

The mediating role of cognitive emotion regulation in the relationship between sexual pain disorder based on early maladaptive schemas and sexual schemas: study of structural equation mode

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Abstract

Introduction: The criterion of a healthy family is the couple`s sexual satisfaction. The aim of this study was to investigate the mediating role of cognitive emotion regulation in the relationship between sexual pain disorder based on early maladaptive schemas and sexual schemas.

Methods: The Research method was descriptive and the statistical population included all women referred to sex clinics in Tehran that 220 qualified women were selected using cluster sampling. In this study, Granfsky Cognitive Emotion Regulation Scales, Young Form Scheme, Anderson and Siranowski Sexual Schematic, and Vaginismus Raisi et al. were used as tools. The evaluation of the proposed model was done through structural equation modeling (SEM) and using AMOS software. Intermediate relationships in the proposed model were tested using the bootstrap method.

Results: The results of structural equation modeling indicated an acceptable fit of the model and showed that early maladaptive schemas and sexual schemas with the mediation of cognitive regulation of emotion predict sexual pain disorder.

Conclusion: Therefore, it is recommended to pay attention to these components in clinics and treatment centers for sexual disorders in order to treat and improve sexual pain disorder.

Key words: Cognitive emotion regulation, early maladaptive schemas, Sexual pain disorder, sexual schemas

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Introduction:

No society can claim to be healthy unless it has healthy families (1). The primary and most important criterion for a healthy family is couple satisfaction (2). Sex is one of marriage's most important influencing factors (3). Any disorders in sex can affect the couple's life (4). Sexual disorders significantly impact the quality of married life (5). Vaginismus is one of the sexual disorders that can have a negative and unpleasant effect on the sexual relations of couples.

Vaginismus is an abnormal contraction in the muscles of the outer third of the vagina, which prevents the penetration of the male penis and intercourse. This reaction may also appear in women's examinations and can prevent the entry of the speculum into the vagina. When other factors cause the disorder, or it has the symptom of another mental disorder, this diagnosis is not made (1). The prevalence of sexual function disorders, including vaginismus, differs in societies. In Middle Eastern countries, society is based on the family, and sexual problems can affect families' well-being. In this region of the world, the women who suffer from sexual disorders don't share their sexual problems with family medicine, and this behavior can be related to cultural factors (6). Sain's study (7) indicates that the prevalence of vaginismus disorder is increasing in Turkey. The findings of a meta-analysis suggest that vaginismus is prevalent in 95% of infertile Iranian women (8). Vaginismus disorder has many consequences, such as low satisfaction level with sex, depression, aggression, the feeling of shame, inefficiency in couples, unhappy marriages and finally, betrayal and sexual promiscuity (9). Some research evidence indicates that 50 to 60 percent of divorces in Iran are related to sexual problems and disorders (10). In the conducted studies, women diagnosed with vaginismus experienced higher pain levels, catastrophic recognition and harm avoidance scores than healthy women (11). Friedman (12) presented a hypothesis that vaginismus is related to personality traits, and the women who frequently use defense mechanisms and have emotional conflicts about sexual issues will suffer from vaginismus. Vaginismus can be associated with other sexual disorders such as arousal disorder/sexual interest of women and low satisfaction in sexual life (13).

Although the etiology of vaginismus is unknown (14) and can be influenced by some factors such as medical, psychological, socio-economic, cultural and racial diversity (15), in most cases, psychological factors can cause vaginismus disorders (3). It seems that all kinds of stress, being unaware of physiology and sexual function, emotional problems and beliefs and a person's knowledge about sexual activities and roles can have a negative effect on sexual function and vaginismus disorder (16). As mentioned, one of the influencing factors on vaginismus disorder is emotional factors; in fact, it can be said that normal sexual behavior brings pleasure to the person and his partner, during which the primary sexual organ is stimulated, and intercourse occurs. In this case, the person and her partner will not feel guilty or anxious, while painful intercourse can lead to tension, anxiety and negative emotions (3). Women with vaginismus have difficulty establishing emotional relationships with their husbands and cannot express their positive feelings. They experience strong negative feelings (17), so they may protest in a non-verbal way (3). Cognitive emotion regulation strategies refer to a person's thoughts after a negative or traumatic

experience. Hence, people use different strategies to regulate their emotions, some of which are compromised and adaptive and others uncompromising and non-adaptive (18). One of the most critical skills for our survival is the flexible regulation of emotions under environmental conditions (19). Adaptive emotion regulation leads to successful performance in the environment. When this person faces a problematic emotional experience, she can use some behaviors that are aimed at achieving his goal (18). The cognitive regulation of emotion is used to change or adjust an emotional state and includes some strategies that maintain, increase or decrease feelings (20). Okomo, Ogugbue, Inyang, and Mermikwu (21) found in their study that the experience of pain or painful intercourse and negative feelings during sexual intercourse prevents women from orgasm. They examined women's negative emotional experiences and rehabilitated them through intervention. They reported that the intervention has effectively reduced the destructive effects of negative emotions on the sexual life of the participants, and sexual disorders are associated with psychological problems such as depression and anxiety. Terkuille and weijenborg (22) tried to check whether women with vaginismus can always have pleasurable sex with positive emotions or not. They reported that relaxation training while experiencing positive emotions was a successful treatment for this disease. The results of Mojtabai, Sabri and Alizadeh's research (23) indicate that women with vaginismus disorder have "negative cognitions and emotions" about vaginal penetration.

Early Maladaptive Schema (EMS) also overshadows sexual relations (24). In sexual disorders, the active ideas of Early Maladaptive Schemas cause an unsuccessful sexual experience. When these beliefs are engaged, they cause negative emotions and thoughts, which affect sexual responses (9). The cognitive schemas are defined as the main idea of the people about sexual matters and themselves as sexual beings. People with sexual disorders often have an incorrect and unrealistic opinions about sexual issues (25). Cognitive schemas originate from past experiences; they affect current performance and direct future sexual behaviors. Women with sexual disorders (including vaginismus) have a more active negative cognitive schema. Therefore, they are less involved in emotional issues, avoid intimacy, and have higher anticipated abandonment anxiety (26). Early Maladaptive Schemas can be described as a picture of self-stable life themes and inconsistencies caused by repeated adverse experiences with others during childhood and adolescence (27). Because of these toxic experiences, the basic psychological needs are unmet, making the person vulnerable and creating early Maladaptive Schemas (27). Young et al. proposed 18 Early Maladaptive Schemas organized into 5 domains which correspond to the frustration of 5 basic psychological needs in childhood. The 5 basic needs are secure attachment, Autonomy, realistic constraints, directedness and playfulness (27). According to Young's theory, these ideas (schema) that are learned in childhood may not be able to help people to cope with life issues in adulthood. Schemas can directly or indirectly cause depression, anxiety disorders, feeling of loneliness, inability to maintain relationships, substance abuse, and eating disorders (28). Based on Beck's

cognitive theory, the result showed that the cause of sexual disorders could be Early Maladaptive Schemas (9 and 29).

Also, Oliveria and Nobre (30) have indicated Early Maladaptive Schemas' prominent role in women with sexual dysfunction. These women showed more Vulnerability to harm and illness in dependence/incompetence areas. In addition, women who showed negative responses and reactions in sexual situations and had sexual defects had higher scores in the schemas of incompetence, self-depreciation and difference/loneliness. Research findings of Sadeghi Bid Meshki and Mir Hashemi (31) state that there is a significant correlation between the component of cutting and rejection with the element of sexual performance. The results of the present study, the studies mentioned above, and the results of Dikman and Sefak's (32) study show some differences in the Early Maladaptive Schemas in patients with vaginismus in comparison to normal patients. These differences were evident in terms of negative/pessimism, approval seeking, recognition seeking, punitiveness, vulnerability/vulnerability to harm or illness, unrelenting standards, hyper criticalness. The subscale scores were higher in the group of women with vaginismus than the healthy women, and a significant difference was seen.

Various cognitive factors are influential in sexual misconduct and marital dissatisfaction. Epstein and Baucom (33) state that sexual schemas are a type of knowledge, and they are essential in marital relationships (34). Sexual schemas are defined as a person's cognitive generalization, which is considered as one of the fundamental aspects of sexual self-beliefs, and it originates from past experiences and manifests in current sexual behavior; for example, a previous sexual experience that led to embarrassment may lead one to believe that I am sexually disabled. One's thoughts about sexual schemas are affected by observing, experiencing and discovering the sexual behaviors, emotions, attitudes and beliefs (35). In romantic relationships, sexual schemas affect how a person perceives and organizes information and the meaning people get from information (14).

Women can experience positive or negative sexual schemas. Positive sexual schemas can lead people to experience positive emotions and behaviors, satisfying sexual action and more arousal; on the other hand, negative sexual schemas can lead people to experience negative feelings and behaviors, distress, problems and sexual disorders in relationships. More shame or conservatism has been reported among the people who have experienced the second situation (35). Women with negative tendencies towards sexual schemas may describe themselves as unromantic, self-conscious, and insecure when it comes to sex, so it's essential to consider schemas, their modification, changes and their place in sexual relations (23). The study of Sharifian, Saffarinia and Alizadeh Fard (36) showed that passionate-romantic sexual schema and shy-cautious sexual schema with the interference of fairness style indirectly affect sexual pain disorder. Radlove (37) showed in a study that women with positive sexual schemas have better feelings about their sexual experiences, and they have satisfying sex in comparison to women with negative schemas. Also, the study of Zargarinejad and Ahmadi (38) showed that people with a positive sexual schema compared to those with a negative sexual schema have more positive feedback about sexual issues and sexual satisfaction and sex.

Although many studies have been conducted about the sexual issues in Iran and the world, there is still insufficient research on vaginismus disorder, especially about the role of essential issues such as cognitive regulation of emotion, sexual schema and Early Maladaptive Schema that are rooted in childhood experiences and the person's relationship with parents in childhood. The present study tries to determine the factors which seem to play a role in vaginismus disorder. And it wants to present a model by using the structural equation model to investigate the relationship between sexual schema, Early Maladaptive Schema, and vaginismus disorder through the intervention of cognitive emotion regulation and test the structure of the model and answer the question: "can cognitive emotion regulation intervene between the Early Maladaptive Schema and sexual schema with vaginismus disorder? The structure of this model is illustrated in Figure 1.



Fig. 1: Conceptual model of research

Method:

This study's purpose is practical, using correlative and structural equations for descriptive data collection. The necessary information was collected in the field and through a questionnaire. The statistical population of this study includes all women with dyspareunia who were referred to sexual health clinics in Tehran. Three clinics in Tehran city (family health, Nikandish Pishro and specialized clinic for women's neurology and sexual health) were selected using a cluster random sampling method. Based on the DSM-5 diagnostic criteria, the diagnosis of a psychiatrist and a clinical psychologist, 220 women with dyspareunia referred to these clinics were selected as research samples.

It should be noted that since the study must include 10 to 45 people for each variable in sample correlation research (39), and since there are 4 variables in the present study, 45 people were selected for each variable to ensure more meaningful results. By considering the possible dropout and generalizability, 220 people were considered. Among the entry conditions, having vaginismus disorder based on DSM-5 diagnostic criteria, absence of psychiatric disorder based on an interview with a psychiatrist, not having any sexual problems, not taking medication and being married at least for one year were necessary. After obtaining oral consent and freedom of action for participation or refusal in the research, the participants will be given brief information about the study's objectives. The participants will be ensured of information non-disclosure and confidentiality. The participants were asked to read all the questions carefully and answer them based on the written instructions on the questionnaires. There was no need for writing participants' names and surnames. Garnefski emotional regulation questionnaires (2001), The Young Schema Questionnaire-Short Form (2003), Anderson and Cyranowski sexual schema (1994) and Raisi et al. vaginismus diagnostic questionnaire (2016) was used as tools in this study.

Sexual Schema Questionnaire: Sexual Self-Schema Scale is made by Anderson and Cyranowski (40). Sexual schema is a cognitive generalization of a person's sexual dimensions. This questionnaire consists of 50 items, and 24 attributes are presented in it as covering things to cover the central nature of the test along with the 26 main attributes. Content validity of the Persian version of this scale has been measured and verified by Mojtabaei, Sabery and Alizadeh (23). Cronbach's alpha coefficient of this scale is reported to be 0.82 in Karimnejad Niaragh, Borjeli, Alavian, and Azartash Shandi's report (34). According to the study of Anderson and Cyranowski (40), the internal consistency of this scale using Cronbach's alpha coefficient for the whole scale and each factor is as follows: a full scale (0.82); factor 1 (0.81); factor 2 (0.77); factor 3 (0.66). The retest coefficient of this scale on a sample of 387 people in two weeks is as follows: The full scale is 0.89; factor 1 (0.72); factor 2 (0.76); factor 3 (0.85).

Cognitive Emotion Regulation Questionnaire: It was prepared by Garnefski, Kraaij and Spinhoven (41). This questionnaire is a multidimensional and self-report questionnaire with 36 items, the scale of cognitive emotion regulation evaluates nine cognitive strategies of Self-Blame, Acceptance, Rumination, Positive Refocusing, Refocusing on Planning, Positive Revaluation,

Putting into perspective, Catastrophizing, and Blame others. These 9 scales are divided into two categories of positive or adaptive cognitive emotion regulation and negative or maladaptive cognitive emotion regulation. Garnefski et al. (41) have reported a desirable validity and reliability for this questionnaire. The total validity of positive, negative and complete strategies using Cronbach's alpha coefficient is obtained at 0.91, 0.87, and 0.93, respectively. This scale's structural validity and reliability have been confirmed in Iran using confirmatory factor analysis. Its validity has been reported using Cronbach's alpha coefficient for each subscale between 0.64 and 0.82. Etemadi, PourSharifi, Tajeri, Kalantari, and Hawasi-Somar (42) obtained Cronbach's alpha of 0.81.

Young's Schema Questionnaire (YSQ-SF): This questionnaire was created by Young in 1988 to measure 15 Early Maladaptive schemas. It has 75 items. These 15 schemas fall into the five domains of abandonment, impaired autonomy and Performance, other-directness, over vigilance, and impaired limits, with the primary developmental areas. Schmidt et al. (28) obtained an alpha coefficient from 0.83 to 0.96 for each Early Maladaptive Schema. Sadooghi, Vafaie, RasoulZadeh Tabatabaie, and Esfahanian (43) have determined the internal consistency of the entire questionnaire be about 0.94.

Dyspareunia questionnaire: Molaeinezhad, Salehi, Merghati, Khoei, Latif-Nezhad Roudsari, Salehi and Yousefy's (44) Multidimensional Vaginal Penetration Disorder Questionnaire was used to measure the dyspareunia. This questionnaire has 72 items and 9 dimensions of catastrophic thoughts, helplessness, marital adjustment, avoidance, motivation to penetrate, sexual information, hypervigilance, optimism and genital incompatibility. The reliability of the subscales was obtained between 0.70 and 0.87 by the retest method Molaeinezhad, Salehi, Merghati, Khoei, Latif-Nezhad Roudsari, Salehi and Yousefy. (44) conducted a study to design and psychoanalyze a tool for evaluating dyspareunia with a qualitative, quantitative, exploratory approach. In the first part of the study mentioned above, the data were collected through individual interviews among 20 couples with marital disorders who were purposefully selected from the Infertility and Psychosexual Clinic of Isfahan. These data were analyzed by the method of life history and collected sexual stories by thematic analysis method. In the second part of this study, the items of two female and male questionnaires were designed and after determining validity form and content with 76 and 45 items by 214 couples who visited three sex clinics through invitations and the reason for their marital disorder was vaginismus based on DSM-IV criteria. The obtained codes, concepts and themes in the qualitative phase were used to do so. Then, the construct validity of both questionnaires was checked by exploratory and confirmatory analysis. The reliability of the questionnaire is also reported through the internal consistency of 0.79. The reliability of this scale in the present study was obtained at about 0.83 using Cronbach's alpha coefficient. Questions 1, 2 and 4 were deleted due to low reliability.

In this research, the collected information was analyzed with the help of statistical methods in two descriptive-inferential parts. Mean, standard deviation and variance, frequency distribution table

and graph were used in the descriptive statistics section, and research hypotheses were investigated by the use of Pearson's correlation coefficient method and structural equation modeling in the inferential area. Spss-22 software and AMOS-24 software were used for data analysis.

Results:

Table 1 illustrates the Mean, standard deviation and correlation coefficients between research variables, including Early Maladaptive Schemas (abandonment, impaired self-management and performance, other-directness, hypervigilance and impaired limits), Sexual Schemas (passionate/Romance, direct straight forward/frank, embarrassment/conservative), cognitive emotion regulation (positive and negative strategies of cognitive emotion) and dyspareunia.

Table 1: Descriptive findings

research variables	1	2	3	4	5	6	7	8	9	10	11
1.disconnection and rejection schema	-										
2.impaired autonomy and performance schema	0/52**	-									
3.other-directedness schema	0/61**	0/54**	-								
4.over vigilance schema	0/58**	0/49**	0/42**	-							
5.impaired limit schema	0/46**	0/61**	0/56**	0/69**	-						
6. passion/romance schema	-0/32**	-0/34**	-0/09	-0/27**	-0/17*	-					
7.direct straight forward/frank sexual schema	-0/14*	-0/18**	-0/02	-0/09	-0/01	0/53**	-				
8.embarrassment/conservatis m schema	0/51**	0/54**	0/46**	0/39**	0/34**	0/20**	-0/16*	-			
9.positive emotion regulation strategies	-0/17*	-0/23**	-0/12	-0/15*	-0/16*	0/31**	0/25**	-0/29**	-		
10.negative emotion regulation strategies	0/56**	0/60**	0/45**	0/41**	0/48**	-0/57**	-0/32**	0/62**	-0/16*	-	
11. dyspareunia	0/52**	0/48**	0/41**	0/51**	0/46**	-0/54**	-0/48**	0/50**	-0/26**	0-62**	-
mean	73/4 0	56/4 2	34/98	35/58	35/94	16/3 1	30/4 8	15/ 43	63/4 9	50/1 4	49/8 6
Standard deviation	18/6 6	15/7 1	1/65	9/03	8/64	7/70	6/13	3/1 9	12/8 2	10/3 7	8/12

*P<0.05, **P<0.01

Table 1 illustrates the correlations between research variables. As the above table shows, all of the Early Maladaptive Schemas are positively correlated at a significance level of 0.01 with dyspareunia. Among the sexual schemas, two schemas of passionate/romance schemas and straight forward/frank are correlated negatively at a significant level of 0.01 and embarrassment/conservative schema is positively correlated at a significant level of 0.01 with dyspareunia. Negative strategies of cognitive emotion regulation are positive and their positive strategies are correlated at a significance level of 0.01 with the dyspareunia.

As it can be seen in table 2, the predictor variables were analyzed in order to evaluate the univariate data distribution normality, skewness and kurtosis of individual variables, to investigate the variance inflation factor (VIF) and tolerance.

Table 2: Examining the assumptions of normality and collinearity

variable	The assumption of normality		Collinearity assumption	
	skewness	kurtosis	Tolerance factor	Variance inflation
disconnection and rejection schema	0/34	-0/66	0/26	3/91
impaired autonomy and performance schema	0/23	-0/82	0/23	4/34
other-directedness schema	0/41	-0/75	0/36	2/81
over vigilance schema	-0/05	-0/62	0/52	1/92
impaired limit schema	-0/14	-0/78	0/44	2/28
passion/romance schema	-0/24	-0/80	0/51	1/96
direct straight forward/frank sexual schema	0/39	-0/47	0/74	1/35
embarrassment/conservatism schema	0/09	-0/63	0/46	2/16
positive emotion regulation strategies	-0/15	-0/56	0/84	1/19
negative emotion regulation strategies	-0/26	-0/20	0/46	2/16
dyspareunia	-0/76	0/13	-	-

Table 2 shows that the skewness and kurtosis values for all of the variables are within ± 2 limit. This indicates the normal data distribution for research variables. Table 2 indicates that the collinearity assumption is established among the data of the present research, because the tolerance coefficient values of all predictor variables are greater than 0.1 and the values of the variance inflation factor for each of them were smaller than 10. According to the mears, Gamest and Goarin's opinion (45) the tolerance coefficient is less than 0.1 and the value of the variance inflation factor is higher than 10, indicating the non-establishment of the collinearity assumption between the research data.

The data analysis of Mahalanobis Distance (D) was used in this research to determine whether or not the assumption of normality of multivariate distribution is established. The values of skewness and kurtosis of the information related to the Mahalanobis Distance are equal to 0.71 and 0.15, which indicated the establishment of the assumption of normality of multivariate distribution. Also standard residuals graph was examined to evaluate the homogeneity of variances, and the results showed that the assumption of homogeneity of variance is maintained among the data of the present study.

Model analysis:

A) Measurement model: only the Early Maladaptive Schemas were latent variables in the present study, and it was assumed that they can be measured by the indicators of disconnection and rejection, impaired autonomy and performance, other-directness, hypervigilance and impaired limits. The research measurement model fitness was analyzed by confirmatory factor, the use of AMOS 24.0 software and the estimation of maximum likelihood (ML). Examining the obtained fitness indices showed that the measurement model has an acceptable fitness with the data. Table 3 shows the fitness indices of the measurement model.

Table 3: fitness indices of the measurement model

Index of fit	Primary measurement	Modified model	Cut-off point
Chi-square	34/23	7/71	-
Degree of freedom of the model	5	4	-
χ^2/df^1	6/85	1/93	Less than 3
GFI ²	0/940	0/986	0/90 >

¹ . Normed Chi-square

² . Goodness Fit Index

AGFI ¹	0/821	0/948	0/850 >
CFI ²	0/960	0/995	0/90 >
RMSEA ³	0/166	0/066	0/08 <

Table 4 indicates that *AGFI*, X^2/df and *RMSEA* indices of the acceptable fitness of the measurement model are not supported with the collected data ($RMSEA = 0.166$, $AGFI = 0.821$, $GFI = 0.940$, $CFI = 0.960$, $x^2/df = 6.85$). For this reason, the measurement model was modified and the fitness indices were obtained by creating the covariance between the errors of the hypervigilance and the impaired limits ($RMSEA = 0.066$, $AGFI = 0.948$, $GFI = 0.986$, $CFI = 0.995$, $x^2/df = 1.93$). In the measurement model, the highest load factor belongs disconnection/rejection ($\beta = 0.904$) and the lowest belongs to the impaired limitations ($\beta = 0.682$). According to Tabachnik and Fidell opinion (46) the factor loadings of 0.71 and above are excellent, the loadings between 0.63 and 0.70 are very good, loadings between 0.55 and 0.62 are good, loads between 0.45 and 0.55 are fair, loads between 0.32 and 0.44 are low and loads below 0.32 are poor. The factor loadings of all indicators are higher than 0.32, therefore all of them have the necessary power to measure the current research variables.

B) Structural model: After ensuring the optimal fitness of the measurement model, in the next step, the model fit indices of the structural model (Figure 1) was estimated and evaluated. In the structural model of this research, it was assumed that the Early Maladaptive schema and sexual schema predict the dyspareunia directly and through the mediation of positive and negative cognitive emotion regulation. The fitness of the structural model was tested by the structural equation modeling method. The results indicated that the structural model with the collected data has an acceptable fitness ($RMSEA = 0.080$, $AGFI = 0.885$, $GFI = 0.951$, $CFI = 0.972$, $x^2/df = 2.34$) therefore it was concluded that the structural model of the research fits the collected data. Table 4 illustrates the total direct and indirect path coefficients between the research variables in the structural model.

¹ . Adjusted Goodness Fit Index

² . Comparative Fit Index

³ . Root Mean Square Error of Approximation

Table 4) The total direct and indirect path coefficients between the research variables in research model.

Paths	b	S.E	β	CR	p	
Direct path	Direct straight forward/frank→Negative strategies of emotion regulation	-0.095	0.085	0.066	-	0.238
	Embarrassment-cautious sexual schema→ Negative strategies of emotion	0.636	0.165	0.292	3.85	0.001
	Passionate/Romance sexual schema → Negative strategies of emotion	-0.291	0.089	0.237	-3.27	0.003
	Early Maladaptive Schema → Negative strategies of emotion	0.134	0.038	0.278	3.53	0.001
	Direct straight forward/frank→Positive strategies of emotion regulation	0.216	0.128	0.137	1.69	0.095
	Embarrassment-cautious sexual schema→ positive strategies of emotion	-0.491	0.248	-0.205	-1.98	0.049
	Direct straight forward/frank → dyspareunia	0.341	0.088	-0.244	-3.88	0.001
	Embarrassment-cautious sexual schema→ dyspareunia	0.037	0.167	0.017	0.22	0.885
	Passionate/Romance sexual schema → dyspareunia	0.133	0.088	0.112	-1.51	0.123
	Early Maladaptive schema → dyspareunia	0.092	0.034	0.196	2.71	0.007
	Negative strategies of emotion→ dyspareunia	0.321	0.086	0.331	3.73	0.001
	Positive strategies of emotion→ dyspareunia	-0.054	0.048	0.061	-1.13	0.250
	Indirect path	Direct straight forward/frank → dyspareunia	-0.042	0.033	0.030	-1.27
Embarrassment-cautious sexual schema→ dyspareunia		0.230	0.067	0.109	3.43	0.001
Passionate/Romance sexual schema → dyspareunia		-0.107	0.032	-0.090	-3.24	0.004
Early Maladaptive schema → dyspareunia		0.041	0.013	0.087	3.15	0.005
Total path	Direct straight forward/frank → dyspareunia	-0.383	0.097	0.274	-3.95	0.001
	Embarrassment-cautious sexual schema→ dyspareunia	0.267	0.162	0.126	1.65	0.128
	Passionate/Romance sexual schema → dyspareunia	-0.239	0.086	-0.201	-2.78	0.009
	Early Maladaptive schema → dyspareunia	0.133	0.036	0.283	3.69	0.001

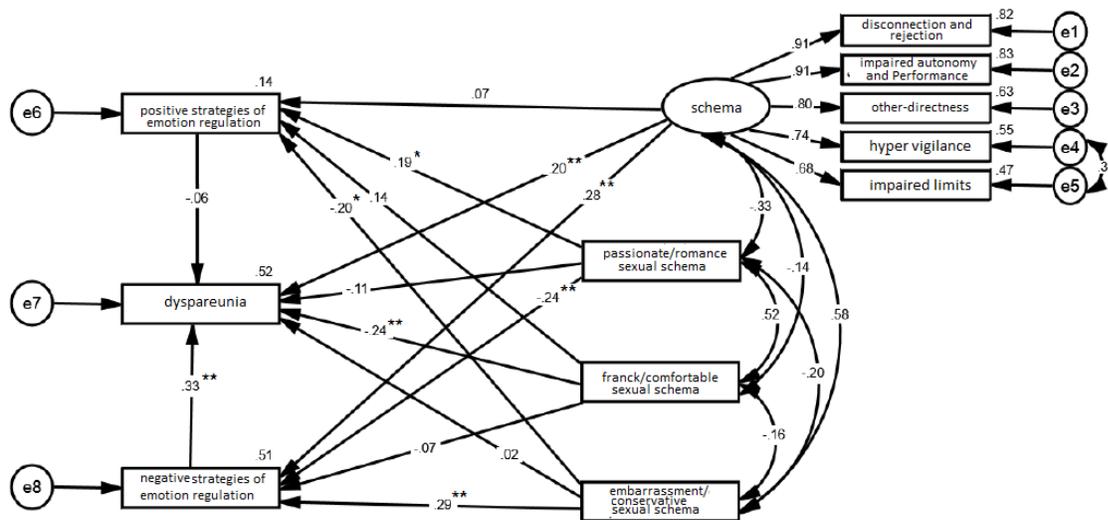
In the following, research hypotheses have been tested based on the results of the above table:

Based on the results of Table 4, unlike the positive strategies of cognitive regulation, the coefficient of the path between its negative strategies and dyspareunia is positive and significant at 0.01 level ($p < 0.01$, $\beta = 0.331$). The total path coefficient between Early Maladaptive Schemas and dyspareunia is positive and significant at the 0.01 level ($p < 0.01$, $\beta = 0.283$). Also, the total path coefficient was between direct straight forward/frank sexual schema ($p > 0.01$, $\beta = -0.274$) and passionate/romance sexual schema ($p > 0.01$, $\beta = -0.201$), and it was negative and significant at 0.01 level with the dyspareunia.

Table 4 indicates that the indirect path coefficient between Early Maladaptive Schemas and dyspareunia is positive and significant at the level of 0.01 ($p > 0.01$, $\beta = 0.087$). Thus, it was concluded that positive and negative strategies of cognitive emotion regulation of the relationship

between Early Maladaptive Schemas and dyspareunia intervenes in a positive and meaningful way¹Painful sex was small and non-significant, so it is reasonable to say that it mediates the relationship between early maladaptive schemas. It should be mentioned that because the path coefficient between the positive strategies of the cognitive emotion regulation and the dyspareunia was small and not significant, it is logical to say that the intervene between the early Maladaptive Schema and the dyspareunia has been done by negative cognitive emotion regulation for the first time. Table 4 shows that the coefficient of the indirect path between shy/conservative sexual schema with dyspareunia is positive and it is significant at the level of 0.01 ($p > 0.01, \beta = 0.109$). On the other hand, the coefficient of the path between passionate/romance sexual schema and dyspareunia is negative and significant at the level of 0.01 ($p > 0.01, \beta = -0.090$). Thus, it was concluded that cognitive regulation strategies of the relationship between embarrassment/conservative sex schema and dyspareunia is positive and the relation between passionate/romance sexual schema and the dyspareunia is negative and significant. Figure 1 illustrates the structural model of research in explaining the relationship between Early Maladaptive Schemas, sexual schemas, cognitive emotion regulation and dyspareunia.

Figure 1: The structural model of the research



As the figure above shows, the sum of squared multiple correlations (R^2) for dyspareunia equals to 0.52. Based on this, we can say the Early Maladaptive Schemas, schemas and cognitive emotion regulation explains 52% of the variance in dyspareunia.

¹ . Bootstrap estimation method was used to calculate indirect path coefficients in this research.

Discussion and Conclusion:

As stated, this research aims to investigate the mediating role of cognitive emotion regulation relation with dyspareunia based on the Early Maladaptive Schemas and the sexual schema. The results of this research showed that cognitive emotion regulation (positive and negative strategies) significantly predicts dyspareunia, actually negative strategies cognitive emotion regulation, contrary to positive strategies of cognitive emotion regulation, predict the dyspareunia in a positive and meaningful way. These findings are in line with the results of previous studies (21) and (22). Previous studies have shown that people who have a higher level of cognitive emotion regulation have more psychological well-being and life satisfaction than others, and people who have obtained higher ability scores in cognitive emotion regulation have reported more strategies adaptive emotion regulation and less use of Maladaptive strategies (47). In Sohrabi and Daneshmand's study (48) it was shown that the cognitive emotion regulation had a direct effect on sex and satisfaction from sex. Dube, Corsini-Munt, Muies and Rosen (49) showed in their study that women suffering from female sexual/arousal disorder had more problems in emotional regulation than the control group. Also, the findings of the study of Sarin, Asmel and Binik (50) showed that women with sexual/arousal disorder have a big problem in regulating their negative emotions in compare to healthy women of the control group. In fact, in the explaining this section, it can be said that women with vaginismus experiences negative emotions due to dyspareunia and the women who are able to control their negative emotions are better in facing with negative emotions and reduce the rate of negative emotional exchange, so they experience a higher level of marital satisfaction, while women who are not able to control their negative emotions, cannot deal with these emotions, and as a result they have marital conflicts and this problem reduces the level of marital satisfaction and the quality of sexual relations.

People with sexual disorders often have unrealistic beliefs and opinions about sexual issues, including Early Maladaptive Schemas. The results of this research have shown that Early Maladaptive Schemas predict the dyspareunia positively and significantly. The obvious correlation between the disconnection-rejection schema factors can be seen in the findings of Abolghasemi and Kiamarsia (51) that women with sexual deviances have a considerable Early Maladaptive Schemas than the healthy women, and the impaired limits schema has the lowest correlation. The findings of the Reissing, Binik, Khalife, Cohen (52) showed that the majority of women with vaginismus have reported sexual conflicts in their childhood and their sexual performance and positive self-sexual schema were lower than healthy women. Also, in the study of Nejman, Dunne, Purdie, Boyle and Coxeter (53) the findings have showed a positive correlation between sexual deviances and sexual abuse in childhood among both sexes, and the scores were high especially for women. Ozen, Ozdemir, Bestep (54) showed in their studies that vaginismus cannot be related only to medical issues and psychological causes, and childhood injuries are involved in it. Due to the fact that childhood trauma is one of the main causes of vaginismus (55) the results of the current studies confirm the researcherrs' findings. Also, the results of the study by Elmquist, C. Shorey,

Anderson and L. Stuart (56) showed that the Early Maladaptive Schemas have a positive correlation with sexual impulsive behaviors, which shows the very important role of schemas in sexual matters.

Also, the present research showed that the positive and negative strategies of cognitive emotion regulation significantly mediate the relationship between Early Maladaptive Schemas and dyspareunia. Although the research that examines the role of intermediation of cognitive emotion regulation in dyspareunia based on Early Maladaptive Schemas and sexual schema has not been found. Perhaps something can be found in the research of Besharat, Khalili Khezrabadi, Rezazadeh (57) as a confirmation for the findings of the present study, which has examined Early Maladaptive Schemas and marital problems by considering the role of mediating emotion regulation. It should be noted that because the path coefficient between positive strategies of cognitive emotion regulation and dyspareunia was small and not significant, so it is reasonable to suggest that it mediated the relationship between Early Maladaptive Schemas and dyspareunia is done through negative strategies of cognitive emotion regulation. And it can be correlated to the findings of SadatiKiadehi, Pazira, Salimi, Alavijeh (17) stating that women with dyspareunia have experience more negative emotions, and also with the findings of SadatiKiadehi et al. (17) that no significant positive experience have been reported among the women with vaginismus and the healthy ones. Women with Vaginismus experience more negative emotions that lead to painful intercourse. Their sexual relationship is with wrong ideas and negative emotions that lower the level of marital satisfaction and psychological well-being and also cause many psychological problems and mental illnesses, especially depression and mental health problems (58). Psychologically, the cognitive experience of positive emotions leads to feelings of satisfaction, happiness, intimacy and empathy with others. People who experience more positive emotions are less vulnerable than those who experience negative emotions. In general, people who express their positive emotions are more satisfied with their married life and sexual relations, and they experience less tension and divorce happens less among this group of people because they can solve their marital problems in an effective way (59). Early Maladaptive Schema leads to extreme generalizations and illogical attributions and cause an emotional situation for a person so that he/she cannot deal with his/her emotions efficiently and it causes bad performance of emotional regulation. This defect in emotion regulation which is rooted in the Early Maladaptive Schemas, causes anxiety in a person (60) and anxiety during sex is an important component in the prediction of dyspareunia (36). Early Maladaptive Schemas make the restraining and managing process of emotions difficult.

Sexual schemas significantly predict dyspareunia. Sexual schemas are one of the other involved schemas in dyspareunia, which are in line with the results of previous studies, (14), (37) and (38). It was also shown in the present study that sexual schemas significantly predict dyspareunia and two direct straight forward/frank, passionate/romance schemas are negatively and significantly associated with dyspareunia. The results of this part can be explained as: the less direct straight forward/frank sexual schemas and passionate/romance schemas are seen in a person the more will be his/her dyspareunia. It was shown in the research of Mojtabaie, Sabery and Alizadeh (23) that

there is a significant relationship between sexual schema, passionate/romantic subscale and embarrassment/ conservative subscale with sexual function, but the frank/comfortable subscale has no significant relationship with sexual function. Also, Anderson and Cyranowski (40) examined the relationship between sexual and romantic experiences to determine how sexual schemas develop from past experiences.

The results showed that positive sexual schemas were significantly associated with having more sexual experiences compared to participants with negative sexual schemas. The people who have positive sexual schemas have reported a higher level of irritability. Sexual schemas consist of two categories: positive (passionate/romance, frank/comfortable) and negative (embarrassment/conservative). Positive sex schema can lead people to experience positive emotions and behaviors in intimate relationships. Some samples of the positive sexual schemas are kind, romance, friendly and caring. For example, the positive sexual schemas may lead to increased passionate/romance feelings and behavioral openness in sexual experiences. In contrast negative sexual schema can lead people to experience negative emotions and behaviors in intimate relationships. It is reported that people with negative schemas have higher levels of embarrassment or reticence about sexual experiences. And it is possible that negative schemas make people become unromantic, self-conscious and insecure about sex (40).

Finally, the results of the present study showed that the positive and negative strategies of cognitive emotion regulation can significantly affect the relationship between sexual schemas and dyspareunia. In fact, cognitive regulation strategies effect relationship between schemas and sexually embarrassment/conservative and dyspareunia in a positive way and the relationship between passionate/romance sex schema and mediates dyspareunia in a negative and significant way. No study was not found that have checked these three components, but the results of this part of the research can be considered consistent with the study (42, 61-64). The results of structural equations of Sharifian, Saffarinia and Alizadeh-Fard (36), showed that the passionate/romance sexual schema and the embarrassment/conservative sexual schema with the mediation of fairness style has an indirect effect on dyspareunia. Research findings of Mansouri, Saffarian, Mansouri (65), have shown that negative cognitive emotion regulation strategies had a mediating role in women's sexual disorders. In general, the results of this research and previous studies indicated that cognitive emotion regulation (positive and negative strategies) predict dyspareunia based on Early Maladaptive Schemas (positive and negative). And the people with dyspareunia use negative strategies to regulate and control their emotions and feelings. Having negative sexual schemas and Early Maladaptive Schemas as well as negative cognitive regulation strategies, cognitions and beliefs can affects the emotions, feelings, behaviors and sexual attitudes of women and leads to non-adaptive behaviors in people with sexual pain. As a result, it causes marital conflicts and decreases the level of marital satisfaction. For explaining the present content, it can be said that in a healthy marriage, having healthy sexual relations plays an important role in reducing conflicts and increasing the level of marital satisfaction, but unfortunately, dyspareunia causes marital

conflicts, depression, aggression, feeling of embarrassment, incompetence. So in this case, couples should pay attention to controlling and solving these issues. In fact, the cognitive emotion regulation plays an important role in evaluating and organizing adaptive behaviors. It prevents negative emotions and people who use positive strategies of cognitive emotion regulation in facing different life issues are able to control their behavior and emotions and thus prevent conflicts, marital disorders and sexual disorders.

Ethical considerations:

All of the participants in this study signed a consent form to participate in the study. The questionnaires were anonymous and the identity of participants remained confidential.

Research limitations:

The limitations of the research can be the lack of cooperation from the patients and the lack of similar research in the field and the relationship between the components.

The practical results of the research:

Considering the relationship between the cognitive emotion regulation, Early Maladaptive Schemas and sexual schemas in dyspareunia and also considering the importance of sexual function in different areas of life and its key role in marital satisfaction, it is suggested to use these components in clinics and treatment centers for sexual disorders in order to reduce and treat dyspareunia. It is suggested to examine more samples and other psychological components in future researches

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