



## REVIEW ARTICLE

# Sleep, Nightmares and Schizophrenia

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### Abstract

Sleep problems are recognized as widespread in patients with psychosis. Other facts are known as well - that not only can psychiatric illness result in sleep problems, but that these same problems can exacerbate psychopathology and that they constitute risk factors for suicide. Sleep difficulties are known to respond well to appropriate treatment and yet, with the exception of insomnia, sleep quality is not routinely inquired about during psychiatric assessments. This narrative review focuses on nightmares in the context of schizophrenia and the results suggest that they are both common and distressing. They are also potentially dangerous. The alleviation of nightmares can improve the quality of life for persons suffering from schizophrenia and can lower the risk of suicide.

### Keywords

Schizophrenia, Sleep, Nightmares, Cognitive behavior therapy, Suicide

## Introduction

There is near general agreement in the academic field of sleep that a form of continuity exists between everyday life and dream life. This means that the happenings of the day enter our dreams and, more importantly, that the emotion aroused by the day's events is reflected at night in our dreams [1,2]. There is probably bidirectional traffic on the day-night bridge so that the content and tone of our dreams also cross over and impact our waking life [3,4].

Given that dream content can be analyzed [5-9] and the incidence of specific kinds of dreams such as nightmares can be counted, it becomes possible to utilize dream measures in order to evaluate the quality of well-being of the previous day. In the context of schizophrenia, such unobtrusive measures are useful tools by

which clinicians are able to assess the severity of psychotic symptoms over specific time periods and, perhaps in addition, to assess the response of these symptoms to treatment. Patients with psychotic illnesses may be more willing to talk about or record their dream life than to discuss their daytime symptoms because they have learned that it is the thoughts and perceptions they experience during the day that mark them as "different", and stigmatize them. Tracking the frequency of nightmares could prove, perhaps, to be a simple, stigma-free, and useful tool for gauging the strength of delusions and the burden of hallucinations.

In current psychiatric practice, dreams are not probed in interviews conducted with schizophrenia patients [10], but perhaps they should be. If they truly reflect daytime pathology, they could become a "royal road" [11] to the evaluation of response to the many treatments for schizophrenia. At the same time, the successful cure of nightmares might be a way to diminish the distress of psychotic symptoms that plague patients during the day. For these reasons, I conducted a literature search on nightmares, on the continuity hypothesis of dreams, on dreams in schizophrenia and their connection to symptoms, on the effect of schizophrenia treatment on nightmares and on the effect of nightmare treatment on symptoms of psychosis.

## Nightmares

Nightmares are the most common of all sleep disturbances. They are defined as disturbing dreams accompanied by intensely negative emotions such as fear, disgust, and horror. They generally occur during Rapid Eye Movement (REM) sleep in the latter part of the night, and awaken the person from sleep. The content of nightmares can usually be vividly recalled. The five most

common themes that recur in nightmares have been identified as: Being chased, falling, being paralyzed, being late for a crucial event, and being made aware of the death of a significant person [12,13]. When compared to “bad” dreams (similar content, less intense, not waking the sleeper), nightmares are described as more bizarre, more violent, more failure-oriented, and more likely to end in disaster [14]. “Bizarreness” has been acknowledged as a difficult concept to define or quantify although, tellingly, it has been used to describe both dreams [15] and psychotic delusions [16]. Hall and Van de Castle [6] defined bizarreness in dreams in terms of setting (unfamiliar or distorted), flow of events (implausible), characters (constantly changing identity) and tone (disturbing, confusing, surprising). Although nearly everyone experiences nightmares at one time or other, frequent nightmares, defined as occurring at least once a week, are endured by about 5% of the population [17]. In the psychiatric population, the prevalence is six times as high as in the general population. The most common psychiatric association is with posttraumatic stress disorder but nightmares are not rare in the schizophrenia population; approximately 10% of psychosis patients are reported to experience frequent, recurring nightmares [18]. Nightmares occasion significant distress and need to be taken seriously by the medical profession because they have been closely linked to suicidal behavior [18,19].

### Well-Being, Dream Valence, Sleep, Psychiatric Disorders, and Psychosis

Even though there continue to be many methodological concerns about the reliability and validity of dream content analysis [15,20,21], the consensus is that pleasant dreams tend to occur when a person is generally feeling well, and bad dreams during times of emotional upset [22-25]. This is the case both objectively and subjectively. Individuals who experience frequent nightmares report that their nightmares always occur at times of stress [26].

Not only nightmares, but sleep disturbances or parasomnias in general have been linked to psychiatric disorders [27]. Insomnia and nightmares especially have become risk markers for serious mental illness. As an example, in an online survey of almost 1500 university students, Sheaves, et al. [28] found that insomnia and nightmare frequency, as well as nightmare-related distress, rose in parallel to the number of reported psychiatric symptoms.

As noted above, the prevalence of frequent nightmares in psychiatric populations is very high, but this may be attributable not only to the psychiatric illness itself but to its accompaniments, namely substance abuse, therapeutic medications, medical comorbidity, and generalized stress [29,30]. It is especially important to note that medications routinely prescribed for psychiatric disorders (pharmacological agents that affect

the neurotransmitters norepinephrine, serotonin and dopamine) are known to induce nightmares, although this depends heavily on personal vulnerability and daily dose [31-37].

Dreams have been studied in all psychiatric populations, but investigators have been especially interested in the connection between dreams and schizophrenia because dreams have often served as a model for psychosis [38-41]. Visual, auditory, kinetic, and tactile hallucinations, bizarre ideas, incoherence of thought, fears, terrors, and emotional chaos often characterize our dreams, as they also characterize the experience of schizophrenia [42]. Both psychotic patients and dreamers accept impossible events as being real and do not, at the time of dreaming or psychosis, realize that their own imagination is generating the fantasy events. This is clinically referred to as “lack of insight”. Dreams and hallucinations are phenomenologically similar in that they are both characterized by vivid, sensory-rich experiences. At a neurobiological level, other similarities have been reported between REM sleep and schizophrenia [43].

Sleep disturbances have been reportedly associated with schizophrenia even at premonitory or very early stages of the illness, when the association cannot be attributed to chronicity, substance abuse, medical illness or medication [42,44]. Moreover, a predictive link has been found between childhood parasomnias and the onset of schizophrenia in adolescence [45,46]. This suggests an intimate connection between the two phenomena.

Many attempts have been made to characterize dream content that is specific to schizophrenia and distinguishable from dream content in healthy adults or in other psychiatric conditions [47,48]. Findings have been inconsistent. Questionnaire results from the Lusignan, et al. [47] study of REM dreams reveal that, when compared to controls, patients with schizophrenia report experiencing a greater number of nightmares. Their dream narratives are also shorter, but no other significant differences were found among the three groups studied. In parallel work with non-REM dreams (it may surprise readers that dreams can occur in both REM and non-REM sleep stages [49]) of schizophrenia patients and controls, the same researchers [48] again found few differences in dream content except that the dream narratives were again shorter in patients with schizophrenia.

Comparing waking fantasies and dream reports of 30 individuals with schizophrenia and 30 control subjects, Scarone, et al. [50] found “cognitive bizarreness” in the dream reports of both groups, as expected given the discussion, above, on the bizarreness of dreams and delusions. In the narratives of waking fantasies, bizarreness was only found in the schizophrenia reports, again as expected. Other studies, too, have reported on

the bizarre quality of dreams in the context of schizophrenia [51,52] but Khazaie, et al. [53] surprisingly found that, in their sample, the dreams of patients with schizophrenia, when compared to the dreams of family members, patients with other diagnoses, and control subjects, contained relatively fewer bizarre elements. On the whole, these investigators found few differences among the dreams of the four groups except that fewer friends appeared as characters in the dreams of schizophrenia patients. This is not surprising given that individuals suffering from schizophrenia tend to not have many friends.

Dreams of individuals with schizophrenia have been characterized as anxious, hostile, and grandiose, containing themes of threat and foreboding [54]. Hadjez, et al. [55], in a study comparing the dreams of 20 patients with a schizophrenia diagnosis to patients with other diagnoses and also to community controls, found the dreams in the schizophrenia group to be impoverished, lacking in emotional expression. In an interesting, carefully conducted study of 123 schizophrenia patients and 123 controls, Zanasi, et al. [56] used Jungian text analysis to evaluate dream reports. They found no influence of antipsychotic medication dose and confirmed the Hadjez, et al. [55] results of a relative lack of emotional elements.

In summary, there does not appear to be any outstanding difference in the content of dreams in populations with or without psychosis.

## Nightmares and Psychosis

In response to a recent online survey of over one hundred clinicians treating schizophrenia, disrupted sleep was reported as characteristic of their patients, and they endorsed the statement that sleep and psychotic experiences exacerbated one other [57]. The survey authors speculated that genetic factors [58] and the medication factors discussed earlier could be responsible for this association. They also emphasized the fact that physical health problems in people diagnosed with schizophrenia could further impair their sleep [59].

Nightmares in particular have been associated with psychotic decompensation. Among the parasomnias, it is the frequency of nightmares in childhood that best predict psychosis in adolescence [46]. Nightmares have also been reported to predict schizophrenia relapse. In a 1998 case study of a 40-year-old woman with schizophrenia, the authors described two psychotic relapses in the same patient, both immediately preceded by intense and vivid nightmare attacks [60].

In a 2014 study [61], the at-risk schizophrenia state - before criteria for a diagnosis of schizophrenia are reached and before medication is prescribed - was associated with greater nightmare frequency than the control state. While nightmare frequency in first-degree relatives was comparable to that of controls, patients

with schizophrenia had a substantially higher rate of nightmares, more than was seen in the at-risk group. Importantly, nightmares were linked to significant subjective distress. Although other research has found associations between psychotic symptoms and nightmare frequency [35,62] neither positive symptoms (delusions and hallucinations), nor negative symptoms (asociality, apathy), appeared to exert a strong influence on nightmare rates in the Michels, et al. study. The investigators and others [63] concluded that nightmares did not mirror symptoms per se, but rather, reflected the degree of distress shown by schizophrenia patients.

Van Schagen, et al. [64] investigated nightmares in 498 patients with diverse psychiatric disorders. Those who fulfilled criteria for a nightmare disorder were the ones who also scored high on a scale of general psychopathology.

To summarize, while there is continued controversy about delusions and hallucinations (as distinct from distress or general pathology) being associated with an increased rate of nightmares, there is general agreement that the content of paranoid thoughts and visual or auditory hallucinations is reflected in the content of nightmares [62]. It has also been noted that the presence of nightmares, should a person interpret the phenomenon delusionally, e.g. "someone is persecuting me through my nightmares" can result in daytime preoccupation, increased delusional thinking, further distress and further impairment in functioning [65,66].

## Important Questions about Nightmares and Psychosis

A) Does the frequency of bad dreams and nightmares reflect the severity of psychotic symptoms?

In most studies, dreams are collected from research participants who have chronic symptoms with no accompanying measure of symptom severity so that it is impossible to correlate frequencies of good and bad dreams with the degree of symptoms. There are some indirect indications, however, of a relationship. In 1980, Herz and Melville [67] found, in two large independent cohorts of schizophrenia patients, that bad dreams were among the most common indices of psychotic relapse. More recently, the study results of 40 patients with psychosis indicated that 55% experienced weekly distressing nightmares. The more distressing the nightmares, the greater the delusional severity [65].

B) Does treatment of schizophrenia diminish the frequency of nightmares?

There are many treatments aimed at various aspects of schizophrenia, but antipsychotic medications are considered the indispensable treatment. These drugs have been reported to reduce the frequency of nightmares [68], although they do not accomplish this as effectively as the treatments cited below.

C) Does treatment of nightmares diminish psychotic symptoms?

There are a number of effective treatments for nightmares [69]. With respect to drug treatment, the American Academy of Sleep Medicine recommends prazosin, an alpha 1-adrenergic receptor antagonist. With respect to psychotherapy, the Academy recommends specific forms of cognitive behavioral therapy, notably imagery rehearsal, rescripting therapy, exposure and systematic desensitization, and lucid dreaming therapy. Imagery Rehearsal (IRT), the most frequently used therapy, focuses on nightmares that tend to be recurrent. The patient is helped to transform their content and to repeatedly rehearse the transformations.

Lucid dreaming therapy is an interesting and relatively novel treatment for nightmares. Lucid dreams are those in which a person becomes aware that he or she is dreaming and is able to make a conscious decision to change the direction the dream is taking [70]. Individuals can be trained to be lucid dreamers, to become aware, in the midst of a dream, of the fact that they are indeed dreaming [71,72]. The "insight" gained in this way is credited for reducing the distress of nightmares. It had been hoped that insight training that works for nightmares could work in the same way for the insight defect associated with schizophrenia [73], but this has not proven to be effective as of yet [74]. Psychological treatments for nightmares appear to work through the provision of an increased sense of mastery, a reduction of fear, a restoration of sleep, and a dismantling of counterproductive beliefs [75-81]. In principle, these mechanisms should also be able to exert positive effects on the symptoms of schizophrenia but in a small study by Sheaves, et al. [62] a reduction of nightmare following IRT did not diminish psychotic symptoms although participants did describe a positive change in their emotions.

A more recent study [81], though not able to conclude that IRT (as opposed to other aspects of hospital treatment) was specifically responsible for the outcome, did result in overall symptom improvement in psychiatric inpatients, many of whom would have been suffering from psychotic illness. Waite, et al. [82] while not showing that therapy for sleep problems alters specific symptoms, nevertheless report that patients diagnosed with schizophrenia want help to improve their sleep and that interventions that do improve sleep may have the added benefit of lessening psychotic symptoms. They propose a treatment hierarchy for sleep interventions in this population that includes a thorough assessment of sleep problems, education about sleep hygiene, relaxation techniques, and IRT.

Van Schagen, et al. [83] demonstrated a moderate effect on general psychopathology of schizophrenia patients of IRT for nightmares when compared to treatment as usual. The beneficial effects were still ob-

servable at 3-month follow-up. Furthermore, the same investigators extended the follow-up period to 6 and 9 months and found that the benefits were sustained [84].

There is also evidence for the efficacy of Eye-Movement Desensitization and Reprocessing (EMDR) for nightmares in the context of posttraumatic stress disorder [68] and it has been shown that schizophrenia patients are able to respond relatively well to EMDR [85].

In summary, there is evidence that improvement in nightmares can improve well-being and reduce general psychopathology in diverse groups of psychiatric patients, including those with schizophrenia, and that brief psychological interventions that improve sleep are seen as important and very much appreciated by this population [86,87]. Precisely because it is very much appreciated, one can never dismiss the operation of a placebo effect in reports of well-being. No specific effect on psychotic symptoms such as delusions and hallucinations has been demonstrated as of yet, but this line of research is worth pursuing because sleep pathology and psychosis pathology share some commonalities such as paranoid themes and a lack of appreciation that what is being seen and heard is not real [88-91]. In general, sleep disorders cut across many psychiatric diagnoses whose symptoms overlap with each other to significant degrees [92], which is why it makes sense for clinicians to address sleep issues in all mental illness, including schizophrenia.

D) Does treating nightmares reduce suicide?

Probably the most important reason to target nightmares in the schizophrenia population is the very high suicide rate in this disease [93,94] and the known association between nightmares and suicide [19]. Nightmares are thought to lead to suicidal thoughts via perceptions of defeat, entrapment, hopelessness [95,96].

It is likely that, because of psychosis-related stigma, reducing the risk of suicide via treatment of sleep problems, which are known to be ubiquitous in the general population, will be more acceptable to individuals with psychosis than illness-specific interventions. It is known that nightmares can be effectively modified using existing psychological interventions. If nightmare frequency and distress can be reduced in individuals living with schizophrenia, the suicide rate should decrease whether or not psychotic symptoms improve [97]. This seems probable but has yet to be demonstrated.

## Conclusion

There is increasing recognition that sleep problems are common in patients with psychosis, that they exacerbate psychopathology and that they are amenable to treatment. Currently, although insomnia is routinely inquired about in psychiatric assessments, other aspects of sleep are ignored unless specifically mentioned by the

patient. Healthy sleep patterns are an important part of mental health and need to be routinely addressed in the context of care. Nightmares in particular add to the burden of psychotic symptoms in schizophrenia and contribute to the risk of suicide. Their alleviation will improve the quality of life for persons suffering from schizophrenia.

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