Management of Chronic Insomnia Using Cognitive Behavior Therapy for Insomnia (CBT-I) During COVID-19 Pandemic: Does One Shoe Fit All?

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Abstract
Purpose Insomnia is a highly prevalent disorder that is seen across all age groups causing significant morbidity to the patients. Its prevalence has further risen during COVID-19 pandemic. It is widely acknowledged that untreated insomnia can lead to significant health risks and socio-occupational dysfunction.

Methods A narrative review was conducted following focused search of databases.

Results Available guidelines mention two different approaches for the management of insomnia—pharmacological and non-pharmacological. Non-pharmacological therapies like multicomponent cognitive behavior therapy for insomnia (CBT-I) have been advocated for the management of acute as well as chronic insomnia in the literature as it has been found efficacious and useful. Multiple variants of CBT-I, e.g., digitally delivered CBT-I, brief CBT-I have been tested during pandemic owing to closure of clinics. However, there are certain issues to be considered while choosing CBT-I as therapy. For example, like other forms of psychotherapies, is there a need for assessing the candidature of patient before administering CBT-I; is CBT-I free of adverse effects as commonly thought; is CBT-I more efficacious than hypnotics; and at last, how to manage cases that are not candidate for CBT-I.

Conclusion This narrative review addresses the scientific robustness of evidence for issues related to adherence, efficacy and adverse effects of non-pharmacological therapies. Available literature suggests that data related to adherence and efficacy of CBT-I suffer from methodological shortcomings and careful selection of patient is important for the successful therapy. At the same time, attempts have been made to shed light to the areas where CBT-I can be helpful in the management of insomnia.

Keywords Chronic Insomnia · CBT-I · Adverse effects · Candidature

1 Introduction
Insomnia is one of the prevalent sleep disorders that are associated with significant morbidity, if left untreated. Current evidence prefers and advocates use of non-pharmacological management techniques of insomnia, viz. multicomponent cognitive behavior therapy for insomnia (CBT-I) [1–4]. These guidelines mention that CBT-I should be the preferred method for addressing insomnia, while pharmacotherapy may be used for short-term treatment only, i.e., 4–8 weeks, that too, when CBT-I is not available. In other words, CBT-I is preferred mode of treatment for both acute as well as chronic insomnia. A number of arguments have been provided in favor of CBT-I and to avoid pharmacotherapy that include development of tolerance, dependence and adverse effects arising out of use of hypnotics [3, 4]. Before discussing the choice of therapy, it is important to discuss in...
brief about epidemiology, course and burden of insomnia. These sections will be followed by discussion about CBT-I.

2 Search Strategy and Selection Criteria

This is a narrative review regarding the utility of cognitive behavior therapy for insomnia (CBT-I) during COVID-19 pandemic. Hence, narrative reviews, systematic reviews, meta-analysis and guidelines were searched using terms “chronic insomnia”, “cognitive behavior therapy for insomnia”, “COVID-19” in PubMed and Google scholar. However, for the some specific sections (e.g., natural course of insomnia, functional imaging in insomnia, adverse effects of CBT-I), systematic reviews and meta-analysis were not available. For those, individual papers were searched with an attempt of including latest available evidence.

3 Epidemiology of Insomnia During COVID-19

Insomnia is prevalent among all age groups; however, prevalence of insomnia varies across ages and geographical areas [5]. Epidemiological studies suggest that 10–15% adults meet the present criteria for the diagnosis of insomnia [5–7]. Highest prevalence has been reported from Brazil and lowest from Europe and Asia [5]. Besides demographic factors, prevalence of insomnia is also dependent upon the definition and method used for the assessment of insomnia. For example, insomnia symptoms are more common than insomnia disorder [6, 7]. Second, till definition of chronic insomnia was clearly mentioned duration criterion in the international classification of sleep disorders, various definitions were used ranging from 1 to 6 months [6, 7]. Third, diagnosis of insomnia could be made using questionnaires, clinical interview as well as using objective measures, viz., actigraphy or polysomnography [8, 9].

Insomnia appeared to increase during COVID-19 infection across globe. It has been reported to influence approximately one fifth in France to third population in Greece [10, 11]. Pooled prevalence reported that insomnia affected 15% population during COVID-19 pandemic with greater occurrence in healthcare workers [12]. A meta-analysis suggested that nearly 40% healthcare workers experienced insomnia during COVID-19 pandemic [13]. Thus, there was a wide variation in prevalence of insomnia during COVID-19, perhaps related to a multitude of factors viz., method of diagnosis, demographic and occupational variable related to selected population, phase of COVID-19 pandemic to name a few.

4 Natural Course of Insomnia

Natural history of insomnia has been examined in various population based longitudinal studies of varying duration and having different study population during non-pandemic time. Insomnia may be divided into two major categories—insomnia symptoms and insomnia disorder. Former category includes subjects who fail to meet the syndromal diagnosis of insomnia owing to quantitative or qualitative aspects of definition of insomnia disorder [14, 15].

However, both insomnia symptoms and insomnia disorder may run a chronic course. A 1-year follow-up study with monthly assessment enrolling 100 subjects reported that nearly half of the subjects having good sleep at baseline develop insomnia symptoms and 15% develop insomnia disorder at least once during study period [15]. Approximately one fourth of the subjects with insomnia symptoms meet criteria for insomnia disorder at least once in a year suggesting that insomnia symptoms may pave way for insomnia disorder [15]. Another study reported that “Insomnia symptoms” were more common and persistent than insomnia disorder in a population of adult subjects that were followed up for 3 years [14]. Half of the subjects reporting insomnia symptoms at baseline had symptoms even after 1 year, 13% developed insomnia disorder and only one third achieved remission at the end of 1 year [14]. These proportions remained stable for three years.

Similarly, insomnia disorder persisted in nearly half of the subjects even after one year, approximately third of them improved to “insomnia symptoms” while only one fifth achieved remission at the end of 1 year [14]. Thus, remission rates are higher among subjects with “insomnia symptoms” compared to insomnia disorder (one third vs one fifth), and perhaps “insomnia symptoms” is the less severe form of insomnia disorder [14]. Moreover, gender and age influenced persistence of symptoms/disorder. Older women (> 55 years at baseline) were more likely to have persistent complaints compared to younger women (< 55 years at baseline) and men in either age groups [14]. This data suggest that insomnia occurs over a dimension ranging from normal sleep to occasional symptoms and finally, the clinical disorder. This spectrum may be related to pathophysiological changes in brain of patients with insomnia disorder because of neurobiological changes that are more stable compared to insomnia symptoms only. These factors indicate the need for an early and effective intervention.

Phenotypically, insomnia may be divided into four categories: sleep-onset insomnia, sleep-maintenance insomnia, early-morning-awakening and lastly, a combination of these. These phenotypes are also not stable. A 20 years
long study involving two sets of population at baseline—young (<57 years at baseline) and older (>57 years at baseline) showed that insomnia phenotypes fluctuates over time [16]. Sleep maintenance insomnia was 2–5 times more common compared to sleep-onset insomnia in both groups during a span of 20 years [16]. While proportions of subjects in sleep-onset insomnia decline over time in both groups, proportion of subjects in sleep-maintenance insomnia remained relatively stable [16]. Interestingly, proportion of subjects having combined (sleep onset + sleep maintenance) insomnia remain stable till 10 years but doubled at 15 years, irrespective of age group [16]. Like other studies mentioned above, this study also showed that female gender and older age were associated with greater risk for persistent insomnia over study period, i.e., chronic insomnia [16].

Even after resolution of insomnia, residual symptoms persist. Ninety one percent subjects having insomnia symptoms or insomnia disorder have residual symptoms even after their insomnia achieve complete remission by definition [17]. Most common residual symptom was poor quality of sleep, which was reported by nearly 39% subjects. Maintenance insomnia was most frequent in nighttime residual symptom (27%) while during the day, approximately one fourth subjects reported fatigue, mood change and cognitive impairments.[17] 57% subjects relapsed within four years which could be predicted by residual symptoms.

Course of insomnia appears to be unaffected during COVID-19 pandemic. It has been found in a longitudinal study that incidence of insomnia was 33% and persistence rates among previously known insomnia patients was 77% [18]. These numbers compel the need for a management technique that is effective, safe, economical and can be provided even using telemedicine techniques.

In short, studies show that symptoms of insomnia fluctuate over time, insomnia symptoms increase the risk of developing insomnia disorder, especially among older women, sleep-maintenance insomnia tend to be chronic and residual symptoms are common after treatment of insomnia. These factors play important role in choosing the correct treatment options.

5 Pathophysiology of Insomnia

Various models have been proposed to explain pathophysiology of insomnia and it explains evolution of our understanding of insomnia. While earlier models focused only on the behavioral and cognitive models, recent model is more inclusive and evidence based. Parallel process model explains the evolution of insomnia from acute to chronic state and considers behaviors, cognitions and their neurobiological underpinnings [19, 20]. Hyperarousal appears to be the primary pathology in insomnia irrespective of duration and phenotypes [21–24]. On the other hand, behavioral and cognitive changes usually follow the acute episode of insomnia and tend to perpetuate symptoms to chronic insomnia. While pharmacotherapy primarily aims at reducing hyper-arousal, CBT-I addresses hyper-arousal as well as cognitive behavioral changes. However, it must be noted that cognitive behavioral changes are consequence of insomnia symptoms and an early intervention to improve sleep can reduce their occurrence.

Pathophysiology of insomnia during COVID-19 was overlapping with that during non-pandemic period. Stress/hyper-arousal, change in homeostatic pressure and altered circadian drive were suggested to play a role during COVID-19-related insomnia [25]. One of the most studied aspects in this context has been the role of Angiotensin Converting Enzyme (ACE) receptors. It has been postulated that the ACE-2 can affect the expression of the Per2 & Bmal gene, which are important constituents of the circadian clock [26]. Though the exact nature of interaction is still elusive, existing research does allow us to make informed guesses. A study using the animal models of ACE receptors lacking Drosophila was shown to have poor sleep maintenance, suggesting close link of sleep pathophysiology and ACE [27]. In addition to the biological underpinnings that could be unearthed, the psychosocial effects of the ongoing pandemic and the resultant lockdowns have also been recognized to play a very important role in the pathophysiology of insomnia [28].

6 CBT-I During COVID-19 Pandemic

Since most of the clinics were closed during pandemic, new avenues were discovered to deliver CBT-I during pandemic (search conducted in 20/01/2022). These included online delivery of CBT-I, self-guided modules [29]. CBT-I which was digitally delivered 3 years before the pandemic has been found to have enduring effects during the pandemic. Subjects who received digital CBT-I had lesser sleep disturbance and better resilience during COVID-19 pandemic compared to those who received only sleep education 3 years before the pandemic [30]. Simplified CBT-I with only four components was found to improve sleep in short term (2 weeks) among admitted patients reporting acute and chronic insomnia during COVID-19 pandemic [31]. However, self-efficacy was a predictor of the success for the digital CBT-I which also appears to be the case of other methods of delivery and suggesting that CBT-I may not be “instituted” as mass therapy and careful patient selection is important [30].
7 Issues Related to Delivery of CBT-I

While CBT-I has been recommended across a number of guidelines addressing management of insomnia, a number of factors influence the optimal delivery of CBT-I [32]. These issues may be categorized into three major classes—system related issues, clinician related issues and lastly, patient related issues (Table 1). Despite being advocated by guidelines, trained CBT-I therapist are few in number and nearly 90% are concentrated in the United States of America across the globe [33]. This leaves only 12% trained therapist to address needs of remaining 96% population of world [34]. Moreover, since cognitive behavior therapies also induce neurobiological changes, theoretically there is a possibility that an untrained therapist can inflict harm rather than the benefit to the patient, similar to what is seen during other biological therapies [35, 36].

7.1 Physician-Related Issues

Most of the physicians are not well informed about the consequences of untreated insomnia, components of CBT-I as well as its clinical efficacy [32, 37]. In addition, because of preconceptions, many physicians decide on behalf of patients and do not offer CBT-I to their patients [32, 37]. This could be a major reason for underuse of CBT-I as a management strategy.

7.2 Patient-Related Issues for CBT-I

Patient related issues are important to be considered during delivery of CBT-I. Similar to pharmacotherapy, psychotherapies also have certain indications and contraindications. Psychotherapy cannot simply be administered to all patients, as commonly believed [38, 39]. Like other psychotherapies, at least theoretically, CBT-I also requires proper patient selection [38, 39]. First of all, subject should be ready to engage in therapy. They should have psychological mindedness—in other words, they should understand their emotions, thoughts and behaviors as CBT-I involves cognitive restructuring as well. Since, response to therapy may be slow to appear, they should be able to delay gratification. Frustration may arise during therapy either because of sleep related complaints or may be related to the cues indicating dysfunctional cognitions and behaviors by the therapist during therapy. Hence, persons with high impulsivity and aggression may not be suitable candidates for CBT-I. Lastly, person must understand that success of therapy depends upon the efforts put-in by the therapist as well as by themselves [38, 39]. Comorbid disorders and symptoms also influence whether person may be advised for CBT-I or not. For example, sleep-restriction therapy (SRT), one of the components of CBT-I, cannot be delivered to subjects reporting daytime sleepiness, those with history of bipolar disorders, seizure disorders and parasomnias as SRT may

| Table 1 Barriers to delivery of CBT-I [32, 37] |
|-----------------------------------------------|
| **S. no.** | **Domains**       | **Issues**                                                                 |
|----------|-------------------|---------------------------------------------------------------------------|
| 1        | System related    | Availability of trained CBT-I professionals                               |
|          |                   | Reimbursement from insurance provider                                      |
|          |                   | Cost of treatment                                                          |
|          |                   | Accessibility to therapist                                                  |
| 2        | Clinician related | Lack of adequate knowledge about insomnia                                   |
|          |                   | Lack of knowledge about components of CBT-I                                |
|          |                   | Lack of trust that CBT-I is efficacious                                    |
|          |                   | Feels that patient would not accept CBT-I                                   |
|          |                   | Lack of motivation to assess and treat insomnia                            |
|          |                   | Belief that patients need a quick-fix                                       |
| 3        | Patient related   | Time constrains                                                            |
|          |                   | Duration and frequency of therapy sessions                                 |
|          |                   | Travel to therapist’s office                                                |
|          |                   | Arranging support for therapists visit                                     |
|          |                   | Cost of therapy                                                            |
|          |                   | Therapists fee                                                             |
|          |                   | Loss of work due to time spent in therapy                                  |
|          |                   | Travel to therapist’s office                                                |
worsen these conditions. Similarly, subjects complaining of nocturnal panic attacks should not be advised relaxation therapy because it may worsen anxiety paradoxically [39] (Table 2).

These issues have not been mentioned in existing guidelines for the management of insomnia, posing a picture that all patients with insomnia may be subjected to CBT-I [3, 4]. In other words, for a sizable number of patients having chronic insomnia, CBT-I may not be a suitable alternative. Issue remains, how to manage cases of chronic insomnia who are not a good candidate for CBT-I. Of course, they have to be put on the pharmacotherapy using hypnotics.

### Table 2 Candidature for CBT-I [38, 39, 44]

| S. no | Domains                              | Details                                                                 |
|-------|--------------------------------------|-------------------------------------------------------------------------|
| 1     | Psychological construct              | Psychological mindedness  
Able to delay gratification  
High frustration tolerance  
Ready to accept responsibilities  
Neurocognitive functions intact  
Non-chaotic life in past  
Able to form human relations  
Not having obsessive traits |
| 2     | Factors related to poor adherence    | Sleep duration not too short  
High level of anxiety  
High level of depressive thoughts  
Poor sleep quality  
Younger age  
Poor motivation to behavioral change  
Lower expectations from treatment  
Slow progress during therapy  
Dis-satisfaction with therapy  
Inability to assimilate suggested interventions in daily life  
Unable to adapt suggested interventions in home-settings  
Sleep restriction therapy and time-out-of-bed appears counter-intuitive to expectation  
Increment of daytime sleepiness in early course of treatment  
Feeling bored because of delayed bedtime |
| 3     | Comorbid disorders                   | Daytime sleepiness  
Seizures  
Bipolar disorder  
Panic disorder |
| 4     | Time and cost                        | Able to find time for the sessions  
Able to travel towards the therapist’s office |

8 Comparison of CBT-I vs Hypnotic Therapy

Hypnotic therapy and CBT-I may be compared under following major headings—cost, efficacy, accessibility, adherence, adverse effect profile and overall quality of evidence. (Fig. 1).

### 8.1 Cost

Studies comparing cost of pharmacotherapy vs CBT-I, head-to-head are not available, except one paper where it was calculated based on a theoretical model. Cost of zolpidem for 3-year prescription along with physician’s fee was compared with cost incurred towards CBT-I in the USA and hypnotic therapy was found cheaper [37].

### 8.2 Efficacy

A meta-analysis reported that in the short term, components of CBT-I are as efficacious as hypnotics with effect size greater than 0.8 for both therapies [40]. The effect sizes were moderate to large for most of the sleep parameters like sleep-onset latency (SOL), wake after sleep onset (WASO) and sleep quality but not for total sleep time (TST). However, combined outcomes yielded a smaller effect size and the improvement was greater in psychiatric than other medical populations [40]}. However, results have been challenged
by recent study which reported that hypnotic drugs show higher efficacy than CBT-I in the short term though CBT-I has a better efficacy in the longer term [41].

However, meta-analysis conducted by Smith et al. [40] had many methodological problems. First, studies were not aimed at comparing CBT-I vs hypnotic in head-to-head trial. Rather, authors included studies that have applied CBT-I alone and compared them with studies that prescribed hypnotics alone. Second, randomization was not done in the included studies that could have influences on effect size [40]. Recent European guidelines, based on meta-analytic studies of CBT-I reported that effect size of CBT-I varies between 0.4 and 0.8 [4]. Recent American guidelines regarding pharmacotherapy for chronic insomnia also reported similar effect size for hypnotics too [42]. Together, these evidences suggest that in terms of efficacy, both therapies are comparable; however, effect size of CBT-I may not be as high as indicated in earlier studies.

### 8.3 Accessibility

Accessibility to face-to-face CBT-I is a major problem. To overcome it, internet-based CBT-I delivery, group CBT-I and self-help CBT-I have been tried. However, effect size differed across different meta-analysis and administration of CBT-I using these modes was usually found to be less efficacious than face-to-face CBT-I [4]. Thus, to have optimal efficacy, CBT-I should be administered in face-to-face settings. This should be considered in the light of a number of factors—number of trained therapists, their availability and expenses incurred by the patient toward reaching them, payment of professional fee, and absenteeism from work to attend sessions, to name a few. On the other hand, accessibility to hypnotics is not a problem and they are widely available, even in the primary care settings. This suggests that hypnotics are as efficacious as CBT-I for insomnia, are cheaper and widely available.

### 8.4 Adherence

Adherence is a major problem with CBT-I but not with pharmacotherapy, which is considered to be other way round [39]. While studies of hypnotic therapy point towards continuation of therapy beyond intended period, studies of CBT-I report discontinuation of therapy in 14–40% enrolled subjects [39, 43]. It has been suggested that these figures actually overestimate the adherence to CBT-I owing to measurement techniques used for adherence [39, 44]. Adherence to CBT-I is usually measured by number of attended sessions and data from sleep diary [39, 44]. Unfortunately, these measurement techniques do not take into account quantitative and qualitative changes in cognitive as well as behavioral aspects expected out of CBT-I. This is because adherence to some components of CBT-I, e.g., sleep hygiene, stimulus control technique (SCT) and cognitive restructuring are difficult to be measured objectively [44]. Moreover, objective assessment of sleep—wake cycle viz., actigraphy, also cannot provide data regarding these components [44].

Merely attending sessions or completing sleep diary do not really transform into acquisition of intended behavior, cognitive restructuring and are influenced by subjective

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**Fig. 1 Comparison of CBT-I vs Hypnotic Therapy**

| Cognitive Behaviour Therapy for insomnia | Hypnotic therapy |
|-----------------------------------------|-------------------|
| **Cost:** Costlier than hypnotics⁴       | **Cost:** Cheaper than CBT-I⁴ |
| **Efficacy:** Poor in short but term similar to hypnotics in long term⁴, 30, 31 | **Efficacy:** Poor in short but term similar to hypnotics in long term⁴, 30, 31 |
| **Accessibility:** Limited⁴             | **Accessibility:** Widely available |
| **Adherence:** Poor, and available data overestimates adherence⁴, 32, 33 | **Adherence:** Overadherence is an issue |
| **Adverse effects:** Data limited, usually underestimated⁴, 30, 31 | **Adverse effects:** Data available, usually overestimated⁴ |
| **Quality of evidence:** Overestimated⁴ | **Quality of evidence:** Underestimated⁴ |
bias. Hence, there is a need for having more objective data regarding adherence to CBT-I [44]. Further, a gap exists in the knowledge regarding multiple aspect of CBT-I, e.g., dose effect (minimum sessions required to produce intended results); recognizing critical time in the process of therapy to which adherence is required to produce minimal effect; global vs partial adherence (identification of core-components of CBT-I required to produce minimal effect) [44].

8.5 Adverse Effects

Information on this aspect of CBT-I is little known and most of the guidelines and articles mention it as a safe technique which is virtually free of adverse effects [1–4, 42, 45]. Contrary to this belief, literature suggests that psychotherapy also has side effects and unwanted effects in approximately 5–21% of subjects [36, 46, 47]. Adverse effects of psychotherapy can be recognized as appearance of new symptoms, worsening of baseline symptoms, downhill course of illness, lack of improvement, prolongation of treatment, self-absorption, loss of self-mastery, increased worrying and rumination in patients with obsessive traits, non-compliance, tense relationship or dependency on therapist, negative change in relationship with family or at workplace (Table 3) [36, 46, 47].

Contrarily, a plethora of literature related to adverse events caused by hypnotics is available. Hypnotics have been compared to placebo in randomized control trials, and hence, odds for the adverse effects were amplified. It must be noted that most of the adverse effects mentioned for hypnotics in literature do not meet specificity criterion, which is one of the eight criteria proposed by Hill [48]. Recent guidelines based on meta-analysis of short-term pharmacological trials report also report that most of the adverse effects of hypnotic therapy were benign [42]. There is a tendency to generalize the adverse effects arising out of hypnotics therapy, despite the fact that only a sub-set of population develop some of the adverse effects [4].

In pharmaco-therapeutic trials, all adverse events appearing during the course of therapy are recorded irrespective of pharmacokinetic and pharmaco-dynamic explanation of causality with the drug. Later on, they are divided in two categories—those ‘appear related to medications’ and those ‘appear unrelated to medication’. Such process is deficient in psychotherapeutic practice and unwanted events appearing during process of therapy (e.g., discomfort related to therapy) are rationalized as part of therapeutic process [36, 46]. Owing to these issues, recent guidelines based on multiple meta-analysis of CBT-I do not mention any adverse effects related to CBT-I [4].

These issues strongly argue that there is a need for the literature comparing adverse effects of hypnotics with CBT-I.

8.6 Quality of Evidence

Grading of Recommendations Assessment Development and Evaluation (GRADE) system is commonly used to assess the quality of evidence [49]. There are some serious concerns regarding the way quality of evidence was assessed for CBT-I as well as hypnotic trials. Recent European guidelines included meta-analysis of CBT-I studies that had either no comparison group or CBT-I was compared to one of its components [4]. As already mentioned, effect size was found to vary between 0.4 and 0.8 and authors reported that there is a possibility of overestimating the effect size due to absence of blinding from sham group [4]. On the other hand, meta-analysis of studies of hypnotics had a blinded arm using either active or placebo agents; however, duration of trial was short owing to common beliefs regarding their adverse effects [4].

Though the hypnotics have been found to have an effect size (0.5–0.8) which was comparable to CBT-I in meta-analysis of short-term trials, American Academy of Sleep Medicine guidelines for pharmacotherapy of insomnia lowered the GRADE quality of evidence and downgraded recommendation to “Weak” category [42]. Paper cited different reasons for the same- variability in statistical tests applied and outcomes measured across studies, industry sponsorship, paucity of data related to adverse effects and absence of data regarding functional improvement or prevention of complication [42]. Many of these issues also occur with CBT-I and despite having these issues, European guidelines did not lower quality of evidence as well as recommendations [4].

| Table 3 | Categories of adverse effects in psychotherapy [46] |
|---------|---------------------------------------------------|
| 1       | Unwanted effects                                 |
|         | All adverse effects occurring during therapy period |
|         | May be unavoidable                               |
|         | May be necessary for attainment of therapeutic goal |
| 2       | Adverse treatment reactions                       |
|         | Causally related to therapy in varying proportion of probability |
| 3       | Side effects                                     |
|         | Occur routinely with the correct treatment        |
| 4       | Malpractice effects                              |
|         | Consequent to inappropriate treatment             |
| 5       | Contraindications                                |
|         | Serious side effects that occurs during therapy with greater risks than benefit |
Another important comparative approach that has been employed by various researchers is the comparison of CBT-I with other non-pharmacological agents like yoga or mindfulness-based therapy. Though we could not access similar studies conducted specifically during the COVID-19 pandemic period, we could access studies employing a randomized control methodology in cancer survivors with insomnia with non-inferiority analysis comparing yoga with CBT-I [50, 51]. A similar approach was also employed to compare the effect of CBT-I with yoga and aerobic exercises amongst other modalities in managing insomnia in a female sample presenting with hot flushes and was found that CBT-I was superior to the other modalities in decreasing severity of insomnia [52]. Studies have also compared CBT-I with mindfulness-based therapy in cancer patients to find that CBT-I was non-inferior to mindfulness-based therapy [53]. Yoga-nidra has been found to as efficacious as CBT-I in patients with chronic insomnia, with greater efficacy in reducing salivary cortisol and promoting stage N2 and N3 sleep [54].

10 Conclusion

Issues discussed above are important, especially in the era of evidence-based medicine where most of the clinical decisions are taken based on the available guidelines and scientific literature. A very important point that should be raised at this juncture is that the COVID-19 pandemic has illustrated the need for upscaling our services. Worldwide, this pandemic brought forth the stories of healthcare systems crumbling under intense pressure of demands. But, probably now is also the right time to recalibrate our strategies. Though there is a sizeable amount of evidence recommending the solitary use of CBT-I in the management of insomnia in COVID-19, we also need to appreciate that CBT-I and hypnotic therapies have different mode of actions and their combined application can be very effective in countering the various shortfalls either approach has in singular use [55, 56]. Though CBT-I has been advocated as an efficacious measure to improve short-term as well as chronic insomnia, however, absence of information regarding three major issues weakens the strength of available evidence favoring CBT-I, viz. candidature, adverse effects and adherence. Moreover, CBT-I requires intensive investment in terms of infrastructure and personnel, which is lacking in most centers. There is a need for addressing these issues in future studies and also to compare of CBT-I vs hypnotics in head-to-head trials, especially during COVID-19 pandemic. At the same time, role of other non-pharmacological therapies for the management of insomnia should also be explored that are less resource intensive.

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Declarations

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