Nightmare and Psychosis Proneness: Mediating Role of Lucid Dreaming in Pakistani Adults

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The current study was designed to examine the role of nightmares in psychosis proneness in relation to lucid dreaming. In this correlational study, the sample comprised of 220 young Pakistani adults from both genders (124 women and 96 men) age range from 18 to 26 years ($M = 21.14$, $SD = 1.87$). The participants were assessed on nightmares, psychosis proneness, and lucid dreaming through the Mannheim Dream Questionnaire, Inventory of Personality Organization, and The Lucidity and Consciousness in Dreams Scale respectively. Pearson correlation analysis demonstrated significant inter-correlation between dream lucidity, nightmare, and psychosis proneness. Path analysis illustrated dream lucidity as a significant mediator in the link between nightmare and psychosis proneness. The results concluded that dream lucidity plays the role of facilitating factor in the development of psychosis proneness. The findings also provide insight into the role of nightmares and lucid dreaming while examining psychosis proneness.

Keyword. Dream lucidity, Nightmare and Psychosis Proneness

Nightmares, clinically as well as generally defined are evocative dreams significantly marked by intensified and repetitive feelings of dread or terror which awaken the individual. In many cases, nightmares are symbolized with symptoms of parasomnia but differentiated from repetitive and disturbing nightmares resulting from

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exposure to trauma. Nightmares are often experienced in absence of an identified observable trigger and usually of long-standing duration (Levin & Fireman, 2002). Though nightmares are linked with brain functioning, particularly in physiological demonstrations, waves frequency and chemical compositions are widely tested, yet little is known in their association with psychological functioning. Contemporary researchers focused on the effect nightmare have on the overall wellbeing of an individual. Participants experiencing frequent nightmares and non-nightmare dreamers were compared experimentally. The analysis revealed that participants experiencing nightmares encountered more anxiety and negatively toned dreams apart from the frequent nightmares (Paul et al., 2021). Considering the contemporaneous literature, it is substantial to understand how nightmare manifestations allied with pathological symptomology which in turn would be helpful for the sleep management practitioners, and general healthcare practitioners to recognize when nightmares are particularly problematic for waking to function.

Link Between Nightmares and Lucid Dreaming

Nightmares are widely examined and frequently associated with dreams lucidity. Lucid dreaming is generally described by awareness and control while dreaming. In extension to awareness and control, insight and dissociation are lining criteria of lucid dreaming (Voss et al., 2009). Control facilities in alteration of dream plot, whereas dissociation, is silent and without interference display of dream (e.g., on a screen), seeing oneself outside the plot of dream (Windt & Voss, 2018). The theories of stimulation function postulate that individual dreams are built on their simulating waking life experience. Further, it asserts that diverse psychological functions such as episodes of apprehensions and concerns increase anxiety symptoms which trigger dreams frequency and intensity, consequently initiating lucidity. There is a logical sequence of the link between nightmares and lucid dreaming as lucid dreaming may help regulate the content of night terrors and nightmares. Like nightmares, lucid dreams episodes are also described by consistent and significant agitation and quick awakening with screaming and high autonomic arousal.

Link Between Nightmares and Psychosis symptoms

Nightmares and night terrors have often been linked with psychopathology and psychosis proneness in clinical samples (Thompson et al., 2015). In continuation to this, findings from clinical

samples demonstrated that patients who eventually develop psychosis also report having nightmares about body obliteration and death. Along with international literature on the aforementioned link, some studies in the local perspective are also available. For example, in one of the empirical studies (Najam & Malik, 2003), the researchers explored nightmares in relation to pathological personality traits by administering Minnesota Multiphasic Personality Inventory. The result of his study showed that nightmares are experienced along with tension, worry, anxiety, mistrusting and sensitivity emotions as well as difficulties in relaxing. They are more prone to unusual mental experiences and unusual lifestyles (Najam & Malik, 2003). While explaining this link neurologically, Solms (2009) study claims that dream reality confusion is caused by damage in frontal-limbic lesions, cortical blindness, and flaw in reality monitoring, this could be caused by executive and affective disorders whereas it was seen temporal-limbic seizure activates in recurrent dreams and complex partial seizure in nightmare cases.

Link Between Lucid Dreaming and Psychosis

In addition, lucid dreaming and psychosis (insightful) share similar psychological functions and neurochemical composition as in both cases. Lower-level consciousness partially governs thinking with limited access to higher-order consciousness, which facilitates reflection on present mental states (Voss et al., 2018). Psychosis has been positively associated with sleep disturbance (DeVylder & Kelleher, 2016), such as hypnagogic and hypnopompic hallucinations similar to hallucinations experienced in the waking state. EEG showed that insight dreaming state and psychotic state are associated. It also showed that cortical areas activated during lucid dreaming striking overlap with brain regions impaired in psychotic patients with no insight into their state (Dresler et al., 2015)

Further, research suggests that lucid dreamer is so focused on controlling their internal reality that they have the possibility of losing control of their external reality. It was seen that lucid dreamers with psychotic symptoms are more controlling on their dream than non-lucid dreamers (Mota et al., 2016). Similarly, the guilt of manipulating self-dream triggers psychosis, and people accept their lucid dreams as rationalized dreams, which is not a real story but because dreamer acts like being in wakefulness, their ability to restore Search Activities has decreased (Rotenberg, 2015).

Psycho-neurological Similarities

In biological concept, the REM state dreaming and psychosis have been associated with similar neurophysiological and neurochemical brain activity (Scarone et al., 2007). In both, self-generated images develop by endogenous neural activity. This image is the mixture of one own mind and ego (Feinberg, 2010). The frontal cerebral lobe is responsible for creating images that don't exist. The increase in activities of the frontal lobe causes lucid dreaming and the decrease in its activity can cause proneness towards psychosis and non-lucid dreaming while in nightmares amygdale plays a significant role. As Amygdala is responsible for fear and other emotions; with the increase of its activity dreams are been confronted with suppression, and effecting ones' pleasure dream (Mota et al., 2016; Rotenberg, 2015).

Mediating Role of Lucid Dreaming

Lucid dream helps the dreamer to resolve problems related to these emotions or to find an avoiding strategy. Previously, though lucid dreaming lacks to examine the mediating link between nightmares and psychosis symptomology, few other studies have examined some similar paths. Sleep disorder such as sleep apnea or hypopnea syndrome has a mediating impact in initiating lucidity in nightmares (Zink & Pietrowsky, 2015). Mota-Rolim and Araujo (2013) suggest three possible outcomes of lucid dreaming in the presence of a nightmare; firstly, they believed that the dream would awaken by the nightmare's terror. Second, the non-physiological effect would lose the fear of the dreamer as they would consume no threat. Thirdly, the dreamer would manipulate the nightmare with pleasant lucid dreams.

Rationale

Previous researches have separately predicted the risk of psychosis by a nightmare and lucid dreaming (Mota et al., 2016; Thompson et al., 2015). Though both forms share some common characteristics at a cognitive level, substantially different forms of dreaming, such as a nightmare, is a distressful and anxiety-provoking dream while dream lucidity defines as the awareness and control over the dream. Lucid dreaming is highly associated with pleasure and control (American Academy of Sleep Medicine, 2005; Liu, 2016). In our indigenous culture, the role played by lucid dreaming between psychosis proneness and nightmares is not being focused. In one indigenous study, psychological problems among nightmare sufferers

and non-clinical populations were explored and results demonstrated that nightmare sufferers have higher scores on MMPI clinical scales (Najam & Malik, 2003). However, the literature is scarce in the connection between nightmares and psychosis proneness in the Pakistani cultural context.

In recent years, literature tends to unfold the significance of psychotic symptomology and experiences in non-clinical or sub-clinical samples. Though clinical findings also generated a notion that associations between lucid dreaming, nightmares, and psychotic symptomology in non-clinical samples may be weaker than clinical ones, the relevance and significance of normative findings could suggest early interventions strategies at the screening level.

The literature discusses the relationship of lucid dreams, nightmares, and psychosis separately. Both lucid dream and nightmare have been predicting psychosis while according to Zink and Pietrowsky (2015), a lucid dream can be used as therapy for a nightmare as the dreamer modifies, organizes, and delete unwanted information from their dream. The purpose of this study is to explore the relationship of nightmare and psychosis proneness with the presence of lucid dreams in between and in the relevance of collectivist culture.

Hypotheses

Based on documented empirical as well as theoretical perspectives on the subject mentioned links between study variables, the following hypotheses are formulated;

1. There is likely to be a positive relationship between nightmare dream lucidity and psychosis proneness.
2. Dream lucidity is likely to mediate the relationship between nightmare and psychosis proneness.

Method

Participants and Sampling Strategy

In this correlation study, 220 young adults selected through the purposive sampling technique were selected from two academic institutions of Lahore. The participants' ages range from 18 to 26 years ($M = 21.14$, $SD = 1.87$) and they were enrolled in the diverse degree program. The sample was well proportionate across men and women (96 men; 43.6% and 124 women; 56.4%). To control the study's confounding variables and make sure of exclusion on any clinical

tendencies, certain inclusion and exclusion criteria were generated. Only those participants were selected who have not been diagnosed with any psychological illness in recent or past years. Participants who are currently enrolled in either private or public universities under any undergraduate or graduate program were included in the current study. The sample included only Muslim participants as literature reveals that dreaming interpretation can be impacted by religious orientation. Participants from broken families, having any physical disability or intellectual disabilities, and engaging in any stressful profitable business were excluded from the current study.

Assessment Measures

To assess the study variables; a demographic questionnaire inquiring age, gender, academic level, and institute. Along with that, the Mannheim Dream questionnaire, Lucidity and Consciousness in Dreams Scale, and The Inventory of Personality Organization were used.

The Mannheim Dream Questionnaire

The MADRE is a detailed measure of dream-related content assessing dreams in diverse directions (Schredl et al., 2014). In the current study nightmare component of MADRE was used to assess the frequency and intensity of nightmares. For example, asking participants, *how often have you experienced nightmares recently (in the past several months)?* (item 4) and *how often did you experience nightmares during your childhood (from 6 to 12 years of age)?* (item 8) measuring responses on a 0 (never) to 7 (almost every morning). Other items include if *you currently experience nightmares, how distressing are they to you?"* measuring the response on 5 points Likert scale e.g., 1= not at all distressing to 5= very distressing and *do you experience recurring nightmares that relate to a situation that you have experienced in your waking life?* Measuring response on a dichotomous scale; *yes = 1* and *no = 0.* High scores are an indicator of a high level of nightmares. Previously, authors have reported test-retest of MADRE as .75 and indices reliability is .80. In the present research, alpha was found as .84.

The Lucidity and Consciousness in Dreams Scale

Lucid Scale (Voss et al., 2013) was used for the assessment of lucid dreams. The Lucid Scale consists of 27 items and 8 subscales; insight, control, thought, realism, memory, dissociation, negative emotion, and positive emotion. This was measured on 6 points Likert scale from 0 = strongly disagree to 5 = strongly agree. High scores are

indicators of high dream lucidity. The scale has good reliability which is computed through Cronbach's alpha and it ranges from .56-.91 for subscales. Cronbach's alpha was also computed in the current study which ranges from .67-.74 for subscales and the whole scale Cronbach's alpha (α = .92) to ensure that this scale is a reliable and valid measure for the selected population.

The Inventory of Personality Organization

Inventory of Personality Organization (Lenzenweger et al., 2001) is a detailed inventory of assessing diverse aspects of pathological tendencies. For the present study, reality testing comprising of 20 items was used. This subscales measures psychosis proneness on a 5-point Likert scale ranging from never true = 1 to always true = 5. The subscale scores range from 20 to 100 with high scores representing a high level of psychosis proneness. The past research shows good test-retest reliability .8 and internal consistency reliability .9 while Cronbach's alpha reliability for the current study was fairly high (α = .89).

Procedure

Initially, concerned authors were approached for permission to use the questionnaire. Next, the proposal was approved by the departmental board of studies. The participants were approached in their respective localities and informed about the objectives of the study. Inform consent of participants was also obtained after they were assured of the confidentiality of their provided information. They were also briefed that the study involves no physical, psychological, social, or any other potential harm. The participants were free to withdraw at any point of time during the study. In the paper-pen method, the participants were free to ask any questions relevant to the study. Later data was entered in SPSS version 23 and processed for further analysis.

Pilot Testing

To ensure the smooth administration of the questionnaire and conduction of study protocols, a pilot study was carried out which comprised of 20 participants equally distributed across both genders. As all scales were in English langue, therefore these were administered to see if there are any ambiguous, double-barreled, or confusing statements. The response showed that the participants understood the scales well and could be considered suitable for administration.

Analysis Plan

Descriptive and inferential statistics, including mean, standard deviations, and alpha coefficient of study variables, were calculated. Inferential statistics including Pearson Product Moment Correlation, Regression Analysis, and Path analysis, were used to test study assumptions through SPSS version 23.

Results

Preliminary Analysis

Data were cleaned in the first step; outliers were identified to ensure the normal distribution of data, and missing value analysis was performed by replacing with the mean scores' method. Later descriptive of study variables were calculated (see Table 1).

Table 1

Cronbach's Alpha, Descriptive Statistics of Demographic Characteristics and Study Variables (N=220)

Measure	f (%)	M(SD)	α
Age (18-26 year)		21.14(1.87)	
Gender			
Men	96 (43.6)		
Women	124 (56.4)		
Institute			
Private	112 (50.9)		
Public	108 (49.1)		
Year of education (13-18)		13.19(1.43)	
Dream Lucidity		74.04 (25.47)	.92
Dream Nightmare			.84
Dream Recall		4.28 (2.09)	
Nightmare distress		3.11 (1.13)	
Nightmare recurrent		-	
No	115(52.3)		
Yes	105(47.7)		
Nightmare experience		3.80 (2.19)	
Nightmare childhood		3.62 (2.28)	
Psychosis Proneness		54.78 (15.34)	.89

Inferential Analysis

Correlation analysis revealed that dream lucidity was positively significantly correlated with a nightmare (i.e., nightmare distress, nightmare recurrent, nightmare childhood) and psychosis proneness. Whereas nightmare distress and nightmare recurrent had a positive

and significant association with psychosis proneness (see Table 2). Structural equation modeling was employed to assess the mediating role of dream lucidity between nightmares and psychosis proneness. Model fit is presented in Table 3.

Table 2

Inter-correlations of Demographic Variables with Study Variables (N=220)

Measures	2	3	4	5	6	7	8	9
1. Age	-.15*	-.13	-.10	-.02	-.12	-.06	.02	.01
2. Gender	-	-.05	-.19**	.08	.00	.09	-.02	-.16*
3. Institute		-	.07	-.06	.08	.01	.08	-.10
4. Dream Lucidity			-	.21**	.30***	.10	.21***	.31***
Nightmare								
5. Nightmare distress				-	.25***	.35***	.10	.17**
6. Nightmare recurrent					-	.28***	.24***	.23***
7. Nightmare experience						-	.25***	.05
8. Nightmare childhood							-	.12
9. Psychosis Proneness								-

Note. Gender, 1 = Men, 2 = Women, Institute, 1 = Private, 2 = Public, $^*p < .05, ^{**}p < .01. ^{***}p < 0.001.$

Model fit indices were fall under the criteria of excellent fit. Hu and Bentler (1999) suggested that χ^2/df fall between 1 and 3, RMSEA and SRMR should 0.08 or lesser and Comparative Fit Index (CFI), Tucker-Lewis Index (TLI) or Non-normed fit Index (NNFI) and Goodness of Fit Index (GFI) should be .90 or higher are considered as a good fit. After done with the model fit the estimates to be analyzed for direct and indirect effects for nightmares, dream lucidity, and psychosis proneness in university students with 5000 bootstrapped sample (Hayes, 2013).

Table 3

Model Fit Indices for Dream Lucidity, Nightmare Distress, Nightmare Experience, Nightmare Recurrent, Nightmare Childhood, and Psychosis Proneness

Model	χ^2	df	χ^2/df	GFI	CFI	NNFI	RMSEA	SRMR
Model fit	30.76	23	1.34	.97	.97	.95	.04	.04

Note. N = 200. All change in chi square values are computed relative to model, $\chi^2 > .05$, GFI = Goodness of Fit Index, CFI = Comparative Fit Index, NNFI (TLI) = Non-normed Fit Index; RMSEA = Root Mean Square Error of Approximation, SRMR = Standardized Root Mean Square.

Results of direct effects revealed that nightmare distress, nightmare recurrent, and nightmares childhood were found to be a significant positive predictor of dream lucidity and accounted for 13.4% of the variance. Whereas nightmare recurrent and dream lucidity were found to be a significant positive predictor of psychosis proneness and explained 18.1% variance. Indirect effects indicated that dream lucidity was found to be a significant mediator between nightmare distress, nightmare recurrent and nightmare childhood, and psychosis proneness. Whereas, direct effects indicated that nightmare recurrent was found to be a significant positive predictor of psychosis proneness (see Table 4).

Table 4
Standardized Estimates of Direct, Indirect and Total Effects of Paths

Variables	Dream Lucidity		Psychosis Proneness	
	β	SE	β	SE
Direct Effects of the Paths				
Nightmare Distress	.16[*]	.07	.12	.07
Nightmare Recurrent	.24[**]	.06	.15[*]	.06
Nightmare Experience	-.062	.07	-.08	.07
Nightmare Childhood	.16[**]	.06	.06	.06
Dream Lucidity			.22[**]	.08
Total R^2	.134		.181	
Indirect Effect of Paths				
Nightmare Distress			.04[*]	.02
Nightmare Recurrent			.05[*]	.02
Nightmare Experience			-.01	.01
Nightmare Childhood			.04[*]	.02
Total Effects				
Nightmare Distress			.15	.08
Nightmare Recurrent			.20[*]	.06
Nightmare Experience			-.09	.06
Nightmare Childhood			.09	.07

[*]$p < .01.$ [**]$p < .001.$

Figure 1. Mediating role of Dream Lucidity between Nightmare and Psychosis Proneness.
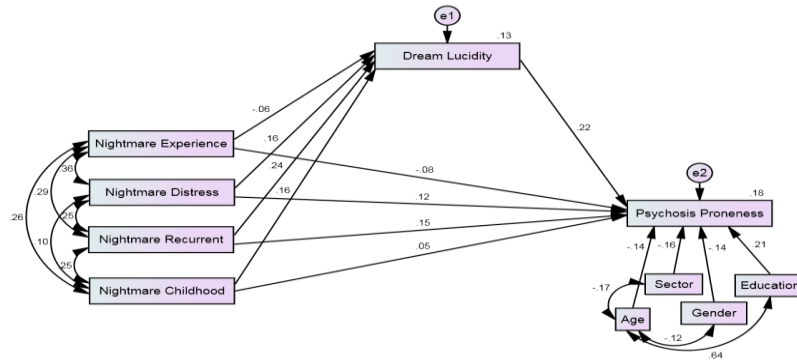
Discussion

It was hypothesized that there is likely to be a relationship between nightmare, dream lucidity, and psychosis proneness. According to Hayes (2013), to compute the mediation analysis the variable should have a relationship with one another. Firstly, the result of the correlation revealed that dream lucidity had a relationship with the nightmare. Previous research approves of it as a Nightmare is a negative emotional dream, this provides the dreamer with distress and anxiety. The mind initiates the lucid dream in order to decrease the distress from the nightmare (Zink & Pietrowsky, 2015). Lucid dream makes the dreamer aware that they are dreaming and reinforce them to shift it towards positive emotions dream (Zink & Pietrowsky, 2015; Taitz, 2011). The process of search activity during lucid dreams helps in changing their nightmare into a pleasant dream. The change might wake them up making them realize that they were dreaming (Rotenberg, 2015). Thus, when one's nightmare distress is high, dream lucidity gets high as it is in the process to change the anxiety-provoking dream.

The analysis also demonstrated the positive relationship between Dream lucidity and psychosis proneness; the finding is consistent with existing literature as psychosis proneness and dream lucidity have similar biological and neurological traits. One is in a dissociative state as one is waking and dreaming at the same time, as well as experiences themselves as a second person (Voss et al., 2009). Both include visual hallucinations and sleep paralysis experienced when waked from sleep (Dresler et al., 2012; Hobson, 2009; Liu, 2016). It's also seen that culture and religion are associated with both as Pakistani parents are mostly authoritative parents. They are warm and

loving yet tend to control the child by presenting themselves with guidance. This makes the child internalize and not have primary control of his life (Yasmeen, 2013). Lucid dreamer has control over their dreams which makes them feel more authority over their dreams. The lucid dreamer can lead towards psychosis if an individual is focused on controlling their internal reliability (i.e., dream) that they lose control of their external reality (Bendall et al., 2007; Mota et al., 2016). Likewise, Muslims faces the guilt of manipulating their dreams which direct to a guilt-proneness personality towards psychosis because individual accepts their lucid dreams as rationalized dreams (Rotenberg, 2015).

Lastly, distress from the nightmare and recurrent nightmare was also seen to have a relationship with psychosis proneness. According to Najam and Malik (2003), nightmare suffering is directly associated with psychasthenia and schizophrenia in Pakistan. Nightmare sufferers experience recurrent episodes of waking in a state of alarm and confusion with the recall of emotional disturbance i.e. fear, anxiety, anger, sadness, disgust, and other dysphoric emotions, and also afraid of falling asleep again (American Academy of Sleep Medicine, 2005). This characteristic is found in Psychotic people as well. The extensive limbic system activation during dreaming and vivid nightmares increase the normative dreaming process. This also affects ones' emotional functioning which furthermore affects waking functioning (Levin & Fireman, 2002). Moreover, the individual with the psychotic disorder has a high risk of having a nightmare (American Psychiatric Association, 2013). These people have hostile content in their dreams and the characters of their dreams are mostly stranger, this makes them more frightful (Mota et al., 2016). Originally, the three variables have a positive relationship with one another; this states that the hypothesis is true.

The second hypothesis was stated that Dream lucidity will mediate the relationship between nightmare and psychosis proneness. For this, a model was designed to control the group with their difference in age, gender, education, and sector. The finding shows that lucid dream is in the presence of nightmare distress, nightmare recurrent and nightmare childhood can lead towards the risk of psychosis proneness. This evidence reveals that the increase of nightmares has increased in the frequency of lucidity and this leads toward reality confusion which confirms our hypothesis.

The finding suggests that in our culture lucid dreams would not be helpful among nightmare sufferers. This finding is consistent with the concept of false awakening. A false awakening is the category of lucid dream where lucid dreamer false awakenings make them believe

they have awoken from their dream, see their surroundings, and begins their day, without realizing that it's still a dream. They have control over memory and thought yet fail to develop insight and realism (Barrett, 1991). Nightmare in the state of false awakening distress the dreamer as they are considering their dream as truth. False awakening contributes in one to fake differentiation of real awakening and false awakening. This leads to individuals' distorted perception of reality and leads towards psychosis proneness (Mota et al., 2016; Rotenberg, 2015).

The second condition where Nightmare in a lucid dream can lead towards the dreamer developing insight that the threat doesn't exist in reality. As lucid dreamer is in a state of sleep paralysis they do not feel the physiological changes by the threat emotions. This makes one lose contact with the threat that exists in wakeful life; they tend to be risk-taking and psychopathic. The dreamer desires to live in their dream world where menaces are not a threat to him (Mota-Rolim & Araujo, 2013). The increase of lucid dreaming desire has been positively associated with psychosis. This increase of desire makes lucid dreamers more focused on their internal reality (i.e. dream) that they lose control of their external reality (Mota et al., 2016).

Thirdly, dreams were known as having not only personal meanings for the dreamer but also social and cultural meanings. According to religious beliefs, Lucid dreams were said to be the highest spiritual guidance that tells one about the threat of violence while nightmare was known as evil spirits' role in frightening visions (Neil, 2015). Jahangir and Qasmi (2007) reported that 38.4% of death dreams come true. They also referred to the divine book that states that $1/46^{th}$ part of prophetic revelation. Lucid dreamer changes and shape the dream by their belief and attitude (Solomonova & Wei, 2016). According to Lyon (2010), Pakistani tend to justify their action by their dream. They believe that God has assigned them with the task. The concept such as honor killing has emerged by one blind faith in their dreams. Religious orientation has been associated with schizotypal personality traits (Ansari et al., 2005). Hence, dreaming affects one's wakeful life as an individual remembers and believes the dream which causes distress and sometimes abnormal behaviors.

Implications and Suggestions

Despite the fact that the study in the insight of understanding the role of dream lucidity in the relationship between nightmare and psychosis proneness, yet still the study carries some limitations. Dreams and nightmares lead to psychosis have been proved

experimentally, this study was quantitative research which falls in its limitation, laboratory research or dream journals can polish the result more. For future research, it is suggested to use a mixed-method approach. Similarly, the limited sample and restricted to educated and Lahore population shows that the sample might vary on a larger scale. Confounding variables such as participants' substance use or unhealthy sleep patterns were not filtered; this might also affect the result.

Besides the limitation, it is the first empirical evidence on the non-clinical young adult study of dream lucidity in our culture. It shows that lucid dreaming is not a healthy therapeutic technique for a nightmare as the finding showed the positive prediction of psychosis long the path. It also shows that obsession with dream life is one of the causal factors that can lead towards psychosis because both lucid dreams and nightmares were positively associated with it.

Conclusion

In conclusion, various researches suggest lucid dream being a healthy activity yet in light of culture and religion, the dream occurrence in the presence of nightmare have a negative effect on one's mental status. One self-interpretation of the dream influences them to forget their existing reality and believe their dream message. Similarly, an individual's unpleasant life within a repeated dream or their ability to accomplish any threat without physical harm makes them lose the grip of awareness in wakefulness.

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