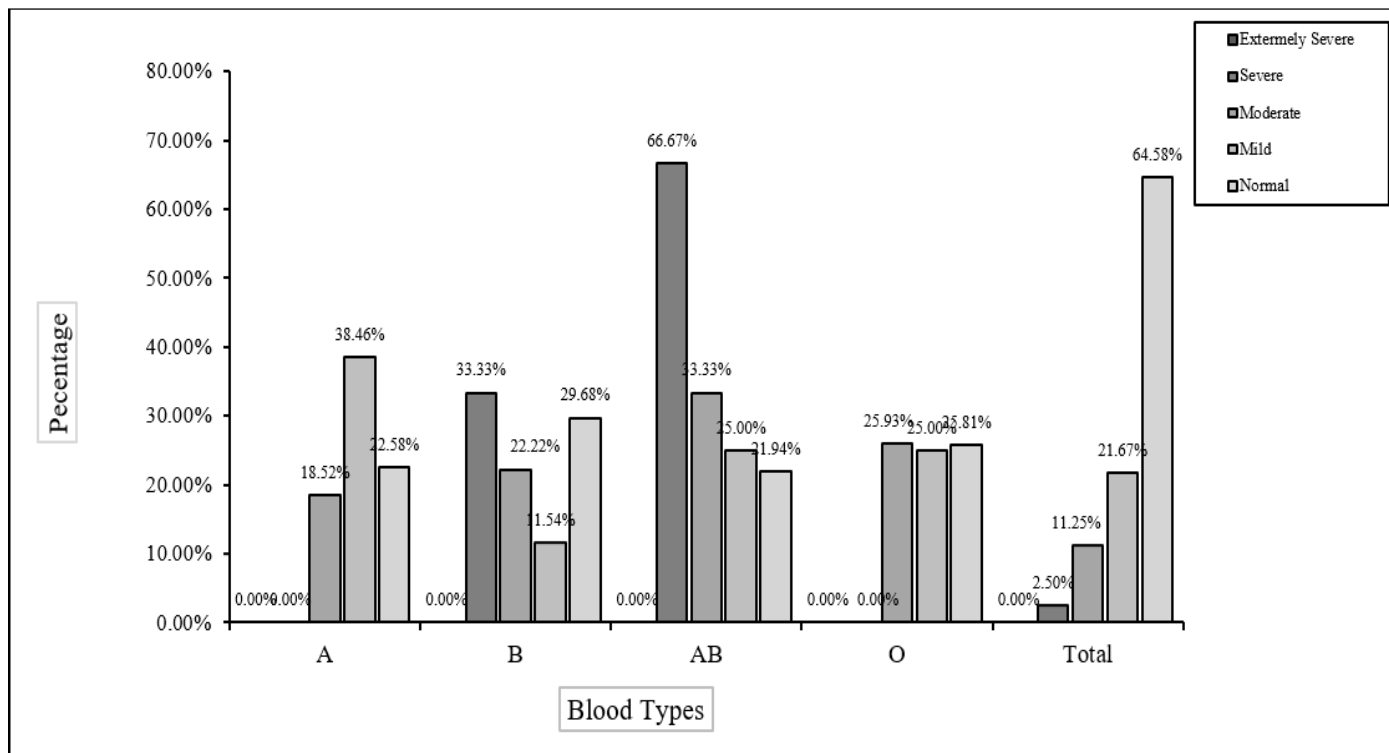

Fig 3 Percentage of People on Stress levels among four Different Blood Types

From Table 3 and Figure 3, it can be seen that the Chi-Square value of the severe level of anxiety was 0.667 which was not significant with df= 1. It shows that severe levels of stress and four blood types (A, B, AB and O) do not differ significantly. So there was no significant association between severe levels of stress and four blood types (A, B, AB and O) of the general people of Ranchi town. But according to the number and percentage, it may be said that most of the severe level of stress belongs to the blood type AB. Only 33.33% of B blood type people have a severe level of stress and none of the A and O blood type people gets a severe level of stress.

The Chi-Square value of the moderate level of anxiety was 0.667 which was not significant with df= 3. It shows that moderate levels of stress and four blood types (A, B, AB and O) do not differ significantly. So there was no significant association between moderate levels of stress and four blood types (A, B, AB and O) of the general people of Ranchi town. But according to number and percentage, it may be said that most of the moderate level of stress belongs to blood type B and blood types A, B, and O were found to have 18.52%, 22.22% and 25.93% moderate levels of stress respectively.

The Chi-Square value of the mild level of stress was 12.154 which was significant at 0.01 level with df= 2. It shows that mild levels of stress and four blood types (A, B, AB and O) differ significantly. So there was a significant association between mild levels of stress and four blood types

(A, B, AB and O) of the general people of Ranchi town. It may be said that most of the mild level of stress belongs to blood type A (38.46%) and blood types B, AB and O were found to have 11.54%, 25% and 25% mild level of stress respectively.

The Chi-Square value of the normal level of stress was 2.342 which was not significant with df= 3. It shows that normal levels of stress and four blood types (A, B, AB and O) do not differ significantly. So there was no significant association between a normal level of stress and the four blood types (A, B, AB and O) of the general people of Ranchi town. But according to number and percentage, it may be said blood types A, B, AB and O were found to have 22.58%, 29.38%, 21.94% and 25.81% mild levels of stress respectively.

IV. CONCLUSION

People with AB and O blood types generally experience severe to moderate depression, while those with A and B types tend to have mild or normal levels. Chi-Square results show that blood type A is mostly associated with moderate anxiety, B with extremely severe anxiety, AB with severe anxiety, and O with mild anxiety. For stress, blood type A is mostly linked to mild levels, B to extremely severe, AB to severe, and O to moderate, mild, or normal levels.

REFERENCES

[1]. Alexander, K. S., Zakai, N. A., Gillett, S., McClure, L. A., Wadley, V., Unverzagt, F., & Cushman, M. (2014). ABO blood type, factor VIII, and incident cognitive impairment in the REGARDS cohort. *Neurology*, *83*(14), 1271-1276.

[2]. Beckman, L., Cedergren, B., Perris, C., & Strandman, E. (1978). Blood groups and affective disorders. *Human Heredity*, *28*(1), 48-55.

[3]. Czechowicz, A. S., & Pamnany, L. (1972). ABO blood groups and the aetiology of schizophrenia. *Medical Journal of Australia*, *1*(24), 1252-1254.

[4]. Dean, L., & Dean, L. (2005). *Blood groups and red cell antigens* (Vol. 2). Bethesda: NCBI.

[5]. Garvert, L., Baune, B. T., Berger, K., Boomsma, D. I., Breen, G., Greinacher, A., ... & Van der Auwera, S. (2021). The association between genetically determined ABO blood types and major depressive disorder. *Psychiatry research*, *299*, 113837.

[6]. Hoang, D. V., Yamamoto, S., Miki, T., Fukunaga, A., Islam, Z., Konishi, M., & Mizoue, T. (2021). Is there an association between ABO blood types and depressive symptoms among Japanese healthcare workers during the COVID-19 pandemic?. *Plos one*, *16*(8), e0256441.

[7]. Irvine, D. G., & Miyashita, H. (1965). Blood types in relation to depressions and schizophrenia: a preliminary report. *Canadian Medical Association Journal*, *92*(11), 551.

[8]. Lavori, P. W., Keller, M. B., & Roth, S. L. (1984). Affective disorders and ABO blood groups: New data and a reanalysis of the literature using the logistic transformation of proportions. *Journal of psychiatric research*, *18*(2), 119-129.

[9]. Masters, A. B. (1967). The distribution of blood groups in psychiatric illness. *The British Journal of Psychiatry*, *113*(504), 1309-1315.

[10]. Mendlewicz, J., Massart-Guiot, T., Wilmotte, J., & Fleiss, J. L. (1974). Blood groups in manic-depressive illness and schizophrenia. *Diseases of the Nervous System*.

[11]. Peterfy, G., Solyom, L., Kendall, A. G., & Turcan, M. (1976). The relationship between ABO blood groups and schizophrenia: A report of negative findings. *Canadian Psychiatric Association Journal*, *21*(5), 303-307.

[12]. Pisk, S. V., Vuk, T., Ivezić, E., Jukić, I., Bingulac-Popović, J., & Filipčić, I. (2019). ABO blood groups and psychiatric disorders: a Croatian study. *Blood transfusion*, *17*(1), 66.

[13]. Plomin, R., & Colledge, E. (2001). Genetics and psychology: Beyond heritability. *European Psychologist*, *6*(4), 229.

[14]. Rihmer, Z., & Arató, M. (1981). ABO blood groups in manic-depressive patients. *Journal of Affective Disorders*, *3*(1), 1-7.

[15]. Rinieris, P., Stefanis, C., Lykouras, E., & Varsou, E. (1982). Subtypes of schizophrenia and ABO blood types. *Neuropsychobiology*, *8*(2), 57-59.

[16]. Shapiro, R. W., Rafaelsen, O. J., Ryder, L. P., Svejgaard, A., & Sorensen, H. (1977). ABO blood groups in unipolar and bipolar manic-depressive patients. *The American Journal of Psychiatry*, *134*(2), 197-200.

[17]. Singg, S., & Lewis, J. L. (2001). Depression and blood types. *Psychological Reports*, *88*(3), 725-726.

[18]. Takazawa, N., Kimura, T., & Nanko, S. (1988). Blood Groups Affective Disorders. *Psychiatry and Clinical Neurosciences*, *42*(4), 753-758.

[19]. Vasan, S. K., Rostgaard, K., Ullum, H., Melbye, M., Hjalgrim, H., & Edgren, G. (2015). ABO blood group and dementia risk–a Scandinavian record-linkage study. *PLoS One*, *10*(6), e0129115.

[20]. Wang, Z., Liu, L., Ji, J., Zhang, J., Yan, M., Zhang, J., ... & Yu, Y. (2012). ABO blood group system and gastric cancer: a case-control study and meta-analysis. *International journal of molecular sciences*, *13*(10), 13308-13321.

[21]. Xu, F., Yin, J. W., Xiong, E. F., He, H., Zhang, Q. T., Fan, S. W., ... & Wang, S. (2019). Correlation between Preoperative Anxiety and ABO Blood Types: Evidence from a Clinical Cross-Sectional Study. *Disease Markers*, *2019*(1), 1761693.