Bad Dreams and Nightmares Preceding Suicidal Behaviors

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ABSTRACT

Objective: Nightmares seem to predict suicidal behaviors, and the aim of this study is to explore the chronology and trajectories of alterations in dream contents before a suicidal crisis, distinguishing 3 different experiences: bad dreams, nightmares, and suicidal scenarios during dreams.

Methods: This naturalistic study included individuals hospitalized between January 2021 and May 2021 in a psychiatric post–emergency room unit for suicidal crisis (thoughts and attempts).

Results: The study observed that 80% (n = 32/40) of patients had altered dreams (AD) before the suicidal crisis, including 27 (67.5%) with bad dreams, 21 (52.5%) with nightmares (bad dreams that awaken the sleeper), and 9 (22.5%) with suicidal scenarios during dreams. No differences were observed between the AD group versus patients with no altered dreams (ND) regarding sociodemographic characteristics. We observed a progression of dream content alterations: bad dreams appear 111 days (4 months) before the suicidal crisis, then nightmares appear 87.3 days before (3 months), and suicidal scenarios during dreams were reported 45.2 days before (1.5 months). For the AD and ND populations in suicidal crisis, 80% had at least 1 subtype of dream alterations, 40% had bad dreams and nightmares, and 17.5% had all 3 subtypes. The AD group, compared to the ND group, had significantly more family history of insomnia ($P = .046$). Almost all patients (97.5%) had depressive symptoms (Montgomery-Asberg Depression Rating Scale [MADRS] score ≥ 7; 82.5% had moderate to severe symptoms, MADRS ≥ 20), 60% had insomnia (Insomnia Severity Index > 14), 92.5% had altered sleep quality (Pittsburgh Sleep Quality Index > 5), and 57.5% reported sleepiness (Epworth Sleepiness Scale > 10).

Conclusions: Dream alterations and their progression can be readily assessed and may help to better identify prodromal signs of suicidal behaviors.

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Despite progress in the research and understanding of suicide, more than 800,000 people die of suicide every year, 1 person every 40 seconds. This is a "global state of emergency" according to the World Health Organization.[1] The economic burden of suicide is estimated at nearly 5 billion euros per year in France. Populations suffering from depression—which affects 1 in 4 people throughout their lives—are at high risk of suicide, and half of patients who commit suicide had depression.[2,3] About half of persons who commit suicide consulted a non-specialized primary care physician in the previous month, underlining current difficulties in assessing suicidal ideation and preventing suicide in clinical practice.[4] To date, suicide prediction models produce accurate overall classification models, but their accuracy of predicting a future event is near zero.[5]

Sleep and circadian markers are of increasing interest to help better predict suicide. Indeed, specific sleep disorders and circadian rhythm disorders have been associated to suicidal behaviors in individuals suffering from major depressive disorder (MDD). The most replicated findings in patients with suicidal behaviors are insomnia and nightmares.[6–8] Furthermore, mortality by suicide is associated with seasonal variations in suicide rates and difficulties in adapting to rhythm shifts.[9,10] Dysrhythmicity of sleep, activities, and social life directly contributes to suicidal ideation and preparation.[11] Actigraphy and polysomnography helped to objectify poorer quality of sleep, longer sleep latency, decreased amount of slow-wave sleep, and longer duration and shorter latency of rapid eye movement (REM) sleep in patients with suicidal behaviors and MDD.[12] Fragmented sleep and prolonged wakefulness at night, mainly in the morning hours, also appeared to possibly predict suicidal ideation.[13,14] Moreover, a recent follow-up study demonstrated that sleep alterations predict suicide attempt, independently of any psychopathologies.[15] Thus, there is an urgent need to confirm the predictive value of these sleep and dream content markers associated with different suicidal behaviors in a population suffering from MDD that is at very high risk of suicide.

Preliminary works found that nightmares are very common in the general population, with about 35% to 45% of individuals experiencing a nightmare per month.[16–18] Bad dreams can be defined in terms of "a negative emotional rating of a dream, irrespective of whether or not the emotion or event of the dream woke the dreamer," and nightmares may be defined as very disturbing dreams awakening the sleeper.[12,19] Nightmares are also defined as a full disorder in *DSM-5* wherein these repeated occurrences of extended, extremely dysphoric, and well-remembered

Clinical Points

- Nightmares seem to predict suicidal behaviors, but the characteristics and trajectories of alterations in the contents of dreams before a suicidal crisis are unknown.
- It is possible to detect the early stirring of the suicidal crisis several months before it appears by assessing dream alterations, which affect 80% of patients in suicidal crisis.
- A chronology of dream alterations may exist that goes from bad dreams, to nightmares (ie, bad dreams that awaken the sleeper), and finally to suicidal scenarios that are present during dreams a few weeks before the suicidal crisis.

awakening dreams cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.[20] Nightmares occur mostly during REM sleep[21] and provoke impaired sleep architecture, which leads to poor quality of sleep and more frequent awakenings.[22] Interestingly, some works reported that night awakenings also increase suicidal risk.[13] The risk of death by suicide is increased not only by the self-perception of nightmares but also by their frequency.[23,24] Nightmares are an overrepresented symptom in psychiatric disorders and are associated with suicides and suicidal attempts, independently of sociodemographic characteristics or psychiatric disorder.[7] Moreover, previous works have observed that frequency of nightmares is associated with more insomnia and anxiety and is predictive of relapses in suicidal attempts.[25,26]

Nevertheless, these interesting preliminary studies did not examine the chronology and trajectories of these dream contents' alterations before a suicidal crisis. Therefore, we decided to perform a naturalistic study to better understand the characteristics of this population during suicidal crisis and to evaluate their past dream contents. We aimed to distinguish in this phenomenology 3 different experiences: bad dreams, nightmares (ie, bad dreams that awaken the sleeper), and suicidal scenarios during dreams. We hypothesized that these dream experiences may have different chronologies of emergence and that individuals with dream alterations, compared to individuals without dream alterations, present with different clinical characteristics.

METHODS

Population

This is a naturalistic study in routine care exploring all consecutive patients who were hospitalized for suicidal ideation or suicide attempt between January 2021 and May 2021. We examined 40 patients from Bichat Hospital in Paris, France, consecutively admitted in the University psychiatric post–emergency room unit. Inclusion criteria were age of 18 years or older and hospitalization for suicidal ideation or suicide attempt, as assessed by trained psychiatrists. Exclusion criteria were individuals deprived of liberty by administrative or judicial decision; those with non-stabilized general medical conditions, including complications following a suicide attempt; pregnant or breastfeeding women; or those participating in intervention research. The data collection for this study took place during the COVID-19 pandemic, but the characteristics of the patients admitted to our University psychiatric post–emergency room unit did not differ from non-COVID periods. This specialized psychiatric unit proposes voluntary admissions mainly for patients who suffer from severe suicidal ideation or after a suicide attempt.

Assessments

We used standardized questionnaires to collect sociodemographic characteristics, lifestyle habits, substance use, psychiatric history, sleep disorder history, and family psychiatric and sleep disorder history according to *DSM* criteria. Symptoms of depression according to the *DSM-5* criteria were also assessed,[20] as well as the duration of the episode and the presence of a suicide attempt. In case of suicidal attempt or thoughts, the date of onset of suicidal thoughts was collected.

Regarding the dream content, according to definitions provided in the introduction, we distinguished bad dreams, nightmares, or suicidal scenarios during dreams and interviewed patients about their onset, for each dream alteration subtype, as well as the theme of their dreams. Previous studies already used this distinction between nightmares, which could be defined as disturbing dreams awakening the sleeper, and bad dreams, as disturbing dreams not awakening the sleeper, and this distinction can be easily assessed by providing the definitions to the patient.[12,19] The psychiatrist was trained and interviewed the patient using standardized questions that included these definitions regarding recent changes and the emergence of bad dreams (yes/no), nightmares (yes/no), and suicidal scenarios during dreams (yes/no) and noted the date of onset for each experience if met.

Regarding the suicidal ideation assessment, all participants were examined with the Columbia-Suicide Severity Rating Scale (CSSRS).[27,28] The score for the most severe ideation from the CSSRS was used as follows: a score from 6 to 10 suggests moderate suicidal ideation intensity, a score from 11 to 15 is in favor of moderate suicidal ideation, a score from 16 to 20 indicates severe suicidal ideation, and a score from 21 to 25 suggests very severe suicidal ideation. Of note, the CSSRS allowed us also to accurately identify the current suicidal scenario.

Insomnia symptoms were evaluated with the Insomnia Severity Index (ISI).[29,30] A total score <7 is not in favor of insomnia, a score between 8 and 14 indicates mild insomnia, a score between 15 and 21 suggests moderate insomnia, and a total score between 22 and 28 is in favor of severe insomnia. Sleep quality was assessed with the Pittsburgh Sleep Quality Index (PSQI),[31,32] on which a total score of >5 indicates sleep disturbance.[31,32] Sleepiness was examined with the Epworth Sleepiness Scale (ESS),[33] on which a total score of ≥ 11 indicates pathological sleepiness.

For chronotype, all patients completed the Horne and Ostberg questionnaire,[34] a self-assessment questionnaire to determine morningness-eveningness in human circadian

Table 1. Sociodemographic Characteristics of Patients Admitted to a University Psychiatric Post-Emergency Room Unit for Suicidal Crisis (Suicidal Thoughts or Attempts)[a]

Characteristic	Total sample (N = 40)	No altered dreams (ND) (N = 8)	Altered dreams[b] (AD) (N = 32)	Bad dreams (N = 27)	Nightmares (N = 21)	Suicidal scenario during dreams (N = 9)	AD vs ND comparison χ^2 or *t* test or *U* test (Fisher)	*P*
Age, mean (SD), y	29.1 (12.2)	28.9 (17.3)	29.2 (11)	30.3 (11.5)	30.0 (12.1)	26.1 (5.53)	0.053	.96
Gender							0.57	.66
Male	9 (22.5)	1 (12.5)	8 (25.0)	6 (22.2)	6 (28.6)	2 (22.2)		
Female	31 (77.5)	7 (87.5)	24 (75.0)	21 (77.3)	15 (71.4)	7 (77.8)		
Body mass index, mean (SD)	22.7 (4.65)	24 (5.16)	22.4 (5.16)	22.6 (4.88)	22.0 (3.46)	23.8 (6.59)	−0.78	.45
Physical activity							0.41	.69
Yes	16 (40.0)	4 (50.0)	12 (37.5)	16 (59.3)	12 (57.1)	5 (55.6)		
No	24 (60.0)	4 (50.0)	20 (62.5)	11 (40.7)	9 (42.9)	4 (44.4)		
Living condition							0.76	.90
Single	19 (47.5)	4 (50.0)	15 (46.9)	13 (48.1)	11 (52.4)	6 (66.7)		
Single, with children	1 (2.5)	0 (0)	1 (3.1)	1 (3.7)	0 (0)	0 (0)		
In a relationship	7 (17.5)	2 (25.0)	5 (15.6)	5 (18.5)	3 (14.3)	1 (11.1)		
In a relationship, with children	13 (32.5)	2 (25.0)	11 (34.4)	8 (29.6)	7 (33.3)	2 (22.2)		
Presence of a roommate							2.92	.31
No	32 (80.0)	5 (62.5)	27 (84.4)	22 (81.5)	17 (81.0)	8 (88.9)		
Yes, with separate beds	1 (2.5)	0 (0)	1 (3.1)	1 (3.7)	1 (4.8)	0		
Yes, in the same bed	7 (17.5)	3 (37.5)	4 (12.5)	4 (14.8)	3 (14.3)	1 (11.1)		
Employment							1.51	.89
Employed	19 (47.5)	4 (50.0)	15 (46.9)	13 (48.1)	10 (47.6)	7 (77.8)		
Retired	1 (2.5)	0 (0)	1 (3.1)	1 (3.7)	1 (4.8)	0 (0)		
Student	16 (40.0)	4 (50.0)	12 (37.5)	10 (37)	7 (33.3)	2 (22.2)		
Unemployed	4 (10.0)	0 (0)	4 (12.5)	3 (11.1)	3 (14.3)	0 (0)		

[a]Values expressed as n (%) unless otherwise noted.
[b]Altered dreams = patients suffering from bad dreams and/or nightmares and/or suicidal scenario during dreams.

rhythms, wherein a score of 70 to 86 suggests a clearly morning type; a score of 59–69, moderately morning type; a score of 42–58, neither morning nor evening type; a score of 31–41, moderately evening type; and a score of 16–30, clearly evening type.

To investigate anxiety and depressive symptoms, all patients were interviewed using the Hospital Anxiety and Depression Scale (HAD).[35] The HAD-A anxiety and HAD-D depression scales are considered significant when the total score is equal to or greater than 11 out of 38, for both HAD-A and HAD-D.[35] We also used the Montgomery-Asberg Depression Rating Scale (MADRS), on which a score ≥ 7 indicates mild depression, ≥ 20 moderate depression, and ≥ 35 severe depression.[36] Finally, patients completed the Generalized Anxiety Disorder-7 (GAD-7),[37,38] on which a total score > 15 indicates generalized anxiety disorder. These assessments took 30 to 45 minutes per patient and are used in routine care.

Patients were notified that these clinical data could be used for research purposes. This clinical research project entitled "Étude des Biomarqueurs du Sommeil et des Rythmes Circadiens dans les Troubles Psychiatriques 'Som-Psy'" was approved (N°CER-2020–56) by the Ethical Review Committee for Biomedical Research Projects (Comité d'Evaluation de l'Ethique des Projets de Recherche Biomédicale Paris Nord) (Institutional Review Board 00006477, of HUPNVS, Paris 7 University, AP-HP).

Statistical Analysis

First, we checked the normality of the distributions of variables and used the Shapiro-Wilk test and QQ plot graphics. Second, nonparametric tests were used for variables showing non-normal distributions (Wilcoxon-Mann-Whitney test, *U* test). When normal distribution was confirmed, a parametric test was used (*t* test), with the χ^2 tests used to compare categorical variables. Univariate 2-sided analyses were performed on the total sample of 40 patients. Each categorical variable is described with a number and percentage, while each continuous variable is described with mean and standard deviation. Third, any variables that were significantly different ($P < .05$) between groups in univariate analyses were then entered into a backward stepwise logistic regression to assess the combination of these selected variables that best classify individuals as having altered dreams (AD) or no altered dreams (ND).

A significant threshold of $P < .05$ was used for all statistics conducted using the JAMOVI software (Version 0.9.5.12).[39–41]

RESULTS

Sociodemographic Characteristics

Of the 40 patients included with suicidal behaviors (thoughts or attempt), 32 (80%) had AD, of which 27 (67.5%) had bad dreams, 21 (52.5%) had nightmares, and 9 (22.5%) had suicidal scenarios during dreams. Sociodemographic variables are summarized in Table 1 for these 4 groups. No differences were observed between the AD group and the ND group regarding age, gender, body mass index, physical activity, living condition, roommate, and employment.

Table 2. Clinical Characteristics of Patients Admitted to a University Psychiatric Post-Emergency Room Unit for Suicidal Crisis (Suicidal Thoughts or Attempts)[a]

Characteristic	Total sample (N = 40)	No altered dreams (ND) (N = 8)	Altered dreams[b] (AD) (N = 32)	Bad dreams (N = 27)	Nightmares (N = 21)	Suicidal scenario during dreams (N = 9)	AD vs ND comparison χ^2 or *t* test or *U* test (Fisher)	AD vs ND comparison *P*[c]
Suicide attempts							0.03	1
Yes	29 (72.5)	6 (75.0)	23 (71.9)	20 (74.1)	14 (66.7)	5 (55.6)		
No	11 (27.5)	2 (25.0)	9 (28.1)	7 (25.9)	7 (33.3)	4 (44.4)		
History of suicide attempts							0.67	.44
Yes	18 (45.0)	4 (50.0)	14 (43.8)	11 (40.7)	8 (38.1)	1 (11.1)		
No	22 (55.0)	4 (50.0)	18 (56.2)	16 (59.3)	13 (61.9)	8 (88.9)		
Tobacco use							2.03	.29
Nonsmoker	18 (45.0)	4 (50.0)	14 (43.8)	12 (44.4)	10 (47.6)	3 (33.3)		
Smoker	17 (42.5)	2 (25.0)	15 (46.9)	13 (48.1)	10 (47.6)	6 (66.7)		
Former smoker	5 (12.5)	2 (25.0)	3 (9.3)	2 (7.4)	1 (4.8)	0 (0)		
Family history of depressive episode							0.03	1
Yes	16 (40.0)	3 (37.5)	13 (40.6)	12 (44.4)	9 (42.9)	6 (66.7)		
No	24 (60.0)	5 (62.5)	19 (59.4)	15 (55.6)	12 (57.1)	3 (33.3)		
Family history of suicide attempts							0.07	1
Yes	4 (10.0)	1 (12.5)	3 (9.3)	3 (11.1)	2 (9.5)	2 (22.2)		
No	36 (90.0)	7 (87.5)	29 (90.6)	24 (88.9)	19 (90.5)	7 (77.8)		
Family history of insomnia							4.91	**.046**
Yes	21 (52.5)	7 (87.5)	14 (43.8)	12 (44.4)	9 (42.9)	3 (33.3)		
No	19 (47.5)	1 (12.5)	18 (56.2)	15 (55.6)	12 (57.1)	6 (66.7)		
History of insomnia							0.03	1
Yes	26 (65.0)	5 (62.5)	21 (65.6)	20 (74.1)	14 (66.7)	7 (77.8)		
No	14 (35.0)	3 (37.5)	11 (34.4)	7 (25.9)	7 (33.3)	2 (22.2)		
History of depressive episode							0.61	1
Yes	39 (97.5)	8 (100.0)	31 (96.9)	26 (96.3)	21 (100.0)	8 (98.9)		
No	1 (2.5)	0 (0)	1 (3.1)	1 (3.7)	0 (0)	1 (11.1)		
History of depressive episodes (no.)							5.10	.39
0	1 (2.5)	0 (0)	1 (3.1)	1 (3.7)	0 (0)	1 (11.1)		
1	15 (37.5)	5 (62.5)	10 (31.3)	9 (33.3)	7 (33.3)	3 (33.3)		
2	12 (30.0)	1 (12.5)	11 (34.4)	8 (29.6)	8 (38.1)	2 (22.2)		
3	6 (15.0)	1 (12.5)	5 (15.6)	4 (14.8)	3 (14.3)	2 (22.2)		
4	4 (10.0)	0 (0)	4 (12.5)	4 (14.8)	2 (9.5)	0 (0)		
5	2 (5.0)	1 (12.5)	1 (3.1)	1 (3.7)	1 (4.8)	1 (11.1)		
No. of depressive episodes, mean (SD)	2.075 (1.22)	1.85 (1.26)	2.125 (1.23)	2.14 (1.25)	2.14 (1.23)	2 (1.29)	0.45	.66
Alcohol use disorder							0.5	.69
Yes	14 (35.0)	2 (25.0)	12 (37.5)	11 (40.7)	8 (38.1)	4 (44.4)		
No	26 (65.0)	6 (75.0)	20 (62.5)	16 (59.3)	13 (61.9)	5 (55.6)		
Bipolar disorder							1.11	.57
Yes	4 (10.0)	0 (0)	4 (12.5)	4 (14.8)	2 (9.5)	2 (22.2)		
No	36 (90.0)	8 (100.0)	28 (87.5)	23 (85.2)	19 (90.5)	7 (77.8)		
Posttraumatic stress disorder							0.61	1
Yes	13 (32.5)	2 (25.0)	11(34.4)	9 (33.3)	6 (28.6)	5 (55.6)		
No	27 (67.5)	6 (75.0)	21 (65.6)	18 (66.7)	15 (71.4)	4 (44.4)		
Anxiety disorder							0.69	.70
Yes	20 (50.0)	5 (62.5)	15 (53.1)	15 (55.6)	7 (33.3)	5 (55.6)		
No	20 (50.0)	3 (37.5)	17 (46.9)	12 (44.4)	14 (66.7)	4 (44.4)		

[a]Values expressed as n (%) unless otherwise noted.
[b]Altered dreams = patients suffering from bad dreams and/or nightmares and/or suicidal scenario during dreams.
[c]Significant results ($P < .05$) are indicated in bold.

Clinical Characteristics

The AD group, compared to the ND group, presented with more family history of insomnia ($P = .046$). No differences between groups were observed regarding other clinical characteristics as detailed in Table 2. Regarding antidepressant use, no statistical differences were observed between the AD and ND groups, with n = 7/32 and n = 2/8, respectively, treated with selective serotonin reuptake inhibitors and n = 6/32 and 1/8, respectively, treated with serotonin-norepinephrine reuptake inhibitors. In the AD group, 1 patient was treated with methylphenidate, 1 with carbamazepine, and 1 with quetiapine.

Mood and Sleep Assessments

As summarized in Table 3, no differences between groups were observed regarding all mood and sleep assessments. All patients except 1, ie, 97.5%, had depressive symptoms, and 82.5% (n = 33/40) had moderate to severe symptoms. Regarding insomnia, 60.0% of the population suffered from insomnia as assessed with the ISI. Regarding sleep disturbance, 92.5% had a PSQI total score above 5, suggesting significantly altered sleep quality. In addition, 57.5% of patients reported significant sleepiness with the ESS. Finally, 82.5% had anxiety (HAD-A) and 67.5%, depression (HAD-D).

Table 3. Mood and Sleep Assessments—Comparison Between Altered Dreams Versus No Altered Dreams Groups[a]

Assessment	Altered dreams (n = 32; 80%)[a]	No altered dreams (n = 8; 20%)[a]	*t* or U/χ^2	*P*
Suicidal intensity (CSSRS total score)	13.81 (4.89)	12.88 (4.67)	−0.491	.63
Depression scale (MADRS total score)	27.13 (10.24)	27.13 (10.05)	0.000	1.00
Depressive symptoms (HAD-D total score)	12.09 (5.54)	11.50 (4.34)	−0.281	.78
Generalized anxiety (GAD-7 total score)	14.97 (5.41)	18.50 (3.25)	77.5	.09
Anxiety symptoms (HAD-A total score)	14.97 (5.41)	15.25 (3.06)	0.910	.37
Sleep quality (PSQI total score)	11.59 (4.02)	12.13 (3.64)	0.340	.74
Insomnia (ISI total score)	15.03 (5.88)	16.00 (4.63)	0.432	.67
Sleepiness (ESS total score)	11.03 (5.53)	8.88 (5.11)	−1.000	.32
Chronotype (morningness-eveningness; Horne and Ostberg total score)	47.84 (10.34)	41.75 (7.38)	−1.564	.13

[a]Values expressed as mean (SD).
Abbreviations: CSSRS = Columbia-Suicide Severity Rating Scale, ESS = Epworth Sleepiness Scale, GAD-7 = Generalized Anxiety Disorder-7, HAD-A = Hospital Anxiety and Depression Scale anxiety, HAD-D = Hospital Anxiety and Depression Scale depression, ISI = Insomnia Severity Index, MADRS = Montgomery-Asberg Depression Rating Scale, PSQI = Pittsburgh Sleep Quality Index.

Figure 1. Chronology of Dream Alteration of Patients Who Were Admitted to a University Psychiatric Post-Emergency Room Unit for Suicidal Crisis (Ideation or Attempt)

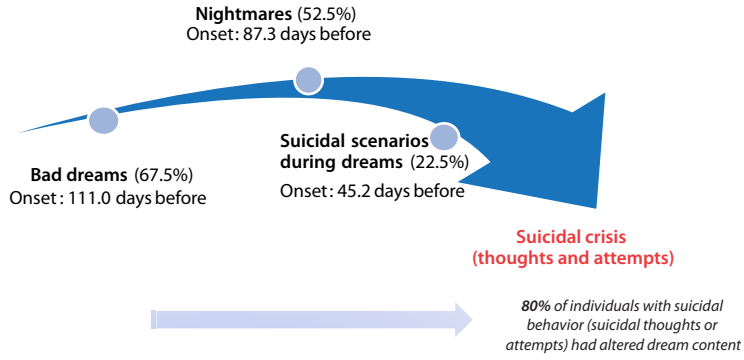
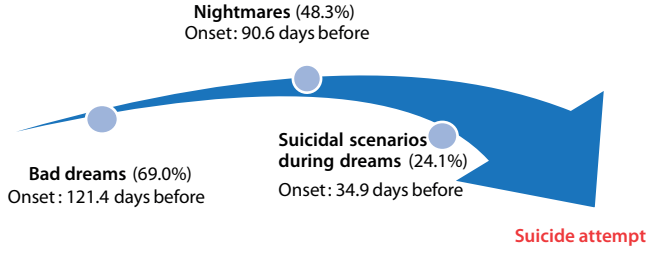


Figure 2. Chronology of Dream Alteration of Patients Who Were Admitted to a University Psychiatric Post-Emergency Room Unit for Suicide Attempts



Chronology of the Dreams' Content Alterations

Eighty percent of our patients experienced at least 1 dream alteration before the crisis. No differences in dream subtype alterations were observed between the different suicide phenotypes (Supplementary Table 1). Regarding individuals who had the 3 dream content alterations, 20.7% had all 3 of the alterations in this chronology. No statistical differences were observed between patients with or without suicide attempt regarding the different types of dream alterations.

Regarding the chronology for suicidal crisis (ie, suicidal thoughts and attempts), bad dreams were experienced by 67.5% of our sample and began an average of 111 days before the suicidal crisis; 52.5% of the patients began to have nightmares an average of 87.3 days before the crisis; and 22.5% had suicidal scenarios in their dreams 45.2 days before the crisis (Figure 1). In the patients who had suicidal crisis, 80% had at least 1 kind of altered dreams, 40% had bad dreams and nightmares, and 17.5% had all 3 types of dream alterations (Supplementary Figure 1A).

Regarding only individuals with suicidal attempt, the progression of alteration of the dreams was the same; indeed, bad dreams affected 69.0% of our sample and began an average of 121.4 days before the crisis; 48.3% of the patients began to have nightmares an average of 90.6 days before the crisis; and 24.1% had suicidal scenarios in their dreams 34.9 days before the crisis (Figure 2). For patients with suicide attempt, 79.3% had at least 1 kind of altered dreams, 37.9% had bad dreams and nightmares, and 20.7% had all 3 types of dream alterations (Supplementary Figure 1B).

DISCUSSION

This study is the first to report a chronology of dream alterations in the context of suicidal crisis from bad dreams, appearing about 4 months before the crisis, to nightmares (3 months before), and then suicidal scenarios during dreams (6 weeks before). This alteration of dream content was experienced by most of the individuals in suicidal crisis, affecting 80% of them. Interestingly, 1 out of 3 patients met 2 types of dream content alterations, and 1 out of 5 experienced all 3 consecutive alterations of dream content (ie, bad dreams, nightmares, and suicidal scenarios). These data show that it is possible to detect the early stirring of the suicidal crisis several months before it appears. In addition, these observations highlight the progression in the dream alteration content associated with the suicidal crisis progression.

These data suggest that alterations of dream content are a major issue and a cornerstone manifestation in suicidal crisis. These observations are in line with previous studies that reported that in patients with MDD, nightmares were associated with increased suicidal ideation and attempts.[8,24,42] Of note, more than 90% of our population were depressed as confirmed with the MADRS, also confirming the high prevalence of dream alterations (80%) found previously in MDD such as in the study of Agargun et al (86%).[43] Interestingly, our study allows clarification of the phenomenology and chronology of dream alterations before the suicidal crisis. Moreover, the reported prevalence may even be underestimated, since previous works show that the frequency of nightmare is underestimated with retrospective self-report.[44] The link between dream alterations and suicidal crisis might be independent too of the psychopathology. Indeed, a previous study observed higher scores of suicidal ideation in patients who had nightmares independent of other psychiatric disorders.[45] Regarding the frequency of bad dreams or nightmares, it has also been shown that patients who report weekly nightmares are more likely to be hospitalized for suicide attempts,[46] and patients with a history of suicide attempts had more frequent nightmares than those with a first suicide attempt.[47] Finally, nightmare frequency appears to be associated with insomnia and anxiety symptoms, whereas nightmares' repercussions (ie, effects and distress) appear rather to be associated with depressive symptoms, insomnia, and seasonal patterns.[26]

Some mechanistic hypotheses may explain these observations of dream alterations before a suicidal crisis. The first one is the continuity between the emotional reaction of the dream and the waking self.[48] In other words, the dreamer's emotional reactions to events are similar to what they would have been in waking life, and hence an individual with depressive mood and suicidal thoughts will continue this emotional state during dreams. The progression of the suicidal crisis during the day may also explain the worsening of dream contents evolving to nightmares and then suicidal scenarios. In line with this, the content of nightmares such as a suicide scenario is linked to the psychopathology of waking life.[49] Indeed, themes of suicide have been observed to be infrequent nightmare themes and are directly associated with the waking-life psychopathology.[49] Nightmares may be considered as a failure of coping, progressing to the hopelessness in the suicide crisis,[11] emerging from elevated hyperarousal and impaired fear extinction.[50] Nightmares may result from a failure of the mood regulatory function of dreams,[51] which may be explained as a hyperactive amygdala and compromised frontal regulatory pathways.[50] These two brain regions have also been identified in the brain circuits involved in depression and schizophrenia.[52] So, nightmares and psychiatric disorders may also share common pathophysiologic mechanisms. These issues are of major interest, and further studies are warranted to better unravel the emergence of dream alterations in the context of suicidal crisis.

Some limitations of the study should be acknowledged. First, the absence of differences between AD and ND may be due to the small sample size of our population and thus needs to be confirmed. Moreover, we decided to compare AD versus ND and not each of the dream content subtypes because some patients had both bad dreams and nightmares and/or suicidal scenarios, leading to overlapping groups. Supplementary Figure 1 emphasizes this issue, and it may be interesting in the future to compare "pure" dream alteration subtypes. Nevertheless, this study observed real-life manifestations, and in addition to not expecting to find such high prevalences of patients with altered dreams, we were also surprised with the important overlap between dream subtype groups. Because of the retrospective design of the dream content recording, this study probably underestimates the frequency of dream alterations, especially as they appear several months before the suicidal crisis. Prospective studies would allow better estimation of the exact prevalence and chronology, which may even reveal earlier prodromes.[53] Such prospective designs may also help to better characterize patients with multiple suicidal crises or chronic/fluctuating suicidal ideation, although this was not an issue in the current study since patients either had their first suicidal crisis or hospitalization or had a history of suicidal crisis not overlapping the current suicidal crisis. Finally, no analyses of covariates and no corrections for multiple testing were conducted, so this exploratory first original study should be interpreted with caution and needs to be replicated.

The strengths of this study included the population of interest, which is very difficult to investigate because of the short duration of the suicidal crisis. In addition, to avoid any biases or misunderstanding, patients benefited from standardized interviews by trained psychiatrists and were assessed with validated self-report scales. Finally, this study is the first to examine the progression of dream content before the suicidal crisis and also to distinguish different dream alteration subtypes.

Suicidal crisis is a very common and severe, as well as very complex, clinical situation. Although suicide is one of the leading causes of death, especially among youth,[54,55] no robust prodromal signs of suicidal crisis have been implemented

in primary care. However, 3 out of 4 people who die of suicide have contact with primary care physicians in the year preceding suicide, about half of them within a month.[4] Therefore, sleep alterations[15] and more specifically dream alterations and their progression could be readily assessed and may help to better identify prodromal signs of suicidal behavior in primary care. As such, very short questions addressing the appearance of new sleep disturbances, including recent experiences of bad dreams or nightmares and brief exploration of their content, may be included in the primary care screening of the suicidal risk. These results are also paving the way to develop specific preventive sleep intervention programs, like imagery rescripting therapy and exposure relaxation and rescripting therapy,[56] and to adapt programs to enhance adherence in high-risk populations such as youth.[57]

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Editor's Note: We encourage authors to submit papers for consideration as a part of our Focus on Suicide section. Please contact Philippe Courtet, MD, PhD, at pcourtet@psychiatrist.com.

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Supplementary Material

Article Title: Bad Dreams and Nightmares Preceding Suicidal Behaviors

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List of Supplementary Material for the article

1. Table 1 — Dreams Content and Suicidal Phenotypes of Patient Admitted in a University Psychiatric Post-Emergency Room Unit for Suicidal Crisis
2. Figure 1 — Altered Dreams in Patients With (A) Suicidal Crisis (Thoughts and Attempts) and (B) Suicide Attempt

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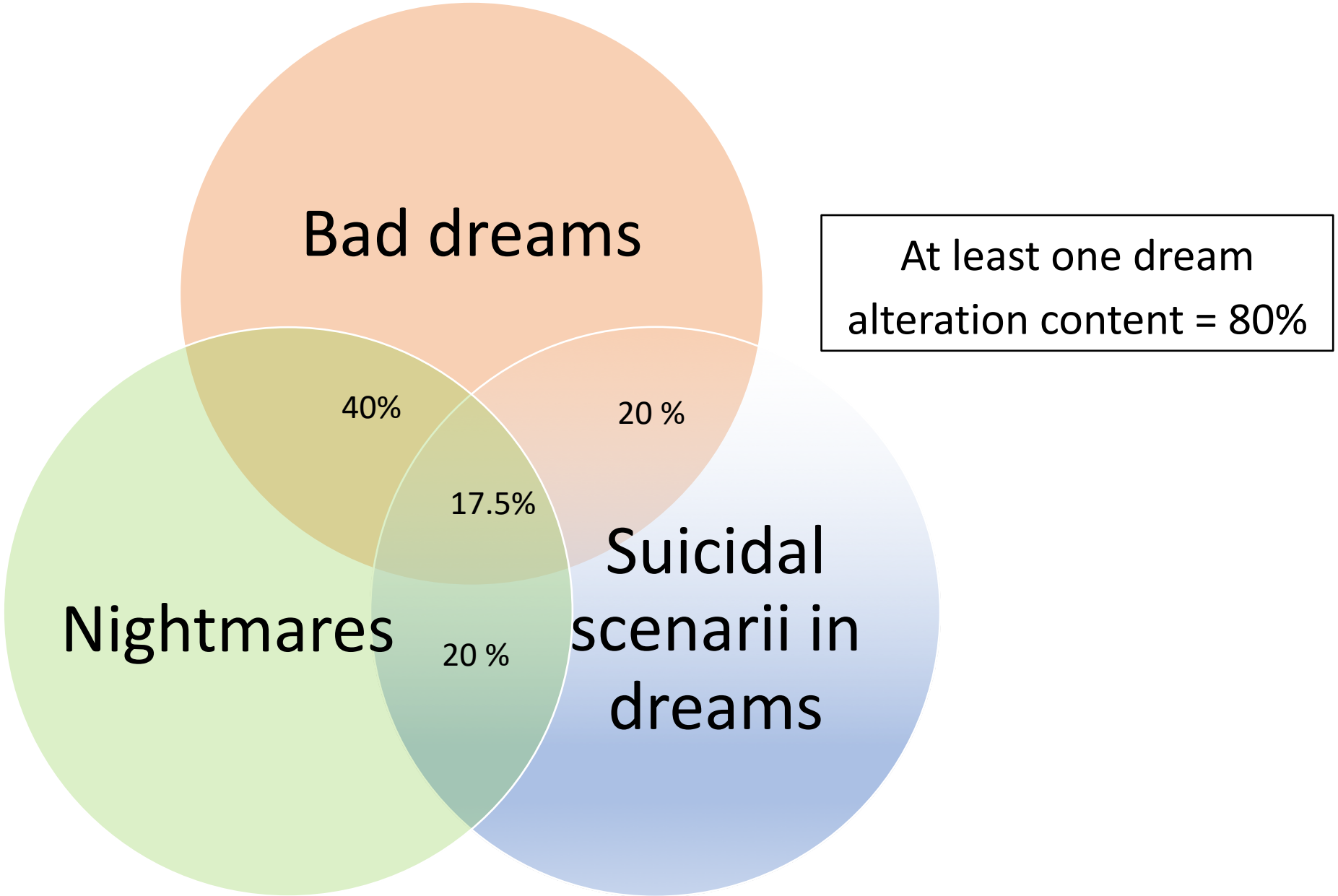
Supplementary Table 1. Dreams content and suicidal phenotypes of patient admitted in a University psychiatric post-emergency room unit for suicidal crisis.

Total sample n=40	Suicidal ideation n=40	Suicide attempts n=29	Recurrence of suicide attempts n=18
No altered dreams n=8	8 (20%)	6 (20.7%)	4 (22.2%)
Altered dreams n=32	32 (80%)	23 (79.3%)	14 (77.8%)
Bad dreams n=27	27 (67.5%)	20 (69.0%)	11 (61.1%)
Nightmares n=21	21 (52.5%)	14 (48.3%)	9 (50%)
Suicidal scenarii during dreams n= 9	9 (22.5%)	6 (20.7%)	4 (22.2%)

Supplementary Figure 1
(A) suicidal crisis (thoughts and attempts)



Supplementary Figure 1
(B) suicide attempt