

## DIABETES

### Childhood Abuse: Risk Factor for Diabetes?

Substantial research has been conducted to study the psychological effects of childhood abuse and sexual trauma—but what about the sometimes lifelong physical effects? Childhood abuse often is linked to adult obesity, thus it may follow that abuse could increase the risk of developing type 2 diabetes, say researchers from Boston, Massachusetts. They note as well that early trauma may cause long-term dysregulated stress responsivity, providing another route to diabetes through physiologic pathways other than weight.

The researchers point to studies that have found, for instance, that adults who experienced childhood traumas, such as abuse, had a 60% higher risk of diabetes. The researchers caution, however, that those studies, while pioneering, were limited in various methodologic ways, such as having small sample sizes. In this study, researchers used data from 67,853 women in the Nurses' Health Study II (NHSII)—16 times more women than in previous studies.

The NHSII provided study participants with a Violence Questionnaire covering 3 periods: childhood (up to age 11 years), adolescence (11 to 17 years), and adulthood. Physical abuse was categorized into 4 groups: no abuse; being grabbed, pushed, or shoved at any frequency or being kicked, punched, bitten, or hit with something once (mild); being hit with something more than once or physically attacked once (moderate); and being kicked, bitten, punched, or physically attacked more than once

or ever choked or burned (severe). For each item, the respondent indicated the frequency (never, once, a few times, more than a few times). The item on "spanking for discipline" was not counted toward the abuse score. Respondents were categorized according to the most severe event they reported.

Sexual abuse was measured by questions on unwanted sexual touching and forced sexual activity. Exposure was categorized into 4 groups: no sexual abuse, unwanted sexual touching only, forced sexual activity once, and forced sexual activity more than once.

More than half (54%) of the women reported being physically abused as a child or adolescent; 9% reported severe physical abuse. One-third (34%) of the women reported sexual abuse, including 6% who reported repeated forced sexual activity.

The researchers found a dose-response association of physical abuse with risk of diabetes. Although mild physical abuse was not associated with increased risk of diabetes in adulthood, moderate and severe abuse were associated with 26% to 54% higher risk of diabetes. Women who reported unwanted sexual touching as a child or adolescent had a 16% higher risk of diabetes. Those who had experienced forced sexual activity once or repeatedly had a 34% to 69% higher risk of diabetes, compared with women who were not sexually abused. Most women who were sexually abused also were physically abused, and the highest risk of diabetes was found among those women who had experienced both types of abuse.

Somatotype at age 5 years was not associated with physical abuse

but it was 0.11 SD higher for women who reported repeated forced sexual activity at ages 5 to 17 years than for women with no sexual abuse history. By the end of adolescence, on average, abused girls had a higher body mass index (BMI) than nonabused girls. At age 18 years, severe physical abuse was associated with a BMI 0.09 SD higher and repeated forced sexual activity with a BMI 0.18 SD higher than those of nonabused girls. The divergence in BMI between the groups of abused and nonabused had widened by adulthood, when BMI was 0.15 SD higher for women with severe physical abuse and 0.23 SD higher for those with repeated forced sexual activity during childhood or adolescence.

Adult BMI accounted for about 60% of the increased risk associated with childhood and adolescent abuse. Even after accounting for BMI, however, the risk of diabetes was still 10% to 30% higher among women who had experienced moderate physical abuse or the most severe physical or sexual abuse.

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## OBSESITY

### Obesity Sensitizes to Fibromyalgia Pain

Many patients with fibromyalgia syndrome (FMS) also are overweight or obese, say researchers from the University of Utah in Salt Lake City. In fact, some studies report that 32% to 50% of FMS patients are obese and an additional 21% to 28% are overweight. An obese patient with FMS may have a more difficult time exercising and sleeping well than a

patient with a normal body mass index (BMI). Furthermore, according to the researchers, these patients may have heightened pain sensitivity to pressure.

A total of 215 FMS patients were included in this study; of which, 51 patients (23%) were categorized in the normal weight group, 64 patients (30%) were classified as overweight, and 100 patients (47%) were deemed obese based on their BMI ranges. The researchers say that increased BMI is common in FMS. In fact, their sample had more than twice the rate of obesity in Utah, where the study was done.

The researchers aimed to evaluate the relationships between FMS and obesity in several domains. Each patient was given a “tender point (TP)” examination (18 points in the classification criteria for FMS and 3 additional non-TP “control points”), after which, the patient rated the level of pain on a scale of 0 (none) to 10 (worst). Patients also had their physical performance evaluated by a licensed physical therapist who assessed their flexibility, strength, and walking. In order to evaluate symptoms, patients completed self-report inventories (the Fibromyalgia Impact Questionnaire and the Center for the Epidemiological Study of Depression Scale) on mood, fatigue, anxiety, and depression, among other factors. They also underwent a 7-day home sleep assessment that calculated total sleep time, sleep efficiency, sleep onset latency, number of awakenings, and time awake after sleep onset.

The distributions of positive tender points were “quite skewed,” the researchers found, with 78% of patients having all 18 points positive; hardly any patients had fewer than 16. The groups (normal weight, overweight, and obese) were similar in the pain-severity ratings of the 3 control points, but differed significantly in rating pain for TPs. The overweight and obese patients felt the greatest pain sensitivity in the lower body, including gluteal, greater trochanter, and knee sites. These results are consistent with other research that has found obesity is a risk factor for chronic pain, is associated with increased severity in visceral pain, and is related to high prevalence of pain complaints, the researchers note.

The mechanisms underlying the obesity–pain sensitivity link are not clear, they say. Poor physical conditioning seems to be a factor. In this study, obesity was associated with reduced strength and flexibility, but the groups had similar results on the walking test. This last result was a surprising find, the researchers say, but they hypothesize that it may have been influenced by the fact that all patients were very sedentary. In addition, there was a 20-minute cap and a self-determined pace in the test.

Another possible mechanism, the researchers say, is through the endogenous opioid system. In an earlier study, they found that obesity in FMS is related to greater levels of proinflammatory indices. Results from animal research, they add, strongly suggest the involvement of

proinflammatory cytokines in central sensitization.

Aerobic fitness programs reduce TP pain sensitivity in FMS patients, but previous studies have found that obese women tend to stop their exercise testing because of musculoskeletal pain. The Utah researchers observed that many of the obese patients appeared to exert less effort because of increased pain. They note that heightened pain sensitivity in the lower body could present a barrier for the FMS patient’s physical therapy.

FMS patients who were overweight or obese also were more likely to sleep less and be more restless during sleep. The normal-weight patients slept 414 minutes a night, compared with 387 minutes and 373 minutes for the overweight and obese patients, respectively. However, the patients’ self-reported sleep symptoms showed little relationship to weight. The only group difference was in self-reporting about stiffness. The researchers emphasize that FMS is a multifactorial condition and that obesity does not necessarily affect all aspects of the disorder. ●

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