

Impact of Temporomandibular Disorder Pain in Adolescents: Differences by Age and Gender

Ing-Marie Nilsson, DDS, Odont Dr
Graduate Student
Specialist Center for Oral Rehabilitation
Linköping, Sweden

Mark Drangsholt, DDS, PhD
Assistant Professor
Oral Medicine, Dental Public Health
Sciences
University of Washington
Seattle, Washington

Thomas List, DDS, Odont Dr
Professor
Orofacial Pain Unit
Malmö University
Malmö, Sweden

Correspondence to:
Dr Ing-Marie Nilsson
Specialist Center for Oral Rehabilitation
Torkelbergsgatan 11
SE-581 85 Linköping
Sweden
Fax: +46 13 228847
Email: ing-marie.nilsson@lio.se

***Aims:** To evaluate the impact of temporomandibular disorder (TMD) pain by age and gender in adolescents, with assessments of this impact specifically on school absence, medication consumption, perceived need for treatment, jaw function limitation, depressive symptoms scores and somatic complaints, and graded chronic pain scale. **Methods:** In a population-based sample, a mailed questionnaire was sent to 350 patients with self-reported TMD pain (group 1) and 350 healthy age- and sex-matched individuals (group 2) aged 12 to 19 years 2 to 4 weeks after their annual dental examination. The groups were divided into younger (age 12 to 15) and older (age 16 to 19) groups. Descriptive statistics and 95% confidence intervals were used, and chi-square and t-tests were calculated for analyzing group differences. Odds ratios were estimated using logistic regression. **Results:** As expected, groups 1 and 2 differed significantly in most variables related to psychosocial and behavioral factors. For adolescents reporting TMD pain once a week or more, no gender or age differences in pain intensity were seen. Jaw function limitation, depressive symptoms scores, somatic complaints, graded chronic pain, and perceived need for TMD treatment were all significantly higher in girls than in boys. Older girls reported higher analgesic consumption and school absences than older boys. **Conclusion:** Girls reporting TMD pain had significantly greater impact on behavioral and psychosocial factors than boys. Almost one third of older girls, compared to one out of 10 older boys, reported school absences and analgesic consumption because of their TMD pain. J OROFAC PAIN 2009;23:115–122*

Key words: adolescence, gender, jaw function, psychosocial status, TMD pain

In general, epidemiological studies have found the prevalence of pain to be higher in women than men.¹ No gender difference has been reported in children up to the age of puberty, but after adolescence, the prevalence of pain increases among girls compared with boys.² Similar patterns have been observed in different pain conditions such as back pain, headache, and stomach pain.² In line with these findings, a previous epidemiological study found that the prevalence of pain associated with temporomandibular disorders (TMD) increased with age among adolescents, especially in females.³

The impact of these pain conditions is also of great interest. In a population-based study among adolescents, Egger et al⁴ found girls with depression and anxiety had a significantly greater prevalence of recurrent headache than girls without such disorder. This association was not found for boys. Egger et al⁵ also

found depression and anxiety disorders associated with stomachaches and headaches together in girls but not in boys, and musculoskeletal pains alone were associated with depression in both sexes. Among adolescents, Perquin et al⁶ found that 25% reported chronic pain and a majority of these sufferers consulted a physician, while more than a third used pain medication.

Much less, however, is known about the overall disability and impact of TMD in adolescents. Some skeptics have questioned whether TMD pain in adolescence is a significant public health problem. In a population-based study among adolescents, the majority of participants with TMD pain had a perceived treatment need and about every fifth adolescent was absent from school due to TMD pain.⁷ It has also been found that adolescents with TMD pain report more somatic complaints, seek treatment more often, consume more analgesics, and experience greater limitations in performing physical activities compared with controls.^{8,9} Hirsch et al¹⁰ found girls consulted a physician/dentist more than boys and had a higher consumption of pain medication due to orofacial pain, than boys. These studies did not allow observation of trends by gender and aging through adolescence.

Overall, knowledge of the disability, impact, and behavioral consequences of TMD pain in adolescence is limited, specifically in relation to age and gender. The hypothesis of this study was that TMD pain has a greater impact on girls than boys concerning school absence, medication consumption, perceived need for treatment, jaw function limitation, depressive symptoms and somatic complaints, and graded chronic pain scale, and this impact increases with age in girls but not boys. Thus, the aim of this study was to evaluate the impact of TMD pain by age and gender in adolescents, with an assessment of this impact specifically on school absence, medication consumption, perceived need for treatment, jaw function limitation, depressive symptoms scores and somatic complaints, and graded chronic pain scale.

Materials and Methods

Study Design

This investigation was designed as a population-based, case-control study. The subjects were drawn from adolescents attending one of 33 public health clinics in Östergötland County, Sweden, from October 2002 to February 2004. Personnel recorded consecutive patients who visited the

clinics during the study period and scored positive for TMD pain.³ This information was sent by mail to the investigator (IMN), who then mailed the questionnaires to the patients. Upon careful scrutiny of the enrollment procedures, a substantial number of the subjects who reported TMD pain in the clinic were not forwarded to the investigator; in fact, about 960 subjects reporting TMD pain were required in order to accrue 350 TMD pain subjects. An analysis of those TMD pain subjects enrolled compared to those not enrolled showed no differences by age and gender. The controls were enrolled in the same manner and were generally consecutive age- and sex-matched individuals from the same Public Dental Service (PDS) clinics. A mailed questionnaire was then sent to 350 patients with self-reported TMD pain (group 1) and 350 healthy age- and sex-matched individuals (group 2) aged 12 to 19 years 2 to 4 weeks after their annual examination at the PDS clinic. After a month, a reminder letter was mailed to those who had not replied. A telephone call was later made to those who failed to reply to the reminder. Data from previous work³ and recent work of others² showed an increase of TMD pain in the mid-teens. For this reason, it was decided *a priori* to stratify the sample by age (younger adolescents aged 12 to 15 years; older adolescents aged 16 to 19 years) in order to observe differences in pain impact by this important factor.

Inclusion Criteria

Group 1, aged 12 to 19 years, enrolled at a PDS clinic in Östergötland County and recorded in the patient's dental record as having TMD pain between October 2002 and February 2004. Group 2 (controls) enrolled at the same clinics as the patients to which they are age and gender matched but recorded as having no TMD pain.

Subject Consent

Written consent from parents was obtained, and participants received a remuneration of SEK 50 (approximately 7 US dollars) after returning the questionnaire. The study was approved by the ethics committee at the Faculty of Health Sciences at Linköping University.

TMD Pain

All adolescents aged 12 to 19 years were asked two questions to ascertain whether they had ambient or functional jaw pain at the annual examination at

the PDS clinics: (1) Do you have pain in the temple, face, temporomandibular joint, or jaws once a week or more often? And (2) Do you have pain when you open your mouth wide or chew once a week or more often? To facilitate comprehension, the therapist pointed to the anatomic regions mentioned so that the patient would better understand the question. If the patient answered “yes” to one or both of the questions, TMD pain was registered as “1.” If the patient answered “no” to both questions, TMD pain was registered as “0.” The test-retest reliability of these questions was 0.83 κ . In a prior study, the sensitivity of this question was 0.98 (95% confidence intervals [CI] 0.90–1.0) and specificity was 0.90 (95% CI 0.81–0.95).¹¹

Questionnaire

The following variables were assessed:

- **Frequency of Headache.** Scored on a 5-point scale: never, 1 to 3 times a month, once a week, several times a week, daily.^{7,11}
- **Frequency of Pain in the Temples.** Scored on a 5-point scale: never, 1 to 3 times a month, once a week, several times a week, daily.^{7,11}
- **Frequency of Pain in the Face, Jaws, and Jaw Joint.** Scored on a 5-point scale: never, 1 to 3 times a month, once a week, several times a week, daily.^{7,11}
- **Pain Intensity.** Measured using a numerical rating scale (NRS) ranging from 0–10 and anchored with the terms “no pain” and “worst pain imaginable.”^{12,13}
- **Perceived Treatment Need.** Determined by asking the patient “Would you like to get help with your pain in the face, the jaws, or the jaw joints?”^{7,11}
- **Other Body Pain Complaints.** Determined by asking the patient “Do you have recurrent pain in other parts of your body? Arms or legs? Back? Neck? Stomach? The questions were dichotomous: yes or no.
- **Treatment from Other Caregivers for Pain.** Determined by asking the patient “Have you gone to a doctor, school nurse, dentist, physical therapist, or other health-care provider for your pain?” The questions were dichotomous: yes or no.
- **Jaw Function Limitation.** Evaluated by asking the patient to fill in the jaw function limitation scale (JFLS). The JFLS contains 14 items on jaw function, which the patient grades on a 4-point scale: (not applicable) and no limitations, little limitations, moderate limitations, severe limitations.¹⁴
- **Analgesic Consumption Due to TMD Pain.** Recorded with a 5-point rating scale that measured frequency of pain medication use: daily, 3 to 4 times a week, 1 to 2 times a week, every month, never, or almost never.⁷
- **School Absence Due to TMD Pain.** Determined by asking the patient how many days in the last month she or he was home from school because of pain in the temples, face, jaws, or jaw joints.¹³
- **Anxious/Depressed and Somatic Complaints.** Determined by asking the patient to score 23 items concerning depression/anxiety and somatic complaints on the Youth Self Report (YSR).¹⁵ The items were rated on a 3-point scale: not true, somewhat or sometimes true, and very true or often true for the previous 6 months. The proportion of adolescents who had a YSR depression score above the normative values + 1 SD was determined to have a high depression score (12.2 for girls and 9.0 for boys), that may indicate clinical depression. The proportion of YSR somatic complaints above the normative values + 1 SD was determined to have a high score (6.6 for girls and 4.7 for boys).⁸
- **Graded Chronic Pain Scale (GCPS).**¹⁶ A self-report instrument that uses seven questions concerning pain intensity, interference in daily activities, and disability days to yield a 0–IV scale score. Grade 0 is defined as no TMD pain in the last 3 months. To receive Grade I–IV the patients had to report TMD pain once a week or more often. Grade I is defined as TMD pain of low intensity, averaging less than 5 on an NRS (0–10, whereas 0 = no pain, 10 = worst pain imaginable) and associated with little pain-related interference with daily living. Grade II is defined as high-intensity pain (5 or above, on an NRS) with low amounts of pain-related interference. Grades III and IV reflect moderate to significant pain-related psychosocial disability regardless of pain level.^{16,17}

Reliability

The reliabilities of two questionnaires, the JFLS and the GCPS, were investigated in a group of 25 participants, both cases and controls, using a test-retest process with a 2-week interval.

Statistical Analysis

Descriptive statistics and 95% CI were calculated for the proportion with TMD pain. To analyze differences between groups for categorical variables, such as gender, the chi-square test was used, and for continuous variables the *t*-test was used. The level of significance was set at $P < .01$. (The level

Table 1 Pain Characteristics and Psychosocial and Behavioral Factors by Main Groups

Variables	Group 1	Group 2	P value
Other bodily pains (%):			
Headache \leq once a week	69.5	26.2	<.001
Neck, recurrent	45.9	18.3	<.001
Back, recurrent	43.5	23.6	<.001
Stomach, recurrent	32.9	25.2	.045
Arms and legs, recurrent	17.4	13.6	.251
Multiple pain sites not including TMD pain (%):			
2 sites or more	65.6	29.8	<.001
3 sites or more	34.4	13.6	<.001
4 sites or more	14.4	5.0	<.001
Seeking care from other caregivers for bodily pain (%)	66.3	30.5	<.001
Analgesic consumption \leq once a week (%)	26.0	3.3	<.001
School absence (%)	24.5	4.7	<.001
Perceived treatment need (%)	66.0	11.6	<.001
Pain intensity (Mean [SD]):			
Temples (NRS)	3.4 [2.6]	1.4 [2.2]	<.001
Face, jaws, jaw joints (NRS)	3.3 [2.8]	0.6 [1.4]	<.001
Anxious/Depressed (YSR) (Mean [SD])	8.0 [6.0]	5.2 [4.7]	<.001
% Elevated Anxious/Depressed Score (YSR) *	23	8.9	<.001
Somatic complaints (YSR) (Mean [SD])	5.7 [3.3]	3.2 [3.0]	<.001
% Elevated Somatic complaints score (YSR) †	41.5	13.6	<.001
Pain severity (GCPS) (Mean [SD])	1.3 [0.6]	0.1 [0.4]	<.001
% GCPS score 1 to 2	96	9.7	<.001
% GCPS score 3 to 4	4	0.3	<.001
Jaw function limitation (JFLS) (Mean [SD])	4.7 [5.9]	0.9 [2.4]	<.001

Group 1 = adolescents initially reporting TMD pain. Group 2 = adolescents initially pain free.

*Proportion with scores above 7.0 + SD 5.2 (girls) and 4.7 + SD 4.3 (boys) on scale from 0 to 28.

†Proportion with scores above 3.6 + SD 3.0 (girls) and 2.3 + SD 2.4 (boys) on a scale from 0 to 18.

of $P < .05$ was regarded as a trend.) The main analyses investigated associations between TMD pain and various aspects of the pain experience, stratified by gender and age. Adolescent subjects were stratified into 12- to 15- and 16- to 19-year olds. Odds ratios for age and gender subgroups were estimated using logistic regression. Data were analyzed with the statistical program SPSS, version 12.0.

Results

A total of 285 (81%) TMD pain patients and 302 controls (86%) aged 12 to 19 responded to the questionnaire. Group 1 (the group initially reporting TMD pain) was comprised of 77.2% girls and 22.8% boys, mean age 16.0 ± 2.1 . Group 2 (the group initially reporting no TMD pain) was comprised of 77.5% girls and 22.5% boys, mean age 16.1 ± 2.1 . Differences in age and gender between groups 1 and 2 were nonsignificant. Group 1 had 75 younger and 145 older girls and 34 younger and 31 older boys. Group 2 had 79 younger and 155 older girls and 36 younger and 32 older boys. Those who did not answer the questionnaire

(16%) differed nonsignificantly from the active participants concerning age and gender.

The reliability of 13 of the questions on the JFLS was moderate to very good (κ 0.53–0.84) and the reliability of one question only fair (κ 0.24). The reliability of the questions on the GCPS was good to very good (intraclass correlation coefficient [ICC] 0.63–0.92).

Of the 285 pain patients in group 1, 64.6% reported TMD pain occurring once a week or more often on the mail questionnaire. Thirty individuals (10.5%) reported no TMD pain at all, and 71 (24.9%) reported TMD pain 1 to 3 times per month. In group 2, which had initially reported no TMD pain, 86.4% continued to report no TMD pain, while 13.6% reported some frequency of TMD pain.

Although most subjects returned their questionnaires within 1 month of the initial mailing, 58 (20%) in group 1 and 44 (14.6%) in group 2 sent their questionnaires after more than 1 month (up to 5 months).

Table 1 presents a comparison of the distribution (%), mean and SD, for all variables in groups 1 and 2. Significant differences in all variables ($P < .001$) except stomach pain and pain in arms and

legs were found between groups 1 and 2. Consequences of TMD pain such as analgesic consumption, school absence, perceived treatment need, and jaw function limitation also differed highly ($P < .001$). Group 1 subjects reported using roughly 8 times as many analgesics, 5 times as many school absences, and 6 times as much perceived treatment for TMD, compared to group 2. The proportion of adolescents that have a YSR depression score above the normative values + 1 SD was determined to have a high depression value that may indicate clinical depression, which was significantly higher in group 1 compared to group 2. The proportion of YSR somatic complaints above the normative values + 1 SD was also significantly higher in group 1, as was the proportion with graded chronic pain of 1, 2, and 3 or more.

Table 2 presents intensity of pain in the temples or face, jaws, or jaw joints for individuals in group 1 who reported pain once a week or more. No differences in pain intensities were seen between genders, and only slight differences by age.

Table 3 shows that gender differences in analgesic consumption and school absence were non-significant, except for the older patients, where there was a trend that the girls reported higher analgesic consumption ($P = .01$) and stayed home from school more often ($P = .04$). Perceived need for TMD treatment was significantly higher among girls than boys. Seeking care (with other caregivers) for bodily pain was higher among girls than boys ($P = .02$). When broken down into the age groups, perceived need for TMD treatment was significantly greater only among the older adolescent girls compared to the older boys and to the younger girls. The overall pattern for analgesic consumption, school absence, and perceived need for TMD treatment was a general increase with age in girls, but a decrease with age in boys.

Table 4 shows that jaw function limitation was significantly more common among girls than boys in both age groups in group 1. Depressive symptoms scores and graded chronic pain were significantly higher among girls than boys and in the older age groups. Somatic complaints (other than pain) showed a trend for higher values in older girls compared to boys. No gender differences were observed in the younger age groups. The older girls showed significantly higher depressive symptoms scores and somatic complaints than the younger girls. All other differences between the older and the younger adolescents were nonsignificant.

Table 5 shows the odds ratios for the association between TMD pain and pain impact by age and gender. These analyses show that the girls in

Table 2 Jaw and Temple Pain Intensity by Age and Gender, Group 1

Pain intensity	Girls		Boys		P
	n*	Mean (SD)	n*	Mean (SD)	
NRS (temples)					
Age					
12–15	32/745	4.6 (1.9)	15/34	4.5 (2.5)	.89
16–19	88/145	5.4 (1.9)	7/31	5.3 (1.4)	.91
P value		.04		.43	
Total	120/220	5.2 (2.0)	22/65	4.7 (2.2)	.35
NRS (face, jaws, jaw joints)					
Age					
12–15	32/75	5.9 (1.8)	4/34	6.3 (1.7)	.75
16–19	82/145	5.4 (2.1)	7/31	4.6 (1.3)	.28
P value		.24		.09	
Total	114/220	5.6 (2.0)	11/65	5.2 (1.6)	.53

Pain intensity calculated for those individuals reporting pain once a week or more. Percentages and means (SD) are shown for girls and boys in group 1 (adolescents initially reporting TMD pain).
n* = number of individuals reporting pain once a week or more.

Table 3 Analgesic Consumption, School Absence, Perceived TMD Treatment Need, and Health-care Seeking for Bodily Pain, by Age and Gender, Group 1

Pain intensity	Girls		Boys		P
	n	%	n	%	
Analgesic consumption ≥ once a week					
Age					
12–15	15/72	20.8	8/33	24.2	.80
16–19	47/145	32.4	3/31	9.7	.01
P value		.08		.19	
Total	62/217	28.6	11/64	17.2	.07
School absence 1 day/month					
Age					
12–15	15/75	20.0	9/34	26.5	.463
16–19	42/143	29.4	3/30	10.0	.04
P value		.15		.12	
Total	57/218	26.1	12/64	18.8	.25
Perceived need for TMD treatment					
Age					
12–15	42/73	57.5	15/34	44.1	.22
16–19	118/144	81.9	11/31	35.5	<.001
P value		<.001		.33	
Total	160/217	73.7	26/65	40.0	<.001
Seeking care for any type of bodily pain					
Age					
12–15	49/75	65.3	18/34	52.9	.29
16–19	105/145	72.4	17/31	54.8	.08
P value		.43		1.0	
Total	154/220	70.0	35/65	53.8	.02

Percentages for girls and boys in groups 1.
Italics: Significant older/younger age comparisons.
Bold: Significant girl/boy comparisons.

Table 4 Jaw Function Limitation, Anxious/Depressed, Somatic Complaints, and Chronic Pain Scale, by Age and Gender, Group 1

Variable	Girls		Boys		P
	Mean	SD	Mean	SD	
Jaw function limitation*					
Age					
12–15	4.7	6.8	1.8	3.1	.003
16–19	5.8	6.0	2.4	3.7	<.001
<i>P</i> value	.223		.509		
Total	5.4	6.3	2.1	3.4	<.001
Anxious/ Depressed†					
Age					
12–15	<i>6.8</i>	<i>5.4</i>	<i>4.7</i>	<i>3.8</i>	<i>.042</i>
16–19	9.7	6.3	6.1	5.2	.003
<i>P</i> value	.001		.222		
Total	8.7	6.2	5.4	4.6	<.001
Somatic complaints‡					
Age					
12–15	<i>4.8</i>	<i>2.8</i>	<i>4.5</i>	<i>2.9</i>	<i>.606</i>
16–19	<i>6.6</i>	<i>3.4</i>	<i>4.9</i>	<i>3.1</i>	<i>.013</i>
<i>P</i> value	<i><.001</i>		.561		
Total	6.0	3.3	4.7	3.0	.005
GCPS§					
Age					
12–15	1.3	0.5	1.3	0.6	.93
16–19	1.5	0.6	1.1	0.3	<.001
<i>P</i> value	.018		.173		
Total	1.4	0.6	1.2	0.5	.004

Means and SDs for girls and boys in group 1. Girl/boy comparisons that are significant are in bold, and older/younger age comparisons that are significant are in italics.

*Score range: 0–56.

†Normative scores (mean, SD) in Sweden for the age group 13 to 18: girls 7.0 (5.2), and boys 4.7 (4.3).²³

‡Normative scores (mean, SD) in Sweden for the age group 13 to 18: girls 3.6 (3.0), boys 2.3 (2.4).²³

§Score range: 0–4.

group 1 have a higher risk for analgesic consumption, school absence, jaw limitations, depressive symptoms, and somatic complaints compared to the girls in group 2. This risk is generally higher for the older versus the younger girls. In boys, the same increased risk was seen although these values were unstable since the sample size was smaller for this subgroup.

Discussion

To our knowledge, this study is the first population-based case-control study that has reported that limitations in jaw function, depressive symptoms scores, somatic complaints, perceived treatment need, and GCPS scores were significantly higher in girls reporting TMD pain than in boys. The authors also noted that perceived treatment

Table 5 Association of TMD Pain Impact Variables with Age and Gender*

Variable	Girls		Boys	
	OR	95% CI	OR	95% CI
Analgesic consumption				
Age				
12–15	–	–	6.7	1.8–24.1
16–19	–	–	10.1	4.4–23.2
School absences				
Age				
12–15	12.6	1.5–105.9	3.0	1.1–8.3
16–19	–	–	8.7	3.8–20.2
Jaw limitations > 0				
Age				
12–15	3.5	1.1–11.5	4.1	2.1–8.0
16–19	3.3	1.1–10.0	7.9	4.7–13.2
Anxious/Depressed (Girls > 12.2; Boys > 9.0)				
Age				
12–15	4.5	0.5–44.1	1.8	0.7–5.0
16–19	4.4	0.8–23.0	3.4	1.8–6.3
Somatic complaints (Girls > 6.6; Boys > 4.2)				
Age				
12–15	35	4.3–285.4	1.5	0.7–3.3
16–19	10.3	2.6–41.1	4.8	2.8–8.4

*For some age groups it was not possible to calculate odds ratios (OR) as zero was included in one of the groups.

need, depressive symptoms scores, and somatic complaints all increased with age in girls. Trends were seen in higher analgesic consumption and school absence in older girls compared to older boys in group 1. The overall impact of TMD pain on behavioral and psychosocial factors appears to be greater in girls than in boys. In contrast, the intensities of TMD pain did not differ by gender. This finding is in accordance with the data of List et al⁷ although girls reporting higher pain intensities than boys has been noted among adolescent chronic pain sufferers in both a clinic¹⁸ and general population sample.¹⁹

Strengths of this study include the use of a reliable and validated method of identifying adolescents with TMD, and the collection of data on a relatively large sample of subjects that allowed for stable comparisons by gender and two age strata. In addition, a population-based design was used,

with an age and gender distribution that corresponded with those in previous studies conducted in the same county (Östergötland) in Sweden.

The limitations of this study should also be noted. Although the study plan was to enroll each consecutive patient reporting TMD pain, two thirds of the adolescents were not contacted or failed to give their consent, so that it took 960 TMD pain patients to accrue 350 subjects. This recruitment procedure is less likely to be representative of Swedish adolescents in this county, but it is more likely to be representative than a clinic-based sample.

Another limitation was that about one third of group 1, who initially reported TMD pain, no longer reported pain on the mail questionnaire. Conversely, 13.6% of those initially reporting no pain on the screening questions now reported TMD pain. There may be several reasons why these subjects changed their TMD pain status. First, the mode of administration differed, since the first occasion was a short face-to-face interview, and the second was a mailed, self-completed questionnaire. Second, the exact questions used to classify TMD pain differed between the two queries. The questionnaire made it possible to report pain 1 to 3 times a month, which was what 71 individuals (24.9%) did. They were not pain-free, but they did not fulfill the criteria for the TMD pain variable. Third, some adolescents took up to 5 months to return their questionnaires. It is likely that, given the transient and intermittent nature of TMD pain,²⁰ some with TMD pain experienced a remission of their pain, and others without TMD pain developed the condition. Since the screening questions were reliable and valid, the authors chose not to regroup the adolescents, even though keeping these groups as they were would tend to minimize differences in the investigated factors.

How do the study results compare with previous research findings? The majority of subjects in group 1 had graded chronic pain of low pain intensity and low disability, but quite a few had more intense and disabling pain problems, which is in agreement with findings among young adult women aged 18 to 23.²¹ Both instruments yielded the same findings—that girls experience more limitation than boys, especially in the older age groups. In addition, the present study found that one out of four adolescents with TMD pain stayed home from school once a month or took analgesics once a week, but there was no gender difference, even though there was a tendency for reports to be higher among the older girls than the boys in

group 1, which agrees with what List et al found.⁷ The findings also agree with those of Hirsch et al,¹⁰ that 22% of the adolescents took analgesics for orofacial pain. In addition, Hirsch et al found similar impacts as measured in doctor visits and analgesic use when comparing abdominal, back, head, and face pain in adolescents. Although Unruh found no clear gender differences in medicine consumption, she did find that medication use increases with age and with the severity and persistence of pain and associated activity restrictions.²²

In the present study, girls overall had significantly higher depressive symptom scores and levels of somatic complaints than boys overall. This finding corresponds with what was found in the normative study of the YSR.²³ The values also correspond with those of List et al,⁸ although differences in their study between the TMD group and controls were nonsignificant, likely because of the small sample size. The depressive symptoms and somatic scores also correspond with a recent study where Larsson and Sund²⁴ found significant differences between boys and girls, with girls scoring higher. LeResche et al² showed that the percentage of girls who experienced high levels of depressive symptoms also increased with increasing pubertal development. This is consistent with the present findings that girls in the older age group report significantly higher levels of depressive symptoms than girls in the younger age group.

A considerable number of adolescents with TMD pain, but mainly girls, experience a composite picture of moderate pain, clinical depression, limitations in jaw function, and on the whole substantial impact on daily living that results in an overall decreased quality of life.

Conclusion

TMD pain in this Swedish adolescent sample had a greater impact on girls than boys, particularly in the older ages. TMD patients suffer substantially more than controls. For those individuals with recurrent and persistent pain—particularly young females—there is more suffering, and they need to receive more comprehensive treatment. A logical next research step would be a longitudinal study where risk factors that contribute to the development of TMD pain in adolescents could be identified, so that the modifiable factors could be reduced or removed and the incidence of TMD pain could ultimately be reduced.

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