Relationships between somatosensory amplification, health anxiety and low back pain among pregnant women

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ABSTRACT

Introduction: A great proportion of pregnant women experience low back pain during pregnancy. The aim of this study was to uncover potential psychological mechanisms underlying pregnancy-related back pain.

Method: Fifty two women with low back pain and forty seven women without low back pain were volunteered to participate in the study. A battery set containing the Health Anxiety Inventory (HAI), Hospital Anxiety and Depression Scale (HADS), Somatosensory Amplification Scale (SSAS), and Visual Analog Scale (VAS) was completed by all participants. Group comparisons were conducted using logistic regression analysis. Relationships of psychological symptoms with pain as measured by the VAS were assessed using regression analysis.

Results: Regression models showed that somatosensory amplification satisfactorily explained the group difference between pregnant women with and without low back pain. A tendency to anomalous somatic sensation was associated with the individual differences on scores of the VAS.

Conclusion: We concluded that pregnant women high in somatosensory amplification were at greater risk of development of low back pain during pregnancy.

Key Words: Pregnancy; Somatization; Affect regulation; Bodily sensation

Introduction

The phenomenon of pain has been the most interested but yet to be still less untangled issue in medical practice. About half of women report some degree of pain in the pelvic region and/or low back pack pain during pregnancy (1). Even though pain during pregnancy can have marked consequences in health and functioning, clinical management of pain during pregnancy can be relatively baffling (2). Pregnant women may suffer from low back pain which may commence immediate to second trimester and persist through the postpartum period (3). Potential accounts for low back pain in pregnant women generally focus on pelvic joints, ligaments, and biomechanical and physiological alterations in muscles. Elevations in relaxin production, changes in posture during pregnancy, and loosening in ligaments are several of these etiological accounts of low back pain morbidity (4).

International Association of the Study of Pain (IASP) defined pain as "An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage." (5). As emphasized by the definition, biomedically assessed physiopathology of pain is associated with emotional processes, reflecting psychosocial aspect of the phenomenon (6). Pain is more than a specific sensory stimulus and interactional effects of neurophysiological, biochemical, psychosocial, behavioral, cognitive, motivational and environmental determinants evolves into a subjective experience. Therefore, experiences central to pain may considerably discern from the initial stimulus that triggers the sensation (7,8). In this study, it was aimed to investigate the relationship of low back pain with anxiety, depression, health anxiety and somatosensory amplification in pregnant women.

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Table 1. Socio-demographical characteristics

		Group					
		Control n = 47		Low back pain n = 52			
		Mean	SD	Mean	SD	t(97)	p
Age		27.21	4.87	26.44	5.04	0.772	0.442
Duration of pregnancy (weeks)		20.94	5.30	21.44	4.60	-0.509	0.612
Gravida		1.89	1.15	1.87	1.17	0.121	0.904
Parity		0.77	1.11	0.71	1.07	0.248	0.804
Body Mass Index		24.54	2.92	25.08	3.52	-0.829	0.409
		N	%	N	%	χ2 (3)	P
Education	Primary	10	21.28	14	26.92	2.695	0.441
	Secondary	8	17.02	11	21.15		
	High	8	17.02	12	23.08		
	College	21	44.68	15	28.85		

Material and Method

Participants and procedure: Fifty two pregnant women with low back pain and forty seven pregnant women without low back pain consecutively administered to gynecology and obstetrics clinic at Van Yüzüncü Yıl University Hospital were included in the study. All participants volunteer to participate in the study and provided written informed consent after briefly acknowledged about the aims and procedure of the present investigation. Pregnant women with and without low back pain completed a battery set encompassing the Health Anxiety Inventory, Hospital Anxiety and Depression Scale, Somatosensory Amplification Scale, and Visual Analog Scale. The study protocol granted approval from the Ethical Committee of Van Yüzüncü Yıl University (date: 203.06.2016 number: 05).

Instruments: Health Anxiety Inventory (HAI): The HAI consists of 18 self-report items. The instrument was designed to assess cognitive and emotional aspects of health anxiety among patients with mental and/or physical illness (9). Turkish version of the HAI was demonstrated to have good reliability and validity byAydemir et al (10).

Hospital Anxiety and Depression Scale (HADS): The HADS consists of 14 self-report items. The instrument was developed to assess presence and severity of anxiety and depression symptoms among individuals with physical health problems (11). Turkish translation of the HADS was conducted by Aydemir et al (12).

Somatosensory Amplification Scale (SSAS): The SSAS consists of 10 self-report items and designed to assess predisposition of individuals to somatization and sensory amplification of body sensations (13). Turkish version of the scale was displayed to have god reliability and validity (14).

Visual Analog Scale (VAS): A visual analog scale ranging from 0 to 10 cm was used to assess the presence and severity of low back pain. Each patient was asked to rate their pain severity on the scale.

Statistical Analysis: We commenced with computing sample descriptive statistics. Using student t-test and non-parametric chi square, group differences were demonstrated to be unsubstantial. To uncover the potential determinants of low back pain in pregnant women, we regressed socio-demographic characteristics (age, duration of pregnancy, gravida, parity, levels of education), BMI, SSAS and HADS scores on binary dependent variable (low back pain vs control groups) in a logistic model. Same independent variables were regressed on scores of visual analog scale of pain. All statistics were conducted using R (15). Statistical threshold was set at $p < 0.05$.

Results

Sample Characteristics: The mean age was 26.81 years (SD±4.95). The mean duration of pregnancy was 21.20 weeks (SD±4.92). The mean body mass index value was 24.82 (SD±3.25).

Patients with and without low back pain were matched for age, duration of pregnancy, gravida index, parity index, body mass index (BMI), and education levels. Using student t test, and non-parametric chi square test, the two groups were

Table 2. Results of logistic and multiple regression analyses

	Low back pain vs control			Visual Analogue Scale		
	P	Odds Ratio	95% C.I.	β	t	P
Age	0.689	0.978	0.879-1.089	-0.053	-0.464	0.644
Duration of pregnancy (weeks)	0.559	0.967	0.863-1.083	-0.063	-0.538	0.592
Gravid	0.995	1.004	0.362-2.783	0.109	0.426	0.671
Parity	0.604	0.749	0.251-2.233	-0.206	-0.801	0.425
Education	0.059	0.646	0.410-1.017	-0.177	-1.542	0.127
Body Mass Index	0.120	1.143	0.965-1.354	0.189	1.598	0.114
Somatosensory Amplification Scale	0.001	1.217	1.089-1.361	0.375	3.757	<0.001
Health Anxiety Index	0.631	0.983	0.918-1.053	-0.013	-0.122	0.903
Hospital Anxiety	0.685	0.971	0.842-1.119	-0.045	-0.340	0.734
Hospital Depression	0.167	0.901	0.778-1.044	-0.142	-1.115	0.268

demonstrated not to differ in terms of demographic characteristics. The sample characteristics are presented in (Table 1).

Logistic and Multiple Hierarchical Regression Analyses: We run two regression analyses to explore risk factors for low back pain in pregnant women. We regressed age, duration of pregnancy (weeks), gravida, parity, education, BMI, the SSAS, HAI, HADS- Anxiety, and HADS- Depression scores on the dependent binary variable. First, we run a logistic regression analysis in which the groups including pregnant women with and without low back pain was the binary dependent variable. In the subsequent regression model, we run a multiple regression analysis in which low back pain as indexed by the VAS was the dependent variable. We found that pregnant women who scored greater on the SSAS were at higher risk for experiencing low back pain during pregnancy (Odds ratio = 1.217; 95% Confidence Interval = 1.089-1.361, p = 0.001). Moreover, the magnitude of low back pain was significantly determined by the SSAS scores as well (β = 0.375; t = 3.757, p<0.001). Findings are summarized in (Table 2).

Discussion

One of the most salient finding of this study was that somatosensory amplification as indexed by the SSAS was found to be the significant antecedent of low back pain among pregnant women. The SSAS composite scores were significantly associated with the VAS scores and statistically significantly explained the difference between pregnant women with and without low back pain. Intriguingly, previous studies have not addressed the relationship between pregnancy-related low back pain and somatosensory amplification. Current findings are consistent and add to the current notion that psychosocial factors plays pivotal role in low back pain among pregnant women (16,17). In addition, anxiety and depression were not significant correlates of low back pain in pregnancy.

Pain-related fear has been considered as an important antecedent in the development, maintenance and exacerbation of chronic pain (18-20). One of the potential mechanisms through which fear could fuel pain symptoms is heightened attention to bodily sensations (19,21-23). The same mechanism seems to be true for self-reported attention in chronic low pain (18,24). Even though the somatosensory amplification in combination with the fear of pain was not addressed in the present data, the significant role of heightened attention to bodily sensations is apparent among pregnant women with low back pain.

Previous literature reported that pregnant women high in BMI and party index, and presence of back pain prior to pregnancy were at greater risk of development of pregnancy-related back pain (16-25,26). Our data could not attest to these relationships even back pain prior to pregnancy was not assessed.

Growing number of clinicians consider that pain in general as a 'vital syndrome' should be assessed in relation to mental health problems (27). In this vein, gynecologists may benefit from the view that low back pain in pregnancy has psychological aspects as well as physical antecedents.

In conclusion, further studies addressing the etiological factors central to low back pain during pregnancy should be taken into consideration the psychological mechanisms of pain accompanied by physical risk factors. Given that the psychological risk factors are proliferate, somatization would be of tremendous importance in conceiving of potential mechanisms of the morbidity of back pain among pregnant women. Clinical relevance may contribute to the development of evidence-based psychological interventions in combination with medication treatment.

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