

The 6/24 rule: A review and proposal for an international standard of a minimum of six hours of continuous sleep in detention settings

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Introduction

Sleep deprivation is one of the most prevalent and widely used methods of psychological torture. Its effects on the body are without direct physical aggression and include significant somatic and psychological impacts and suffering. It is used in multiple coercive environments as a way, among other purposes, of degradation, debilitation, punishment both before and during the interrogation of detainees. In this specific context, it produces cognitive, emotional and physical exhaustion, with the aim of obtaining submission or compliance, and ultimately information or confession (Pérez-Sales, 2017; Reynolds & Banks, 2010; Sveaass, 2008).

There is no universally accepted legal definition of what should be considered *sleep deprivation* in the context of torture. There are however converging positions from the legal and jurisprudential, and especially medical and psychiatric fields that allow for establishing sufficiently clear recommendations for the international community to take a reasoned stance. Within the framework of torture as defined in the United Nations Convention (UNCAT), we propose that **intentionally forcing a person to have less than 6**

hours of continuous, restful sleep must be considered a form of degrading treatment that could amount to cruel and inhuman treatment. We also suggest that when this daily sleep deprivation is intentionally prolonged in a sustained manner for three days or more, it should be considered as a form of torture in itself, irrespective of other coexisting or cumulative elements that may aggravate the condition.

Our proposal and position will be justified with due regard to available knowledge.

Background

Epidemiological and public health studies demonstrate a slight variability in individual needs of sleep: from 6 to 8 hours on average for adults, depending on age. An International Consensus promoted by the US National Sleep Foundation (Hirshkowitz et al., 2015; Watson, Badr, Belenk, & Bliwise, 2015) agreed that a healthy normal sleep pattern for an adult should include a minimum of 7 (+/- 1) hours of daily continuous sleep¹ (see table 1). A number of

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¹ Regarding adults and older adults, meta-analyses show there is a significant difference in the distribution of Stage 1, 2 (increase) and REM (decrease), but this is only detectable in Actigraphic studies (Ohayon et al., 2004).

reviews and meta-analyses of international cohort and longitudinal studies have also consistently shown that mortality is significantly increased in persons sleeping less than 6 (Åkerstedt et al., 2017) to 7 hours per day (Cappuccio, D'Elia, Strazzullo, & Miller, 2010; Yin, J., Jin, X., Shan, Z., Li, S., Huang, H., Li, P. & Liu, L., 2017). This is due to both metabolic changes that increase the risk of death-related diseases (Trivedi, Holger, Bui, Craddock, & Tartar, 2017) and a significantly higher rate of suicide in the affected persons (Pereira, Martins, & Fernandes, 2017). In their international study of reference to date on normal patterns of sleep across a lifespan, Ohayon, Carskadon, Guilleminault, & Vitiello (2004) developed a

comprehensive meta-analysis based on 65 studies, which found that sleep duration only slightly decreased around one hour from adult to old age in healthy individuals. Additionally, reviews of the reported average time of normal duration of sleep across countries and cultures, including data from pre-industrial societies, provide similar results. Analogous results are obtained in historical studies that compare duration of normal sleep patterns from decade to decade since such records were available (Hoyos, Glozier, & Marshall, 2015; Simonelli et al., 2018; Yetish et al., 2015).

The richness of this data demonstrates that for an adult (18-65 yrs), the minimum duration of necessary sleep is no less than

Table 1: *International Consensus on Normal Sleep Pattern (Hirshkowitz et al., 2015; Watson et al., 2015).*

Age	Recommended, h	May be appropriate, h	Not recommended, h
Newborns	14 to 17	11 to 13	Less than 11
0-3 mo		18 to 19	More than 19
Infants	12 to 15	10 to 11	Less than 10
4-11 mo		16 to 18	More than 18
Toddlers	11 to 14	9 to 10	Less than 9
1-2 y		15 to 16	More than 16
Preschoolers	10 to 13	8 to 9	Less than 8
3-5 y		14	More than 14
School-aged children	9 to 11	7 to 8	Less than 7
6-13 y		12	More than 12
Teenagers	8 to 10	7	Less than 7
14-17 y		11	More than 11
Young adults	7 to 9	6	Less than 6
18-25 y		10 to 11	More than 11
Adults	7 to 9	6	Less than 6
26-64 y		10	More than 10
Older adults	7 to 8	5 to 6	Less than 5
≥ 65 y		9	More than 9

6 hours and for older adults (>65) not less than 5 hours. The minimum duration for young adults and children is higher.

Table 2 collects selected impacts of sleep deprivation in the course of coercive interrogations, ill-treatment and torture, with key references selected among the many available. It shows how sleep deprivation affects some of the most essential cognitive and emotional functions of the brain.

Each of these effects can be traced neurologically. More than a decade ago, pioneering military studies in the USA using small samples, employing magnetic resonance imaging (fMRI) had already shown that after just 24 hours of sleeplessness there was clear vulnerability of integrated decision-making to sleeplessness that was accompanied by a breakdown in task-specific neural activity in prefrontal cortex that correlated with behavioural performance (Schnyer, Zeithamova, & Williams, 2009).

In a pioneering controlled study, Dai et al (2019) found using Functional Magnetic Resonance Imaging (fMRI), that prolonged acute sleep deprivation (lasting

20, 24, 32 or 36 h) exhibits accumulative brain atrophic effects which may provide the neurobiological basis for attention and memory impairments following sleep loss. Using a similar neuroimaging test, Chen et al. (2018) and Kong et al. (2018), found that the amplitude of low-frequency fluctuation and short-range and long-range functional connectivity density in four specific areas of the brain may be potential biomarkers of acute sleep deprivation with high discriminating value.

All these studies open the door in the future to potential detection and recognition of signals of the use of sleep deprivation as torture, as well as its impacts. It also provides a potential tool supporting the forensic analysis of credibility of allegations of sleep deprivation (SD).

These short term impacts and their neurobiological correlates are no surprise. More than fifty years ago, the CIA torture handbook, known as the KUBARK manual, warned against an excessive use of sleep deprivation: *“any attempt to produce compliant behaviour by procedures which produce...*

Table 2: *Impairments produced by sleep deprivation relevant to coercive interrogation, ill-treatment and torture.*

<ul style="list-style-type: none"> • Memory retrieval (Havekes & Abel, 2017) • Memory accuracy (Blagrove & Akehurst, 2000) • Cognitive functioning and reasoning (Killgore, 2010; Lim & Dinges, 2010) • Emotion recognition (Killgore, Balkin, Yarnell, & Capaldi, 2017) • Emotional reactions (Fairholme & Manber, 2015; Tempesta et al., 2010) • Moral judgment (Barnes, Gunia, & Wagner, 2015; Killgore et al., 2007; Tempesta et al., 2012) • Threat analysis (Goldstein-Piekarski, Greer, Saletin, & Walker, 2015), • Decision-making process and risk analysis (Horne & Harrison, 2000; McKenna, Dickinson, & Orff, 2007). 	<p>Only one night of sleep deprivation:</p> <ul style="list-style-type: none"> • Increases suggestibility and is sufficient to produce statistically significant differences in the number of false confessions during interrogation (Blagrove, 1996; Blagrove & Akehurst, 2000). • Increases the number of false memories recalled (Frenda, Patihis, Loftus, Lewis, & Fenn, 2014). • Amplifies the effects of physical pain (Lautenbacher, Kundermann, & Krieg, 2006; Schrimpf et al., 2015) • Increases fear-memory consolidation and post-traumatic stress symptoms (Feng, Becker, Zheng, & Feng, 2018).
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disturbances of homeostasis, fatigue, sleep deprivation, isolation, discomfort, or disturbing emotional states carries with it the hazard of producing inaccuracy and unreliability” (p. 88).

Sleep deprivation and mental and physical suffering

Some authors have previously proposed the existence of an antidepressant effect following 24 hours of sleep deprivation. Subsequent studies have shown that the effect is deleterious and of no clinical use (Boland et al., 2017). On the contrary, sleep deprivation has consistently been shown to exacerbate symptoms of mania (Krystal, 2012). A recent meta-analysis has provided strong evidence that insomnia is a significant predictor for the onset of depression (10 studies), anxiety (six studies), alcohol abuse (two studies) and psychosis (one study) (Hertenstein et al., 2019). A review of studies using poly-somnographic methods was also conclusive in showing that sleep continuity disturbances imply a trans-diagnostic imbalance in the arousal system, likely representing a basic dimension of mental health. Sleep depth and REM variables play a key role in psychiatric comorbidity processes and increase symptoms of affective disorders, anxiety disorders, eating disorders, borderline and antisocial personality disorders, attention-deficit-hyperactivity disorder (ADHD), and schizophrenia (Baglioni et al., 2016). Moreover sleep deprivation increases and amplifies the perception and effects of physical pain (Lautenbacher et al., 2006). Sleep deprivation, therefore, produces severe physical and emotional suffering.

Military and police regulations. Some military regulations in the past have established lower thresholds. The idea behind this is that interrogation is not a “healthy” situation and a certain level

of discomfort due to normal routine procedures must be expected. For instance, based on this reasoning, US Army Manuals during the Bush administration established a threshold of 4 hours of continuous sleep every 24 hours for up to 30 days (US Army, 2006).^{2,3} The medical evidence shown above raises questions regarding such practice, clearly showing that this constituted torture.⁴ Notably, this should be considered along with the American Central Intelligence (CIA) guidelines from a similar date, that stated that all detainees should have eight hours of uninterrupted sleep,^{5,6} a level much higher than the one proposed here.

The first 72 hours

The medical and psychiatric research reviewed shows unequivocally that the damaging effects of sleep deprivation and its impact in terms of suffering and impairment, in addition to its consequences

² FM 2-22.3, supra note 90, at M-30.

³ This has also been contested from within the US Military, as some high rank officers have publicly declared that even if it was useful, which is not evident, this threshold violates the Geneva Conventions (Bolgiano, 2010).

⁴ The idea that a person can sleep 4 hours or less a day in a prolonged manner cannot be justified by normal procedure. Medical research shows that there is a high level of suffering, a significant damage to the person and a high risk of false confessions. The person is simply not fit for interrogation.

⁵ Memorandum from Steven G. Bradbury, Principal Deputy Assistant Attorney General, for John A. Rizzo, Senior Deputy General Counsel, Central Intelligence Agency (10 May 2005): FN 36. 30.

⁶ The FBI’s new role, institutionalised under the High Value Interrogation Group (HIG), still permits manipulation of environments, prolonged isolation, and sleep deprivation, although the number of hours a detainee is allowed to sleep is not in the public domain (Greenberg, 2015).

in terms of lack of reliability of interrogations, are significant at the 24-hour mark. In the early and seminal review that provided the foundation for the CIA *Kubark Manual*, Albert Biderman and Herbert Zimmer (1961) had already established this 24-hour criterion. Furthermore, “*after forty-eight hours without sleep, some people become disorganized and ineffective, whereas some others have still been known to go with their functions largely intact*”, but “*most people deteriorate markedly after about seventy-two hours without sleep, and all deteriorate sooner or later*” (p. 44 and seq). They went further to say that “*the effects [of sleep deprivation] are intrinsically adverse, and the reaction of the individual is a factor only in determining how long these effects can be withstood*” (p. 49). Other authors have also suggested that 24 hours of sleep deprivation affects most individuals, with 72 hours as a definite limit for most human beings (Horne & Pettitt, 1985; Mikulincer, Babkoff, Caspy, & Sing, 1989). Furthermore, SERE training, designed for military surviving in extreme torturous conditions, permits soldiers 48h maximum of sleep deprivation (Intelligence Science Board, 2009).

Regarding recovery, a recent international multi-collaborative study demonstrated the need for a minimum of 14 hours of continuous sleep to recover to a normal neurophysiological sleep pattern following 58h of sleep deprivation (Hennecke et al., 2019). If this does not occur, the damage increases proportionally.

Overall, we can conclude that available medical studies provide strong grounding to the thesis that 3 days of continuous sleep deprivation is the limit for considering SD as torture in itself, irrespective of other external factors.

Sleep disruption

The emphasis on the number of hours of continuous sleep should not obfuscate the relevance of sleep disruption to the thesis proposed. Indeed, the *Kubark Manual* recommended sleep disruption as more effective than absolute sleep deprivation: “*Another objection to the deliberate inducing of debility is that prolonged exertion, loss of sleep, etc., themselves become patterns to which the subject adjusts through apathy. The interrogator should use his power over the resistant subject’s physical environment to disrupt patterns of response, not to create them. Meals and sleep granted irregularly, in more than abundance or less than adequacy, the shifts occurring on no discernible time pattern, will normally disorient an interrogate and sap his will to resist more effectively than a sustained deprivation leading to debility*” (pp. 92-93).

Sleep disruption in detention settings can be caused, intentionally or not, by multiple factors: hunger, thirst, high and low temperature, noise or sounds, isolation, overcrowding, or by routine or arbitrary practices; roll call, cell search, shouting at the detainee. Additionally, threats and other fear-inducing practices produce dread and anxiety that can induce disrupted sleep. The effects of sleep disruption are to be added to those of sleep deprivation.

A prospective study by Liu et al. (2019) on sleep disruption analysed the impact of awakening experimental subjects with a phone call every hour during a single night. The impact on the participants was dependant on the subject’s age: there were statistically significant changes in mood in young people and a decline in memory in older adults. Furthermore, a recent review has suggested that there is a relationship between sleep disruption and aggression through three converging effects: anger, perceived hostility and lowered inhibition

(Krizan & Herlache, 2016). These effects depend on disruptions and are independent of the total number of hours in bed. In other words, disrupting sleep has independent cognitive and emotional effects that add to the effects of sleep deprivation.

False confessions—linking length of interrogation and sleep deprivation

The combined effects of sleep deprivation and the physical, cognitive and emotional effects presented until this point, have been shown to produce an increased number of false confessions. This is due to increased suggestibility (Gudjonsson, 2003; Gudjonsson et al., 2016), weakness associated to physical or psychological deprivations during interrogation and the desire to put an end to the interrogation due to the prolonged suffering it entails.

Length of interrogation. The European Committee on the Prevention of Torture and Inhuman or Degrading Treatment or Punishment (CPT) Standards state that interrogations should be avoided for lengthy periods. However, their recommendations are not concrete (Morgan & Evans, 2001). The US Supreme Court prescribes the “totality-of-the-circumstances” test. Relevant factors in this test may include the application of physical abuse or psychological coercion; the time, length, circumstances, and place of the interrogation, and the age and education of the detainee, along with other considerations.

Average length of a police interview. Across various epidemiological studies on the self-reported duration of interrogation of suspects by the police, the average duration is found to be between 1 and 2 hours (Baldwin, 1993; Kassin et al., 2007). During a naturalistic study with real interrogations in juveniles, Feld (2013) found that the average interview lasted between 30 and 45 minutes. Experimental studies have consistently

shown a direct correlation between false confessions and length of interrogation (Madon, Yang, Smalarz, Guyll, & Scherr, 2013) with maximum risk of false confession for interrogations lasting 6 hours in length. The study detected interrogations sometimes lasting even up to 16 hours (Drizin & Leo, 2004). This data combined has led different authors to propose a maximum duration of interrogation of 2 to 4 hours, and up to 6 hours in special circumstances (Davis & Leo, 2012). **Any duration of interrogation longer than 6 hours would be considered coercive, even when brief periods of rest or refreshment are provided.**

Legal aspects

There is, at present, no international regulation providing clear guidance regarding sleep deprivation. This issue of Torture Journal includes a review on the topic by Ergün Cakal. He has summarized the legal framework of sleep deprivation on the basis of the jurisprudence of international tribunals to show that there is ample documentation of cases considering sleep deprivation as a form of cruel, inhuman or degrading treatment, or torture. Of particular note, in what seems the clearest indication of a length of time rule is the case of *Sadretidinov v. Russia*, in which the European Court of Human Rights, despite no violation being found in that case, found that a minimum of six hours of sleep per night was required before Article 3 of the Convention was breached.” (§96).⁷

Conclusion

Epidemiological and public health studies show, across countries and cultures, that an adult needs a minimum of 7 (+/-1) hours of

⁷ ECHR. (2016). *Sadretidinov v. Russia*, 17564/06.

sleep per day. In other words, the minimum duration of necessary sleep is no less than 6 hours. The available jurisprudence also seems to point to a 6 hour minimum for considering sleep deprivation. Anything less than this amount produces impairments in memory retrieval and accuracy, cognitive functioning, emotional recognitions and reactions, moral judgment and threat analysis among others. This, in turn, produces a breakdown in the person that will favour false confessions. Additionally, sleep deprivation leads to physical and psychological suffering sometimes of extraordinary severity. Sleep disruption gives rise to similar effects and ultimately potentiates the effects of sleep deprivation. These effects both appear and can be detected during the first 24 hours in most subjects but are present in all subjects after 3 days (72 hours) of partial or continuous sleep deprivation.

As a mnemonic rule, this can be labelled as the 6/24 x 3 rule.

Those who oppose establishing regulations that can assist both policy-makers and the judiciary argue that some level of sleep restriction is acceptable as part of normal detention procedures. Of course, this is true. Although solitary confinement is an unhealthy situation in itself, the Nelson Mandela Rules and the UN Special Rapporteur on torture recommendations, among others, establish a threshold of 15 days as the limit between suffering incidental to legally admissible solitary confinement and torture (Mendez, 2011). It is *prolonged* solitary confinement that is considered as amounting to torture in itself, irrespective of other cumulative elements. Similar reasoning should be applied to sleep deprivation.

In this issue, Torture Journal offers a collection of papers on the topic. Ergün Cakal reviews the definition

and prohibition of sleep deprivation as torture and ill-treatment in international law, and the potential contribution of medical and psychological knowledge to the development of greater nuance in legal standards. The review is part of an international cooperative study on sleep deprivation by the Danish Institute Against Torture (DIGNITY), the Public Committee Against Torture in Israel (PCATI) and REDRESS. The three organisations explain the process of elaboration of a protocol of exploration of SD and data with preliminary validation in Israel. The Protocol itself is also included in the section. Finally, Mahmud Sehwal and colleagues at the Ramallah-based Treatment and Rehabilitation Centre for Victims of Torture (TRC) present a study in which, for the first time, they document that sleep deprivation produced a number of impacts including severe suffering. At the same time, they show that conviction rates and sentence length were not increased as a result of admissions of guilt obtained from sleep-deprived detainees. In short, the paper suggests that sleep deprivation as torture is not only ethically questionable, but useless from the perspective of the interrogator.

This issue is complemented by an epidemiological study by Brenda Van Den Bergh and colleagues on knowledge, attitudes and practice about torture and torture practices among medical professionals in Tanzania. This expands early data published in our Journal in 2018 (Aon, Sungusia, Brasholt, Van Den Bergh & Modvig, 2018).

Pearl Fernandes and Yvette Aiello from STARTTS-Australia expand their previous publication of group therapy with Tamil survivors of sexual violence in a case report that exemplifies the narratives of survivors and how are they addressed in therapy.

Finally, we include a Debate. Efrat Shir presents a recent Israeli Supreme Court ruling—the case of Mr Firas Tbeish and the implications for the fight against torture in Israel. Hans Draminsky Petersen and John W. Schieman—members of the Torture Journal Editorial Advisory Board—provide comment.

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