Original Article

The Relationship between Fear-Avoidance Beliefs and Pain in Pregnant Women with Pelvic Girdle Pain: A Cross-Sectional Study

Farzaneh Rashidi Fakari[1], PhD Student; Masoumeh Simbar[2], PhD; Marzieh Saei Ghare Naz[1], PhD Student

[1]Students Research Committee, Department of Midwifery and Reproductive Health, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran;
[2]Midwifery and Reproductive Health Research Center, Department of Nursing and Midwifery, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Corresponding author:
Masoumeh Simbar, PhD; Midwifery and Reproductive Health Research Center, Shahid Beheshti University of Medical Sciences, Postal code 91153-86991, Tehran, Iran

Tel: +98 21 88202512; **Fax:** +98 21 33020695; **Email:** msimbar@gmail.com

Abstract

Background: Pelvic Girdle Pain (PGP) is one of the most common problems during pregnancy. Psychological variables including attitude, belief, cognition, and fear have more effects on risk factors for back pain, compared to biomechanical factors. Moreover, fear and anxiety may be provoked by the prospect of pain, which is associated with higher levels of disability, compared to pain itself. Therefore, this study aimed to investigate the relationship between fear-avoidance beliefs and pain in pregnant women with pelvic girdle pain.

Methods: This descriptive cross-sectional study was conducted on 148 pregnant women with PGP, who referred to the healthcare centers affiliated to Shahid Beheshti University of Medical Sciences in Tehran, Iran from September to December 2017. The samples were selected by the multi-stage method. Data collection tools included a demographic questionnaire, Pelvic Girdle Questionnaire (PGQ) and Fear-Avoidance Beliefs Questionnaire (FABQ). Data analysis was performed in SPSS version 22, using descriptive statistics, ANOVA, t-test and multiple regression. A P-value less than 0.05 was considered significant.

Results: The subjects' mean age and gestational age were 29.35±5.89 years and 32.78±5.13 weeks, respectively. Mean and SD of Fear-Avoidance Beliefs (FAB) toward PGQ was 41.27±13.67 (from 66). In addition, PGQ was moderate in the majority of participants [84 (56.75%)]. Results of one-way ANOVA demonstrated a significant relationship between the mean total score and the score of dimensions of physical and occupational activities of FAB in different severities of PGQ (P<0.001).

Conclusion: The results of this study indicated that fear-avoidance and catastrophic beliefs, in women with PGP can be predicted. According to the results of the study, FAB varied with the severity of pain. In addition, increased pain intensity was associated with elevated score of FAB.

Keywords: Beliefs, Pain, Pelvic girdle pain, Pregnancy

INTRODUCTION

Lower back pain and/or Pelvic Girdle Pain (PGP) is the most common problem during pregnancy, the prevalence of which has been reported around 45%-78%.[1] PGP refers to pain in the symphysis pubis, between the iliac crest and gluteal fold, especially in the region of the sacroiliac joint.[2] Factors affecting the emergence of pain during pregnancy can be related to physiological and hormonal changes, stress, and lack of job satisfaction.[2] According to the literature, PGP may cause different degrees of disability.[3] In addition, this condition is observed in most societies and countries of the world; its common treatments include rest, avoidance of intense activities, physiotherapy, exercise therapy, acupuncture, various sports protocols during pregnancy, correct ergonomics, use of lumbar corsets, and in some cases, topical analgesic and anesthetic agents.[4]

On the other hand, diagnosis, determination of treatments with non-invasive methods and prevention of PGP before pregnancy seem necessary due to limitations in the assessment and treatment of this condition during pregnancy.[5] Therefore, both physical and mental dimensions must be considered to prevent the pain.[6] Repetitive relapses of pain and its significant psychological, environmental and social factors have turned it into a chronic and disabling condition.[7] Psychological variables, including attitude, belief, cognition, anxiety and concern, have more effects on the risk factors of back pain, compared to biomechanical factors.[8] Several psychological, social and cultural factors can play an effective role in the progression and persistence of pain syndromes and response to treatment.[9]

The initial response of a large number of individuals to low back pain is instinctively avoiding anything that is recognized as intensifier of back pain. However, fear of pain might cause constant avoidance of the mentioned situation after a while. While this type of behavior is somewhat normal, it leads to an inadequate understanding of pain in some cases, provoking fear and anxiety, and finally leading to fear of moving and inability to perform daily, occupational and social activities.[10] According to some researchers, pain-related fear is more debilitating, compared to pain itself.[11]

The results of studies are contradictory. In a study, pregnant women with PGP had significantly higher levels of negative thoughts and Fear-Avoidance Beliefs (FAB).[12] In another study, there was a correlation between pain intensity, avoidance behavior and disability. A strong correlation was observed between pain and disability.[13] In a study, belief in avoiding fear and the number of pain sites were not significantly associated with the severity of disability or pain.[14] Also, in a study on patients with Low Back Pain (LBP), there was no relationship among the Centre of Pressure measurements, fear of pain, and pain.[15] Results obtained in a study revealed that the influence of FAB on disability was minimal and much less than that of pain severity, and their contribution to the patient's quality of life was irrelevant. Further studies should explore the potential value of FAB in other countries.[16] The relationship between pregnancy-related lumbar pain and its impact on women's lives or the most effective strategies is still unclear. Catastrophic beliefs and fear avoidance in pregnant women with PGP have not been investigated.[12]

Fear is a more specific form of anxiety, which leads to a particular threat. In response to the fears caused by the great catastrophe and trying to control the painful event in future, patients are involved in avoiding and avoidance behaviors.[17]

Avoidance of fear is interpreted as escaping which leads to disruption of cognitive function and increased psychological responses. However, these reactions might be significantly more severe and cause a more serious condition in individuals with higher levels of fear.[18]

During pain, the patient seeks to escape the feeling of fear of pain. It is likely that the patient will become distressed in future

when experiencing pain, resulting in avoidant behaviors. In any case, to stop the pain or avoid pain in the future, it is likely that the behavior is significantly changed. Escape and avoidance behaviors as a result of change in activity can lead to a three-dimensional disadvantage syndrome of disability, falling short of depression. It can be assumed that engaging in avoidance behaviors is the most important variable in predicting and determining whether a person will become disabled.[19]

With this background in mind, this study aimed to determine FAB toward PGP in pregnant women, who referred to the selected healthcare centers affiliated to Shahid Beheshti University of Medical Sciences in Tehran, Iran in 2017.

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted on 148 pregnant women with PGP, who referred to the selected healthcare centers affiliated to Shahid Beheshti University of Medical Sciences in Tehran from September to December 2017.

Sample size was estimated at 148 individuals based on Olsson et al.'s study (2009)[12] and according to the prevalence formula and d=0.8, 95% confidence interval, P=44%.

$$n = \frac{z^2\, p(1-p)}{d^2}.$$

Subjects were selected through multi-stage sampling; one center from each of the five districts of Tehran was selected using the random number table and in proportion to the number of referrals for pregnancy cares. In addition, in each center women were selected through convenient sampling. Inclusion criteria were obtaining written informed consents from the subjects, gestational age of >20 weeks, diagnosis of PGP with Long Dorsal Sacroiliac Ligament (LDL) test, lack of underlying diseases, and no experience of intense stressful events during the past three months. Exclusion criterion was lack of willingness to continue participation

in the research. Data collection tools were demographic characteristics questionnaire, Pelvic Girdle Questionnaire (PGQ), and Fear-Avoidance Beliefs Questionnaire (FABQ).

Demographic characteristics questionnaire: it includes gestational age, age, the spouse's age , level of education, occupational status and types of parity.

Pelvic Girdle Questionnaire (PGQ): it has been designed by Stuge et al (2011), encompassing two subscales of activity and symptoms. The subscale of activity includes 20 items, whereas the subscale of symptoms has five items. In addition, the minimum score of activity and symptoms subscales were zero and the maximum score of activity and symptoms subscales was 60 and 15, respectively; also, the total score of the questionnaire was 75. Items were scored according to a four-point Likert scale. PGQ score less than 28 is mild, between 28 to 62 is moderate and more than 62 is severe. Evaluation of reliability and validity of the PGQ was performed by Stuge et al. (2011). Results were test-retest of reliability, including ICC: 0.93 (0.86-0.96) for the activity and 0.91 (0.84-0.95) for the symptom subscale.[20] Face and content validities were assessed according to the World Health Organization's International Classification of Functioning, Disability and Health. Evaluation tools take three forms: a short version for screening/case-finding purposes; a version for daily use by care-givers; and a long version for detailed research purposes.[21] Rasch analysis was used for item reduction. Rasch model ($\chi2$:8.00; P 0.63) indicated a unidimensional construct of the symptom subscale.[20] In the present study, the validity and reliability of pelvic pain questionnaire were evaluated. Content validity ratio was assessed 0.75-0.80 and content validity index was assessed 0.60-0.75. Exploratory factor analysis and Confirmatory factor analysis confirmed two-factors, that determined 70.22% of the variance. In the confirmatory factor analysis, the results of Chi-square test for Goodness of Fit were obtained firstly (df=274, $\chi2$=1324.55, P<0.001).

Other indicators were evaluated for fitting of the model. All indices, including NNFI=0.96, NFI=0.94, PNFI=0.86, CFI=0.96, IFI=0.96, RFI=0.94, confirmed the fitness for the final model. Also, the findings showed that internal consistency with Cronbach's alpha was 0.96 (ranged from 0.87 to 0.91). The test-retest reliability with an ICC of 0.83.

LDL test: It is a diagnostic clinical test. The patient sleeps and lifts both the hip and knee joint slightly. The examiner is beside her and touches the sacroiliac joint. If the touch causes pain remaining after the removal of the examiner for more than five seconds, it will be considered as pain and if the pain disappears within 5 seconds, it will be recorded as tenderness. The sensitivity and specificity of this test for diagnosis of pelvic pain were 0.86 and 0.98, respectively.[22]

Fear-Avoidance Beliefs Questionnaire (FABQ): this 16-item questionnaire was scored according to the seven-point Likert scale, allocating zero and six scores to the alternatives of completely disagree and completely agree, respectively. The first two sections, or the physical section, consisted of five items evaluating pain-related avoidance behaviors toward physical activities. The second section contained 11 items, which assessed pain-related avoidance behaviors toward occupation. It is noteworthy that algebraic sum of four items (questions two to five) was provided to score the responses of the items in the physical section. In addition, minimum and maximum scores were zero and 24, respectively. Other items (1, 8, 13 and 16) were not regarded in scoring. In the second part, the answers to questions 6, 7, 9, 10, 11, 12 and 15 were summed algebraically, with a minimum score of zero and a maximum of 42. The total score of the questionnaire was a minimum of zero and a maximum of 66. The higher the score, the greater the avoidance perspective caused by pain. FABQ is a scale designed by Waddell et al. with an ICC of 0.74. Fear-avoidance beliefs about work and about physical activity using Cronbach's alpha were 0.88 and 0.77, accounting for 43.7% and 16.5% of the total variance, respectively. Construct validity was assesd by factor analysis, confirming two dimensions for this questionnaire. The factor structure was explored using principal components analysis with varimax rotation. The items were accepted on the final factors if they had a loading of at least 0.45 on that factor and less than 0.30 on any other factor.[11]

Evaluation of reliability and validity of the FABQ was performed by Rostami et al. in Iran. Results were indicative of reliability, including ICC of 0.802-0.808, and internal consistency at the Cronbach's alpha of 0.89. Exploratory factor Analysis determined two factor structures which could explain 57.9% of the total variance.[23]

Following the receipt of an introduction letter from Shahid Beheshti University of Medical Sciences and permission from the related healthcare centers, the eligible subjects were entered into the study after learning about the objectives of the research. At first, the diagnostic LDL test was performed on the participants, who referred to the selected healthcare centers, with the help of the researcher.

Examination was done in one of the rooms of the health center, in a quiet environment, away from other clients and staff, while explaining the process for participants with respect to privacy. The qestionnaires were filled out by the participants after confirming PGP. Our study did not have missing data.

Data analysis was performed in SPSS version 22, using descriptive statistics, one-way analysis of variance (ANOVA) and t-test. The descriptive statistics including frequency distribution, central indicators and dispersion including mean value and SD were used to describe demographic variables, level of education, types of parity, and occupational status. T-test was used to determine the relationship between primiparous and multiparous women in mean score of FAB.

One-way analysis of variance was used to find the relationship between the mean

score of FAB in various intensity levels of PGP; also, to determine the factors predicting PGP, we used multiple regression analysis. In addition, a p-value less than 0.05 was considered significant. Ethics committee of Shahid Beheshti University of Medical Sciences approved the study with the code number of IR.SBMU.PHNM.1396.800.

RESULTS

In this research, the mean age of the subjects and that of their spouses were 29.35±5.89 and 34.30±6.20 years, and the gestational age was 32.78±5.13 weeks, respectively (Table 1). The mean score of FAB and PGQ was 41.27±13.67 and 39.72±19.33, respectively.

Mean physical, occupational and general scores of FAB were 16.58±5.29, 24.68±8.96 and 41.27±13.67, respectively. In general, PGQ was mild, moderate and severe in 46(31.08%), 84(56.75%) and 18(12.16%) of the subjects, respectively. In addition, results of one-way ANOVA demonstrated a statistically significant relationship between the mean score of FAB in various intensity levels of PGP (mild, moderate, severe) (Table 2).

Table 1: Demographic characteristics of the participants

Demographic characteristics	N (%)
Level of education	
Illiterate	2 (1.35)
Elementary	1 (0.67)
Junior high school	11 (7.44)
High school and diploma	58 (39.19)
Academic degree	76 (51.35)
Types of parity	
Primiparous	87 (58.80)
Multiparous	61 (41.20)
Occupational status	
Employed	94 (63.50)
Housewife	54 (36.50)

According to the results of t-test, a statistically significant relationship was observed between pregnant primiparous and multiparous women in terms of mean score of FAB toward PGQ (Table 3).

The correlation between FAB and PGP scores remained consistent even when potential confounding factors (age, parity) were controlled. Two variables (age, parity) entered the regression, but the results of age variable was not statistically significant (P=0.789) and the only variable (parity) that was significant entered the table (Table 4).

Table 2: Mean score of fear-avoidance beliefs toward physical and occupational activities based on the Pelvic Girdle Questionnaire

FAB[a] Dimensions	PGQ[b]			P value[*]
	(Mild <28)	(Moderate=28-62)	(Severe >62)	
	Mean±SD	Mean±SD	Mean±SD	
Avoidance of physical activities	11.36±3.92	18.32±4.03	21.83±2.09	<0.001
Avoidance of occupational activities	17.30±5.37	26.67±8.22	34.27±4.81	<0.001
Total	28.67±8.61	45.00±11.52	56.11±6.41	<0.001

*One-way ANOVA; a: Fear-avoidance beliefs b: Pelvic girdle questionnaire

Table 3: Mean score of fear-avoidance beliefs toward Pelvic Girdle Questionnaire in participants according to the types of parity

FAB[a] Dimension	Primiparous	Multiparous	P value *
	Mean±SD	Mean±SD	
Avoidance of physical activities	15.66±5.54	17.90±4.64	0.01
Avoidance of occupational activities	23.45±8.68	26.44±9.12	0.04
Total	39.12±13.67	44.34±13.18	0.02

*T-test; a: Fear-avoidance beliefs

Table 4: Adjusted correlation between fear-avoidance beliefs and Pelvic Girdle Questionnaire scores by controlling potential confounding factor

Model	B	R	R²	Std. Error	Beta	t	P-value*
FAB [a]	1.07	0.77	0.60	0.07	0.75	14.49	<0.001
Parity	2.49	0.78	0.61	1.17	0.11	2.12	0.03

*Multiple Regression Analysis; a: Fear-avoidance beliefs

DISCUSSION

The present research was conducted in Iran for the first time to determine the FAB toward pain in various intensity levels in women with PGP. According to the results, FAB toward pain increased with elevated severity of PGP. In a study conducted on women with chronic low back pain in Isfahan, there was a positive and significant relationship between pain variables with anxiety, pain disaster and fear avoidance beliefs. However, among these three variables, fear avoidance beliefs showed a stronger relationship.[9]

Another study conducted on women in the 19-21th weeks of pregnancy in Stockholm revealed that pregnant women with lumbopelvic pain had higher levels of negative thoughts and FAB.[12] That is consistent with the results of the present study, indicating that women with chronic low back pain interpret chronic pain activities as a disgusting stimulus, so they refrain from these activities. Thus, the negative evaluation of an activity as a negative stimulus causes the patient to refuse to take into account the outcomes of the activity and the expectations about the pain of the movement. In this way, the positive and strong relationship between pain and these negative beliefs will explain the inability of the patient to be involved, consequently leading to inactivity.[9]

In a study conducted on Saudi women with chronic low back pain, there was a positive and significant relationship between disability with physical activity and work, confirming the relationship between low back pain-related disability with fear avoidance beliefs.[24]

Although the tools used to measure the disability of the patient in this study and those of our study are different, the results of these two studies are consistent. In a recent study, self-reported questionnaire was used to measure disability, so participants may indicate the degree of pain and disability which makes it different from the actual pain and disability, and this may be a significant cause of the relationship between the two belief variables due to fear and disability caused by pain.

Another study, conducted on patients with low back pain, showed that there was a significant correlation within Fear-Avoidance Beliefs Questionnaire for Physical Activity (FABQ-PA) with Roland Morris Disability Questionnaire (RMDQ).[25] These results are consistent with those of our study. Perhaps, the reason for this similarity is that the presence of back pain was confirmed by an expert (not commenting on the presence of low back pain by the patient without a doctor's or expert's examination).

Also, in a study conducted on patients with low back pain, a significant correlation was not found between the results of FABQ-PA and MODQ. This discrepancy with the results of the present study might be due to differences in the collection tools, the age range of the participants, and the gender of the participants. Also, a self-report questionnaire was used to measure incapacity, so the participants may indicate the degree of pain-related disability different from actual pain and disability.[26]

In a study conducted in Denmark on patients with LBP there was no relationship among the centre of pressure measurements, fear of pain, and pain.[15] In another study conducted on women from early to late pregnancy, belief in avoiding fear and the number of pain sites were not significantly associated with severity of disability or pain.[14] This is not consistent with the results of the present study. The reason

for this inconsistency may be the difference in the type of study, different age ranges of pregnancy during the measurement of pain and disability, and the measurement difference.

In several studies, it has been shown that fear of displacement depends on compensation status and depression. In addition, people who report high degrees of fear of displacement of injury have more fear and avoidance when faced with a simple movement. This focused on the clinical relevance of the structure of fear of injury.[27, 28] There are numerous mechanisms showing that the fear of pain can lead to inability to move; they include attention to pain, and catastrophic view about it. Fear of avoidance behavior is the immediate consequence that will cause the person not to perform daily activities. Avoidance of daily activities impairs one's performance.[29, 30]

Avoidance of fear is interpreted as escaping from a condition that might be associated with pain, leading to disruption of cognitive function and increased psychological responses. However, these reactions might be significantly more severe and cause a more serious condition in individuals with higher levels of fear. In general, fear affects the reaction to and evaluation of pain.[18]

According to the results of the current study, FAB was significantly more observed in multiparous women, compared to primiparous subjects. The number of deliveries and experience of back or hip pain in the previous pregnancy are among the risk factors for back pain during pregnancy.[31] Multiparous women with low back or hip pain have possibly experienced previous pain.[32] It has been reported that previous negative experience leads to fear and avoidance. In addition, pain-related negative beliefs cause negative emotions and change the level of pain tolerance, increasing the possibility of the occurrence of more severe outcomes, physical inabilities, and fear and creating the foundation for anxiety and formation of fear-avoidance behaviors.[28, 33, 34] On the other hand, women avoid re-experiencing traumatic events and conditions.[35]

The strengths of this study were the diagnosis of pelvic girdle pain with clinical diagnostic test (ligament Long dorsal sacroiliac), as well as subjective pelvic girdle pain questionnaire.

One of the major limitations of the present research was lack of considering the role of other effective factors such as depression and anxiety in this area.

Conclusion

The results of this study indicated that fear-avoidance and catastrophic beliefs, in women with PGP could be predicted. According to the results of the study, FAB varied with the severity of pain. In addition, increased pain intensity was associated with increased score of FAB. It is suggested that further studies should be conducted on the outcomes and consequences of FAB in women with PGP during and after pregnancy.

Acknowledgment

Conflict of Interest: None declared.

References

1 Bishop A, Holden MA, Ogollah RO, et al. Current management of pregnancy-related low back pain: a national cross-sectional survey of UK physiotherapists. Physiotherapy. 2016;102:78-85.

2 Vleeming A, Albert HB, Östgaard HC, et al. European guidelines for the diagnosis and treatment of pelvic girdle pain. European Spine Journal. 2008;17:794-819.

3 Robinson HS, Mengshoel AM, Bjelland EK, Vøllestad NK. Pelvic girdle pain, clinical tests and disability in late pregnancy. Manual Therapy.

2010;15:280-5.

4 Mirbod SM, Sarami H, Mortazi F, Zarinmoghadam M. Effects of isometric exercise on the alleviation of lumbar and pelvic pain in pregnant women resident in Isfahan. Journal Of Research In Rehabilitation Sciences. 2011;7:621-32. [In Persian].

5 Haddad Mehrjerdi S, Moazzami M, Tara F. Effect of physioball selected exercise on low back pain, lumbar lordosis, strength and flexibility in pregnant women. The Iranian Journal of Obstetrics, Gynecology and Infertility. 2016;18:20-31. [In Persian].

6 Bogduk N. Psychology and low back pain. International Journal of Osteopathic Medicine. 2006;9:49-53.

7 Latthe P, Mignini L, Gray R, et al. Factors predisposing women to chronic pelvic pain: systematic review. BMJ. 2006;332:749-55.

8 Ramond A, Bouton C, Richard I, et al. Psychosocial risk factors for chronic low back pain in primary care -a systematic review. Family Practice. 2011;28:12-21.

9 Sajjadian I, Neshat Dost HT, Molavi H, Bagherian-Sararoudi R. Cognitive and emotional factors effective on chronic low back pain in women: Explanation the role of fear-avoidance believes, pain catastrophizing and anxiety. Journal of Research in Behavioural Sciences. 2011;9:79-90. [In Persian]

10 Vroman K, Warner R, Chamberlain K. Now let me tell you in my own words: narratives of acute and chronic low back pain. Disability and Rehabilitation. 2009;31:976-87.

11 Waddell G, Newton M, Henderson I, et al. A Fear-Avoidance Beliefs Questionnaire (FABQ) and the role of fear-avoidance beliefs in chronic low back pain and disability. Pain. 1993;52:157-68.

12 Olsson C, Buer N, Holm K, Nilsson-Wikmar L. Lumbopelvic pain associated with catastrophizing and fear-avoidance beliefs in early pregnancy. Acta Obstet Gynecol Scand. 2009;88:378-85.

13 Sieben JM, Portegijs PJ, Vlaeyen JW, Knottnerus JA. Pain-related fear at the start of a new low back pain episode. European Journal of Pain. 2005;9:635-41.

14 Robinson HS, Veierød MB, Mengshoel AM, Vøllestad NK. Pelvic girdle pain-associations between risk factors in early pregnancy and disability or pain intensity in late pregnancy: a prospective cohort study. BMC Musculoskeletal Disorders. 2010;11:91.

15 Maribo T, Schiøttz-Christensen B, Jensen LD, et al. Postural balance in low back pain patients: criterion-related validity of centre of pressure assessed on a portable force platform. European Spine Journal. 2012;21:425-31.

16 Kovacs FM, Muriel A, Abriaira V, et al. The influence of fear avoidance beliefs on disability and quality of life is sparse in Spanish low back pain patients. Spine. 2005;30:E676-82.

17 Lethem J, Slade PD, Troup JD, Bentley G. Outline of a fear-avoidance model of exaggerated pain perception--I. Behaviour Research and Therapy. 1983;21:401-8.

18 . Zale EL, Ditre JW. Pain-related fear, disability, and the fear-avoidance model of chronic pain. Current Opinion in Psychology. 2015;5:24-30.

19 Geisser ME, Haig AJ, Theisen ME. Activity avoidance and function in persons with chronic back pain. Journal of Occupational Rehabilitation. 2000;10:215-27.

20 Stuge B, Garratt A, Krogstad Jenssen H, Grotle M. The pelvic girdle questionnaire: a condition-specific instrument for assessing activity limitations and symptoms in people with pelvic girdle pain. Physical Therapy. 2011;91:1096-108.

21 World Health Organization. International Classification of Functioning, Disability and Health: ICF. Geneva: World Health Organization; 2001. [Cited 22 May 2001] Available from: http://www.who.int/classifications/icf/icf_more/en/

22 Vleeming A, de Vries HJ, Mens JM, van

Wingerden JP. Possible role of the long dorsal sacroiliac ligament in women with peripartum pelvic pain. Acta Obstet Gynecol Scand. 2002;81:430-6.

23 Rostami M, Noorian N, Mansournia MA, et al. Validation of the Persian version of the fear avoidance belief questionnaire in patients with low back pain. Journal of Back and Musculoskeletal Rehabilitation. 2014;27:213-21.

24 Buragadda S, Aleisa ES, Melam GR. Fear Avoidance Beliefs and Disability among Women with Low Back Pain. Neuropsychiatry (London). 2018;8:80-6.

25 Chung EJ, Hur YG, Lee BH. A study of the relationship among fear-avoidance beliefs, pain and disability index in patients with low back pain. Journal of Exercise Rehabilitation. 2013;9:532-35.

26 Cai C, Pua YH, Lim KC. Correlates of self-reported disability in patients with low back pain: the role of fear-avoidance beliefs. Ann Acad Med Singapore. 2007;36:1013-20.

27 Marshall PWM, Schabrun S, Knox MF. Physical activity and the mediating effect of fear, depression, anxiety, and catastrophizing on pain related disability in people with chronic low back pain. PloS One. 2017;12:e0180788.

28 Quartana PJ, Campbell CM, Edwards RR. Pain catastrophizing: a critical review. Expert Review of Neurotherapeutics. 2009;9:745-58.

29 Wertli MM, Rasmussen-Barr E, Held U, et al. Fear-avoidance beliefs-a moderator of treatment efficacy in patients with low back pain: a systematic review. The Spine Journal. 2014;14:2658-78.

30 Leeuw M, Goossens ME, Linton SJ, et al. The fear-avoidance model of musculoskeletal pain: current state of scientific evidence. Journal of Behavioral Medicine. 2007;30:77-94.

31 Räisänen S, Lehto SM, Nielsen HS, et al. Fear of childbirth in nulliparous and multiparous women: a population-based analysis of all singleton births in Finland in 1997–2010. BJOG. 2014;121:965-70.

32 Uemura Y, Yasui T, Horike K, et al. Factors related with low back pain and pelvic pain at the early stage of pregnancy in Japanese women. International Journal of Nursing and Midwifery. 2017;9:1-9.

33 Chang HK, Herr KA, Sohn JN, et al. Prediction of pain outcomes in Korean older adults: Use of a structural equation model. Pain Medicine. 2007;8:75-83.

34 Nicholas MK, Coulston CM, Asghari A, Malhi GS. Depressive symptoms in patients with chronic pain. The Medical Journal of Australia. 2009;190:66.

35 Elmir R, Schmied V, Wilkes L, Jackson D. Women's perceptions and experiences of a traumatic birth: a meta-ethnography. Journal of Advanced Nursing. 2010;66:2142-53.