

Sleep disorders and suicidal behavior

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I. Summary

Suicidality is a complex issue. It turns out to be heterogeneous on both levels; clinical, psychopathological and therapeutic.

In a prospective study on a population of 1,165,170 inhabitants for two years "from 2012 to 2014" we recorded 503 cases of suicide attempts, an average annual incidence of 21.77 per 100,000 inhabitants. For women 32.58 per 100,000 inhabitants, while for men it was 10.98 per 100,000 inhabitants. The two most affected age groups are [15-19] and [20-24]. As well as sleep disorders, found in 51.9% among suicide attempt cases, considered to be a risk factor for committing suicide. The recent work of Professor PHILIPPE COURTET (French congress of psychiatry 2013), LIU (2004) and GOODWIN.R.D. (2008) demonstrate a strong association between sleep disorders and the risk of suicide in depression, but also without any proven psychiatric pathology.

"Better understand suicide, to better prevent it"

The frequency of suicide and attempted suicide is increasing worldwide. Better knowledge of the predictive factors of suicide would make it possible to intervene upstream and take care of subjects at risk.

For a long time, authors have been pondering this question which has always been enigmatic: why does a human being kill himself?

For FREUD suicide remains an enigma "it is a desire to kill the object with which the subject has identified himself which provides the energy necessary for the accomplishment of the act, considered then as a reversal on oneself".

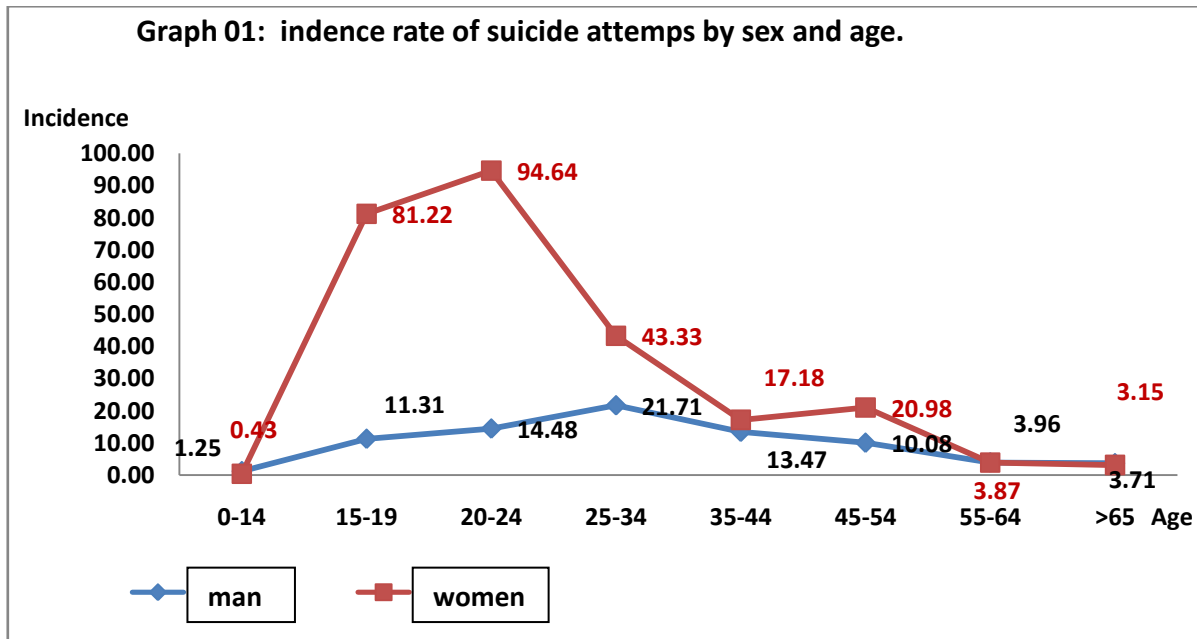
We will not be affected by the suicidal problem until the 18th century, when suicide is gradually registered in the context of alienation and then mental illness. Taking social factors into account and then conceptualizing the suicidal crisis will reintroduce a separation of the suicidal problem from mental illness.

Several risk factors, of varying importance, have been identified which allow general practitioners and psychiatrists to detect, assess and treat patients with high suicidal potential; which in the long term should make it possible to significantly reduce the number of suicidal behaviors.

It is widely recognized that the etiopathogenic mechanisms of suicidal behavior are multiple: bio-psycho-social. Data from developmental psychopathology show that the normal or pathological development of each individual is played out at the intersection between two realities. On the one hand, the neurobiological, genetic, cognitive characteristics and on the other hand, the environment of the subject in the broad sense, to have his family and social relationships, also the cultural aspect.

Recent studies have shown that epigenetic mechanisms regulating gene expression, without altering the DNA sequence, have been implicated in the regulation of suicidal behavior.

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Possible links between sleep disorders and suicide:

What links can we make between the two issues? How do sleep difficulties contribute to the problem of suicide? There is a two-way relationship between depression and sleep disturbances. Sleep deprivation has been shown to increase the risk of developing mood disorders (Schroder and Bourgin, 2012, cited in Billiard and Dauvilliers, 2012).

In our study, among the suicide attempt cases, 51.9% of cases had a sleep disorder in the days preceding the suicide attempt. (Table 01). Insomnia was found in the majority of suicide attempt cases (94.3%). (Table 02)

Table 01. Distribution of suicide attempt cases by presence of sleep disorder

Sleep	Workforce	Frequency (%)
Present	261	51.9
Absent	239	47.5
Unspecified	03	0.6
Total	503	100

Table 02. Distribution of suicide attempt by type of sleep disorder

Sleep disturbances	Workforce	Frequency (%)
Insomnia	246	94.3
Hypersomnia	13	5.0
Parasomnias	00	00
Unspecified	02	0.8
Total	261	100

The Depression:

Depression is the most common disorder among adolescents who die by suicide (Brent and aL, 1993; Houston, Hawton, and Shepperd, 2001; Runeson and aL, 1996) and adolescents who complete their suicide have more difficulty sleeping (Goldstein and aL, 2008). Sleep disturbances and suicidal behavior are among the manifestations allowing the diagnosis of depressive disorder (criterion 4: Insomnia or hypersomnia almost every day; criterion 9: Recurrent thoughts of death, recurrent suicidal thoughts without specific plan or attempted suicide or plan precise to commit suicide) (APA, 2013). Although not all people with depression necessarily commit suicide, a large proportion of them are at higher risk than in the general population and the two issues are closely linked. According to the study by Harris and Barracough (1997), which is a meta-analysis cited in Caillard and Chastang (2010) and covering 259 publications, the risk of suicide can even multiply by twenty compared to the general population.

Liu (2004) indicates in a study that sleeping less than eight hours per night is associated with a high risk of dying among adolescents, after adjusting for the depression variable, which would indicate that the association between sleep and suicidal behavior does not only go through depression. The negative effects of lack of sleep on judgment, concentration, impulsivity, emotions and mental disorders could influence the

association between sleep disorders and suicidal behavior. Sleep disturbances in young people are associated with difficulties in emotional regulation, i.e. more irritability and impulsivity (Dahl and Lewin, 2002; Jones and Harrison, 2001; Pasch, Laska, Lytle, and Moe, 2010). Among the many factors contributing to the risk of suicide, we find the severity of depression, the age at which onset of difficulties, the presence of personality traits such as impulsiveness, aggression and substance abuse (Caillard and Chastang, 2010).

Impulsivity:

In the issue of suicide, the presentation of impulsive traits would play a role, since it is recognized that impulsivity is one of the risk factors for taking action (Laflamme, 2007, cited in Rassy, 2011). However, its influence on suicidal behavior decreases with age (McGirr et al. 2008). The late development of the frontal lobe and its abilities related to behavioral control as well as emotions could be associated with the presence of this trait. Among the functions performed by the frontal lobes, we find the executive functions, the capacities of self-control and inhibition, the modulation of emotions, decision-making, judgment, planning, organization, mental flexibility and attention skills. Adolescence remains an age group more likely to show impulsiveness and recklessness (Steinberg, 2005). Among adolescents who died by suicide, there was more aggressive behavior and a higher degree of irritability than among other age groups (Brent et al., 1994). A study of teens aged 15 to 19 has shown a link between impulsivity and depression as well. inadequate emotional regulation (d'Acremont and Van der Linden, 2006). At the same time, it has been seen that lack of sleep would adversely affect emotional regulation skills (Jones & Harrison, 2001) and influence the development of impulsive traits and the manifestation of irritability. For Schmidt, Gomez, Gay, Ghisletta and Van der Linden (2009), there is a circular relationship between impulsiveness, problem behaviors and sleep difficulties.

Consumption:

There is a relationship between sleep difficulties and substance abuse such as alcohol and drugs. Adolescents with sleep disorders are more at risk of using alcohol or drugs, seeking sleep in these loopholes (Lund et al., 2010; Vallido et al., 2009).

Concerning alcohol, it is a substance which acts on the organism among others on the GABA and serotonergic receptors / neurotransmitters. First, its effect on GABA receptors causes a further decrease in neuronal activity and cognitive functioning. Alcohol has a sedative effect on the body and acts as a depressant on the central nervous system. Consequently, it decreases anxiety, reduces memory and attention skills and can induce sleep, although it is not of optimal quality. Second, the impact of alcohol on serotonergic receptors leads to inhibitory effects and impulsive behavior. Among other things, serotonin acts on time regulation, sleep and moods. An imbalance in serotonin can involve difficulties such as depression and suicide. Regarding drugs, certain substances like cannabis have effects similar to alcohol, playing on moods, acting as a depressant and impairing certain cognitive abilities.

Sleep disorder, alarm signal or risk factor?

There are important differences between a risk factor and a warning signal, related to suicide. One is distal, i.e. it indicates that there is a long-term risk, while the other is proximal, indicating that there are currently difficulties experienced by the individual, and that it would be necessary to intervene directly and immediately on the problem (signal). An alarm signal is episodic and indicates that the risk is imminent and deserves immediate action. For the American Association of Suicidology (Rudd et al., 2006), sleep difficulties are among the warning signs for suicide. According to Goldstein et al. (2008), several studies have reported that there is a relationship between sleep difficulties, suicidal ideation and suicide attempts in adolescence. Regarding completed suicides, few studies have investigated the relationship between suicides and sleep difficulties. The study by Goldstein et al. (2008) reports that there is a link between these two variables.

Distribution of suicide attempt cases according to the presence of sleep disorders and recurrences of suicide attempt:

There is a significant relationship between the existence of sleep disorders and recurrences of suicide attempt, in fact subjects having sleep disorders are 2.11 times more likely to have recurrences of suicide attempt than subjects free from sleep disorders (Table 03).

Table 03. Distribution of suicide attempt cases according to the presence of sleep disorders and recurrence of suicide attempts.					
Suicide attempt recurrences	Workforce	Sleep disturbances		P valeur	OR et IC à 95%
		Number of cases	Frequency (%)		
Presence	179	114	63.68	0.000083	2.11

Absence	324	147	45.37		[1.43-3.13]
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Sleep disturbances, found in 51.9% of suicide attempts cases, were found as a warning sign of suicide. The recent work of Professor PHILIPPE COURTET (French congress of psychiatry 2013), LIU (2004) and GOODWIN.R.D. (2008) demonstrate a strong association between sleep disorders and the risk of suicide in depression, but also without any proven psychiatric pathology.

II. Conclusion:

Suicide is a phenomenon that has long drawn the interest of researchers. It is a complex phenomenon that cannot be said to be tackled from a medical point of view alone. Other approaches, historical, philosophical, anthropological, theological ... have looked at the phenomenon.

One of the risk factors for suicide is sleep disturbance, particularly abnormal circadian rhythms and sleep deprivation. The results reveal major changes in sleep and a significant amount of sleep debt in the month leading up to the act of suicide.

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