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ORIGINAL ARTICLE

Differentiated health problems according to gender among adolescents reporting sexual or physical assault

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Abstract
Background and objectives: Gender studies previously enlightened our research. Gender differences among traumatized adolescents remain understudied. We hypothesized that comparing health problems between adolescents reporting physical assault and adolescents reporting sexual assault could show a gender difference and could help to identify risks.
Methods: In our 1993 cross-sectional epidemiological representative survey of adolescents in France – 14 278 enrolled in the school system, and 3005 who had left school – we selected the 5893 adolescents in the 16–20 age span, and extracted the sub-sample of 1324 who reported sexual or physical assaults (23%). The symptoms noted were not necessarily a consequence of the assault, but they clearly captured health states in these groups.
Results: The rate of sexual assault reports by adolescents who left the school system (9.4%) was higher than in the other group (4.2%, $p < 0.001$). The symptoms selected for the comparisons sexual / physical were chosen because they were significantly more frequent ($p < 0.001$) among adolescents reporting assault compared to non-assaulted adolescents. For each gender and each type of assault, these symptoms were explored using logistic regressions, adjusting age and schooling status (being inside or outside the school system): among boys, health problems seem more salient when the assault report was sexual rather than physical (e.g. suicide attempts: OR = 3.9, 95%CI = [1.9–8.0]); in contrast, among girls, the two groups seem equally affected.
Conclusion: This gender study highlights the risk of suicide among assaulted adolescents. Sexually assaulted boys require care, including suicide prevention, even though they seem to cope effectively with physical assault.

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Potential traumatic events are not associated with people's health problems in the same manner.[1,2] Moreover, subjects do not cope with certain potential traumatic events with the same efficiency; for instance, a simple car accident will not affect a subject with no adverse history as badly as it will affect a child-abuse survivor or children of Nazi camp survivors.[3] On the other hand, with regard to associations of clinical features with a history of traumatic events, in the course of the twentieth century in France, the consequences of trauma on personality, affects and behaviours have long been supposed to be pre-existing causes of exposure to trauma, including social drifting and somatic or behavioural disorders.[4] One study showed that, among adolescents with a clearly non-traumatic disorder, such as bipolar or schizophrenic disorder, these same clinical manifestations were significantly more observed ($p < 0.05$) among those who, had experienced a trauma in addition to their disorder.[5] For one century in France, Babinski's notion of ''pithiatism'',[6] replacing Charcot's previous category of ''traumatic hysteria'',[7] was based on this inversion of poles. Finally, in epidemiological surveys, the frequent difficulties in following subjects who leave mainstream societal systems such as school or work, have prevented some studies from reaching the full conclusions that they had initially hypothesised. In all events, whether causes or consequences, these relatively specific clinical symptoms were present in the groups of adolescents who had experienced traumatic events, and they should be treated.

With this study on assaulted adolescents from the general population, we aimed:

1 To observe the incidence of assaults in certain groups of French adolescents not hitherto identified;
2 To determine to what extent the study could provide psychobehavioral indicators that could be used to screen for traumatized adolescents;
3 To differentiate, using logistic regressions adjusted for age and schooling (being inside or outside the school system), the health problems associated with sexual versus physical assault report in each gender. It was hypothesized that a comparison of health problems between adolescents reporting sexual assault and adolescents reporting physical assault could show a gender difference and help identify potential risks.

Methods

Procedure

With our cross-sectional epidemiological survey on adolescents from the general population in France – one part concerning 14 278 adolescents who were enrolled in the school system, and another concerning 3005 adolescents who had left school – 5893 adolescents in the 16–20 age span were pooled. Then from this sample, the sub-sample of 1324 adolescents who reported sexual or physical assault (23%) was extracted. This kind of epidemiological survey has been regularly carried out in France by the National Institute of Health and Medical Research (INSERM) together with the Ministry of Education. They cover not only assault, but also many topics in which the different researchers involved are interested.

The 14,278 school adolescents were sampled so as to be nationally representative of state secondary school attendees. These 14,278 students were randomly chosen through a 4 stage selection procedure: the 14,278 students were selected from 578 classes, the 578 classes were selected from 186 schools, the 186 schools were selected from 8 regional education areas, and the 8 regional education areas were chosen among the 22 French academic regions. Below are further details on this sampling process.

In France, 80% of students go to state schools and 20% to private schools. In each selected academic region a random sample of 1% was drawn. The schools were randomly selected according to the type of school (junior high school, senior high school and vocational school). Three school principals refused to participate (their schools represented 3% of the initial sample), 7% of the students were absent on the day of the survey, 1.4% did not participate for school reasons (preparation for examinations, training programs) and 1.3% of parents and 1% of adolescents refused to participate. School nurses or school doctors explained the procedure to the students in class and remained there, available for further information, during the time the students were given to fill in the questionnaire.

The health state of the 3005 adolescents outside the schooling system was in line with the health realities of the 90 000 adolescents who leave the French school system each year without a diploma of any kind. The majority of epidemiological data on adolescent health focuses on student populations. Yet adolescents who have dropped out of school may have done so, precisely because of health problems. Several administrative zones within the academic regions participating in the student survey described above were selected. Each zone carried out the survey over a 3–6 month period on all the adolescents (3005 subjects) who had left mainstream school system and had then enrolled on a systematic program of assistance to acquire minimum basic knowledge.

Measurement of variables

The main part of the questionnaire was derived from the Choquet-Ledoux-Menke study[8] and the WHO-HBSC study (World Health Organisation, Health Behaviour among School Children),[9] but in these earlier questionnaires psychological trauma was not included : one of us therefore proposed screening items already included in his previous French and Canadian studies[5]: Ät some time in my life I have been victim of sexual assault(in French: Äu cours de ma vie, j'ai été victime d'une agression sexuelle). This statement was followed, by details on the type of sexual assault (rape, rape attempt or other sexual assault), and was preceded by questions about physical assaults with some of their characteristics (e.g. with or without a weapon). For physical assault, the screening item was: ''At some time in my life I have been a victim of physical assault'' (in French: ''Au cours de ma vie, j'ai été victime d'une agression physique''). Medico-psychological symptoms over the past 12 months were assessed using items with multiple-choice resposes (never, seldom, fairly often, and very often). The

answers were grouped as follows: [fairly often + very often], and [never + seldom].

Statistical analysis

The group reporting physical assault alone and the group reporting assaults that involved sexual violence were compared using stepwise logistic regressions. Odds ratios adjusted for age and schooling status were calculated (OR), as well as their 95% confidence interval (95% CI), the dependent variable being the symptom and the covariates being age, schooling status and type of assault. In these stepwise logistic regressions, the covariates were introduced one by one into the model, starting with the one having the strongest link to the dependent variable, and at each step the covariates were retained within the model only if their link to the dependent variable was strong enough ($p < 0.10$). SAS version 6.08 on a VAX 6000 was used for bivariate analysis and BMDP software[10] for stepwise logistic regressions.

Results

The health problems selected for the sexual / physical comparisons were all chosen because they were significantly more frequent ($p < 0.001$) among assaulted adolescents than among non-assaulted adolescents.

Sociodemographics and lifestyle

Among the 5893 adolescents in the 16–20 age span, comprising subjects inside and outside the schooling system, there were 2965 girls and 2927 boys. Among them, 4767 were studying at school and 1126 had left without any diploma. The mean age was 17.7 years (SD = 1.4) in both genders. Overall, 23% had been assaulted in their lives, 5% sexually and 18% physically. The frequencies of physical assault were similar whatever the schooling status, but sexual assaults were twice as frequent (9.4 % vs 4.2%, $p < 0.001$) among adolescents outside the school system. For boys (60% of the adolescents having experienced assault), the assault was physical for more than 9 out of 10, and for girls (40% of the assaulted adolescents), the assault was sexual for almost half.

The sub-sample of 1324 assaulted adolescents extracted from the 5893 adolescents, was composed of 802 boys and 522 girls, 1062 inside the school system and 262 outside. Their mean age was 17.8 (SD = 1.4). Among the sexually assaulted adolescents, 32% had a father in an executive profession (versus 37% among those who had been physically assaulted only). Two lifestyle features did not distinguish those with a report of sexual assault from those with a report of physical assault. They were: *going out often to cafés, nightclubs or hanging out in town* (66% vs 67%), and *having no friend or only one friend* (12% vs 7%). However, these global frequencies mask the fact that among boys there were significant differences between physically and sexually assaulted boys for these lifestyle features. These differences recall the personality changes after extreme trauma described in the WHO ICD-10 and this issue needs to be discussed. Indeed, among the boys reporting assault (sexually versus physically) using stepwise logistic regressions with the type of assault as the dependent variable, and age and schooling status (inside vs outside of the schooling system) as covariates, we** found that: *going out often to cafés, nightclubs or hanging out in town* (OR = 4.0, 95% CI = [1.2–14.0]) and *having no friend or only one friend* (OR = 3.5, 95%CI = [1.1–11.5]) were overrepresented among boys with a report of sexual assault.

Psychobehavioral attitudes

Among boys, a sexual assault report was more likeky to be associated with the psychological and behavioural problems to study than a physical assault report (see Table 1). For girls, the two types of assault report had similar links to most of the same health problems, except for suicidal ideation and acting out, maybe more frequent with sexual assault report (see Table 2).

Discussion

This article is a result of a cross-sectional epidemiological survey on adolescents from the general population in France. As usual in epidemiology no result on causality was expected from such a study. The symptoms noted were not necessarily a consequence of the reported assaults, but they clearly captured health states in the groups observed. This presentation attempts to discriminate, for each gender, psychological and behavioural features following physical or sexual trauma among subjects 16–20 years old from the French general population. Self-rated clinical instruments are appropriate when the study design includes the formation of representative samples and simple clinical indicators of specific health states. The reported features can easily be identified by non-clinicians who can refer to specialized clinicians, more useful in a second line of mass trauma.[8] The pooling of two slightly different population samples, combined with the use of logistic regression techniques taking into account these two populations as a single variable, could enable more refined clinical observation of subjects who are generally not studied because they are outside the mainstream societal systems.

The exploration of clinical manifestations in a general population survey enables certain misconceptions to be challenged, such as the notion that upper middle classes are exempt from sexual trauma, and that this type of event only occurs in ''deprived suburbs'' or ''backward country areas''. Furthermore, incidences observed for sexual assault cannot exclude the posibility that a certain number of adolescents left the school system precisely because of their trauma. Indeed, the lack of evidence of causality in statistical links should not prevent the exploration of these issues in other studies of a prospective nature. For instance, the lifestyle features mentioned in the *Results* section have several potential clinical meanings: a possible pre-traumatic clinical state or even a predisposition to exposure to trauma, or conversely a posttraumatic ''borderline-like''. In fact, the two lifestyle features studied in this article could contribute to the conceptualization of posttraumatic personality change after trauma,[11] resulting in identity issues[12–14] or personality profiles at risk for

Table 1 Problematic manifestations among boys of 16–20 years of age reporting sexual versus physical assaults.

Boys N = 802	After sexual assault N = 44 %	After physical assault N = 758 %	Comparison[a] sexual / physical OR[b] 95% CI[c]
Sleeping			
Waking up in the night[d]	47	19	3.2 [1.7–6.1]
Nightmares[d]	21	8	2.6 [1.2–5.9]
Sleeping badly[d]	34	16	2.6 [1.4–5.1]
Mood			
Feel like crying[d]	33	10	4.4 [2.2–8.5]
Suicidal thoughts[d]	30	12	3.2 [1.6–6.4]
Low morale[d]	40	17	2.7 [1.4–5.2]
Feel depressed[d]	33	17	2.4 [1.2–4.6]
No hope for the future[d]	45	28	2.3 [1.2–4.3]
Lack of energy[d]	38	24	2.0 [1.03–3.8]
Behaviour			
Suicide attempt[e]	28	10	3.9 [1.9–8.0]
Several suicide attempts[e]	12	3	5.0 [1.8–14.0]
Illicit drugs[e,f]	38	23	2.5 [1.1–5.5]
Access to care			
Has consulted a psychiatrist or a psychologist[g]	27	6	3.7 [1.5–5.5]

[a] Using logistic regressions adjusted for age and schooling status (i.e. inside or outside the school system).
[b] Odds Ratio.
[c] 95% Confidence Interval.
[d] Quite often or very often over the last year.
[e] Lifetime.
[f] Has taken an illicit substance more than ten times: cannabis, heroin, cocain, inhaled drugs or narcotic medical products.
[g] Over the last year.

Table 2 Problemeatic manifestations among girls of 16-20 years of age reporting sexual versus physical assaults.

Girls N = 522	After sexual assault N = 239 %	After physical assault N = 283 %	Comparison[a] sexual / physical OR[b] 95% CI[c]
Sleeping			
Waking up in the night[d]	39	41	ns
Nightmares[d]	27	23	ns
Sleeping badly[d]	30	29	ns
Mood			
Feel like crying[d]	55	54	ns
Suicidal thoughts[d]	30	23	1.5 [1.05–2.1]
Low morale[d]	31	28	ns
Feel depressed[d]	46	51	ns
No hope for the future[d]	50	44	ns
Lack of energy[d]	37	40	ns
Behaviour			
Suicide attempt[e]	33	24	1.6 [1.1–2.3]
Several suicide attempts[e]	9	6	ns
Illicit drugs[e,f]	15	16	ns
Access to care			
Has consulted a psychiatrist or a psychologist[g]	16	13	ns

[a] Using logistic regressions adjusted for age and schooling status (i.e. inside or outside the school system).
[b] Odds Ratio.
[c] 95% Confidence Interval.
[d] Quite often or very often over the last year.
[e] Lifetime.
[f] Has taken an illicit substance more than ten times: cannabis, heroin, cocain, inhaled drugs or narcotic medical products.
[g] Over the last year.

trauma; the cross-sectional nature of the survey does not allow for any definite conclusion. It is important to underline that the core symptomatology following on from trauma is inadequately described by the non-specific category of depression; however, it is also important to point out that low self-esteem and mood are not rare; these facts are crucial to note since they have been shown to be predictive of poorer long term outcomes.[15]

For each gender and type of assault, the symptoms explored were compared using logistic regressions, adjusting age and schooling status (being inside or outside the school system): among boys, health problems were more salient when the assault report was sexual rather than physical (e.g. suicide attempts: OR = 3.9; 95% CI = [2.9–8.0]); in contrast, among girls, the two groups seemed equally affected. Moreover, boys did not show fewer symptoms than girls when they reported sexual assaults. This is reminiscent of the difficulty to cope with sexual assault in both genders. A potential explanation might be that social expectations in the education of boys are congruent to the context of a physical assault: they must fight but they will get esteem or even admiration for their ''virile strength'' if they win or ''courageous stoicism'' if they lose''. The situation of sexual assault contradicts the current societal expectations of males on activity: ''acting their desires'' and not ''passively undergoing the whims of others''; this idea was implicit in several studies.[16] No external esteem will come. The experience will hurt. In this case, biological death is not the main point, and whatever the outcome of the assault, gender identity is potentially undermined.

Conclusion

This gender study highlights the risk of suicide among assaulted adolescents. The comparison of health problem between adolescents reporting physical assault and adolescents reporting sexual assault showed a gender difference and identified risks. Sexually assaulted boys require care, including suicide prevention, even though they seem to cope effectively with physical assault.

Ethical statement

The ethical considerations taken into account for the survey are described in the methodological part of the article.

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Conflict of interest

The authors have no conflict of interest to declare.

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