

# Young adults exposed to traumatic events in childhood use more over-the-counter pain medication than unexposed.

## Pain and psychological symptoms emerging in adolescence may in part explain this difference.

Killing pain. A prospective population-based study on trauma exposure in childhood as predictor for frequent use of over-the-counter analgesics in young adulthood. The HUNT Study.

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**BACKGROUND:** Frequent and increasing use of over-the-counter analgesics (OTCA) is a public health concern. We aimed to assess potentially traumatic events (PTEs) in childhood as predictors for frequent OTCA use in young adulthood.

### METHODS

- A cohort study assessing exposure to PTEs in adolescence and use of OTCA in young adulthood, N=2947.
- Headache, musculoskeletal pain and psychological symptoms were also assessed in adolescence.
- Ordinal logistic regression was used to examine the impact of exposure to traumatic events on the the two outcomes i) OTCA to treat headache ii) OTCA to treat musculoskeletal pain.

**RESULTS:** Overall, exposure to childhood PTEs, particularly direct interpersonal violence, was significantly and consistently related to more frequent use of OTCA to treat musculoskeletal pain and headaches in young adulthood. A higher burden of exposure to interpersonal violence was linked to more frequent OTCA use, indicating a dose-response relationship. Adjusting for pain and psychological symptoms in adolescence attenuated the strength of the associations.

**CONCLUSION:** Adolescents exposed to PTEs in childhood are at increased risk of frequent use of OTCA as young adults. Pain and psychological symptoms emerging in adolescence are of importance for this relationship, emphasizing the need to address symptomatology and underlying causes at an early age.

Table 1. Distribution of sociodemographic characteristics, trauma exposure and symptoms in adolescence (Young-HUNT3, 2006-2008) by use of over-the-counter analgesics in young adulthood (HUNT4, 2017-2019)

	Use of OTCA to treat headaches			Use of OTCA to treat musculoskeletal pain		
	Never/rarely	1-3 times/week	≥4 times/week	Never/rarely	1-3 times/week	≥4 times/week
All participants	2133 (73.3%)	699 (24.0%)	79 (2.7%)	2457 (85.4%)	323 (11.2%)	97 (3.4%)
Females	1163 (67.7%)	491 (24.4%)	65 (3.8%)	1406 (82.5%)	223 (13.1%)	75 (4.4%)
Males	970 (75.7%)	298 (23.2%)	14 (1.1%)	1051 (89.6%)	100 (8.5%)	22 (1.9%)
Age Young-HUNT3, mean	16.0 (SD 1.77)	16.0 (SD 1.76)	15.9 (SD 1.77)	16.0 (SD 1.76)	16.0 (SD 1.79)	16.1 (SD 1.81)
Age HUNT4, mean	27.1 (SD 1.96)	27.0 (SD 1.89)	26.9 (SD 1.71)	27.1 (SD1.95)	27.0 (SD 1.87)	27.1 (SD 1.89)
Socioeconomic factors						
Family economy below average	173 (8.6%)	54 (8.2%)	10 (13.7%)	199 (8.6%)	26 (8.7%)	7 (8.05%)
Household structure, living with both parents	1234 (58.4%)	387 (56.3%)	36 (46.8%)	1442 (59.3%)	153 (48.6%)	50 (51.6%)
Direct interpersonal violence						
Bullying	137 (6.7%)	52 (7.9%)	13 (17.6%)	155 (6.6%)	32 (10.5%)	12 (13.2%)
Physical violence	172 (8.4%)	56 (8.5%)	11 (14.9%)	194 (8.2%)	32 (10.5%)	11 (12.1%)
Sexual abuse	99 (4.8%)	40 (6.0%)	8 (10.8%)	111 (4.7%)	24 (7.9%)	8 (8.8%)
By peer	77 (3.8%)	28 (4.2%)	5 (6.8%)	84 (3.6%)	17 (5.6%)	6 (6.6%)
By adult	46 (2.2%)	17 (2.6%)	5 (6.8%)	54 (2.3%)	8 (2.6%)	3 (3.3%)
Direct interpersonal violence, number of types						
No events	1743 (85.0%)	562 (84.5%)	51 (68.9%)	2020 (85.5%)	242 (79.3%)	67 (73.6%)
1 type	226 (11.0%)	67 (10.1%)	16 (21.6%)	248 (10.5%)	41 (13.4%)	17 (18.7%)
2 or more types	82 (4.0%)	36 (5.4%)	7 (9.5%)	94 (4.0%)	22 (7.2%)	7 (7.7%)
Other potentially traumatic events						
Witness to violence	416 (20.3%)	150 (22.6%)	12 (16.2%)	471 (19.9%)	82 (26.8%)	15 (16.7%)
Disease or death of someone close	1467 (71.3%)	526 (78.7%)	59 (79.7%)	1713 (72.3%)	235 (76.3%)	76 (82.6%)
Severe accident, disaster or other traumatic event	613 (29.8%)	205 (30.8%)	29 (39.2%)	692 (29.2%)	111 (36.3%)	31 (34.1%)
Symptoms						
Posttraumatic stress, sum score (0-3), mean	0.74 (SD 0.96)	0.86 (SD 1.00)	1.25 (SD 1.20)	0.73 (SD 0.95)	1.21 (SD 1.06)	1.06 (SD 1.16)
Psychological distress, SCL-5, mean score (1-4)	1.47 (SD 0.53)	1.59 (SD 0.55)	1.80 (SD 0.75)	1.48 (SD 0.52)	1.69 (SD 0.61)	1.62 (SD 0.60)
Psychological distress above cutoff (SCL-5> 2.0)	251 (12.0%)	103 (15.0%)	21 (27.6%)	283 (11.7%)	71 (22.4%)	17 (17.7%)
Frequent musculoskeletal pain	656 (31.0%)	293 (42.7%)	38 (49.4%)	780 (32.1%)	143 (44.8%)	55 (57.3%)
Pain in 1 site	312 (14.8%)	126 (18.4%)	10 (13.0%)	375 (15.4%)	54 (16.9%)	18 (18.8%)
Pain in 2 sites	180 (8.5%)	93 (13.6%)	14 (18.2%)	223 (9.2%)	44 (13.8%)	16 (16.7%)
Pain in 3-8 sites	164 (7.8%)	74 (10.8%)	14 (18.2%)	182 (7.5%)	45 (14.1%)	21 (21.9%)
Frequent headaches	126 (6.3%)	88 (13.3%)	21 (27.3%)	168 (7.2%)	45 (14.6%)	17 (18.1%)
Disability Index (0-5), mean	1.10 (SD 1.31)	1.50 (SD 1.45)	2.15 (SD 1.63)	1.12 (SD 1.31)	1.73 (SD 1.53)	2.15 (SD 1.66)
OTCA ≥2 days/week in Young-HUNT3	152 (7.2%)	127 (18.7%)	23 (29.9%)	211 (8.8%)	58 (18.2%)	29 (31.2%)

Table 2. The association of exposure to potentially traumatic events reported in childhood (Young-HUNT3, 2006-2008) with use of over-the-counter analgesics to treat musculoskeletal pain in young adulthood (HUNT4, 2017-2019), by type of event and number of types of direct interpersonal violence.

	Model 1 <sup>a</sup> (sex and age) (n=2750-2768)			Model 2 <sup>a,b</sup> (background) (n=2636-2648)			Model 3 <sup>a,b,c</sup> (somatic symptoms) (n=2478-2488)			Model 4 <sup>a,b,c</sup> (psychological symptoms) (n=1570-1576)		
	n	OR (95%CI)	p-value	n	OR (95%CI)	p-value	n	OR (95%CI)	p-value	n	OR (95%CI)	p-value
Direct exposure to interpersonal violence												
by type												
Bullying	2750	1.84 (1.29, 2.63)	0.001	2636	1.84 (1.28, 2.66)	0.001	2478	1.56 (1.06, 2.31)	0.025	1574	1.53 (1.01, 2.31)	0.044
Sexual abuse	2758	1.61 (1.07, 2.42)	0.023	2643	1.70 (1.12, 2.57)	0.013	2484	1.38 (0.89, 2.14)	0.148	1574	1.15 (0.72, 1.85)	0.553
Physical violence	2757	1.50 (1.05, 2.14)	0.024	2640	1.53 (1.07, 2.19)	0.021	2481	1.27 (0.86, 1.87)	0.230	1570	1.08 (0.72, 1.63)	0.707
by number of types												
1 type of direct interpersonal violence	2758	1.60 (1.17, 2.18)	0.003	2643	1.63 (1.18, 2.24)	0.003	2484	1.48 (1.05, 2.07)	0.024	1574	1.35 (0.94, 1.95)	0.104
≥2 types of direct interpersonal violence	2758	2.05 (1.33, 3.16)	0.001	2643	2.12 (1.37, 3.30)	0.001	2484	1.66 (1.03, 2.68)	0.036	1574	1.48 (0.89, 2.48)	0.132
Exposure to other potentially traumatic events, by type												
Witness to violence	2758	1.42 (1.10, 1.85)	0.007	2641	1.40 (1.07, 1.84)	0.013	2482	1.27 (0.96, 1.68)	0.100	1572	1.19 (0.87, 1.63)	0.277
Severe illness or death of someone close	2768	1.30 (1.01, 1.68)	0.042	2648	1.38 (1.06, 1.80)	0.018	2488	1.26 (0.95, 1.65)	0.106	1576	1.37 (0.78, 2.38)	0.271
Severe accident, disaster or other traumatic event	2765	1.34 (1.07, 1.68)	0.010	2648	1.40 (1.11, 1.76)	0.005	2488	1.31 (1.03, 1.67)	0.029	1576	1.14 (0.85, 1.53)	0.380

Table 3. The association of exposure to potentially traumatic events reported in childhood (Young-HUNT3, 2006-2008) with use of over-the-counter analgesics to treat headache in young adulthood (HUNT4, 2017-2019), by type of event and number of types of direct interpersonal violence.

	Model 1 <sup>a</sup> (sex and age) (n=2790-2799)			Model 2 <sup>a,b</sup> (background) (n=2667-2679)			Model 3 <sup>a,b,c</sup> (somatic symptoms) (n=2507-2517)			Model 4 <sup>a,b,c</sup> (psychological symptoms) (n=1587-1593)		
	n	OR (95%CI)	p-value	n	OR (95%CI)	p-value	n	OR (95%CI)	p-value	n	OR (95%CI)	p-value
Direct exposure to interpersonal violence												
by type												
Bullying	2790	*1.41 (1.03, 1.93)	0.031	2667	*1.40 (1.02, 1.94)	0.040	2507	1.40 (1.00, 1.97)	0.052	1591	1.35 (0.94, 1.94)	0.108
Sexual abuse	2789	1.25 (0.87, 1.79)	0.227	2674	1.23 (0.85, 1.77)	0.276	2513	1.10 (0.75, 1.62)	0.625	1591	1.03 (0.68, 1.56)	0.885
Physical violence	2789	*1.25 (0.92, 1.69)	0.148	2671	1.23 (0.90, 1.68)	0.191	2510	1.02 (0.73, 1.43)	0.906	1587	0.91 (0.64, 1.30)	0.608
by number of types												
1 type of direct interpersonal violence	2790	*1.09 (0.83, 1.43)	0.545	2674	*1.05 (0.79, 1.59)	0.755	2513	*0.96 (0.71, 1.29)	0.771	1591	*0.90 (0.65, 1.23)	0.502
≥2 types of direct interpersonal violence	2790	*1.55 (1.05, 2.27)	0.027	2674	*1.55 (1.05, 2.31)	0.029	2513	*1.39 (0.91, 2.12)	0.131	1591	*1.27 (0.80, 2.00)	0.309
Exposure to other potentially traumatic events, by type												
Witness to violence	2790	1.28 (1.04, 1.58)	0.022	2672	1.28 (1.03, 1.59)	0.025	2511	*1.19 (0.95, 1.51)	0.135	1589	*1.07 (0.82, 1.39)	0.622
Severe illness or death of someone close	2799	1.45 (1.18, 1.78)	<0.001	2679	1.44 (1.17, 1.78)	0.001	2517	1.44 (1.15, 1.79)	0.001	1593	1.32 (0.87, 2.03)	0.188
Severe accident, disaster or other traumatic event	2797	1.11 (0.93, 1.33)	0.253	2679	1.12 (0.93, 1.35)	0.242	2517	1.01 (0.82, 1.23)	0.935	1593	0.83 (0.66, 1.06)	0.142

Trauma types were assessed by separate ordinal logistic regression analyses. Direct interpersonal violence encompasses bullying, sexual abuse and physical violence.

<sup>a</sup> Models 1-4 are all adjusted for sex and age, pubertal development, household structure and family economy. <sup>b</sup> Models 2-4 are additionally adjusted for the background factors household structure and family economy. <sup>c</sup> Models 3-4 are additionally adjusted for frequent headaches and musculoskeletal pain. <sup>d</sup> Model 4 is additionally adjusted for posttraumatic stress and general psychological symptoms.