

Dance and Music as a Therapy to Heal Physical and Psychological Pain: An Analytical Study of COVID-19 Patients during Quarantine

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Abstract: *This paper delineates that involvement to dance and music is an active therapy that offers physical and psychological benefits for the people who affected with diseases. It is closely connected with human emotions which reduce the psychological pain and depression of people when they are getting involved with music and dance. Due to the outbreak of Coronavirus disease (COVID-19), patients are totally under stress and fear for life and livelihood. To overcome this perilous situation, involvement to dance and music is suggested to be an apt therapy that fights against the psychological and emotional effects through its unique power. Involvement to dance and music serves as a useful vehicle of hope and positivity to patients who are under quarantine. Hence, this paper aims to study the collaborative understanding of COVID-19 patients' perspectives on the involvement to dance and music and how it relieves their psychological pain and gains their physical strength while diverting them from fear to during quarantine. There are 215 COVID-19 patients taken as subjects from Tamilnadu, India. There were ten questionnaires used to collect the data through Google forms. The data was analyzed through ANOVA calculation. The major finding of the study indicates that involvement to dance and music brings immeasurable healing to body and mind. Furthermore, this study recommends dance and music to be used as a therapy for COVID-19 patients all over the world to keep them healthy and positive.*

Key words: *COVID-19, dance, music, therapy, neurobiology, psyche, body, patients.*

1. INTRODUCTION

Involvement to dance and music is an effective therapy that not only provides a sense of inner peace and happiness but also enthralls people to strengthen their psyche as well as body through its kinetic force. It is the property of universe in various styles which is mixed with human culture. Lossing, A. et. al. (2017) analyzed that dance movement is strongly rooted with Brain's neural system and its energized when people listen to music. It has an

inherent relationship because our body parts start to make movements as per the tune of music when we listen to music and watch dance shows. Involvement to dance and music can partially be an exercise that promotes chemical balance in human body which moves us from the bottom of the body and enhances our physical fitness through our brains which keep us positive and energized. This accounts for the reason that there is a direct relationship between the body and the mind. Today, it has turned its role to heal physical and psychological pain for COVID-19 patients.

Due to the pandemic caused by COVID-19, almost all countries in the world faced gradual shut down to reduce the spread of the virus. The virus was first reported in Wuhan, China. As there has been exponential surge in patients testing positive for COVID-19 in several countries, different countries started to impose strict lockdown to curb the disease. One of the safety measures for curbing the spread is through separating patients. As cited in Economics Times on 17 March 2020, the research experts' study report suggested that "Social distancing is the timing solution." Dr. T Jacob John, the former head of the Indian Council for Medical Research's Centre for Advanced Research in Virology, stated that "the purpose of the lockdown is primarily to slow down the spread of the virus and to reduce its growth in small proportions (Naqvi et al. (2020))." As there is increasing number of cases, many containment zones are set up for accommodating COVID -19 patients in India. COVID-19 patients are accommodated for treatment in a place where treatment is given as instructed by medical doctors. Apart from this, all patients are motivated to dance as they wish and listen to music. They are also motivated to watch TV shows. In every pandemic situation, mankind's best therapy is involvement to music and dance which helps them to come out from the depression and stress. Urvashi, a classical dancer of Kathak and Bharathantyam (Kathak and Bharathantyam are Indian classical dances), stated that "The therapy is divided into two segments that are active and passive." She stated that in the active segment, one can reduce stress through dancing. On the other hand, she mentioned that in the passive segment, one can reduce stress through watching other people dance." The test on the study has been taken randomly by both male and female COVID-19 patients in order to analyze the hypothesis. Most patients have accepted that it is only through their involvement with music and dance that kept them out of stress and fear. Some of the patients had spent most of their time in watching dance programs and listening to songs in various TV shows. Finally, it has been proven that involvement to dance and music is not only just an art, but also has an enormous healing power. Since the whole world has been stunned due to a pandemic situation brought by COVID - 19, involvement to dance and music acts as a substitute medicine which is needed by patients who are under quarantine. Therefore, involvement to dance and music has been considered as a medicinal therapy that can heal stress and physical illness. This involvement also helps us to get rid of pain both physically and mentally.

2. REVIEW OF LITERATURE

Chatterjee (2013) described in detail the medicinal value of Indian classical dance and folk dances which are viewed as therapeutic. Since the ancient time, Indian dance and music has a unique healing power by its nature with multiple movements and 'Ragas' (Ragas is the rhythm of a song) which serves mankind to keep strong. Chatterjee (2013) has deeply described that involvement to dance and music has enormous health benefits for the torso, lungs, respiratory, and eyes. Beth and Helen (1989) suggested that the treatment for Neurological sickness like Parkinson's disease is too complicated to handle the patients who were affected by tremor, and relying only to medicine and clinical treatment is not enough. Hence Beth and Helen, proved with a group of Parkinson patients that involvement to dance

and music therapy helped them positively to improve their cognitive level and physical strength. Lind (1986) broadly described the characteristics of music therapy and how it works on human brain. She further explained how involvement to music and dance help to those who suffer from cerebral palsy for its betterment. Hodges (1980) explained how music strongly influences the psychology of human beings when one listens to music. Hodges (1980) raised many questions related to the influence of music and dance, and he found the answers by analyzing the scientific benefits of this influence. Schwartz et al. (2019) have examined and explored a systematic experiment on patients of Huntington's disease through a therapeutic power of music and dance. Hanna (1988) highlighted the benefits of Indian classical dance and its power which inhibits many physical problems of the human body. Hannah (1988) further mentioned that she has analyzed this power through her own experience after learning the classical dance "Odissi." Hanna (1995) depicted that dance, as a medicine, reduces stress and depression of people when they practicing and singing it. Narayan and Dua (2018) compared the Indian classical dance and yoga and highlighted the similarities between yoga and dance which finally considered that dance has combined health benefits through mudras and postures of movements.

Sievers, et al. (2013) synchronized kinetic power with human behavior and emotions and have done experiments in a tribal village of Cambodia and another in the United States of America with the help of a computer that utilized a jitter (a digital audio system). Deekshitula (2019) portrayed the entire classical dances of India and its connections with the human body, both mentally and physically, while illustrating health benefits from each dance's form and movements. Castilo, et al. (2010) have experimented patients who struggled with depression while undergoing music therapy and psychotherapy. The patients were divided them randomly into two groups: one is a music listener; the other one is non-music listeners. Castlo et al. (2010) found out that music helps patients to recover from depression. Dapratl & Haggard (2009) experimented on psychological experiences while observing through the creative and artistic experience of classical ballet. The study showed how the body reacts according to dance movements through music and rhythm for many years. Gitanjali (1998) has scientifically proven that Indian classical music (*Ragas*) has different benefits and control over certain emotions. During ancient times, some of the *Ragas* were sung for several events: *Amirthavarshiniis* is sung to get rain; *Punnagavarali* is sung to capture snakes; and *Neelambari* is sung to promote sleep. Hence, Gitanjali (1998) has proven this hypothesis by testing a group of people and getting a positive result. Mukarjee, et al. (2014) focused on two ancient Indian classical dances (Bharathnatyam and Kathak) to find out the influence of how dance movements address obesity. Being overweight has been a problem of the people in the whole world. For this reason, a group of Bengali females were selected to practice these two dance movements on a regular basis, and these participants have been observed for having an entire change in body shape anthropometrically. Sureka, et al. (2018) conducted a study among physiotherapists and looked on the effects of practicing Indian classical dance to the function of pulmonary and respiratory system.

3. RESEARCH METHODOLOGY

The study was conducted through Google forms among respondents in select places from Tamil Nadu, India. For the study, 215 COVID-19 patients were taken as samples belonging to different age groups and social status. From this figure, 104 were female, 110 were male and one was a transgender. Subjects were selected through random sampling technique in order to avoid extraneous variables, and to prevent unbiased proposition. Survey research design was adopted in order to test the views of the respondents with regard to how they could see the use of dance and music as a therapy for physical and psychological pain

during quarantine. For carrying out the study, the researchers prepared a questionnaire, which was used for obtaining data from respondents. Moreover, the questionnaire has been divided into three parts which consist of 10 questions in relation to COVID -19 patients' psychological approach, especially with their response to dance and music during quarantine. Involvement to dance and music always affects the psyche of patients positively. Hence, the questions were asked on the basis of involvement to dance and music. In this regard, all the respondents were not similarly responsive to questions.

Data Presentation and Discussion

Table 1. COVID-19 Patients' Response to Dance and Music
(Strongly Agree=SA, Agree =A, Neutral =N, Disagree =D, Strongly disagree =SD)

	COVID-19 Patients' Response to Dance and Music	SA	A	N	D	SD	%
1	Dance and music helped me to overcome my fear of COVID-19.	86 40%	90- 41.86%	26 12%	10 4.65%	3 1.39%	215 100
2	I felt dance movements as fitness therapy.	95 44.18%	85 39.53%	28 13%	5 2.32%	2 0.93%	215 100
3	I spent a greater number of hours listening and watching TV shows every day.	49 22.79%	70 32.55%	51 23.72%	33 15.34%	12 5.58%	215 100

Table - 1 represents COVID-19 patients' response to dance and music. The first question indicates that majority (81.86 % both SA+A) of the patients seem to have felt that dance and music helped them to overcome their fear of COVID-19, whereas 6.04% (D+SD) responded negatively to the statement that dance and music did not help them to overcome their fear of COVID-19. It may be strongly true from the responses to the second statement that 83.71% (both SA+A) of the patients said that they felt that dance movements served as fitness therapy for them which could help them to be healthier while 13% were neutral with their opinion. Around 3.25% disagreed with the statement. While responding to the third statement, 55.34% (SA+A) of the respondents agreed that they would generally spend a greater number of hours listening and watching TV shows which could subsidise the psychological tension.

Table 2. Exposure of Patients to Dance and Music Performance
(Strongly Agree =SA, Agree =A, Neutral=N, Disagree =D, Strongly disagree =SD)

Table - 2 represents an exposure of patients to dance and music performance of the questionnaire item nos. 4 - 6. Data from questionnaire item no. 4 indicates that 59.7% of

	Exposure of Patients to Dance and Music	SA	A	N	D	SD	Total %
4	Classical dances such as Bhrathanattiyam and Kathak appease my anger and give me a sense of satisfaction when I watch in TV	58 26.97%	69 32.1%	59 27.44%	23 10.7%	06 2.4%	215 100
5	I sing a song to spread happiness to all people around.	80 37.2%	63 29.3%	45 20.9%	15 7%	12 5.6%	215 100
6	Female patients are more active compared to male patients while dancing in the treatment center	58 27%	82 38.1%	47 21.9%	20 9.3%	8 3.7%	215 100

respondents agreed that watching classical dances such as Bhrathanattiyam and Kathak had a positive impact on their lives which could appease their anger. For this, they felt a sense of satisfaction which enabled them to forget about their fear of COVID-19, whereas 13.1% of them negatively responded to the question. Questionnaire no. 5 shows that 66.5% of the respondents gave positive responses, while 12.6% of the views were indifferent. The figure indicates that patients could be very happy by singing a song apart from undergoing medication. Hence, it may be inferred from the respondents that singing songs for patients allows them to be happy. The item no. 6 presents that 65.1% of respondents agreed that female patients are more active compare to male patients. This shows that female respondents are psychologically stronger compared with male patients. Female respondents also were ready to dance and to sing which was the result of their togetherness in treatment centres. However, 13 % of them negatively responded to the item where they expressed that they might be less interested on being together and were reluctant to show their activeness. Though the respondents were in COVID -19 treatment centres, they did not find any decline in their attitude since they started spending time on dancing, watching dance performance shows in TV, and listening to music which have improved their psychological as well as physical strength.

Table 3. Influence of Gender, Age, and Social Media in Pain Recovery
(Strongly Agree =SA, Agree =A, Neutral =N, Disagree =D, Strongly disagree =SD)

	Gender, Age, and Social Media	SA	A	N	D	SD	Total %
7	Involvement to Dance and Music is the remedy for difficulties like emotions, distress, stress, and depression etc. for Adults with Dementia.	80 37.20%	83 38.60%	40 18.60%	9 4.18%	3 1.39%	215 100
8	In social media especially dance and music become boring as I grow older. (In Indian context when people become old, they show less interest in watching dance and music due to rigid cultural practice)	38 17.67%	51 23.72%	47 21.86%	61 28.37%	18 8.37%	215 100
9	In treatment centers, dance and music helped me to acquire mental clarity and emotional stability.	47 21.86%	86 40%	55 25.58%	19 8.83%	8 3.72%	215 100
10	I usually have unlimited access to dance and music and this access have improved my confidence level apart from taking a medication.	53 24.65%	99 46.04%	38 17.67%	16 7.44%	9 4.18%	215 100

Table - 3 represents the influence of gender, age and social media in healing the pain of COVID-19 patients. It is clear from the responses of patients that gender and age influence their lives during quarantine, as far as involvement to dance and music is concerned. Their

involvement in dance and music does not have any negative effect as revealed with the responses of participants to item nos. 7-10. Reading news related to dance and music and watching TV shows allowed patients to lighten the pain they were carrying. The views of patients for item no.7 reveal that around 75.8 % of the respondents were likely to confirm that dance and music could be the panacea for their pain, especially for adults with Dementia. Therefore, it is apparent that the stress and depression of patients were relieved.

The relationship between social media and involvement to dance and music is that due to the technological advancement of social media, people can listen and enjoy dance and music through various channels. When asked if social media especially dance and music become boring as the respondents grow older, 41.39% of the respondents felt that it was getting more boring as they grow older. Furthermore, the response of respondents for item no. 9 clearly shows that approximately 61.86% of them agreed that in treatment centers, involvement to dance and music helped them to acquire mental clarity and emotional stability. Therefore, these respondents could spend their time without any fear of the disease, hoping to get relieved in a short period of time. However, 12.55% of the respondents expressed their disagreement due to their interest in other aspects of life.

Item no. 10 presents an interesting fact where there are 70.69% of the respondents who were greatly influenced by the unlimited access to an involvement to dance and music which has improved their confidence level apart from taking medication. On the other hand, 11.62% of the respondents have given a negative response. It is evident from the data that majority of the patients involved themselves with dance and music with their fellow friends in quarantine centers. Therefore, the participants were able to manage the critical situation in a peaceful way where they did not even allow themselves overpowered by the fear of contracting COVID-19. From the results of the study, it is apparent that there is no gender variation in terms of their involvement in dance and music. Research also shows that there are doctors and patients who dance and sing all over India who subscribe to this particular involvement to overcome this situation and to divert the fear and psychological pain.

As Dr. Deepashree (2020) stated, “We wanted to come up with something that would help us to relieve stress. She further added that music was a common healer and stress buster and that is how it began. She explained that people have gotten this perception that doctors are serious persons and that they cannot express themselves. However, as he explained in the end, doctors are human beings too and they need a vent for their emotions. For this reason, she decided that doctors would only pick up positive songs, and that each doctor or a certain team should provide a 30-second- to one- minute-clip.”

Mathematical Analysis

The researchers performed the ANOVA calculation on the respondents' data taken through Google forms on involvement to dance and music as a therapy for physical and psychological pain. There were 215 respondents who gave their opinions in the study. For the purpose of simplification, Strongly Agree (SA) is represented as x_1 , Agree (A) is represented as x_2 , Neutral (N) is represented as x_3 , Disagree is represented as x_4 and Strongly Disagree (SD) is represented as x_5 . Table 1 represents the calculation of data. The researchers tested the hypotheses in the study in order to understand the effectiveness of involvement to dance and music as a therapy for psychological pain.

H_0 : Involvement to dance and music is a therapy for psychological pain.

H_1 : Involvement to dance and music is not a therapy for psychological pain.

Table 4. Calculation of General Data Analysis

S No	x_1	x_2	x_3	x_4	x_5	Total	x_1^2	x_2^2	x_3^2	x_4^2	x_5^2
1	58	69	59	23	6	124	3364	4761	3481	529	36
2	95	85	28	5	2	160	9025	7225	784	25	4
3	49	70	51	33	12	179	2401	4900	2601	1089	144
4	58	69	59	23	6	189	3364	4761	3481	529	36
5	80	63	45	15	12	202	6400	3969	2025	225	144
6	58	82	47	20	8	215	3364	6724	2209	400	64
7	80	83	40	9	3	224	6400	6889	1600	81	9
8	38	51	47	61	18	255	1444	2601	2209	3721	324
9	47	86	55	19	8	270	2209	7396	3025	361	64
10	53	99	38	16	9	332	2809	9801	1444	256	81
Total	616	757	469	224	84	2150	40780	59027	22859	7216	906

P = Total Number of Observation

$$= 5 \times 10 = 50$$

Q = Sum of All Values

$$= 1,32,938$$

$$\text{Correction Factor} = \frac{Q^2}{P} = \frac{(1,32,938)^2}{50} = 35,34,50,237$$

$$\text{SST} = \sum x_{ij}^2 - \frac{Q^2}{P}$$

$$= (\sum x_1)^2 + (\sum x_2)^2 + (\sum x_3)^2 + (\sum x_4)^2 + (\sum x_5)^2 - \frac{Q^2}{P} = 35,22,20,539.$$

$$\text{SSB} = \frac{(\sum x_1)^2}{n_1} + \frac{(\sum x_2)^2}{n_2} + \frac{(\sum x_3)^2}{n_3} + \frac{(\sum x_4)^2}{n_4} + \frac{(\sum x_5)^2}{n_4} - \frac{Q^2}{P}$$

$$= \frac{(616)^2}{10} + \frac{(757)^2}{10} + \frac{(469)^2}{10} + \frac{(224)^2}{10} + \frac{(84)^2}{10} - \frac{Q^2}{P}$$

$$= 35,33,27,267$$

$$\text{SSW} = \text{SST} - \text{SSB}$$

$$= 11,06,728$$

Table 5. Final Calculation of Data

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (df)	Mean Square (MS)	Variance Ratio
Between Columns	353327267	4	8,83,31,816.75	$F_C=0.111$ $F_R=2.506$
Between Rows	353351419	9	39,27,935.44	
Error	354458147	36	98,46,059.639	

The test statistics are the following:

$$F_C = \frac{MSE}{MSC} = 0.11$$

$$F_R = \frac{MSE}{MSR} = 2.506$$

ndf for “between columns”=36,4=5.91

ndf for “between rows”=36,9=3.07

Table value of F for (36,4) df at 5% level=5.91

Table value of F for (36,9) df at 5% level=3.07

In both the cases, calculated values of $F <$ the table value of F .

Therefore, H_0 is accepted at 5% significance level. Hence, the researchers conclude that involvement to dance and music is a therapy for psychological pain.

4. FINDINGS AND DISCUSSION

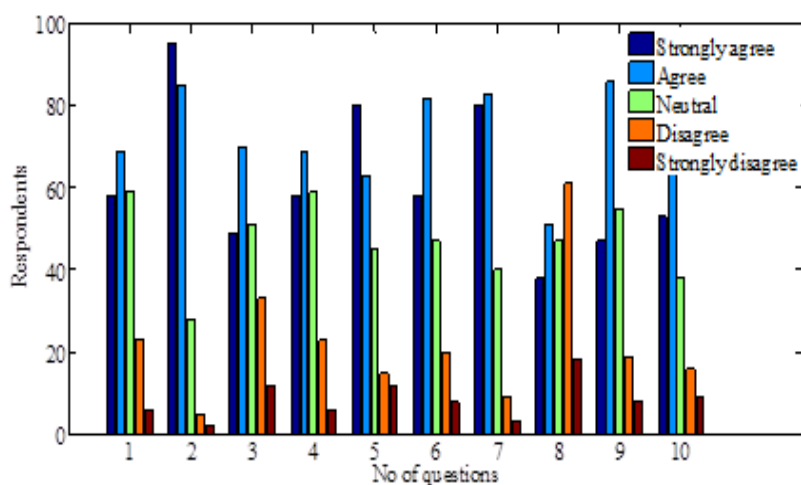


Figure 1. Analysis of Five Data in Real Life.

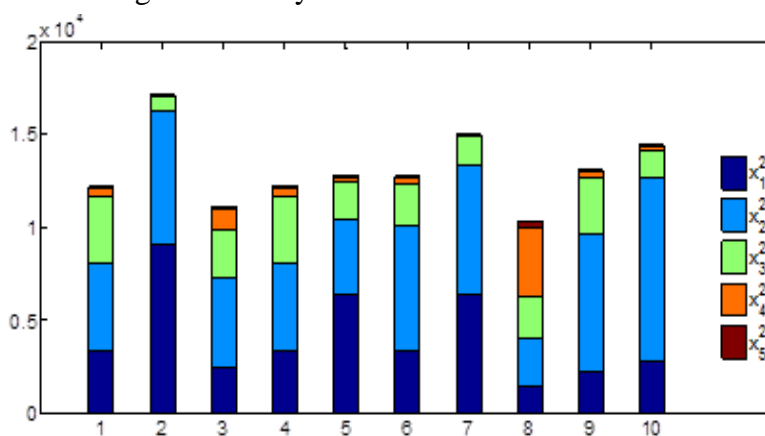


Figure 2. Analysis of Square of Five Data in Real Life.

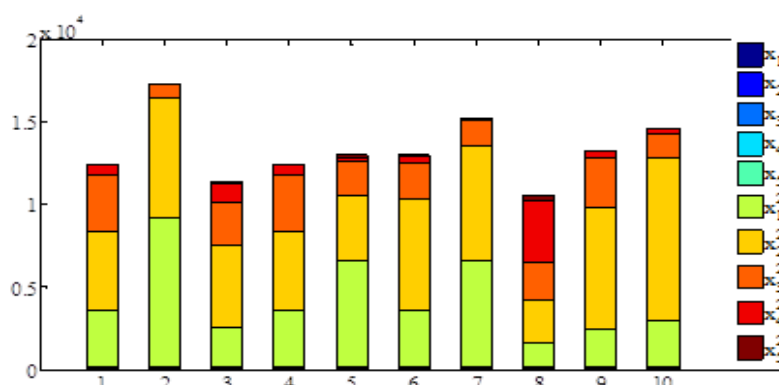


Figure 3. Analysis of Entire Data.

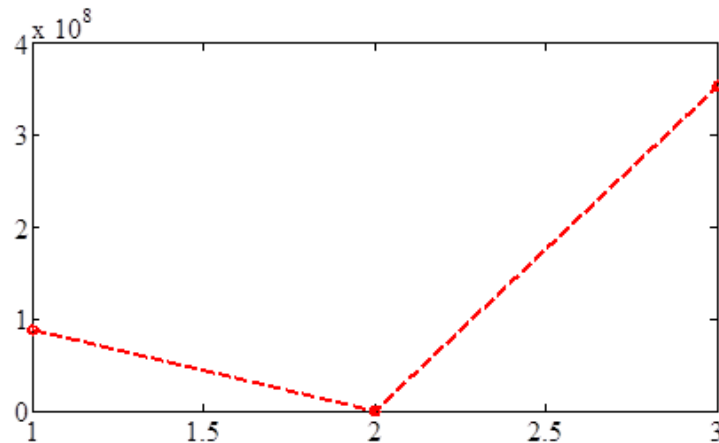


Figure 4. Analysis of Final Calculated Values for Data.

This chart shows the results on the involvement to dance and music as a therapy to heal physical and psychological pain for COVID-19 patients which were obtained from the questionnaire that the participants accomplished through Google forms. Figure 1 represents the bar diagram of the five original data which is the principal result of this research work. The statistical analysis of the square of five data is shown in figure 2. The entire statistical details are shown in figure 3. Finally, figure 4 shows the final verification of the data for line diagram. As per the mathematical procedure, the collected data from the COVID-19 patients are correct. Finally, the researchers conclude that involvement to dance and music works as a therapy for physical and psychological pain. The study explored the effectiveness of how an involvement to dance and music heals physical and psychological pain among COVID-19 patients during quarantine. The study has also provided significant insights on the treatment for COVID-19 patients. The relationship between an involvement to dance and music and the patients' psyche is clearly presented as Bosewell (2020) stated, "Music plays an important role in basic human emotions, and it has been very useful in mental health as it helps in treating anxiety, depression, and some psychiatric disorders. He further added that dance therapy is a very useful method of intervention in improving cognitive level in some individuals, and it also has lasting effects on chronic psychiatric ill patients". Sridevi (2020) stated that, "Dance increases the muscle strength and flexibility from head to toe. She further added that dance increases endurance and motor fitness. She explained that while dancing traditional dances like Bharathanatyam, it helps patients to attain aerobic fitness. She also suggested that dancing improves the coordination agility and flexibility. She concluded her statement by explaining that dance is an effective rehabilitation for balance and gait impairment posture correction." This study resulted from the analysis which strongly presents that involvement to dance and music is a therapy for physical and psychological pain for COVID-19 patients during quarantine.

5. LIMITATIONS

In India, people are strongly accustomed with their cultural and religious roots. South Indian women compared to North Indians, are rigid and conservative due to their cultural background and familial setup. The survey has revealed that while comparing female participants with male participants, the male participants are active while the female participants are quite reluctant. The female participants felt shy to dance. However, the female participants were almost equally interested in watching classical dance and music. When the researchers tried to get more samples, many of the COVID-19 patients were not ready to respond due to their fear of contracting the virus. Therefore, the researchers stopped with 215 samples.

6. CONCLUSION

The results of the study show that as per the mathematical procedure, the collected data from COVID-19 patients concluded that the involvement to dance and music works as a therapy for physical and psychological pain. The study explored the effectiveness of the involvement to dance and music and how it serves as a therapy for physical and psychological pain among COVID-19 patients during quarantine. In therapeutic point of view, involvement to dance and music primarily deals with physical movements and mind as it has been an enormous power in health science. Dance plays the role of a doctor, entertainer, and physical trainer. Music, on the other hand, decreases the levels of hormone cortisol. Involvement to dance and music could be the best therapy which is proven in this study. Doctors recommend implementing involvement to dance and music as a therapy for COVID-19 patients in hospitals and quarantine centers. Hence, study shows that if we encourage people to involve with dance and music which enormously lowers physical and psychological pain. For a wide scope, the result of this study should be highlighted to the public for people to be kept engaged, positive, and free from the fear of COVID-19 pandemic.

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