

IS SLEEP DEPRIVATION INVOLVED IN DOMESTIC VIOLENCE?

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Received May 09, 2008; accepted November 20, 2008.

ABSTRACT

Background and objective: Sleep deprivation promotes an increase in aggressiveness; however, this effect has not been investigated in humans. Since high alcohol intake promotes desynchronized sleep deprivation and alcoholism is directly associated with domestic violence (DV), this study aimed to collect information on sleep characteristics, anxiety, and alcohol consumption by DV perpetrators.

Methods: Having this purpose in mind, 53 female victims of physical violence perpetrated by their intimate partners (DV group) were interviewed after providing free informed consent. The interviews took place on the occasion that the abused women registered a formal accusation at the Specialized Police Station for Women. The interviews were structured in a previously tested questionnaire.

Results: Thirty women from the general population without any complaint of DV composed the control group. The DV group showed prevalent insomnia, high sleep fragmentation, intense daily snoring, a tendency to disregard sleep hygiene rules and thus feel sleepy during the day, sleep complaints, high alcohol intake, and high anxiety levels. Increased aggressiveness from their partners after a poor night's sleep was reported by 58% of DV victims, and half of them reported having been battered on those days.

Conclusions: Data obtained support the possible involvement of sleep-deprivation-induced aggressiveness in DV etiology; this fact requires confirmation by further studies using other reliable methods.

Keywords: sleep deprivation, aggressiveness, alcoholism, anxiety, domestic violence.

INTRODUCTION

1. Sleep

It has been well established that sleep in mammals and birds encompasses two distinct functional states of the central nervous system (1). The first, which is characterized by the occurrence of slow and relatively high voltage variations in electrocortical activity, is called synchronized wave sleep (SS). Sleep profundity in this state is gradual and goes from sleepiness to deep sleep,

with light and moderate sleep as intermediate stages. Another state with comparatively lower voltage and higher frequency electrocortical waves constitutes REM sleep (also called paradoxical sleep or desynchronized waves sleep). In general, the latter occurs after a return to light sleep in the SS state and is concomitant with suppression of skeletal muscle tone, occurrence of rapid eye movements, muscular twitches, irregularities in respiratory and cardiac rhythms, oscillations in arterial pressure, dreams, and other less evident manifestations (e.g., muscular movements of

the stampedes and tensor tympani and spiked waves that take a ponto-geniculo-occipital path in the brain). The human adult usually presents cyclical SS and REM sleep every 90 minutes, with more SS deep sleep at the beginning of nocturnal sleep and more REM sleep during the second part of the night. These two types of sleep are compensated for after deprivation (2), indicating their homeostatic importance. In recent decades, consolidation of knowledge with respect to sleep and its disturbances and treatments has enabled the establishment of a new medical specialty called Sleep Medicine (3).

2. Sleep deprivation and aggressiveness

Attempts to infer the function of sleep starting from the effects of its deprivation have shown an increase in aggressiveness, which is expressed as antisocial behaviors (4). Dement (1960) demonstrated that this increase is an effect of selective REM sleep deprivation, and he also demonstrated other concomitant effects like hyperphagia, hypersexuality, visual hallucinations, and sleep compensation (2). The author and his collaborators (5) found that aggressiveness resulting from REM sleep deprivation is manifested by an increase in the number of fights among rats, a fact widely documented in several laboratories (6-11). A large portion of the population is afflicted by sleep disturbances resulting in sleep deprivation (3), and there is a trend in contemporary life toward a 24-hour society in which sleep deprivation is the most prominent aspect (12). However, only a reduced number of studies on human aggressiveness induced by sleep deprivation have been undertaken. One of the few existing studies points to the possibility that sleep deprivation triggers violent behaviors that occur during sleep (13).

3. Effects of alcohol intake on sleep

One extensively studied cause of sleep deprivation and alteration is the ingestion of alcohol. In healthy volunteers, intake of ethyl alcohol at low doses promotes a reduction of REM sleep in the first half of the night and a compensatory increase in the second half (14-16). Healthy individuals develop tolerance toward this effect (15-17). The use of low doses for five consecutive nights (16), however, causes a compensatory rebound of REM sleep, indicating the accumulation of short daily deprivations. Lobo (1995) demonstrated that healthy individuals, even with total or partial prior sleep deprivation for 40 hours, exhibit reductions in desynchronized sleep when sleeping under the effect of ethanol at a concentration of 0.9g/kg. Different studies agree that light sleep (stage 2) and deep delta-wave sleep (stage 4 of SS) are generally increased in the first part of nocturnal sleep while the influence of ethanol remains present, whereas these are both reduced in the second part of the night (18). Total suppression of REM sleep occurs with consumption of doses above 1.0 g/kg (considered high doses), and suppression of sleep is proportional to the blood ethanol concentration (19). Alcoholics (abusive alcohol consumption and dependence on ethanol) present a short duration of superficial sleep that is fragmented by frequent waking. Intense compensation of REM sleep (80 to 100% of sleep time) occurs before the onset of delirium tremens when alcoholics are going through an abstinence period (20). Sleep time in relation

to the period spent lying down (sleep efficiency) and the duration of SS deep sleep remain reduced in chronic alcoholics, even after two weeks of abstinence (21). These conditions can persist for 9 months or longer, and sleep fragmentation can last through 21 months of abstinence (22).

4. Alcoholism and Domestic violence

Alcoholism is recognized as a factor linked to domestic violence (DV) (23-27). Such violence is defined as physical aggressions perpetrated against those who share the domestic space, particularly children, women, and elderly people. Mental diseases, suffering from DV and other mistreatments in childhood, social acceptance of violence, lack of communication, sex, vulnerable self image, frustration, and changes in routine are some factors that have already been associated with the DV-alcoholism relationship (28). Because anxiety is the characteristic emotion of defensive behaviors, it is perfectly understandable that abused children become anxious adults. Many anxious individuals make use of alcoholic beverages to reduce anxiety levels and thus become frequent users or people dependent on alcohol (29-33). The high correlation index between alcoholism and DV (34-39) leads to the assumption that alcohol may be a substance that triggers aggressiveness or that may inhibit critical sensibilities; it may therefore be a prevailing cause of domestic violence.

5. Sleep deprivation and the alcoholism-DV relationship

The primary role performed by the ingestion of alcoholic beverages in DV etiology is undeniable, although the existence of many alcohol users who do not commit any kind of violence indicates that this substance does not directly induce crises of violence. Indeed, the observation that 76% of DV cases are perpetrated when the aggressor is sober (40) suggests that either violence is generated by one or more factors concomitant with alcoholism or that other factors independent of drinking contribute to induce aggression. The possibility that alcohol deprives the individual from REM sleep and that such deprivation facilitates the expression of aggressive behaviors seems to be a plausible hypothesis.

6. Domestic violence as a social problem

DV has occurred throughout the course of human history. Until a few decades ago, it was considered a problem that should be restricted to the familial sphere. The facts that domestic violence is increasing at alarming rates, victimizing individuals all over the world, bringing suffering and sometimes serious and irreversible consequences, and provoking consequent monetary and social costs (41) has led to the current concept that DV is both a crime and a public health concern (42). It thus requires extensive research (43) and calls for social intervention measures.

According to a survey conducted by the World Society of Victimology (an entity headquartered in the Netherlands) in 54 countries, the percentage of abused women in Brazil reaches 23% (44). Data published by the National Human Rights Movement, however, suggest that the Brazilian mean is around 66% (45). This discrepancy is due to the fact that 52% of abused women do not register any complaint; furthermore, 30% of those who do file a complaint return to the police station to drop the complaint.

DV perpetrated against females is responsible for approximately 20% of hospital emergency cases in the United States (46,47), where about 30% of murdered women are killed by husbands or intimate partners. The costs, which indicate the seriousness of the problem in the US, were calculated at approximately 5.8 billion dollars in 1995; in 2003, this sum was equivalent to 8.3 billion dollars (48). Individually, women who live with violent partners have a three times higher chance of incurring average expenses above five thousand dollars than do women who do not live with this kind of partner (49). According to the World Bank, one out of five cases of female absenteeism at work is a result of DV. The Inter-American Development Bank (IDB) suggests that the cost associated with this figure ranges in the United States from 10 to 67 billion dollars per year, depending on the direct and indirect expenses included in the assessment.

7. Proposition

The dimension of the DV problem highlights the importance of studies examining the relationship between sleep deprivation and DV. Thus, the aim of this study was to collect data that would confirm that there is a close link between anxiety, the use of alcoholic beverages, and sleep deprivation in most DV cases.

METHODS

A total of 53 abused women were interviewed after being informed of the purpose of the research/study and ensured of confidentiality, total anonymity, and the right to stop the interview whenever they wished. Free informed consent was obtained from 85% of participants; two abused women refused to proceed with the interviews. These interviews were conducted at the Specialized Police Station for Women in the cities of Araras, Bauru, Piracicaba, and Sao Paulo on the occasion when a complaint about DV was registered. These interviews were structured in a standardized questionnaire previously validated in a pilot study. The partners of the women interviewed constituted the group of DV perpetrators evaluated (DV group). Thirty women from the general population (GP group) living in neighborhoods similar to those where the DV victims lived were invited to participate in these interviews after explanations were given and consent was obtained; data regarding their partners made up the control group. The interviewers did not participate in data analysis to avoid interference of any possible bias.

The questionnaire comprised 12 questions for assessing general data and the occurrence of DV. A total of 38 questions were related to sleep, and those on sleep complaints were posed three times at different moments and in different forms to ensure understanding and evaluate the coherence of responses. Thirteen questions addressed the use of alcoholic beverages, 16 were related to anxiety levels, and 2 were asked at the end of the interview to assess the participant's opinion on the aggressor's behavior and aggressor's acceptance of therapy. In addition, subjects were thanked and provided with instructions regarding the possibility of accessing the results of the study.

The questions concerning sleep were formulated based on

sleep medicine manuals, and they dealt with sleep hygiene rules, manifestations predictive of sleep disturbances, sleep complaints, daytime sleepiness, and daily sleep hours. The use of alcoholic beverages was investigated to enable classification of abstemious individuals (those who never drink), occasional or social drinkers (those who sporadically drink at home or at social events), systematic users (those who usually drink more than three times per week), and dependent individuals (those who drink daily until intoxication, borrow money to buy drinks, or are reserved when sober). Anxiety levels were assessed by means of questions related to drinking and anxious behaviors; such questions allowed the classification of non-anxious (up to 6 patterns of anxious behavior), anxious (from 7 to 10 patterns), and very anxious (above 10 patterns) individuals as evaluated in the pilot study. The study to validate the questionnaire was conducted with respondents who were reportedly anxious or non-anxious and who presented different levels of alcohol intake; it included bearers and non-bearers of sleep disturbances.

Data obtained were expressed as absolute frequencies or percentages and as means with their respective standard deviations. The Chi-square test was utilized to establish statistical significance between frequencies, whereas the t-test was employed to compare means. In both cases, a significance level of 0.05 was used.

RESULTS

1. Sample data

The sample of females from the DV group consisted of 43% married women, 43% in non-official unions, 10% separated, one single, and one an ex-girlfriend. Except for the last case, all women were mothers (2.1 ± 0.9 children); three had at least one child from a prior relationship. The average time of cohabitation with the aggressor was 10.5 ± 8.5 years, and only three women had registered a complaint by the time of the first aggression. Twenty-one women reported having been battered countless times before (some of them daily for years), but the first complaint had been registered only on the occasion of the interview. Nineteen women reported multiple situations of abuse prior to any registration at the police station. Five women had previously registered complaints regarding threats, but the occasion of the interview was the first time they had registered a complaint regarding physical abuse. Nineteen women from the GP group were married (63%), 10 were in non-official unions (33%), and one was a fiancé (4%); the average length of their current relationship was 9.6 ± 7.9 years. The mean number of children was 2.7 ± 2.3 . No case of DV was reported in this group.

The average age of the DV perpetrators was 34.1 ± 9.5 years, distributed in a relatively homogeneous way from 18 to 60 years. The average family income in this group (varying from R\$ 150 to R\$ 15,000) was slightly lower than that of the control group on account of 10 individuals who did not work (unemployed or idle). Six individuals in the DV group used illegal drugs, three made regular use of tranquilizers, two were taking anticonvulsants, and one regularly used a cocktail of drugs to control HIV. The DV group included one case of physical handicap, one case of

hospitalization for mental disease, one leprosy case, two cirrhosis cases, one gastric ulcer carrier, and one case of rhinoplasty to suppress snoring. Nine individuals from the group of aggressors had already been previously accused of or arrested for violence; one was accused/arrested for robbery; two were accused of or arrested for drug dealing; one was arrested for failing to pay children's support. The GP group included two carriers of chronic renal problems, one case of gastric ulcer, and one case submitted to testicular surgery. One individual from this group had previously been cited judicially for violence, but the act had not occurred in the domestic environment.

Three interviews conducted with DV group members were excluded from the subsequent analysis for the following reasons: 1) there was a lack of data because sexual intercourse had occurred only once, 2) there was a lack of data because woman had taken heavy sleeping drugs, and 3) the complaint had been registered by the aggressor's daughter.

2. Data on sleep

The GP group included 9 individuals (27%) who did not have a regular sleep schedule. Variations in total daily sleeping hours were detected in 6.7% of the sample. Total sleep time below 7 hours was reported in 26.7% of the group, between 7 and 9 hours in 56.7%, and more than 9 hours in 10%. Corresponding data obtained in the DV group revealed that 54% of the sample did not have a regular sleep schedule, with 13% showing variation in total daily sleeping time. A sleeping period below 7 hours was present in 32%; between 7 and 9 hours in 36%, and more than 9 hours in 17%. One individual who worked as a nighttime watchguard reported that he used to sleep in two distinct shifts, each of irregular duration. Termination of sleep by means of an alarm clock or a functional equivalent occurred in 50% of both the GP and DV groups (excluding individuals who did not work).

Both groups evaluated showed a high incidence of individuals who did not follow sleep hygiene rules. In the DV group, 98% of the individuals reported that they did not follow any of these rules; this percentage in the GP group was 97%. The mean number of non-observed rules was 1.9+0.9 in the GP group and 2.7+1.4 in the DV group. Table 1 shows the frequency according to which hygiene rules were transgressed in the samples evaluated.

Table 1: Sleep hygiene in perpetrators of domestic violence. Percentage frequency of individuals who do not follow sleep hygiene rules in a sample of DV perpetrators (DV group, n=50) and in a general population sample (GP group, n=30).

Item of hygiene	DVgroup	GPgroup
Irregular bedtime	54	27
Drinking coffee, soft drinks, etc., before bedtime	82	77
Drinking alcoholic beverages before bedtime	58	30
Eating a heavy meal (before bedtime)	52	57
Practicing physical exercises before bedtime	6	7
Sleeping in a lighted environment	24	7
Sleeping in a bustling environment	30	23
Sleeping in a noisy environment	22	17
Sleeping with children in the same room	7	38
Sleeping on an empty stomach	-	3

Among the population of DV perpetrators, the number of individuals with manifestations predictive of sleep disturbances was 49 out of the 50 evaluated (98%). In the GP group, this parameter was 20 out of 30 (67%). The Chi-square test of independence (1 g.l., p<0.05) indicated that the number of individuals showing manifestations predictive of sleep disturbances was lower in the GP group. This was also detected in the mean number of these manifestations (DV=3.3+1.4 and GP=1.7+1.0). Table 2 shows that the DV group exhibited a higher incidence for almost all items. Equivalent frequencies were observed for the few cases of sporadic snoring, low frequency of sleep fragmentations, and coughing. The general mean concerning sleep fragmentation, however, was 2.6+1.2 in the DV group (excluding three cases showing a variable number of fragmentations) and 1.6+0.7 in the GP group. The DV group contained 13 individuals (26%) with problems resuming sleep after waking up in the middle of the night; this problem was not observed in the GP group.

Table 2: Sleep problems in DV perpetrators. Percentage frequency of manifestations predictive of sleep disturbances reported by victims of domestic violence (DV group, n=50) and by people from the general population (GP group, n=30).

Manifestation reported	DV group	GP group
Delay to fall asleep	32	10
Excessive motion during sleep	54	27
Reported nightmares	15	7
Waking up, sleep interruptions (fragmentation)		
1 time	12	30
2 times	18	17
3 times	10	7
4 or more times	20	0
Variable each night	3	0
Totals	92	53
Delays to resume sleep	26	0
Snoring		
Low and sporadic	2	17
Low and daily	10	3
High and sporadic	10	20
High and daily	42	17
Totals	64	57
Coughing	8	10
Teeth grinding	14	0
Groaning during sleep	4	0
Waking with shortness of breath	6	0
Tremor during sleep	2	0
Frequent sneezing during sleep	4	0
Sleep talking	2	0
Convulsions during sleep	2	0
Complaints about lack or poor quality sleep	50	7
Recognized insomnia	4	3

Complaints about insufficient sleep or poor sleep quality reported by the aggressors themselves to their female partners (e.g., observations such as "I cannot get to sleep", "I would like to sleep more", "I haven't slept well", or "It is as if I haven't slept at all") showed an incidence of 50% in the DV group; in the GP

group, this percentage was 7%. The Chi-square test revealed that this difference was statistically significant (1 gl, $p < 0.05$).

Signs predictive of daytime sleepiness were detected in 53% and 88% of GP and DV group members, respectively. In the GP sample, 41% began whispering while watching TV; this behavior occurred in 54% of the DV sample. Sleepiness after lunch showed an incidence of 27% and 54% in the GP and DV groups, respectively. Sleeping easily while traveling as a passenger was reported by 10% of the GP group and 20% of the DV group. Ease in sleeping during the daytime was found in 23% of the control group but reached 68% in the DV group.

3. Alcohol intake

Among the members of the DV group, 22% were abstemious, 20% were social drinkers (drank only occasionally), 24% were systematic alcohol users, and 34% were deemed alcohol-dependent. Among the members of the GP group, 13% were abstemious, 57% were social drinkers, and 30% were systematic alcohol users; no cases of dependent individuals were registered.

4. Evaluation of anxiety

The average score on the anxiety scale used was 5.1+3.0 points for the GP group and 12.2+3.3 points for the DV group. The composition of the GP group consisted of 70% normal individuals and 30% anxious individuals. In the DV group, this composition was 8% normal, 14% anxious, and 78% highly anxious; the difference in the last of these rates was statistically significant (Chi-square, 1 gl, $p < 0.05$). In the DV group, the mean anxiety score was 12.3+3.3, which was higher than the GP score of 5.1+3.0 (t-test, $p < 0.05$).

5. Correlation with aggression

The 25 DV perpetrators who complained to their female partners about poor sleep quality showed high means for data predictive of sleep disturbances (4.4+1.1/person) and high anxiety levels (9 to 17 points). High rates for the number of individuals showing alcohol abuse (68%) were observed in this group, in which 17 out of the 25 individuals were systematic users or dependent on alcohol.

Eight women (27%) from the general population reported their partners' increased irritability after a poor night's sleep. This fact was reported by 56% of women included in DV group, 28% of whom stated that they had been battered on these days. Some women confessed that they had never paid attention to this fact or to the frequency of aggressions; these women therefore could not point out the days on which a greater tendency toward violence occurred.

6. Treatment

Twelve women from the DV group (24%) said that their partners had agreed to undergo clinical treatment for aggressiveness; 60% did not make any comment on the subject; 4% were trying to convince their partners to undergo treatment; 2% said their partners had begun treatment but had given up; 4% did not know how to answer the question.

DISCUSSION

The results obtained in this study indicate that perpetrators of DV show a relatively high incidence of sleep alterations concomitant with high levels of anxiety and alcohol intake compared to individuals in the general population who do not incur in this type of transgression. Acceptance of the validity of these data supports the hypothesis that anxiety and sleep alterations can mediate the relationship existing between alcoholism and aggression in many DV cases.

The accurate methodology adopted in this study ensures data reliability. First of all, it is likely that the participants' emotional states on the occasion of the interviews maximized the tendency to highlight the aggressor's negative aspects. The fact that probing for specific responses regarding sleep was conducted immediately after obtaining general data without the interviewer indicating an opinion toward the aggressor appears to have reduced such a tendency. Second, the possibility that higher rates for items predictive of sleep disturbances in the DV group resulted from the questionnaire and/or from interviews is not sustainable, since the same instrument permitted detection of different levels of sleep problems in the GP group. Third, the validity of the items in the questionnaire relative to sleep as indicative of disturbances is undeniable. These items are the same as those utilized for clinical prospecting of sleep disturbances and are based on data from Sleep Medicine manuals (50).

Our data also indicate greater sleep deprivation among DV perpetrators. The sleep hygiene rules are precepts established with the purpose of obtaining sufficient and good quality sleep. Therefore, it is clear that a high rate of transgressions in the DV group impairs sleep, resulting in sleep reduction and/or poor quality. By the same token, data like greater sleep fragmentation, difficulty falling sleep, and the presence of daily snoring point to disturbances that jeopardize sleep quality and/or quantity. The observation of a larger number of individuals with daytime sleepiness among DV perpetrators corroborates the lack of refreshing sleep. The fact that 50% of respondents reported having heard complaints from their aggressors about the quality and/or quantity of their sleep no doubt reinforces the information that sleep alterations are prevalent among DV perpetrators.

According to data obtained, alcohol ingestion before bedtime is the sleep hygiene rule most frequently transgressed by the population of DV perpetrators. Several studies point to the use of alcoholic beverages as a means to self-medicate for anxiety (29,30,32,33). Thus, the observation that DV perpetrators showed high anxiety levels and abused alcohol is not surprising. Anxiety itself is a factor that promotes insomnia (51). Alcohol at high doses initially promotes an increase in delta-wave stage (deep sleep) and deprivation of REM sleep in individuals with normal sleep, and its effects are more dramatic in carriers of sleep pathologies (18). Sleep deprivation in turn brings about stress (52) and increased anxiety levels (53), a situation that leads the individual to drink more (54,55). These factors thereby create a vicious cycle that significantly reduces sleep quality and quantity. The ingestion of large quantities of ethanol promotes sleep fragmentation, as it increases the need to urinate and/or drink water. Moreover,

as has been demonstrated, alcohol intake promotes sleep deprivation when the ethyl content in the blood exceeds certain limits. A set of factors thus indicates that DV perpetrators aggravate sleep deprivation as a result of poor sleep hygiene and/or sleep disturbances (including anxiety, which promotes insomnia), adding to the effects of alcohol-induced deprivation.

As already mentioned, sleep deprivation (particularly of REM sleep) increases aggressiveness in laboratory animals. Studies on aggressiveness conducted in humans show that aggressiveness increases with exacerbation of irritability and also increases the number of antisocial behaviors (2;4). Since the data obtained in this study indicate a marked sleep deprivation in DV perpetrators, we suggest that sleep deprivation is an important factor in the etiology of aggression in a large proportion of cases. The observation that 56% of women in the DV group associate exacerbation of their partners' bad mood with the habit of battering them after a poor night's sleep demonstrates the involvement of sleep deprivation in the etiology of a large proportion of DV cases.

The existence of cases of sleep disturbances and alcohol ingestion in the control group that did not culminate in DV leads to the conclusion that sleep deprivation is associated with other factors that trigger violent acts. These factors may include antisocial personality characteristics, high stress levels regarding the relationship, the abuse of other drugs, strong beliefs with respect to the connection existing between alcohol consumption and problems in the relationship (36), sequelae of violence during childhood, parental alcoholism (24), and employment situation (23).

The involvement of anxiety, alcoholism, and sleep deprivation in DV etiology finds support in another line of evidence from the literature. Aggressive behaviors can be offensive or defensive. A defensive attitude or attack is a natural manifestation of anti-predatory function. It can also be expressed in the form of "wild running", depending on the situation in which the prey finds itself (56). Disarrangement in neural organization mechanisms can trigger these behaviors in inappropriate situations, thereby giving rise to the anxiety disorder known as panic syndrome. Sandrin and Hoshino (11) observed that fights among rats deprived of desynchronized sleep were eminently defensive, and they suggested that such fights may be manifestations of panic. This fact has been proven by the reduction of fighting with fluoxetine treatment (57), a substance effectively used for treatment of panic syndrome (58). Furthermore, the administration of sodium lactate, a substance that induces crises for the diagnosis of panic syndrome, increases the number of fights among sleep-deprived rats (59). De Paula and Hoshino (2002) demonstrated that animals showing high levels of anxiety were susceptible to manifesting uncontrollable flights of panic fight when deprived of sleep (60). Thus, sleep deprivation resulting from high anxiety levels and sleep disturbances potentiated by alcohol abuse can be seen as a factor that facilitates aggression in DV perpetrators. In fact, it has been demonstrated that the administration of lactate to these individuals triggers panic attacks, with sensations similar to those the aggressors report feeling when attacking their female partners (61). The comorbidity between anxiety disorders (panic) and alcoholism is an acknowledged fact believed to be a mutual determining factor (31,62).

Analyzing our data with regard to the objective established for

this study, we suggest that anxiety (including panic), alcoholism, and sleep deprivation exhibit relationships important in the etiology of DV. As described above, this occurs in 76% of DV cases without inebriation.

Although data from this study suggest that other clinical factors may be involved in DV etiology, the findings reported herein do not suggest that DV should be decriminalized. The principle is simple: DV violates human rights.

ACKNOWLEDGEMENTS

The authors are grateful for the collaboration provided by the respondents and officers at the Specialized Police Station for Women in the cities of Bauru, Araras, and Piracicaba as well as the First Police Station of Sao Paulo.

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