

## EFFECTIVENESS OF ONLINE COGNITIVE BEHAVIORAL THERAPY: A CASE STUDY OF PANIC DISORDER

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### ABSTRACT

**Objectives:** This case intended to explore the effectiveness of cognitive behavioral approach via electronic means in treating symptoms associated with Panic Disorder and pre-occupation with health-related concerns.

**Design of the study:** It's a single-case study design for an in-depth understanding of client and the disorder dynamics.

**Place and Duration of the study:** The case study was done via electronic means during Covid-19, from June 2020 to October 2020 in Lahore, Pakistan.

**Sample and Method:** Case study was done on a 24 years old female having Panic Disorder, along with sub-threshold features of Illness Anxiety Disorder. Psycho-diagnostic interview (DSM-V Criteria), CBT assessment form, Panic Disorder Checklist, HFD and TAT used in the initial phase for case conceptualization. Further, techniques from the Cognitive Behavioral Therapy were used for the client's catastrophic thoughts and cognitive distortions to alter her overestimation of threat in reducing her panic attacks. Cognitive Behavior Therapy techniques such as thought reconstruction, grounding techniques along with mindful relaxation techniques also helped the client gain control over her anxious thinking process and pre-occupation with health.

**Results and Conclusion:** CBT techniques helped improve the client's overall functioning, panic attacks were eliminated and preoccupation with health was reduced. The results and client's recovery established that Cognitive Behavior Therapy via online means is an effective approach to treat Panic Disorder and negative thinking process.

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**Keyword:** Online CBT; Case Study; Panic Disorder

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## INTRODUCTION

Panic disorder is characterized by recurrent unexpected panic attacks. According to DSM-V, to diagnose this, four out of the thirteen symptoms are required where two of the symptoms are related to cognitions like fear of dying and of going crazy. Other symptoms are of physiological nature like palpitations, breathlessness, sweating, dizziness, nausea etc. Furthermore, there must be a fear of another unexpected panic attack (American Psychiatric Association, 2013). Panic attacks may also be nocturnal where a person wakes up from the sleep with heightened anxiety (Wells, 1997).

According to Izard (1992), during panic attacks, there is a strong tendency for some-action. These are usually either to escape, the more often one, or the urge to fight which is seldom. So, this fight or flight mode activates the autonomic nervous system, hence causing or elevation the physiological arousal. Apart from this, there are some accompanying cognitions like perception of threat or immediate danger or of losing control or getting embarrassed. However, on average, 40% of the people who report panic attacks do not actually show arrhythmia (Wilkinson et al., 1998). This means that rather than true panic, this is actually just the 'anticipatory anxiety' (Barlow et al., 1994). Finally, sometime the urge to escape is also not fulfilled to situational constraints like job settings or performance expectations which lead to better endurance and thus building discordance between physiological arousal and behavioral response (Rachman et al., 1988).

Among many cognitive models of Panic attacks, the most comprehensive and also used in the present case was of Clark's (1986). According to his cognitive model, panic attacks are the result of catastrophic misinterpretation of physiological arousal, followed and elevated by selective attention to them. This further leads to avoidance and safety behaviors, resulting into maintaining factors. Health-related anxiety also has a similar pattern except for the more protracted time-course in comparison to panic attacks and do co-occur (Warwick & Salkovskis, 1990). Mainly the attentional bias, that is, too much body focus acts as a maintaining factor (McManus et al., 2012).

There are different treatment modalities for treating Panic disorder and health-related anxiety. The one cognitive therapy with major usefulness is CBT. Cognitive Behavioral Therapy (CBT) has proven its effectiveness on-average on 70-80% people having panic attacks (Clark et al., 1994). Also, the generated results are maintained generally for follow-up intervals of as long as two years

(Craske et al., 1991). CBT has its effectiveness not only for in-person setting but also through electronic means (Donovan & March, 2014). Multiple studies reported significant reduction in the symptoms like anxiety, depression, emotional dysregulation, insomnia etc., when CBT was delivered online (Wisman & Christ, 2023; Alimoradi et al., 2022). The treatment according to this approach usually comprises of dealing with misinterpretations of danger and physiological symptoms. This usually begins with psycho-education regarding the fight or flight mode and difference between sensation and panic. Other elements that aid to the recovery process are cognitive restructuring, breathing retraining and exposure therapy for the feared or avoided situations (Barlow, 2001). Cognitive restructuring is mainly for the catastrophic thinking patterns of the client in response to the internal and external cues (Hofmann, 2007). In short, CBT requires the clients to get engaged in exercises and different activities with the clear goal of changing one's thinking patterns and lifestyle (Khattra et al., 2017).

## METHOD

### *Case History*

#### History of presenting complaints

The client Fatima (pseudonym) is a 24 years old single female. She is a student of MSc. Psychology, final year. She is last born and has one elder sister, living in a nuclear family system. In June, 2020, the client contacted online with the complaints of repeated situational and unexpected panic attacks. She reported that she had a high fear of acquiring Corona or throat cancer or any other major illness since 2 months during lockdown period. These thoughts were often followed by a panic attack, with the symptoms of palpitations, shortness of breath, nausea, feelings of choking and de-realization. She had a persistent concern regarding additional panic attacks and that it might develop into a serious illness. She had a lot of reassurance seeking and checking behavior. She reported that she wasn't avoiding going out but she was hyper vigilant and very anxious every time she went out. Further she reported that she has developed a preoccupation with her health especially her throat so whenever she felt difficulty swallowing or a slight throat ache, she would think that it might turn out to be a cancer. So, she was hyper vigilant about these physical symptoms too. She had a habit of overthinking, constantly re-checking her symptoms and reassurance-seeking from family. Furthermore, she had disturbed sleep and eating patterns. In academics, she reported that she is unable to participate in the class due to the

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fear that people might think she is dumb or stupid, that is why she is asking questions. So, she is quiet during classes which affect her overall class participation marks.

About the triggers, she would get triggered on the news of Corona or any death news along with any physical symptoms especially throat ache. Her parents didn't consider these symptoms as an illness; however, her elder sister was very supportive of her and advised her to seek proper therapy for it.

Regarding early life, client reported tapahat she didn't have a very happy childhood. She was always compared with her sister by her family and relative. Comparisons were made mostly related to appearance and academics. So she started hating her elder sister; however, as the sister has a loving and polite personality so growing up, she started sharing a good bond with her. Currently, she loves her; however, when there is a lot of comparison, she slightly feels jealous. She is also close to her mother. Regarding the relationship with her father, she reported that it's strained. They don't talk much as he used to neglect her a lot in childhood and reported that he would have been happier if it was a son. Now the communication is need-based only. Overall, the family environment is adequate.

Client was an average student throughout her life. She was very social so had good relationships with classmates and teachers. She always had good friends in all the phases of her life till present. Watching series or reading books is her pass time. Moreover, she met a guy on Facebook and firstly they became friends and then got engaged. They meet often and had multiple times physical contact too but limited only to kissing and fondling, Client reported that she has a lot of guilt over it so it's over.

She told that her mother has an anxious personality and she takes over her. Also, her maternal aunt has some anxiety issues and she is on proper medications. Client wasn't taking any medication nor did she have any history of drug intoxication or dependence. Client had some pain complaints in knee sockets for months due to low levels of Vitamin D and calcium levels, for which doctor had asked her to not exert herself too much physically.

Client was diagnosed with Panic Disorder according to the criteria of DSM-V. Apart from the principal diagnosis, a provisional diagnosis of Illness Anxiety Disorder was also given as she met the full criteria except for the duration one.

*Assessment*

Rapport building and history taking were the major goals of the first session. CBT assessment was done, ensuring empathy and formation of a therapeutic alliance. DSM-V was used as a major tool to diagnose the client. Other than that, among Projective testing, HFD and Thematic Apperception Test were used. HFD indicated anxiety, feelings of inadequacy, guilt and insecurity. TAT depicted that she had conflicts of achievement vs. inadequacy and id vs. superego, with the defense mechanisms of denial and displacement. Furthermore, she had poor interpersonal relationships and emotional instability.

*Measures*

**Human Figure Drawing (Goodenough, 1926)**

Human Figure Drawing is a projective test developed by Goodenough in 1926 for children. However, Machover (1949) expanded its uses to get personal information of the patient. Significant correlations with other drawing tests assure its reliability. Apart from emotional indicators, it also provides information regarding a person's neurological functioning and cognitive abilities. It is easy to administer and score (Gigi, 2016).

**Thematic Apperception Test (Murray, 1943)**

This is a projective test that consists of a number of cards with pictures and scenarios and the test taker is required to create a story on each card. The cards are somewhat ambiguous so it is assumed that people project their own needs, conflicts and desires on the cards and is considered a valid test. Moreover, interscorer reliability for the test is good ranging from .37 to .90 with mostly .85 or above (Sindhura, & Srujana, 2022).

*Procedure*

The procedure of the case study was explained to the client and her consent was taken. Sessions were conducted once a week and 16 sessions in total. She was diagnosed with Panic Disorder according to DSM-V (American Psychiatric Association, 2013). Moreover, she had sub-threshold symptoms of Illness Anxiety Disorder with the duration criteria unmet yet.

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### Therapeutic Process & Interventions

After assessing the eligibility for CBT, therapeutic procedure was started by implementing different behavioral and cognitive techniques on client step-by-step. A description of some major techniques included in the process discussed below.

Psychoeducation is a therapeutic technique that involves addressing the client about his or her problems, giving an understanding of how the treatment work and connection between the symptoms and the interventions used (Otto & Deveney, 2005). It may also involve giving information to the family whenever family is also a part of the treatment process. This improves client's active participation and adherence to the treatment (Ekhtiari et al., 2017). In the whole therapeutic process, psychoeducation was one of the major component where client was psychoeducated regarding nature of panic attacks, its components (cognitive and physiological), CBT and its model, Clark's model for Panic attacks (1986) and every technique with rationale before giving the client for homework.

Goal setting helps keep track of the treatment plan and progress and provides a structure to therapeutic process. It enhances client's participation in planning out the treatment (Playford et al., 2000). Goals are always to be made collaboratively and not to be decided solely by one party. In this case, client and therapist decided on these goals: (1) to move the day sleep pattern to night-time schedule of around 7-8 hours; (2) to have proper healthy meals at least 3-4 times a day; (3) to add some kind of physical activity on a daily basis; (4) to decrease the frequency of the panic attacks; (5) to be able to counter excessive health-related preoccupation; (6) to be able to manage stress level effectively through healthy coping strategies; (7) to improve academic performance by at least participating once in every class.

Relaxation training is very important part of psychological intervention plans especially panic disorder and is found to be very successful (Cowley & Roy-Byrne, 1987). For this, client was taught the slow-breathing technique to apply when she is in a state of hyperventilation to recover the smooth regulation of breathing. Apart from this, she was taught Deep breathing for overall management of her stress and she was given the audio of Progressive Muscle Relaxation for muscle tension relief (Leahy, 2017).

Specific to panic attacks' management, grounding techniques were taught along with the rationale because they are more useful than avoidance strategies

(Morissette, et al., 2005). Five senses technique was taught, where one has to use each sense and name things in the surroundings which one can see, smell, touch, hear and taste. The purpose is to bring awareness to the external environment rather than being focused on the inner physical sensations. Client was more sensitive to sense of smell so whenever she felt overwhelmed by physical sensations, she used to smell around or spray perfume on herself, which did wonders for her and her intensity of panic attacks died down soon.

Thought restructuring technique is the essence of CBT where client's dysfunctional thoughts are first identified and then refuted, replacing them with alternative balanced thoughts. In this technique, client identifies the cognitive errors that help in overcoming unhelpful and dysfunctional thoughts (Wilkes & Frank, 1994). This technique involves 4 steps. It starts with the identification that a thought about an event creates an emotion leading to a certain behavior and every component is affected by the other like an angry thought creates an angry emotion and likewise behavior and that behavior in turn affects client's thoughts and feelings. The client then recognizes that his or her thoughts might have cognitive errors for which they check the validity of thought by collecting evidences. In the final step, client generates alternative statements (which is not necessarily a positive thought, but is a balanced thought that is based on reality), that lead to helpful, less intense emotions and managed adaptive behavior patterns (Otto & Deveney, 2005). All this restructuring, helps clients with the relief in symptoms (Beck, 1970). In this case, the cognitive distortions which were found to be a major part of client's thinking pattern, assessed collaboratively were mental filter, magnification/minimization, all or nothing, over-generalization and jumping to conclusion (Fortune telling). Client learnt how to search for evidences in favor of and against her thoughts. She was asked to counter her negative thought with her alternative thoughts with consistency as her homework.

Mindfulness-being in the present moment, for overthinking was suggested. Other techniques included guiding her about the proper sleep hygiene and proper meal tracking and importance of both. Further, activity scheduling was done for her routine management and better activity level. Letter writing and Diary writing were also given as homework for client's stress management, to know more about the client through her diary and written ventilation of her emotions. These written documents as therapeutic tools are very successful (Knoetze, 2013). She choose to write letter to her fiancé as well. According to her, despite all the love, she had some unresolved grudges which she'd like to

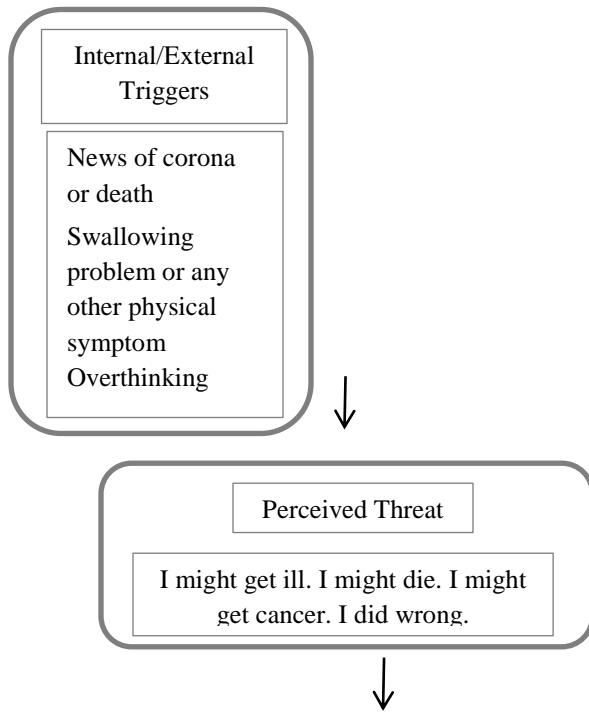
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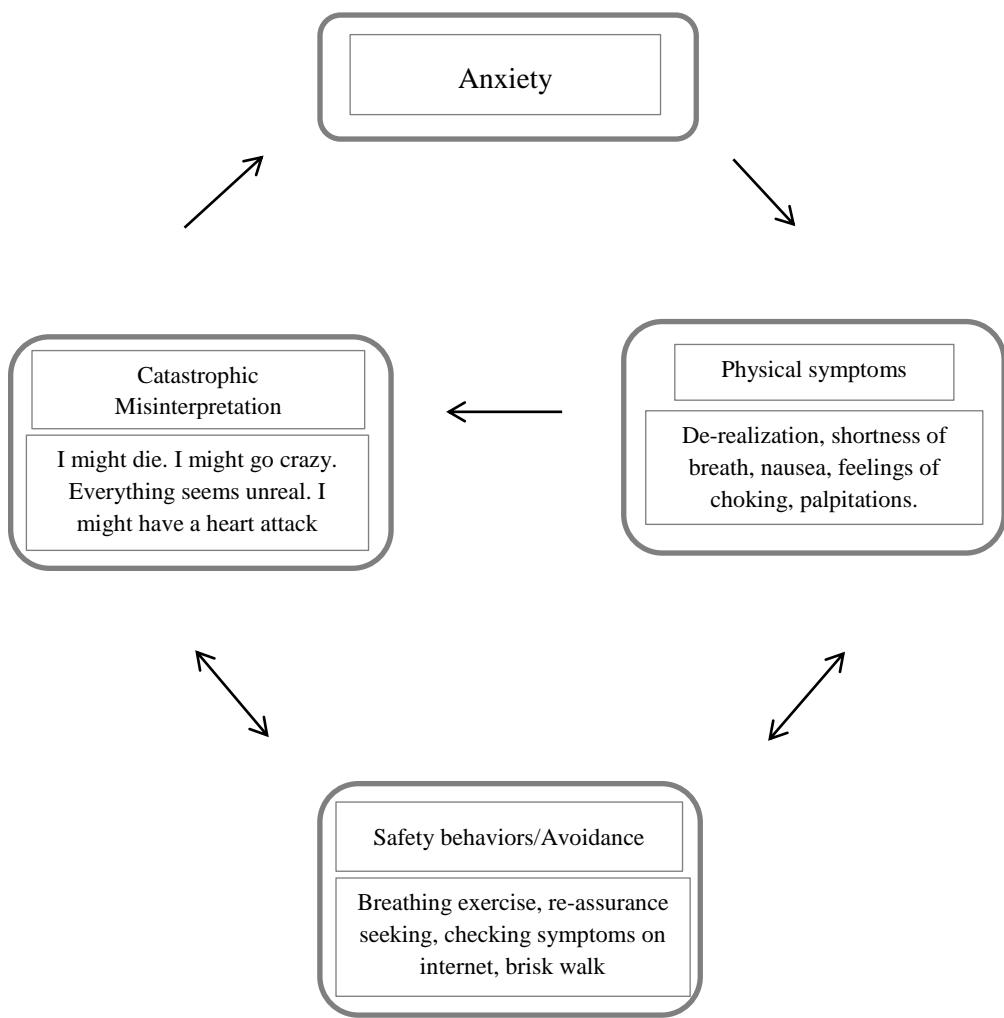
write. She was encouraged for this. Furthermore, coping statements were added to also help her with the panic attacks.

Behavioral experiments and surveys were also a part of her treatment when the core beliefs were to be tested out. Testing the accuracy of one's assumptions and beliefs, fears- not the inevitable outcomes- is learned (Otto & Deveney, 2005). Downward arrow technique was used to elicit the client's core beliefs. After delineating her core beliefs, Socratic questioning was used to shake her beliefs which involved exploring evidences, third person projection technique, alternatives, taking opinions of others, exposing self to fearful beliefs etc. The therapy was bilaterally terminated with the psycho-education regarding symptom fluctuations, lapses and relapse prevention. Client was praised for her termination and progress. A follow-up session was scheduled after a month since she was getting married in 2 months; she told that she won't be able to do more follow-ups.

**Figure 1**

*Client's Idiosyncratic Model of Panic Attack*





**Table 1**  
*Assessment of Hyperventilation*

Symptoms	Present/Not Present
Dizziness	Sometimes
Light-headedness	Yes
Confusion	Yes
Breathlessness	Yes
Blurred vision	Sometimes
Feelings of unreality	Yes
Numbness & tingling in the extremities	Yes
Cold, clammy hands	Yes
Stiffness in the muscles	Yes
Tightness or pain in the chest	No
A fear that something bad is about to happen	Yes

**Table 2**  
*Summary of Sessions and Management Techniques*

Session # 1	Session # 2
<ul style="list-style-type: none"> <li>• Rapport building</li> <li>• History taking</li> <li>• Eligibility for CBT assessed</li> <li>• CBT assessment form, Panic Disorder checklist, HFD &amp; TAT</li> </ul> <p>Homework: Diary writing + leaflet on Panic attack given for reading</p>	<ul style="list-style-type: none"> <li>• Brief mood check-in</li> <li>• Review of homework</li> <li>• Complete Case formulation</li> <li>• Goal setting</li> </ul> <ul style="list-style-type: none"> <li>• Psycho-education (nature of anxiety, Clark's model of panic attack, CBT)</li> </ul> <p>Homework: Panic attack tracker</p>
Session # 3	Session # 4
<ul style="list-style-type: none"> <li>• Brief mood check-in</li> <li>• Review of homework</li> <li>• Psycho-education (Fight/flight mode, Mechanism of hyperventilation)</li> <li>• Assessment of hyperventilation</li> <li>• Relaxation training (Slow-</li> </ul>	<ul style="list-style-type: none"> <li>• Brief mood check-in</li> <li>• Review of homework</li> <li>• Grounding techniques for panic attacks' management (Detailing &amp; 5 senses technique)</li> <li>• Psycho-education (Vicious cycle of overthinking)</li> <li>• Mindfulness concept &amp;</li> </ul>

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<p>breathing for hyperventilation, deep breathing, Progressive Muscle Relaxation)</p> <ul style="list-style-type: none"> <li>• Sleep hygiene tips</li> <li>• Activity Scheduling</li> </ul> <p>Homework: Physical activity and relaxation techniques added to routine</p> <p>Sessions # 5-8</p> <ul style="list-style-type: none"> <li>• Brief mood check-in</li> <li>• Review of homework</li> <li>• Psycho-education (CBT Thought model, cognitive distortions)</li> <li>• Thought restructuring complete</li> </ul> <p>Homework: Dysfunctional Thought Record Forms 1, 2 &amp; 3</p> <p>Sessions # 13-15</p> <ul style="list-style-type: none"> <li>• Brief mood check-in</li> <li>• Review of homework</li> <li>• Exploration of Avoidance</li> <li>• Exposure hierarchy</li> </ul> <p>Homework: Exposure exercises</p>	<p>helpfulness with overthinking</p> <p>Homework: Mindfulness + Letter writing for written ventilation</p> <p>Sessions # 9-12</p> <ul style="list-style-type: none"> <li>• Brief mood check-in</li> <li>• Review of homework</li> <li>• Psycho-education (Faulty assumptions and core beliefs)</li> <li>• Downward Arrow Technique</li> <li>• Socratic dialogue</li> </ul> <p>Homework: Behavioral experiments for questioning core beliefs &amp; exercises to shake them</p> <p>Session # 16</p> <ul style="list-style-type: none"> <li>• Brief mood check-in</li> <li>• Review of homework</li> <li>• Psycho-education (Symptom fluctuations, lapses, relapses)</li> <li>• Relapse prevention</li> <li>• Bilateral termination</li> </ul>
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### ***Outcome***

About progress, she reported that sleep time got really set to 11-11:30pm. Along with that, her meals were regular and physical activity was also up to the goal this time. Her management of panic attacks got better eventually leading to no panic attacks. Smelling/Touching something or breathing helped her most among all the techniques. She also did mindfulness meditations and reported less anxiety than earlier. The surveys and experiments helped her a lot with her core beliefs. Her health-related preoccupation also nearly diminished. According to her, seldom would she have these thoughts and she'd counter them in a flick of second without having any anxiety. Her guilt related tasks helped her very much. She reported she felt free and liberated from that guilt and she felt

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closer to Allah, with less fear and more love. Client was much praised for her motivation and efforts she contributed into therapy. Consent was taken for the publication of this case study to maximize the benefit.

**Table 3**  
*Complete Case Formulation*

	Bio	Psycho	Social
Predisposing Factors	Maternal aunt has anxiety issues	Low self-esteem Jealousy towards sister Overthinking Insecurity	Constant comparisons with sister Neglecting father
Precipitating Factors		Fear of acquiring a Corona or other major illnesses	Corona pandemic
Perpetuating Factors	Genetic predisposition	Constant overthinking Catastrophization Overwhelmed feelings Overestimation of threat Fear of unexpected panic attacks Guilt	No proper therapeutic treatment/ medication Mother is not supporting in her illness Re-assurance seeking Ongoing Corona pandemic Physical contact with fiancé in past (limited to kissing and fondling)
Protective Factors		Hopeful for recovery Good insight	Well-maintained lifestyle Good friends Supportive sister and Fiancé

## DISCUSSION

The purpose of the present case study was to check the effectiveness of cognitive behavioral therapy for Panic disorder via electronic means. Treatment plan was conceptualized based on CBT and consisted of 16 sessions, 45-50 minutes each. The findings depicted significant change in client's mental health, symptoms of Panic disorder, preoccupation with health and her interpersonal relationships according to the subjective ratings of presenting complaints and referring back to goals of the treatment.

Cognitive behavioral therapy is an established treatment for various psychological disorders like Obsessive Compulsive Personality Disorder, Depression, Illness Anxiety Disorder, Generalized Anxiety Disorder and more, not only in West, it is found to be successful in Pakistani culture too (Khalid et al., 2020; Bukhari et al., 2018; Latif & Iqbal, 2016; Ansari & Siddiqui, 2014; Whiteman, 2013; Lateef & Zadeh, 2012). Moreover, in accordance with the present case study, CBT has proved its effectiveness with Panic Disorder too as a first-line effective treatment with quick recovery and long-term maintenance even to those who didn't respond to medicinal treatment (Otto & Deveney, 2005; Oei, et al., 1999).

Furthermore, the treatment (CBT) in the present case study was delivered via electronic means due to Covid-19 (which was also the precipitating factor for the client's mental illness). Evidences of various researches are present that prove the effectiveness of CBT via different electronic means (Andrews et al., 2015; Klein et al., 2006). Many researchers prove that symptoms are drastically reduced even with E-CBT (Wisman & Christ, 2023; Alimoradi et al., 2022; Donovan & March, 2014). Online treatment programs are also feasible and though progressed gradually, proved to be as successful as clinical ones (Ruwaard et al., 2012). One other benefit of e-therapy is the easy accessibility whenever in-person sessions are not feasible (Andrews et al., 2015), like in the present study, the country was going through a complete lockdown and in-person sessions were out of question.

The major maintaining factors in Panic Disorder are the catastrophic misinterpretations of the bodily sensations when one perceives physical sensations as a sign of threat (Fentz et al., 2014). So, hypervigilance with respect to these misinterpretations in turn increases anxiety and bodily symptoms and this vicious cycle continues (Clark et al., 1999); for example, considering palpitations as impending heart attack (Oei & Devilly, 1999). So, CBT model of

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Panic attack postulates that if this link between physical sensation and fear is broken, panic attacks diminish (Shear, 1994); and this is what exactly happened with the client. Initially, she re-shifted her focus from internal to external world through grounding techniques and later learned to counter her fear provoking misinterpretations of threat. Both breaking the link eventually and moving from reduction in symptoms to complete elimination of panic attacks.

Moreover, the other fruitful components of the treatment which helped the client were relaxation training and exposure/ behavioral experiments. A meta-analysis reviewed different published studies where some emphasized on arousal reduction through breathing training and many studies included exposure; proving the importance of the both of the components in a treatment plan (Stech & Newby, 2019). All in all, behavioral and cognitive techniques do bring a change in client to a greater extent when used in adjunct to each other like in CBT.

### ***Conclusion***

During bi-lateral termination, client seemed very confident and happy that she was able to overcome her fears and anxieties and that she had better coping abilities now. She now enjoyed activities that once didn't seem to be fulfilling. Her relationships got much better and she got closer to religion as well. The results showed that CBT approach, when applied online, was effective in treating both her Panic Disorder and her pre-occupation with health. With the help of this therapeutic approach, the client was able to handle her problems in a better way that led to her mental well-being.

### ***Limitations and Recommendations***

Where case study design provides rich information into the disorder dynamics, it poses threats to external validity of the research. So, to improve generalizability of findings, research designs can be elaborated to fit a larger sample size. Moreover, a comparison group can increase the believability of findings, with including a wait-list control group or a better option could be comparing with other established treatment strategies other than CBT like psychiatric medications or ACT etc. Furthermore, including a repeated measures concept could also be enlightening where rather than going for pre-test and post-test, measures are administered on client after frequent intervals to further discriminate the effectiveness of different techniques of CBT.

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