Putative Risk Factors for Dysmenorrhea from the OPPERA Study

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Introduction

- Dysmenorrhea is the most common gynecological problem among menstruating women, affecting up to 90% of females during their reproductive years [1,2]
- Risk factors for dysmenorrhea are not well described, however it has been associated with young age, early menarche (<12 years) and nulliparity[3]
- The aims of this investigation are to identify putative risk factors for dysmenorrhea and investigate differences in the severity of menstrual pain among different demographic groups

Methods

- This was a case-control study of dysmenorrhea symptoms in women who were enrolled in the OPPERA project (Orofacial Pain: Prospective Evaluation and Risk Assessment)
- Participants were recruited at 4 U.S. study sites from 2006-2008
- The analysis was limited to 1,826 females (18-44 years) with at least one menses in the 60 days prior to enrollment
- A questionnaire evaluated the severity of menstrual pain over the previous three months as either “none,” “mild,” “moderate,” or severe”
- Dysmenorrhea cases were those who reported “moderate” or “severe” pain during menstruation
- Association between dysmenorrhea case status and each putative risk factor was evaluated using logistic regression
- Each model was adjusted for study site, race, age, and TMD case status

Results

- PMS was associated with greater odds of dysmenorrhea: for mild PMS (OR=2.7, 95% CI=1.9, 4.0), moderate PMS (OR=19.7, 95% CI=13.2, 29.4) and severe PMS (OR=46.3, 95% CI=24.7, 87.1)
- Other risk factors included African-American race (OR=1.3, 95% CI=1.0,1.6), lack of health insurance (OR=1.4, 95% CI=1.1, 1.9), and lower education levels (OR=1.5, 95% CI=1.1, 2.0)
- Use of HC was protective against dysmenorrhea (OR=0.5, 95% CI=0.4, 0.7)
- No consistent relationship was observed between age, parity, and age of menarche and dysmenorrhea

Table 1. Dysmenorrhea Odds Ratios

Predictor	Classification	Reference Group	Fully Adjusted^ Odds Ratios OR	Lower CI	Upper CI	P value
Race/ Ethnicity	Black /African-American	White	1.3	1.0	1.6	0.047
	Hispanic		1.0	0.7	1.6	0.940
	Other/Not stated		0.8	0.6	1.1	0.202
Age	18-24	35-44	1.1	0.8	1.4	0.703
	25-34		1.3	1.0	1.7	0.104
PMS	Mild	None	2.8	1.9	4.2	<.0001
	Moderate		19.7	13.2	29.4	<.0001
	Severe		48.8	25.9	92.1	<.0001
Current Income	$0-$59,999	$60,000+	1.1	0.8	1.4	0.615
Health Insurance	No	Yes	1.4	1.1	1.9	0.012
Education	College	Post-Graduate	1.4	1.0	2.0	0.037
	<High-High School		1.5	1.1	2.0	0.020
Parous	No	Yes	1.3	0.9	1.7	0.114
HC Use	Current	Never Used	0.5	0.4	0.7	0.0001
	Former		1.0	0.8	1.2	0.923

^Adjusted for race, age, current hormonal contraceptive use, study site

Table 2. Severity of menstrual pain by

Predictor	Classification	Pain severity: Dysmenorrhea Non-cases		Pain severity: Dysmenorrhea Cases		P value
		None	Mild	Moderate	Severe	
		N (%)	N (%)	N (%)	N (%)	
Race/ Ethnicity	White	162 (16)	513 (51)	287 (29)	37 (4)	0.0315
	Black/ African American	105 (20)	216 (41)	157 (29)	55 (10)	
	Hispanic	17 (16)	55 (51)	27 (25)	8 (7)	
	Other	41 (22)	92 (49)	43 (23)	11 (6)	
Age	18-24	156 (16)	506 (52)	271 (28)	42 (4)	0.6243
	25-34	91 (19)	214 (44)	145 (30)	40 (8)	
	35-44	78 (21)	156 (43)	98 (27)	29 (8)	
PMS	None	184 (48)	161 (42)	32 (8)	4 (1)	<0.0001
	Mild	112 (13)	546 (65)	169 (20)	19 (2)	
	Moderate	24 (5)	139 (30)	272 (58)	32 (7)	
	Severe	2 (2)	16 (16)	32 (31)	52 (51)	
Income	<$60,000	152 (18)	389 (46)	241 (29)	62 (7)	0.0493
	$60,000+	104 (18)	303 (51)	170 (29)	17 (3)	
Health Insurance	Yes	273 (18)	758 (50)	416 (27)	77 (5)	0.0016
	No	46 (18)	102 (39)	83 (32)	29 (11)	
Education	<High School	178 (17)	479 (47)	299 (29)	68 (7)	0.0282
	College	81 (16)	246 (50)	144 (29)	24 (5)	
	Post Graduate	66 (22)	149 (50)	69 (23)	13 (4)	
Parous	Yes	98 (21)	196 (42)	124 (27)	38 (8)	0.8169
	No	217 (16)	678 (50)	388 (29)	73 (5)	
Age of Menarche	< 12 years	84 (17)	229 (48)	147 (30)	35 (7)	0.1797
	12+ years	237 (18)	645 (49)	365 (28)	76 (6)	
Current HC use	Never	107 (17)	290 (46)	182 (29)	48 (8)	<0.0001
	Former	145 (16)	420 (47)	269 (30)	57 (6)	
	Current	66 (22)	164 (55)	62 (21)	6 (2)	
Reason ever used HC	Never used	107 (17)	290 (46)	182 (29)	48 (8)	<0.0001
	For pain	19 (10)	68 (37)	75 (41)	22 (12)	
	Other	192 (19)	516 (51)	256 (25)	41 (4)	
Reason currently using HC	Not using	252 (17)	710 (47)	451 (30)	105 (7)	<0.0001
	For pain	7 (13)	24 (45)	18 (34)	4 (8)	
	Other	59 (24)	140 (57)	44 (18)	2 (1)	

Conclusions

- The putative risk factors that were most strongly associated with dysmenorrhea include African-American race, lack of health insurance, and severity of PMS
- HC use and post-graduate education were protective
- Associations between dysmenorrhea and race, health insurance, and education remained significant after adjusting for HC use, suggesting that the association cannot be entirely explained by lower HC use in the high-risk groups
- Although age, parity, and age of menarche have been associated with dysmenorrhea in previous studies, they were at best weakly associated with dysmenorrhea in the present cohort. Further study on the risk factors of dysmenorrhea is needed

Bibliography

1. Bettendorf B, Shay S and Tu F. Dysmenorrhea: contemporary perspectives. *Obstet Gynecol Surv* 2008:63:597-603.
2. Jamieson DJ and Steege JF. The prevalence of dysmenorrhea, dyspareunia, pelvic pain, and irritable bowel syndrome in primary care practices
3. Latthe P, Mignini L, Gray R, Hills R and Khan K. Factors predisposing women to chronic pelvic pain: systematic review. *BMJ* 2006:332:749-755

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