

## ORIGINAL ARTICLES

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# Frequency and Nature of Pain in a Long Dream Series

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Research indicates that pain can be found in dreams; although it is very rarely. The analysis of a long dream series (N= 6541) indicates that even though a good part of the pain dreams (1%) can be easily explained by pain present during sleep or pain memories of the dreamer's waking life, some dreamed pain has never been part of the waking life of the dreamer. Whether these dreams can be explained by seeing this pain in others or by the fact that experiencing pain is hardwired into the brain is a still open question. Furthermore, it would be interesting to study the frequency of pain dreams in different samples of patients suffering from chronic pain. (**Sleep and Hypnosis 2011;13(1-2):1-6**)

**Key words:** xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

## INTRODUCTION

The old saying “If you pinch yourself and experience pain you cannot dream” implicate that dreams might be void of pain sensations. Symons (1) wrote that having pain dreams is maladaptive because acute pain should be result in awakening (it might be a potentially dangerous situation). Although there had been examples of pain dreams published (2–3), the first content analytic study of 119 REM awakening dreams obtained from 20 male healthy students yielded only one reference to pain and even this reference was not explicit like “I am experiencing pain.” (4). The most extensive study on the topic was carried out by Zadra and coworkers (5). About 50% of the 185 participants completing a dream questionnaire stated that they had at least one pain dream in

their life time. Analyzing 3045 home dreams, the prevalence of pain dreams was 0.59% (5). Interestingly, most of the pain situations in the dream (being stabbed, being shot, being electrocuted, and accidents) does not refer to an actual or past waking-life pain experience of the dreamer; only one participants who suffered from occasional lower back pain in waking life reported also dreams in which his back was hurting. A case report (6) and field-observations (7) also indicate that waking-life pain experiences might be related to the occurrence in the dream, for example, toothache dreams in children (7). As pain is not very prominent in the waking life of healthy persons, the small amount of pain dreams might still in line with the continuity hypothesis of dreaming (8). Thus, if dreams reflect the waking life, pain patients should have more pain dreams than healthy persons. Up to now, only one study (9) looked into the frequency of pain dreams in patients experiencing severe pain – in this case – due to burn injuries; 30.2% of their dreams included pain experiences measured by self-rating scales presented to the patient after

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giving the dream report. This methodological detail is of importance since only 6 of the 19 pain dreams included an explicit reference to pain, i.e., in 13 dreams pain is not mentioned explicitly in the report but rated on the dream pain scale. In almost all dreams the location of the pain corresponded to the pain experienced in the waking state (9). So, the question whether pain dreams reflect pain experiences of the previous day(s) as a memory or whether pain dreams are caused by an acute pain present during sleep is not answered by that study. Several examples of pain dreams include that statement that the pain was still present when the dreamer woke up (2,5) indicating that physical pain was incorporated into the dream. Nielsen et al. (10) induced mild pain by inflating a blood pressure cuff worn above the right or left knee. Stimulations resulted often in awakenings but in 15 of 42 dream reports obtained from undisturbed REM sleep pain was present. Similar to the study in pain patients (9), the location of the pain within the dream often corresponded to the inflicted pain. One participant who underwent knee surgery a few years prior to the sleep laboratory experiment reported the highest percentage of pain dreams (70%). Interestingly, anger was quite often present in these dreams in which the dreamer try to do something in order to relieve the pain. However, a follow-up study (11) using small blood pressure cuffs on both hands did not yield clear-cut results; only one of 88 dreams with stimulation included a reference to pain.

Taking together these findings, pain dreams might reflect actual pain present during sleep but it seems very implausible that all pain dreams can be explained this way. Research showing that intensity and duration of pain is stored as explicit episodic memories and could retrieved one week later (12) render it very plausible that pain memories can be processed in dreams – reflecting continuity to waking life. Moreover, patients with the rare syndrome of congenital insensitivity to pain showed normal fMRI responses to observed pain in the two key regions of the so-called “shared circuits” for self

and other pain (13); a result hinting that it is possible we might dream of pain experiences we never experienced ourselves but saw in real life or media (14).

The present study analyzed a dream series of 6541 dreams recorded over a period of fifteen years. In addition to studying the frequency and content of pain dreams in this subject, pain dreams were also analyzed whether they include pain experiences the dreamer had had in his real life, e.g. he suffered from chronic tension headaches for 10 years.

## **METHOD**

### **Dream diary**

The participant has kept an unstructured dream diary, starting in September, 1984. Dreams recorded until July 1999 were included in this study.

### **Participant and procedure**

The male participant was 22 years old at the beginning of the studied dream series. The major pain experiences were: chronic tension headaches from 1977 to 1987 (constantly present), a concussion after a motor vehicle accident in 1977, pain during a three-week lasting severe pneumonia due to paraffin intoxication in June 1991.

The dream reports were typed and entered into a database (Alchera 3.72, created by Harry Bosma, [www.mythwell.com](http://www.mythwell.com)). This database allows one to assign key words to the dreams, a task carried out by the dreamer himself. I.e., the presence of explicitly mentioned pain was rated for each dream by the dreamer. In addition, the cause of the pain or the dream action that inflicted the pain, the location of the pain, the intensity of pain (mild, moderate, intense, very intense/unbearable) were coded. The categories for the pain cause were as follows: illness, fighting with humans, strong mental pain, self-inflicted pain, accidentally hurt by other persons, accidentally hurt by doing something, motor

vehicle accidents, pain inflicted by an animal. Lastly, it was scored whether pain intensity decreases within the dream.

The Alchera software also provides a word count for each dream report. As an analysis unit a single dream report was used. The data were entered into an Excel sheet (Microsoft) and data analysis was carried out with the software package SAS 9.2 for Windows.

## RESULTS

The dream series included 6541 dreams (mean dream length:  $126.5 \pm 82.3$  words). Within this series, 68 dreams (1.04%) included explicit mentioned pain experiences (mean dream length of the pain dreams:  $161.2 \pm 78.0$  words). The distribution of the locations of the pain experiences are depicted in Table 1. Whereas the pain location was not explicitly mentioned in 8 dreams, pain within the dream was most often located in the head, hands, back, and genitals. The main causes for dreamed pain have been: fighting with humans, illness, attacked by an

**Table 1. Location of pain in pain dreams (N= 68)**

Location of pain	Frequency
Head	11
teeth	2
Back	7
Chest	5
Abdomen	5
Bottom	2
Genitals	7
Arms	3
Hands	11
Legs/Feet	6
Body as a whole	3
Not mentioned	8

Note: In two dream reports two locations were mentioned.

**Table 2. Reasons for pain in pain dreams (N= 68)**

Location of pain	Frequency
Illness	12
Fighting with humans	17
Accidental body contact with humans	6
Strong mental pain experienced also as physical pain	4
Self injury	2
Injury while doing something	6
Attacked by an animal	10
Accident	11

animal, and accidents (see Table 2). For headaches (N= 11 dreams), the distribution was as follows: illness (4), accident (4), fight (1), accidentally hurt (1), and hurt while doing something (1). All four dreams including illness-related headaches did occur after 1987 (Aug 1989, Apr 1991, Aug 1991, Mar 1993).

Next, the dream reports were classified according to the intensity of the pain experienced within the dream: mild (20), moderate (35), intense (11), very intense/unbearable (2). In 8 dreams the pain lessened within the dream. The following dream example illustrates this: "... A squirrel begins to scabble at my feet; there is also a snake. I am afraid to move because the snake might bite me. The snake, however, grasps the squirrel by its head which now digs its paws into my feet, causing considerable pain. Very slowly the snake pulls away the squirrel. The pain at the soles of the feet slowly lessens." In two cases, the dreamer reported that the pain persisted into waking life.

Dream 1 "..... The bigger snake bites the smaller snake and suddenly both snakes are dangling from my right big toe. I am totally terrified because the snakes are poisonous; nobody knows whether lethal and how fast acting the poison is. The owner of the small snake tries to detach them from the toe. I experience pain in the big toe upon awakening." Dream 2: "... On the right side of the tent is a river with strong current. Something is biting into my foot. I try to get rid of it. There are two frogs. I can detach the first quite easily. But the second one bites my hand which hurts very much. I awake with unpleasant feelings in the hand and in the foot.

Lastly, the pain dreams were classified according the relation between the dream situations involving pain as a whole, the pain experience itself, and the waking-life experiences of the dreamer. To illustrate this procedure, the coding of the following dreams is presented: "I take a walk in a park which is known for free-running boars. Normally they are amicable but now and then, some animals attack humans. All of a sudden, such a male boar is attacking me.

The animal approaches from behind and I try to sidestep but the boar grazed my leg. I experience mild pain.” Although it is quite plausible to experience mild pain due to an external cause in the leg (Coding: 2), it has never occurred to the dreamer in his waking life that a boar has attacked him (Coding: 4).

“... I am playing with L. (girl, 5 years old), she is making a somersault (stepping up my legs and holding my hands). Accidentally she hit my balls. I explain to her that this was hurting.” The pain and the situation as a whole was experienced by the dreaming in his waking life (both Codings: 1).

“ One of my companions leads us to a sea with cliffs. Many monsters with sharp teeth are around us. We must get past them. I experience almost unbearable pain in the hand as the bite. But this is part of getting through. The third person of our party who was sceptical transforms into a dragon and stays behind. It is some kind of rebirth.” The pain and obviously the situation of the dream were never experienced by the dreamer in his waking life (both codings: 4).

The pain situation in the dream as a whole rarely happened in the waking-life of the dreamer (see Table 3), whereas the pain experience itself showed a greater resemblance to pain experienced in waking life.

Another aspect which was not studied systematically but was mentioned in several dream reports is the difference of the pain experienced in the dream and the pain the action would cause in waking-life. The following

example illustrates this topic: “..... This policeman was lured into a trap by five people. They tramp on him (now me). I protect my genitals with one hand. An elderly woman jumps with special joy vehemently on me but these attempts cause very little pain.”

## DISCUSSION

The findings of this dream series indicated that explicit mentioned pain experiences can be found in dreams, although they are quite rarely. The figure of 1% matches with the findings of Zadra, et al. (5) reporting that 0.59% of 3045 diary dreams includes pain experiences. The list of most prominent pain locations (head, hands, back, leg/feet, chest, abdomen) nicely fits the list of Zadra et al. (5) obtained by questionnaire (most often mentioned: abdomen, legs, head/face, back, chest, hands). Whereas some of the actions reported by the participants of Zadra’s (5) study as leading to pain in dreams were mostly fighting, accidents or bitten by animals were also found in the pain dreams of the present study, illness, accidentally caused pain, strong mental pain as cause for physical pain, and self injury were also reasons for dream pain. Several of the illness-related pain dreams might be explained to the chronic pain the participant suffered over 10 years but interestingly these dreams occurred after the chronic headaches have ceased. This might be a reflection of pain memories rather than pain present during sleep causing the pain. That actual pain caused the pain in the dream is very implausible for most of the dreams except for two where the dreamer explicitly report pain after waking up.

Regarding the actions leading to pain, only 2.9% of the dreams reflect a pain situation experienced by the dreamer in waking life; which is compatible with findings showing that dreams rarely include exact episodic replays of waking-life experiences (15). On the other hand, the finding that about 60% of the isolated pain experiences within the dream are associated with a specific waking memory or are highly probable to have happened in the waking life of

**Table 3. Link between dreamed pain situations and pain experiences and waking life experiences (N= 68 pain dreams)**

Location of pain	Pain situation as a whole	Pain experience itself
Experienced in waking life by the dreamer (explicit memory)	2	22
Probable to be experienced by the dreamer in his waking life	5	19
Improbable to be experienced by the dreamer in his waking life	7	13
Never experienced by the dreamer in his waking life	54	14

the participant indicates that these dreams include a pain memory processed by the sleeping brain and which have been put in a new context. The dreams of experiencing pain but to a lesser extent than in waking life would fit into the theory of combining waking life experiences in a new way.

However, for about 20% of the pain experiences, the participant stated that he has never experienced them in waking life. One might hypothesize that the participant watched films including the depiction of pain like “Lord of the Rings” or other films (cf. 14). This hypothesis is quite difficult to corroborate because the dreamer had to keep a diary about his/her viewing pain in others, in real life and in films – otherwise most of the memories will get lost. The other explanation would be that the dreaming mind can experience completely new things which the person has never experienced in waking life but that are wired within the brain like possible hearing in congenitally deaf persons (16). It would be very interesting to study whether watching pain experiences affect dream content.

Regarding methodological issues, it must be noted that the content analytic ratings were made by the participant himself. Whereas interrater reliability is very high for scales with high face validity like location of the pain or

causes of pain (17), the ratings regarding the relationship between dream pain and waking-life could only be provided by the participant, otherwise long lists of all pain experiences had to be compiled. A more detailed study would also include a pain diary in order to match waking-life experiences with pain dreams. As the findings are based on a single case, it would be very desirable to have a considerable sample of persons contributing pain dreams; unfortunately, the present study indicates that this will need large expenditure on side of the participants because pain dreams are so rare.

To summarize, pain can be found in dreams and, thus, the saying that pinching with pain indicates that you are not dreaming is falsified. Interestingly, a study (18) using pinching in a lucid dream also indicates that about two thirds of the dreamers experience pain due to the pinching in the dream. Even though a good part of the pain dreams can be easily explained by pain present during sleep or pain memories, some dreamed pain has never been part of the waking life of the dreamer. Whether these dreams can be explained by seeing this pain in others or by the fact that experiencing pain is hardwired into the brain is a still open question. Furthermore, it would be interesting to study the frequency of pain dreams in different samples of patients suffering from chronic pain.

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