

Dealing with the psychological impact of biological disasters to foster health & well-being

Abstract

There has been a surge of biological disasters such as SARS, Ebola virus, Zuca Virus, Covid-19, hand, foot and mouth disease and many more in the 21st century. These have had grave physical, psychological, social, emotional, environmental and psychological repercussions on societies across the globe both at individual and community level. The W.H.O declared COVID-19/novel corona virus as a global pandemic in January 2020 that was highly contagious and had grave physical and psychological impact on individuals irrespective of any age, gender, caste and class the world over. Keeping this in mind, the present article aims to highlight and discuss certain pre and post psychological techniques that can be incorporated in one's daily routine amidst such crisis, in order to restore health, well-being and peace.

Keywords: psychological intervention techniques, biological disasters, health & well-being

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Introduction

There has been a surge of biological disasters such as SARS, Ebola virus, Zuca Virus, Covid-19, hand, foot and mouth disease and many more in the 21st century. These have had grave physical, psychological, social, emotional, environmental and psychological repercussions on societies across the globe.

Biological disasters are natural scenarios involving disease, disability or death on a large scale among humans, animals and plants due to microorganisms like bacteria, virus or toxins.¹

The WHO declared COVID-19/novel corona virus as a global pandemic in January 2020 that has grave physical and psychological impact on individuals irrespective of any age, gender, caste and class the world over. Research indicates that during such crisis people may have experienced a wide range of thoughts, feelings and reactions that include (Source: Minding our minds during the COVID-19-MoHFW, 2020).³

- a. Feeling stressed & overwhelmed about your own health & that of your loved ones.
- b. Phobia, Anxiety, worry, panic, uncontrolled fear, PTSD and suicide ideation.
- c. Negative and racing thoughts such as psychological trauma, grief and profound sorrow.
- d. Sadness, helplessness and loss of interest in daily activities and depression.
- e. Changes in eating & disturbed sleeping patterns such as insomnia.
- f. Unable to deal with social isolation/ feeling disconnected from others.
- g. Frustration, irritability and anger.
- h. Dissociation, emotional distress and shock and trouble relaxing.
- i. Physical symptoms such as: increased heart rate, upset stomach, fatigue & frequent headache.
- j. False belief that you have actually contracted the disease without any visible sign or symptom.

A narrative review was conducted by three experts in community medicine, disaster medicine and psychiatry reflecting on the disaster management of the psychological impact of Covid-19 pandemic. Results indicated that biological disasters such as covid-19 caused immense emotional distress, fear and negative emotions among people due to lack of effective treatment, availability of vaccines, fear of contracting the virus and related lifestyle and adjustment issues. The review indicated that the most common distress reactions included anxiety, insomnia, perception of insecurity, anger, fear of illness and risky behaviour. Furthermore, the patients having mental disorders were found to be more vulnerable during the pandemic due to somatic, cognitive, behavioural and psychosocial vulnerability and disruption psychiatric care.⁴

Hsieh et al.,⁵ had conducted a review of studies that summarized the issues concerning mental health problems related to infectious diseases such as Covid-19 and SARS from the available literature. Results indicated that such biological disasters not only had a strong impact on those being affected directly, but also affected their family, friends and co-workers and well-being of people at the community level. It is suggested that clear and timely psycho-education, psychological first aid and psychological de-briefing could ameliorate the negative impact of disasters to a great extent both at the individual and community levels.

Measures that can help one to deal with such crisis include

Firstly, since the virus is contagious, incorporating Preventive measures specified by the WHO can play a very important role in remaining safe & healthy. These are as follows: (World Health Organization: Coronavirus disease (COVID-19) advice for the Public, 2020).⁶

- I. Stay at home and spend time with loved ones.
- II. Wash your hands more frequently with soap & water for at least 20 seconds in order to maintain proper hygiene and limit your vulnerability to infection.
- III. Maintain good physical hygiene & avoid touching your eyes, nose or mouth if your hands are not clean.
- IV. Maintain good respiratory hygiene by covering your mouth/nose when you sneeze or cough using a handkerchief or your elbow.

V. **Social Distancing:** Maintain adequate social distance of at least 3 feet from people who are unwell. In such times, however, social distancing or a period of lockdown can create a feeling of isolation, loneliness, excessive worry and panic of not being able to connect with loved one's especially if one is being quarantined. In such times social distancing does not necessarily mean that a person is also emotionally disconnecting from their loved ones. Rather the lockdown period should be taken an opportunity to connect with your family and friends if not in person then through virtual means such as whatsapp, facebook, video all, chat, skype and other virtual means (World Health Organization: Coronavirus disease (COVID-19) advice for the Public, 2020).⁶

Psychological techniques that can be incorporated in one's daily routine do deal with biological disasters are as follows:

"Small steps in the right direction can turn out to be the biggest step of your life" (Anonymous).

Stay away from information overload, especially from rumours and fake news: It is indicated that keeping oneself obsessed with rumours, fake news and cognitive overload creates unnecessary panic, worry and anxiety among people exacerbating their level of already existing stress, having an adverse effect on their health and well-being. Therefore it is advisable to try and seek information that is both relevant, timely and preventive.

Make use of Psychological First Aid: Psychological First Aid is an evidence-informed modular approach to help children, adolescents, adults, and families in the immediate aftermath of disaster and terrorism.⁷ It is particularly designed to reduce the initial distress caused by traumatic events and to foster short- and long-term adaptive functioning and coping.⁷ The psychological first aid is given by qualified mental health experts post disaster in the following manner:

- I. By establishing a human connection in a non-intrusive, compassionate manner
- II. By enhancing immediate safety providing both physical and emotional comfort
- III. By calming and relaxing emotionally overwhelmed or distraught survivors
- IV. By helping survivors to share their immediate needs and concerns, and gather related information and provide them practical solutions
- V. By connecting survivors as soon as possible to social support networks, including family members, friends, neighbours, and community helping resources
- VI. By providing support adaptive coping, acknowledging coping efforts and by empowering survivors such as adults, children, and families to take an active role in their recovery.⁷

Make use of psychological debriefing: Psychological debriefing (PD) is a brief, short-term intervention aimed at mitigating long-term distress and preventing the emergence of posttraumatic stress after a disastrous event or situation in a humane, caring, compassionate and empathetic manner.⁸

The key elements of psychological debriefing are ventilating emotions about the trauma, while discussing one's thoughts and feelings, and reactions with a trained professional, who in turn, provides psycho-education about traumatic stress responses and attempts to normalise these reactions.⁹

However, the aim of psychological debriefing is also to provide education about common reactions to traumatic events, to indicate resources for further help and support where necessary, and to begin to facilitate the process of accepting and dealing with a traumatic incident.⁹

Psychological debriefing can be of the following types that have been a handy and beneficial tool in mitigating post disaster effects:

Operational debriefing: In operational debriefing, mental-health workers acknowledge it as an appropriate practice that may help survivors acquire an overall sense of meaning and a degree of closure.⁸

Critical incident stress debriefing (CISD) is a formalized, structured method whereby a group of rescue and response workers reviews the stressful experience of a disaster. CISM includes the following components: pre-crisis intervention; disaster or large-scale demobilization and informational briefings (town meetings); staff advisement; defusing; CISD; one-on-one crisis counselling or support; family crisis intervention and organizational consultation; follow-up and referral mechanisms for assessment and treatment, if necessary.⁸

Research conducted across the globe indicates that psychological debriefing to a certain extent has been able to assist people lead a normal life post disasters. It is indicated that psychological debriefing has been found to reduce psychological distress, PTSD, anxiety, phobias and help people feel safe and more resilient post the occurrence of biological disasters.

Psychological debriefing has been used with individuals as well as with groups. The group setting is considered to be the preferred strategy, not only for its economic and technical advantages but also because it recreates a maternal environment. At the same time, the group becomes a place to communicate and to re-establish order, trust, and a feeling of safety.⁹

Make use of psychological education/interventions: During and post biological disasters many psychological education based interventions have been used majorly at four levels which are as follows:

- I. Basic services and security for the general population affected by the crisis.¹⁰
- II. Community and family support for mild psychological distress.¹⁰
- III. Focused non-specialized support by paraprofessionals for mild to moderate health disorders.¹⁰
- IV. Specialized services by mental health professionals for severe psychological disorders.¹⁰

Research conducted across the globe indicates that intervention programmes such as stress inoculation, Cognitive Behavioural therapy, Rational Emotive Behavioural therapy, art therapy and expressive arts therapy, grounding and mindfulness based techniques, and intermittent counselling techniques have been found to be beneficial in helping victims of biological disasters lead a relatively stable and normal life. Many other psychological techniques that can and have been used as handy tools during such crisis situations have been discussed below:

Reframe negative thought patterns into positive ones: In times of crisis, it is but natural for individuals to get trapped in the vicious circle of thoughts that are both negative and distressing. In such times, it is all the more necessary that one should break away from this chain of pessimism, by distracting and disengaging oneself, right from the

very onset of such negative belief patterns. This can be done by using techniques such as:

- I. Counting backwards from 10 to 1, listening to music, talking/ writing it out.
- II. By asking one-self the following questions:
 - i. Is the situation all that bad?
 - ii. What positive action can I take now?

A research was conducted by Ndukwu et al.,¹¹ to investigate the effectiveness of Rational Emotive Behavioural Therapy (REBT) on depression and anxiety during COVID-19 pandemic in Nigeria. The study adopted a randomized pre-test, post-post, control group design and used trial tested instruments to study depression and anxiety among Nigerians. Results indicated that REBT was found to be effective in reducing depression and death anxiety in COVID-19 patients. Furthermore, using REBT as an intervention helped to curb the spread of the disease by letting the Nigerians know the existence, mode of spread and the consequences of the disease to be real rather than a myth.¹¹

Maintain a positive frame of mind by

- I. Rediscovering and re-connecting with leisure activities and hobbies that you had once planned to do but, did not get time to pursue, such as painting, sculpting, art & craft, needle work, cooking, gardening, role- play, story-telling and the list is endless.
- II. Indulging in spiritual activities such as prayers and chanting of mantras, the importance of which our Indian scriptures has been emphasizing since times immemorial. It is indicated that making use of such practices assist in creating positive vibrational energy around oneself, leading to better health and well-being.

Eating healthy & having a good quality sleep: It is indicated that during situations of crisis and stress, the level of corticosteroids increases in the body which has a direct bearing in weakening one's immune system, making one more vulnerable to contracting diseases. Keeping that in mind, strengthening one's immune system by eating healthy and having a good quality sleep are of prime importance. The following immunity boosting foods can be incorporated in one's daily diet:

- I. Fibre rich foods such as: (oats, whole wheat grains/porridge, bread, pasta), fruits (esp. citrus fruits & purple foods as they are rich in antioxidants) green leafy vegetables, sprouts, seeds (such as sunflower, pumpkin) nuts such as almonds, peanuts, raisins, walnuts etc.
- II. Keep yourself hydrated with:
 - i. Warm water
 - ii. Green tea
 - iii. Herbal tea consisting of basil, cinnamon, black pepper in warm water with jiggery/honey.
 - iv. Hot water with slices of lime as it helps to make the alkaline base of the body.
 - v. Hot milk with honey & mild turmeric.
- III. Make use of ginger, garlic, cumin, coriander, turmeric, mint, oregano & basil in your cooking.

IV. Refrain from cold/refrigerated food, tobacco, drugs, drinks & alcohol.

Make use of aroma therapy: Take a hot water bath using aromatic oils such as rose, lavender, mint & lemon as they are both therapeutic & relaxing. Research conducted across the globe indicates that essential oils help to deal with anxiety, stress, depression, nausea, sore muscles, irritable bowel syndrome, headaches, insomnia and stimulate ones appetite.¹² The following aromatic oils are found to have an enigmatic effect on health and well-being (Table 1).

Table 1 Indicating effect of essential oils on health & well-being

Name of the aromatic/ essential oil	Effect on health & well-being
Basil	Eases coughs and congestion, enhances mood, improves digestion, increase alertness, and soothes muscular aches.
Eucalyptus	Used to treat colds, congestion, and coughs, and has antibacterial benefits.
Jasmine	Jasmine has the potential to relieve stress, help treat dry skin and signs of aging, inflammation, and psoriasis.
Lavender	Lavender is used for relaxation and to relieve insomnia
Lemon & Orange	Lemon boosts mood and energy, relieves anxiety and may help promote weight loss.
Rose	Helps to ease stress and menstrual cramps.
Sandalwood	Helps to relieves anxiety & relieve stress.
Tea Tree Oil	Used to treat fungal skin infections and acne.
Ylang Ylang	Used to relieve pain, inflammation, improve mood, and reduce blood pressure.

Source: an overview of essential oils.²

Maintain a healthy exercise regime: Incorporate exercises such as Aerobics, dance therapy, yoga (Pranayam, laughter yoga etc.) & brisk walk in your daily regime, as working out not only keeps one in shape, but also assists in increasing one's physical and psychological resilience making them less vulnerable to deadly diseases.

Research indicates that exercising between 60 and 90 minutes, 2 to 3 days per week has been found to be very effective in reducing stress and improving feelings of well-being.¹³ Furthermore, it is also suggested that doing a regular moderate to vigorous aerobic exercise program, such as the recommendations of 150 minutes of moderate-intensity aerobic exercise per week or 75 minutes of vigorous-intensity aerobic exercise per week assists in improving the physiological adaptations to the way the body handles stress and recovers from it resiliently.¹⁴ It has also been documented that shorter duration exercises have also been found to have positive results in dealing with stress. A study conducted in a worksite environment showed that 15 minutes of chair-based yoga postures was effective in reducing acute and associated respiration rate and heart rate.¹⁵

Make use of creative visualization: Watching a beautiful nature video & reliving it again with your eyes closed or by visualizing/ reliving a positive life event in your life with your eyes closed are the few ways to practice creative visualization. Research indicates that creative visualization assists in dealing with fear, anxiety and panic, as its effect is both, embracing and calming.

Practicing the following creative visualization technique using light has been found to be very effective to calm and soothe your body and mind during stress. Follow the following instructions.¹⁶

- I. Get yourself into a comfortable position.
- II. Close your eyes, take a few deep breaths, and relax.
- III. Imagine a beautiful healing light coming from an unseen source above you. This magnificent liquid light heals and soothes everything it touches.
- IV. Imagine bringing the healing, soothing light into your body, through the crown of your head.
- V. Feel the light as it moves through your body and fills you with comfort and relaxation.
- VI. Feel it filling up your toes, your feet, your ankles etc. until your entire being is immersed in comfort and relaxation.
- VII. When you feel completely rejuvenated, think about the rest of your day unfolding in peace in harmony. Visualize the outcomes that you want.
- VIII. Open your eyes slowly and notice how wonderful you feel.

A pilot test was conducted to study the effect of guided meditation on anxiety, depression and sleep quality among 60 COVID-19 patients admitted to a tertiary care facility (30 experimental group & 30 control group) using a computer generated random table and opaque sealed envelope technique. Results indicated that there was a significant difference observed in post-test anxiety and depression and in the global sleep quality index of the experimental and control groups. It was further indicated that guided meditation was found to be effective in improving the global sleep quality index and alleviating anxiety and depression to a great extent as compared to the standard routine care provided during COVID-19 patients admitted in a tertiary care facility.¹⁷

Practice deep breathing: “Breathe in for 4 seconds and then Breathe out for 4 seconds”. Deep breathing exercises not only assist in creating a homeostasis between one’s body and mind, but also help to increase one’s focus, concentration and ability to think and act rationally.

A study was conducted by Perciavalle et al.,¹⁸ to verify whether deep breathing is capable of improving one’s mood and reducing the levels of stress. Thirty-eight adult healthy subjects (aged between 18 and 28 years) volunteered for the study. They were randomly divided in two groups, the Experimental Group (N = 19) and the Control Group (N = 19). The subjects of the Experimental Group were submitted, once per week, to 10 treatment’s sessions of Anti-stress Protocol, each lasting 90 min, whereas subjects of the Control Group sat ten times for 90 min, once per week, without practicing any treatment. The psychological state of mood and stress was evaluated using Measurement of Psychological Stress (MSP) and Profile of Mood State (POMS), while the biological profile of the stress was detected by measuring the heart rate and the salivary cortisol. Results obtained from the present research indicated that deep breathing technique is capable to induce an effective improvement in mood and stress both in terms of self-reported evaluations (MPS and POMS) and of objective parameters, such as heart rate and salivary cortisol levels.

Use progressive muscle relaxation: Progressive muscle relaxation is a mind-body technique that involves slowly tensing and then relaxing each muscle group in the body. Progressive muscle relaxation assists in increasing one’s sensations associated with tension and stress and in turn, helps one to identify and deal with the physical and psychological effects of everyday stress.¹⁹

Zargarzadeh et al.,²⁰ had conducted a quasi-experimental research to study the effect of progressive muscle relaxation on anxiety level

of 49 male and female nursing students divided into two groups (study and control). In the pre-test stage, demographic data and Sarason anxiety questionnaires were filled by 94 students. In the intervention stage, the students having test anxiety were assigned to two groups (study and control), and the progressive muscle relaxation method was performed in the experiment group in four sessions. Then, the students did this method two times a day until final exams, immediately following which they filled the self-reported checklists. Results indicated significant difference in the mean scores of test anxiety after intervention between the two groups of study and control ($P = 0.00$), but this difference was not significant before intervention ($P = 0.76$). Also, in the study group, there was a significant difference in the mean scores of test anxiety before and after intervention ($P = 0.00$), but this difference was not significant in the control group ($P = 0.09$). Wilcoxon test showed a significant difference in categorization of test anxiety scores in the study group before and after intervention ($P = 0.00$), but the difference was not significant in the control group ($P = 0.083$).

Practice mindfulness meditation: Mindfulness meditation involves the cultivation of moment- to-moment, non-judgemental awareness of one’s present experience that may be narrowly or more broadly focussed.²¹ This can be done by opening one’s sense organs and focussing only on the present moment on what you are seeing, hearing and feeling, in order to cultivate a stable non-reactive awareness of one’s internal and external experiences.²¹ During mindfulness meditation, while sitting quietly, slowly letting the breath go down, and disengaging the mind from active thinking, creates a balance between the sympathetic and parasympathetic centres of the brain, leading to substantial mind-body relaxation.²¹

Wang et al.,²² had conducted an 8 day longitudinal study using YouTube meditation videos to boost mindfulness and occupational health of randomly sampled American employees. The purpose of this study on YouTube meditation videos was twofold: (a) to examine daily meditation and longitudinal changes of mindfulness and (b) to examine daily meditation and longitudinal changes of occupational health. Participants were randomly assigned to either meditation or non-meditation groups. A 10-min guided meditation YouTube video was presented daily to the meditation group. Results indicated that after comparing survey responses from the eighth day with the first day, the meditation group showed significant improvements in overall state mindfulness, state mindfulness of body, overall cognitive and affective mindfulness, attention, and present focus. Moreover, the meditation group reported a significant reduction in negative attitudes toward work.²²

Make use of the art of gratitude & thankfulness by maintaining a gratitude journal: Amidst such crisis, the first and foremost thing one needs to do is, to be thankful and grateful for “being alive”. As, “a heart that is grateful is a magnet for all possible miracles” (Anonymous). It is indicated that we express gratitude and receive the same, our brain releases dopamine and serotonin, the two crucial neurotransmitters responsible for our emotions, and they make us feel ‘good’. They enhance our mood immediately, making us feel happy from the inside. Therefore, by consciously practicing gratitude every day, one can help these neural pathways to strengthen further, making in better control of situations and more resilient to deal with stress.²³ Research indicates that maintaining a gratitude journal causes less stress, improves the quality of sleep, and builds emotional awareness.²⁴

A study conducted by Skrzelska et al.,²⁵ examined the role of the multidimensional gratitude practice in regaining mental health and facilitating post-traumatic growth in post-COVID times on a

sample of 63 Portuguese adults (30 in the experimental and 33 in the control group) The weekly gratitude tasks included: gratitude diary, expressing gratitude, finding gratitude in past or current life, and practicing grateful mind. Before random allocation to the groups (pre-intervention Time 1), participants completed questionnaires on gratitude (GQ-6), depression, anxiety, stress (DASS-21), social safeness and pleasure (SSPS), satisfaction with life (SWLS), positive and negative affect (I-PANAS-SF), compassion motivation and action (CMAS) and post-traumatic growth (PTGI). Participants from the experimental group, at post-intervention (T2), showed significantly higher scores in life satisfaction, positive affect, compassion for others and post-traumatic growth compared with baseline (T1) and the waitlist group. They also showed a significant decrease in depression, stress and negative affect levels. No significant difference in anxiety or self-compassion was observed in the within-group or between-group comparison, which might be partially explained by the focus of the tasks, concentrated on finding gratitude outside rather than in self, and the timing of the intervention, being just after worldwide pandemic evoking fear of the unknown future. growth in post-COVID reality.²⁵

Activity: Each day be grateful for any one thing in your life and document in a journal, as gratitude is not just a virtue, rather it is the parent of all others.

Spend time with pets as it is both fun and relaxing.

Make use of relaxing & calming hues and colours around you such as shades of greens, blues & pastel shades and monochromatic backgrounds. Research conducted by Lubos,²⁶ indicated that there was a significant reduction the students' level of stress after exposure to blue and pink colour therapy. Moreover, a significant difference in the stress levels between the students with and without colour therapy was found. Those students with colour therapy had a higher reduction of stress level than those who did not receive the therapy. Both blue and pink are soothing colours, but blue had higher effect of reduction of stress level. Lastly, in case of any emergency take the help of health care professionals & helpline services.

Conclusion

The above article based on the cited review indicates that biological disasters are inevitable in today's world, and in order to be able to sustain through the course having a sound and healthy mind-body connect is of prime importance. Covid-19 and many such biological disasters have had grave physical and psychological consequences on people across the globe. Research indicates that during such times making use of psychological techniques such as gratitude, mindfulness, guided meditation, focussed breathing, progressive muscle relaxation and adopting a healthy diet and exercise regime have found to be beneficial in mitigating the effects of such disasters to some extent. However, since most of the research is pilot in nature and has been conducted on a limited population, generalization may not be that certain. However, more research on varied population across the globe on large samples would be required to make the effect of such techniques more effective and universal.

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Conflicts of interest

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