FINDING THE RELATIONSHIP BETWEEN PSYCHOLOGICAL DISTRESS AND HEALTH RELATED QUALITY OF LIFE IN ADOLESCENTS DUE TO COVID-19 PANDEMIC

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Abstract: Coronavirus disease caused by the infamous severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was first discovered in Wuhan, China in December 2019 and later, spreading to all parts of the world resulting in a Pandemic. The outbreak of Coronavirus has impacted every segment of life such as education, economy and health etc. The outbreak has reported the psychological impact of the quarantine and lockdown on human health. The study aims to explore the effect of anxiety, stress and psychological distress on health-related quality of life. 50 subjects were taken for the study out of which 22 were males and 28 were females. Four scales were taken for the study which are Hamilton Anxiety Rating Scale, Perceived Stress Scale, Impact of Event Scale-R and SF-36 Questionnaire. They were interviewed using these four scales and correlation was interpreted using Pearson correlation test. It was found that the scales for anxiety, stress and psychological distress are negatively correlated with the components of SF-36 questionnaire. Hence, concluding that as anxiety, stress and psychological distress increases, quality of life decreases.

Index Terms – COVID-19, Lockdown, quarantine, Health-related Quality of life, Anxiety, stress and psychological distress.

I. INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a highly contagious respiratory as well as vascular disease which is caused by the infamous severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The very first case was identified in Wuhan, China in December 2019 and soon after, it spread worldwide like wildfire.

Common symptoms of COVID-19 include fever, cough, fatigue, breathing difficulties, and loss of smell and taste. Onset of symptoms may begin as early as on the first day till the fourteenth day soon after the exposure to the virus. While most people have mild symptoms, others develop acute respiratory distress syndrome (ARDS).

Only Preventive measures such as social distancing, quarantining, use of sanitizers, ventilation of indoor spaces, hand washing, and keeping unwashed hands away from the face. The use of face masks and face shield has been recommended in public settings to minimize the risk of transmissions.

The Coronavirus disease (COVID-19) has impacted every segment of life like commercial establishment, education, economy, religion, transport, tourism, employment, entertainment, food security, sports, etc. Besides these, outbreaks have reported that psychological impact of quarantine can vary from immediate effects, like irritability, fear of contracting and spreading infection to family members, anger, confusion, frustration, loneliness, denial, anxiety, depression, insomnia, despair, to extremes of consequences, including suicide.

Children and adolescents were also greatly impacted by the sudden closure of schools, withdrawal of social life and outdoor activities. A study has evaluated 1036 quarantined children and adolescents in China in an age range from 6 up to 15 years, of which 112, 196, and 68 presented depressions, anxiety, and both, respectively.[31] Another study demonstrated a high prevalence of psychological distress in quarantined children and adolescents due to the COVID-19 pandemic in India. These individuals have experienced helplessness (66.11%), worry (68.59%) and fear (61.98%), compared to non-quarantined children.[8] Moreover, it was also reported in China that children and adolescents aged 3–18 years presented symptoms of inattention, clinging, worry and irritability during this pandemic.[31]

A study takes into account the impact of quarantine on mental health of children and adolescents, and proposes measures to improve psychological outcomes of isolation.[9]

II. METHODOLOGY

RESEARCH DESIGN: Correlational design
AGE: 12-18 years
NUMBER OF SUBJECTS: 100
SOURCE OF SUBJECTS: Community
METHOD OF SELECTION: Convenience sampling

VARIABLES
DEPENDENT VARIABLE: Health-related Quality of life
INDEPENDENT VARIABLE: Anxiety, stress and psychological distress.

INCLUSION CRITERIA
Gender- male and female
Age- 12-18 years

EXCLUSION CRITERIA
Age more than 18 and less than 12 were excluded.
Already diagnosed Psychiatric cases.

OUTCOME MEASURES/ASSESSMENT TOOLS:
1.Hamilton Anxiety Rating Scale (HAM-A)[32,33]
It is a psychological questionnaire used by clinicians to rate the severity of a patient's anxiety. The scale consists of 14 items designed to assess the severity of a patient's anxiety. Each of the 14 items contains a number of symptoms, and each group of symptoms is rated on a scale of zero to four, with four being the most severe.

2. Impact of Events Scale - Revised (IES-R)[11,16]
It is a 22-item self-report measure that assesses subjective distress caused by any traumatic events such as loss of someone, natural calamity etc. Items are rated on a 5-point scale ranging from 0 to 4 where zero stands for 'not at all' and four stands for 'extremely'. It has three subscales: Intrusion, Avoidance, and Hyperarousal. The IES-R yields a total score (ranging from 0 to 88) and Respondents are asked to indicate how much they were distressed or bothered by a particular event during the past seven days by each "difficulty" listed.

3. Perceived Stress Scales (PSS)[12]
The Perceived Stress Scale was developed by Sheildon Cohen to measure the degree of stress in one's life in a particular situation.

4. Short Form Health Survey (SF-36)[13,14,15]
It is a 36-item, patient-reported survey of patient health. It contains 8 subscales whose scores can be calculated by adding the scores for each question in the given section. It is a measure of health status and an abbreviated variant of the SF-6D which is commonly used in health economics.

PROCEDURE:
1. Proposal will be approved by the dissertation and ethical committee of Jamia Hamdard.
2. Subjects will be selected as per inclusion and exclusion criteria.
3. Informed consents will be taken from subjects and will be interviewed through WhatsApp video calling feature.
4. Using all the scales, data will be collected and master chart will be prepared.
5. Data will be analyzed using Pearson correlation test.

DATA ANALYSIS
The number of subjects taken were 50, out of which 22 were males and 28 were. The samples were taken from the community. The scales used are Hamilton anxiety rating scale (HAM-A), perceived stress scale (PSS), Impact of event scale-Revised (IES-R) and SF36 questionnaire. A master chart was prepared and data was analyzed using Pearson correlation test. SPSS Version 17 was used for statistical analysis.

RESULTS
(A) SAMPLE CHARACTERISTICS
50 subjects out of which 22 were males and 28 were females, were taken for the study by community sampling. The scales used are HAM-A, PSS, IES-R and SF36 questionnaire. The age ranges from 12 to 18 with standard deviation of ±1.936 and mean is 14.74.

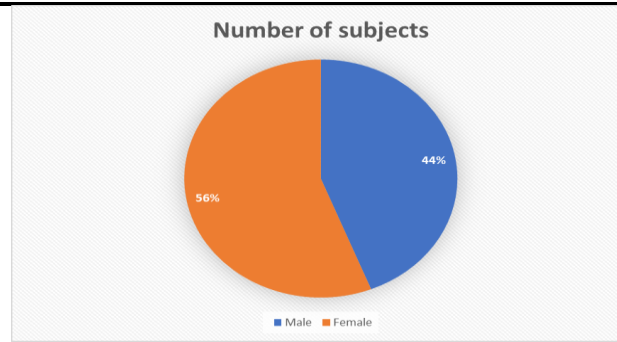| Gender	Number of subjects
Male	22
Female	28

FIGURE 1

(B) MEAN AND STANDARD DEVIATION FOR QUALITY-OF-LIFE W.R.T. HAM-A, PSS AND IES-R

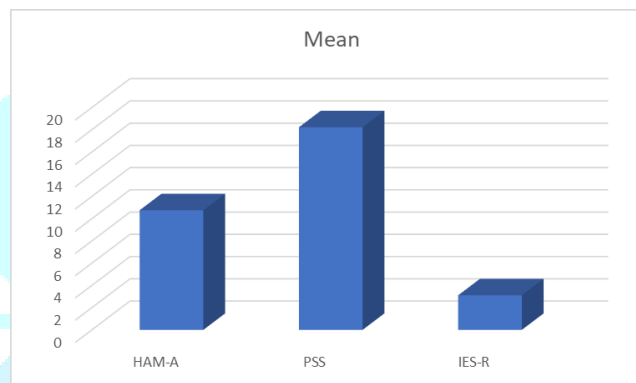| Scales	Mean
HAM-A	10.76
PSS	18.22
IES-R	3.109

FIGURE 2

(C) TO FIND THE CORRELATION BETWEEN QUALITY-OF-LIFE VS ANXIETY AND STRESS.

Quality of life has eight components: Physical functioning, physical health, emotional health, energy, emotional well-being, social functioning, pain, general health.

Psychological distress	Pearson Correlation	0.692**	0.408**
	Sig. (2-tailed)	.00	.003
	N	50	50
Physical functioning	Pearson Correlation	-0.106	0
	Sig. (2-tailed)	.466	.998
	N	50	50
Physical Health	Pearson Correlation	-0.415**	-0.211
	Sig. (2-tailed)	.003	.142

	N	50	50
Emotional Health	Pearson Correlation	-0.447**	-0.243
	Sig. (2-tailed)	.001	.089
	N	50	50
Energy	Pearson Correlation	-0.329*	-0.307*
	Sig. (2-tailed)	.02	.030
	N	50	50
Emotional Well-being	Pearson Correlation	-0.533**	-0.494**
	Sig. (2-tailed)	.00	0.00
	N	50	50
Social Functioning	Pearson Correlation	-0.283*	0.064
	Sig. (2-tailed)	.046	.659
	N	50	50
Pain	Pearson Correlation	-.466**	-0.089
	Sig. (2-tailed)	.001	.537
	N	50	50
General Health	Pearson Correlation	-0.41**	-0.394**
	Sig. (2-tailed)	.003	.005
	N	50	50

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

1.CORRELATION BETWEEN HAMA-A AND PSS WITH PHYSICAL FUNCTIONING

i. Physical Functioning VS HAMA-A - Pearson correlation(r) is -0.106 and sig. (2 tailed) is 0.466, which is not significant (Graph 1).
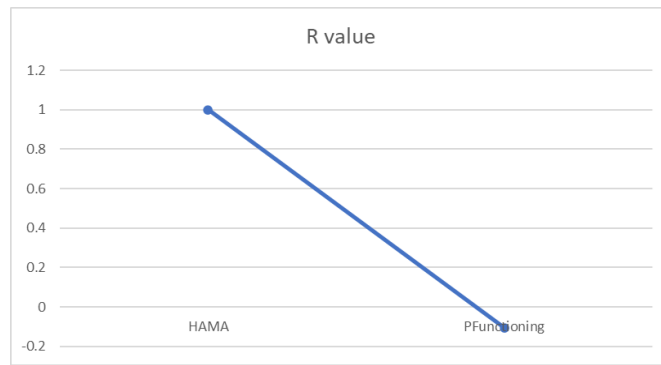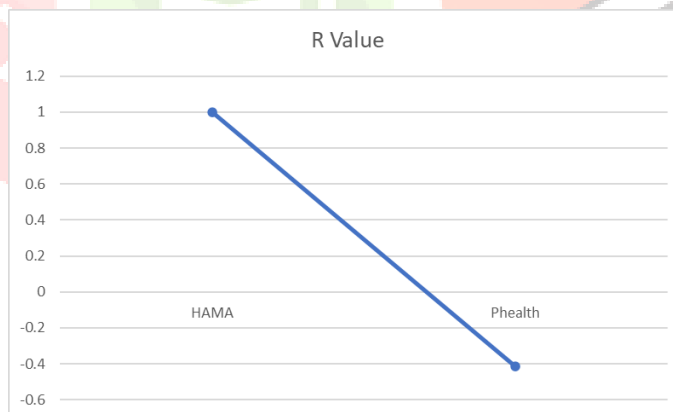

Graph 1

ii. Physical Functioning VS PSS – Pearson correlation(r) is 0.00 because of error values, PSS is not significant. Sig(2-tailed) is 0.99 due to certain errors (Graph 2).
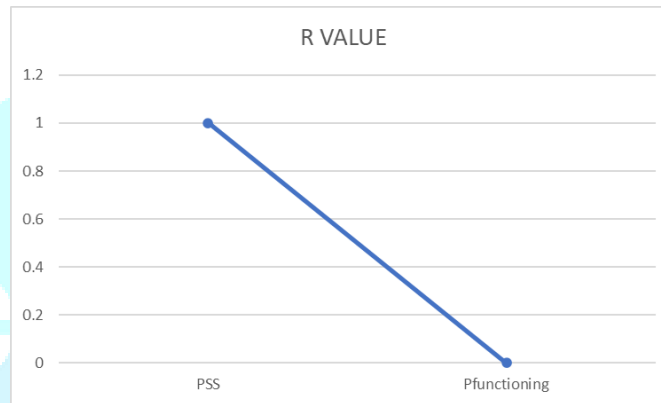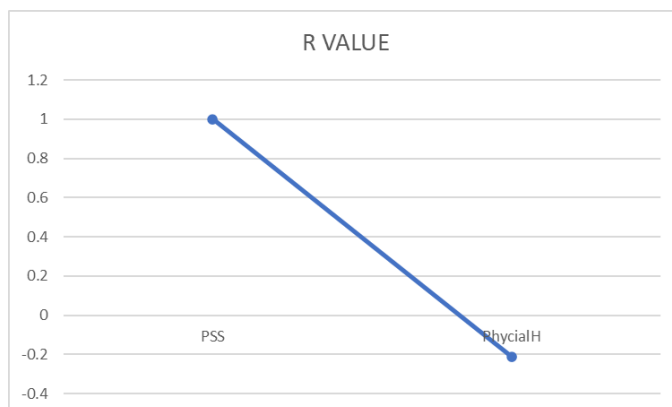

Graph 2

2. HAM-A AND PSS WITH PHYSICAL HEALTH

i. Physical health VS HAM-A- The Pearson correlation(r) is -0.415. This is having negative correlation between physical health and Anxiety which reflects that when physical health is better when anxiety is reduced. P value was calculated to be 0.003 and this is high (Graph 3).
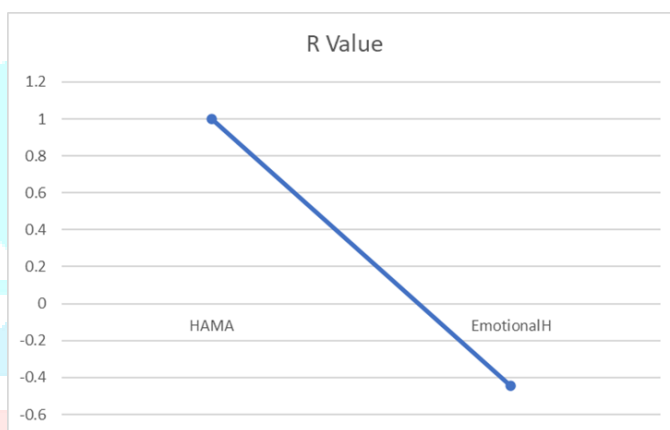

Graph 3

ii. Physical health VS PSS- Pearson correlation(r) is -0.211 which is not significant as the sig(2-tailed) is 0.142 (Graph 4).
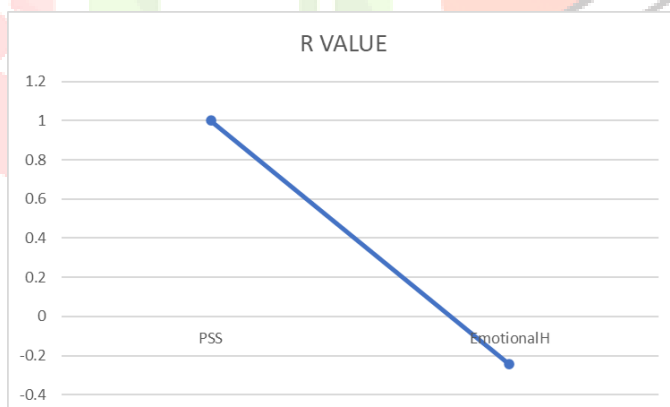

Graph 4

3. HAM-A AND PSS WITH EMOTIONAL HEALTH

i. Emotional health VS HAM-A – Pearson correlation(r) is -0.447 which shows that there is negative correlation between emotional health and HAM-A. Hence, when anxiety decreases, emotional health will be better. P value is 0.001 which is highly significant (Graph 5).
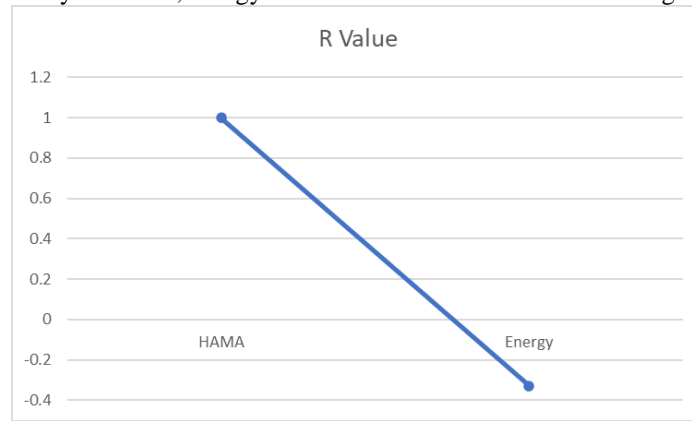

Graph 5

ii. Emotional health VS PSS- The value of Pearson correlation(r) is -0.243 and sig.(2-tailed) is 0.089 which is not significant (Graph 6).
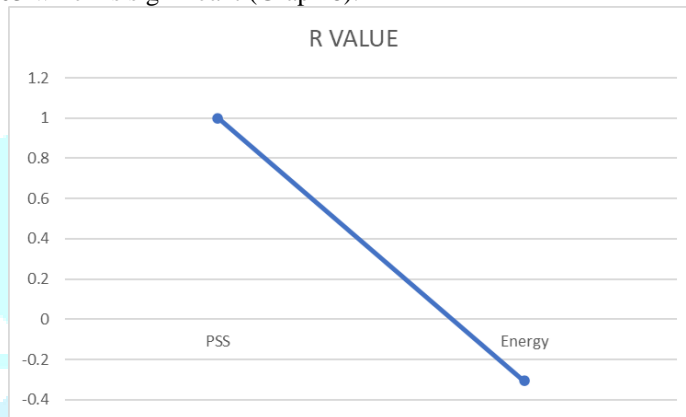

Graph 6

4. HAM-A AND PSS WITH ENERGY

i. Energy VS HAM-A- The value of Pearson correlation is(r) -0 which tells us that there is a negative correlation between energy and anxiety, that means when anxiety increases, energy decreases. P value is 0.02 which is significant (Graph 7).
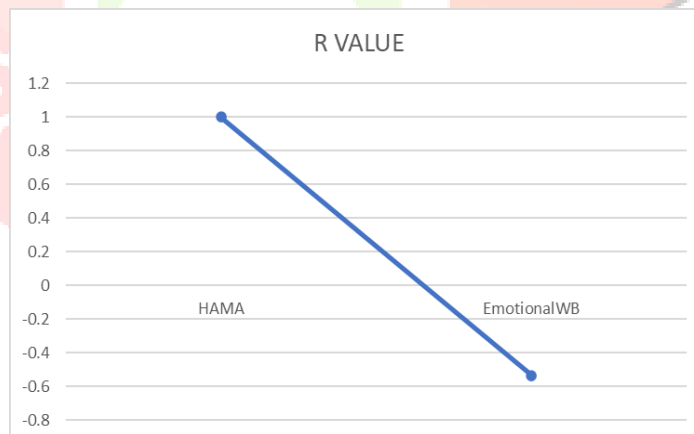
Graph 7

ii. Energy VS PSS- Pearson correlation(r) is -0.307, meaning that energy and stress are negatively correlated. When stress increases, energy decreases. P value is 0.03 which is significant (Graph 8).
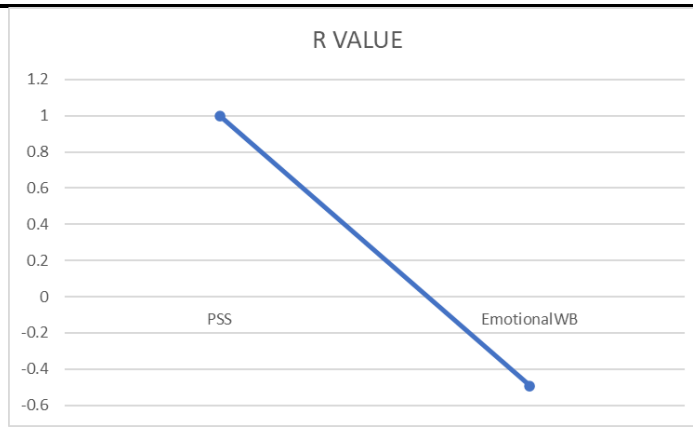
Graph 8

5. HAM-A AND PSS WITH EMOTIONAL WELL-BEING

i. Emotional well-being VS HAMA- Pearson correlation(r) is -0.533 which describes that emotional well-being and anxiety have negative correlation between them and when anxiety increases, emotional well-being decreases. P value is 0.00 which is highly significant (Graph 9).
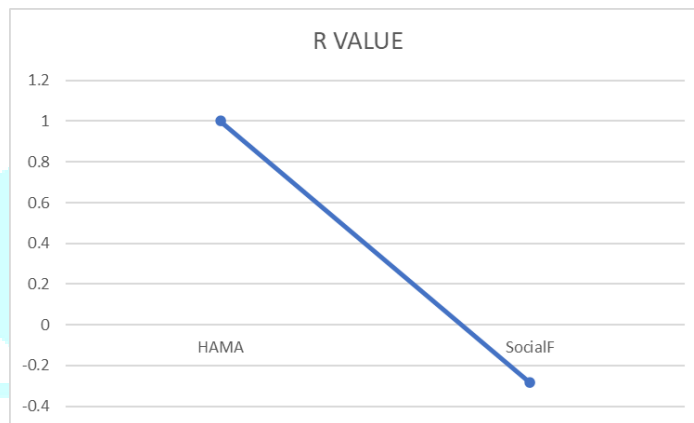
Graph 9

ii. Emotional well-being VS PSS- Pearson correlation(r) is -0.494 which indicates there is a negative correlation between emotional well-being and stress. This implies that when stress increases, emotional well-being decreases. P value was calculated to be 0.00 which is highly significant (Graph 10).
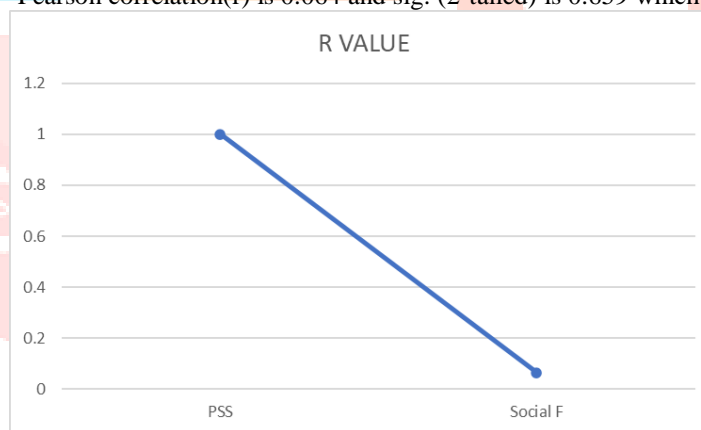
Graph 10

6. HAM-A AND PSS WITH SOCIAL FUNCTIONING

i. social functioning VS HAM-A- Pearson correlation(r) is -0.283 denoting that when anxiety and social functioning have negative correlation. So, when anxiety increases, social functioning will be reduced. P value was found to be 0.046 which is significant (Graph 11).

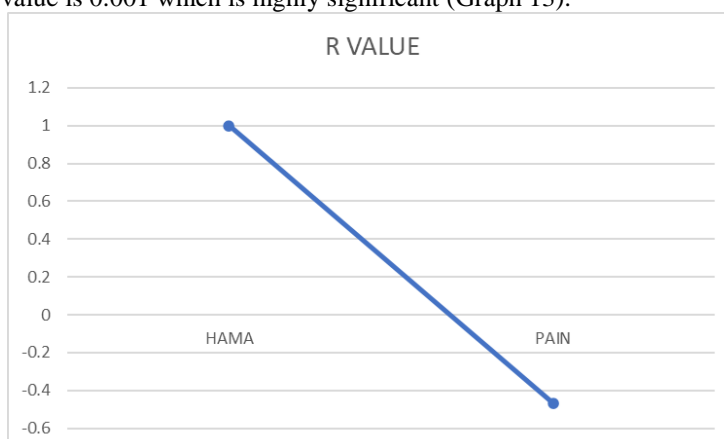Graph 11

ii. social functioning VS PSS- Pearson correlation(r) is 0.064 and sig. (2-tailed) is 0.659 which is not significant (Graph 12).
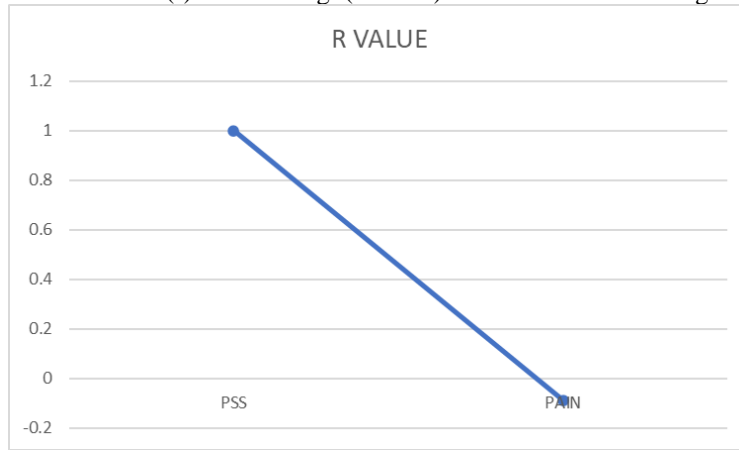

Graph 12

7. HAM-A AND PSS WITH PAIN

i. Pain VS HAM-A- Pearson correlation(r) is -0.466 implying that anxiety and pain are negatively correlated. When anxiety increases, pain decreases. P value is 0.001 which is highly significant (Graph 13).

Graph 13

ii.   Pain VS PSS- Pearson correlation(r) is -0.089 sig. (2-tailed) is 0.537 which is not significant (Graph 14).

Graph 14

8. HAM-A AND PSS WITH GENERAL HEALTH

i. General health VS HAM-A- Pearson correlation(r) is -0.410 stating that general health and anxiety are negatively correlated. It denotes that when anxiety increases, general health decreases. P value is 0.003 which is highly significant (Graph 15).
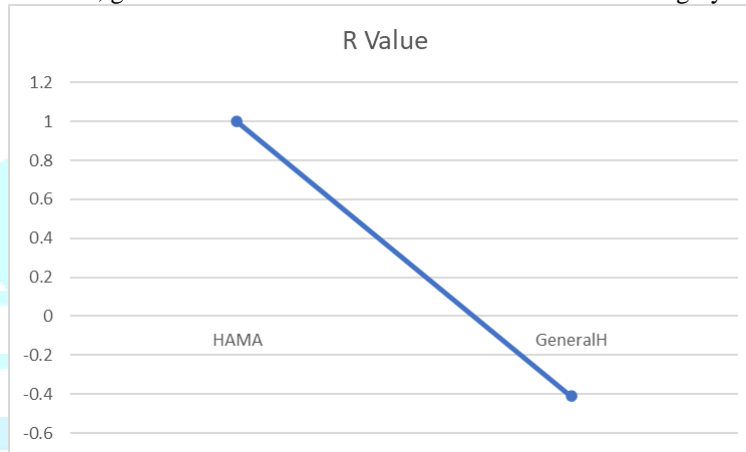
Graph 15

ii. General health VS PSS- Pearson correlation(r) is -0.394. This tells us that general health and stress have negative correlation between them. When stress increases, general health decreases. P value is 0.005 which is highly significant (Graph 16).
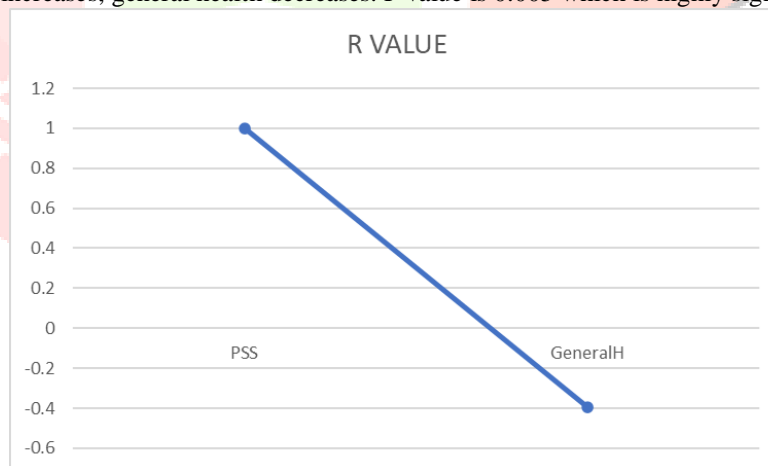
Graph 16

(D) CORRELATION BETWEEN PSYCHOLOGICAL DISTRESS WITH QUALITY OF LIFE.

Variable		Psychological distress
HAM-A	Pearson Correlation	.692**
	Sig. (2-tailed)	.000
	N	50
PSS	Pearson Correlation	.408**
	Sig. (2-tailed)	.003
	N	50
Psychological Distress	Pearson Correlation	1
	Sig. (2-tailed)	
	N	50
Physical functioning	Pearson Correlation	-.067
	Sig. (2-tailed)	.642
	N	50
Physical health	Pearson Correlation	-.372**
	Sig. (2-tailed)	.008
	N	50
Emotional health	Pearson Correlation	-.260
	Sig. (2-tailed)	.069
	N	50
Energy	Pearson Correlation	-.120
	Sig. (2-tailed)	.407
	N	50
Emotional wellbeing	Pearson Correlation	-.418**
	Sig. (2-tailed)	.002

	N	50
Social functioning	Pearson Correlation	-.254
	Sig. (2-tailed)	.076
	N	50
Pain	Pearson Correlation	-.369**
	Sig. (2-tailed)	.008
	N	50
General health	Pearson Correlation	-.021
	Sig. (2-tailed)	.885
	N	50

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

1. PSYCHOLOGICAL DISTRESS WITH PHYSICAL FUNCTIONING- Pearson correlation(r) is -0.067 and sig.(2-tailed) is 0.642 which is not significant (Graph 17).
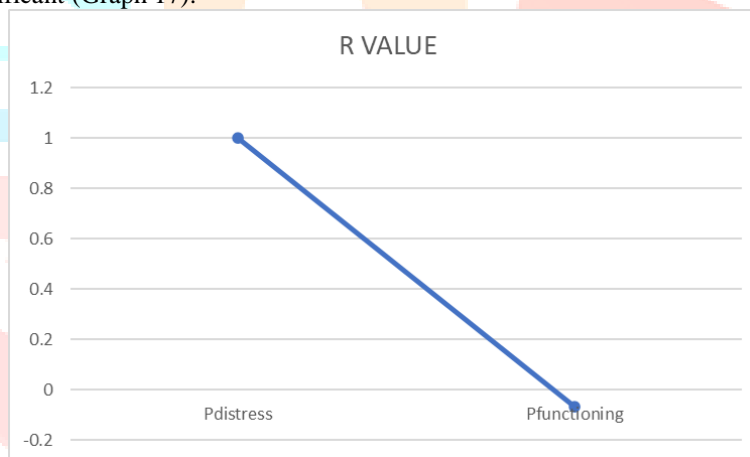
Graph 17

2. PSYCHOLOGICL DISTRESS WITH PHYSICAL HEALTH- Pearson correlation(r) is -0.372 and sig. (2-tailed) is 0.008 which is highly significant. R value shows that psychological distress and physical health have negative correlation. This implies that when a person has more psychological distress, his physical health decreases (Graph 18).
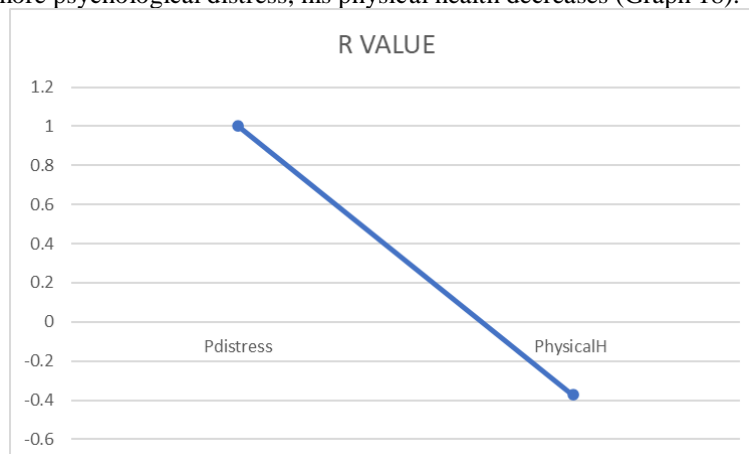
Graph 18

3. PYCHOLOGICAL DISTRESS WITH EMOTIONAL HEALTH- Pearson correlation(r) is -0.260 and sig. (2-tailed) is 0.069 which is not significant (Graph 19).

Graph 19

4. PSYCHOLOGICAL DISTRESS WITH ENERGY- The value of Pearson correlation(r) is -0.120 and sig. (2-tailed) is 0.407 which is not significant (Graph 20).
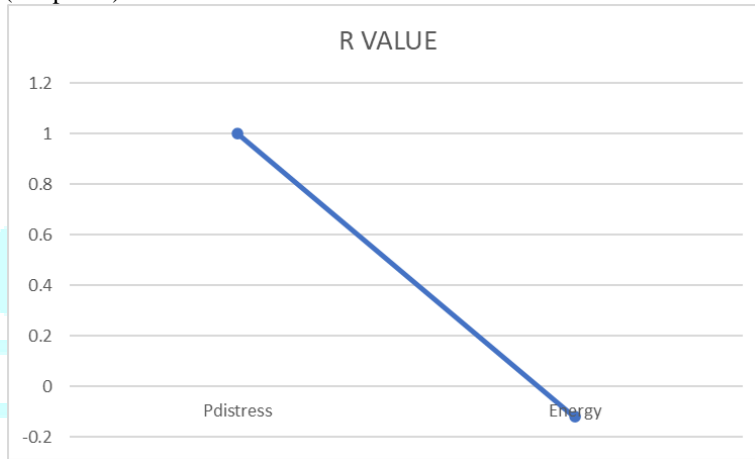
Graph 20

5. PSYCHOLOGICAL DISTRESS WITH EMOTIONAL WELL BEING- Pearson correlation(r) is -0.418 sig. (2-tailed) is 0.002 which is highly significant. Psychological distress and emotional well-being are negatively correlated and thereby, when one increases other decreases. When psychological distress is more, then emotional well-being decreases (Graph 21).

Graph 21

6. PSYCHOLOGICAL DISTRESS WITH SOCIAL FUNCTIONING- The value of Pearson correlation(r) is -0.254 and sig. (2-tailed) is 0.076 which is not significant (Graph 22).
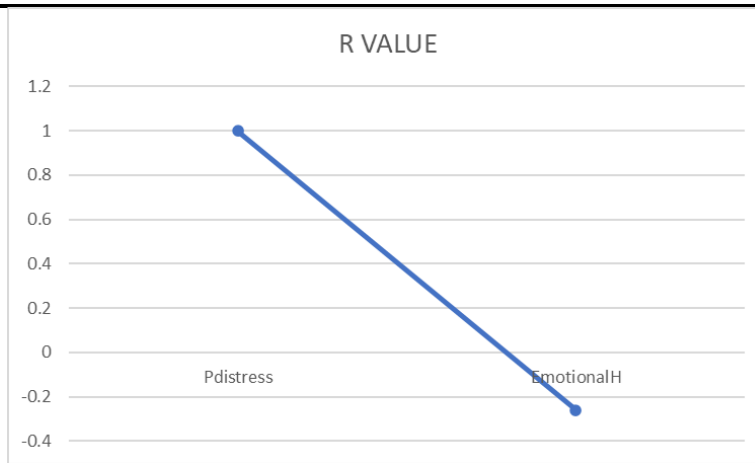

Graph 22

7. <u>PSYCHOLOGICAL DISTRESS WITH PAIN</u>- The value of Pearson correlation(r) is -0.369 and sig. (2-tailed) is 0.008 which is highly significant. R value shows that both, psychological distress and pain are negatively correlated. That means, when psychological distress of a person is increased, then pain decreases (Graph 23).

Graph 23

8. <u>PSYCHOLOGICAL DISTRESS WITH GENERAL HEALTH</u>- The value of Pearson correlation(r) is -0.021 and sig. (2-tailed) is 0.885 which is not significant (Graph 24).
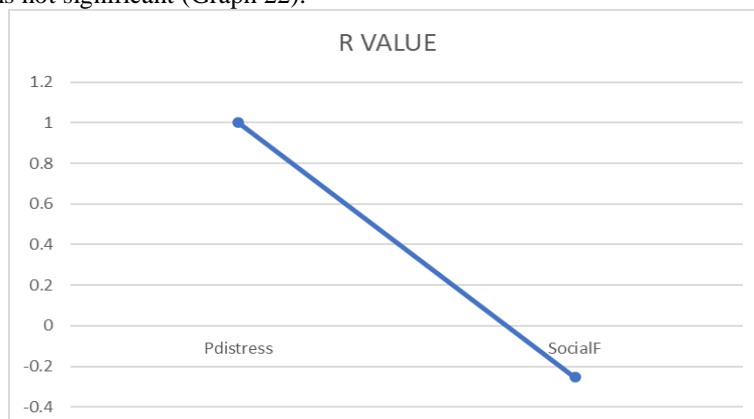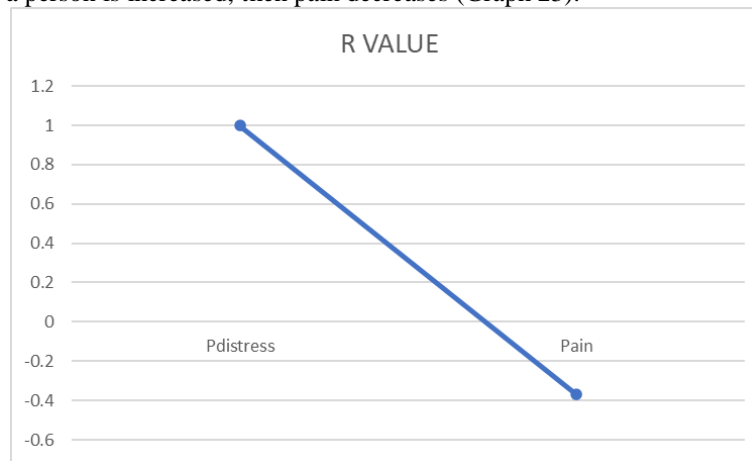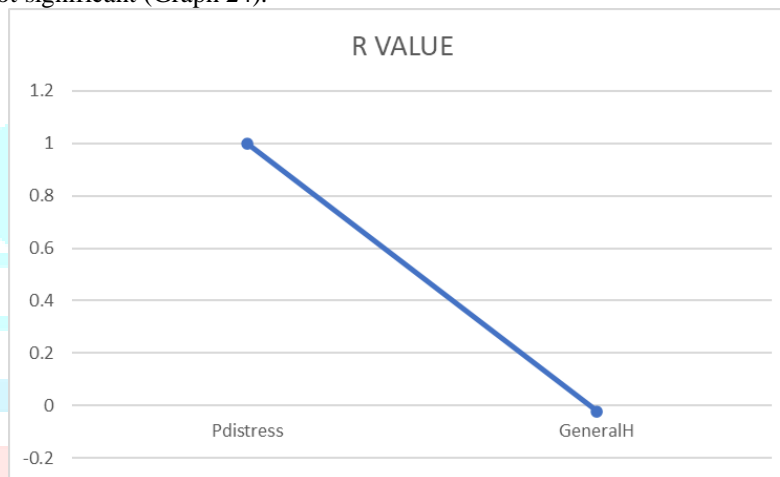

Graph 24

DISCUSSION

Coronavirus disease 2019 (COVID-19) is a highly contagious respiratory as well as vascular disease which is caused by the infamous severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first case was discovered in Wuhan, China in December 2019 and soon after it spread in all parts of the world, resulting in lockdown and quarantine.

The Coronavirus disease (COVID-19) has impacted every segment of life like commercial establishment, education, economy, religion, transport, tourism, employment, entertainment, food security, sports, etc. Besides these, outbreaks have reported that psychological impact of quarantine can vary from immediate effects, like irritability, fear of contracting and spreading infection to family members, anger, confusion, frustration, loneliness, denial, anxiety, depression, insomnia, despair, to extremes of consequences, including suicide.[3, 4,7, 10, 13] Children and adolescents were also greatly impacted by the abrupt withdrawal from school, social life and outdoor activities. [9]

The study aims to explore the effect of anxiety, stress and psychological distress on health-related quality of life. 50 subjects were taken for the study comprising of which 22 were males and 28 were females. Four scales were taken for the study which are Hamilton Anxiety Rating Scale, Perceived Stress Scale, Impact of Event Scale-R and SF-36 Questionnaire.

Hamilton Anxiety Rating Scale (HAM-A)- It is a psychological questionnaire used by clinicians to rate the severity of a patient's anxiety. The scale consists of 14 items designed to assess the severity of a patient's anxiety. Each of the 14 items contains a number of symptoms, and each group of symptoms is rated on a scale of zero to four, with four being the most severe.[32,33]

Impact of Events Scale - Revised (IES-R)- It is a 22-item self-report measure that assesses subjective distress caused by any traumatic events such as loss of someone, natural calamity etc. Items are rated on a 5-point scale ranging from 0 to 4 where zero stands for 'not at all' and four stands for 'extremely'. It has three subscales: Intrusion, Avoidance, and Hyperarousal. The IES-R yields a total score (ranging from 0 to 88) and Respondents are asked to indicate how much they were distressed or bothered by a particular event during the past seven days by each "difficulty" listed. [11,16]

Perceived Stress Scales (PSS)- The Perceived Stress Scale was developed by Sheildon Cohen to measure the degree of stress in one's life in a particular situation. [12]

Short Form Health Survey (SF-36) It is a 36-item, patient-reported survey of patient health. It contains 8 subscales whose scores can be calculated by adding the scores for each question in the given section. It is a measure of health status and an abbreviated variant of the SF-6D which is commonly used in health economics.[13, 14, 15]

50 subjects were interviewed using these four scales. The values of these scales were then statistically analyzed, and correlation was interpreted using Pearson correlation test.

Using the scales for Anxiety, stress and psychological distress, it was found that these have increased due to the pandemic as also stated in many articles. [1, 2, 4, 7, 20, 25]

Upon correlating with the components of SF 36 questionnaire with HAMA, it was found that:

HAMA is highly significant with Physical health, Emotional health, emotional well-being, pain, general health, energy, social functioning.

This states that Anxiety has a negative correlation with physical health, emotional health, emotional well-being, Pain, general health, energy and social functioning. Gretchen A. Brenes also suggest that anxiety and the components of quality of life are linked. [34] A study done by Jodi Oakman et. Al [25] also reported several health outcomes including Pain, fatigue, well-being, stress and happiness which impacted employee's mental as well as physical health while working at home. Another study done by Valerio Saladino et. Al [26] also found the significant psychological and social effects on the population. Children, college students and health workers who are likely to develop post-traumatic stress disorder, anxiety, and other of symptoms of distress. Also, the social distancing and security measures has affected the relationship among people. [26] Another study showed that mental health as well as students' social networks have worsened during the pandemic. [27]

Upon correlating the components of SF-36 Questionnaire with PSS, it was concluded that:

PSS is highly significant with Emotional well-being, general health, Energy.

This clearly states that stress has a negative correlation with emotional well-being, general health and energy as also depicted in a study, it was found that there is significant negative correlation between stress and various domains of Quality of undergraduate pharmacy students. [28]

Also, upon analyzing the relationship between psychological distress and components of SF-36 questionnaire, it was found that:

Psychological distress is highly significant with physical health, Emotional well-being, pain.

This concludes that psychological distress also plays a role in reduced physical health, emotional well-being and pain. A study done by Abdul Ghaffar Khan et. Al [29], it was concluded that psychological distress has a negative impact on quality of life on different social groups of Bangladesh, teachers, government officials, development workers, professionals and students during COVID-19 outbreak.

However, component like physical functioning is not affected by any variable.

In this way, we can say that Anxiety, stress and psychological distress affects the components of SF-36 questionnaire.

LIMITATIONS

1. Bigger sample size can be taken for the research for better results.
2. Face to face personal interview is better for proper interaction than video or audio calling.

RECOMMENDATIONS

1. Other scales for anxiety and stress can be taken which are more sensitive and have better reliability and validity for precise results.
2. The Research can be explored via different age groups.

CONCLUSION

As the world is hit by COVID-19 pandemic, it has adverse effect not only on the community but also their physical and mental health. There was increase in stress and anxiety. So, the study aims to explore the correlation of stress, anxiety and psychological distress with quality of life.

50 subjects were taken including 22 males and 28 females. Subjects were interviewed using four scales: IES-R, PSS, HAM-A and SF-36 questionnaire. They were interviewed using video and audio calling feature. Data was analyzed using Pearson coefficient test. It was found that Anxiety, stress and psychological distress has a negative correlation with the components of SF-36 questionnaire. Therefore, it means that as Anxiety, Stress and psychological distress increases, quality of life decreases.

An occupational therapist can play a significant role in reducing the anxiety, stress and psychological distress levels by Evaluating the patient's condition and providing appropriate treatment interventions. Relaxation techniques such as deep breathing, Jacobson's relaxation and visual imagery can be provided. Apart from these, activity scheduling and exercising at home should also be encouraged.

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