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# Intermenstrual Pelvic Pain, Quality of Life and Mood

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**Key Words**
Chronic pelvic pain · Dysmenorrhea · Dyspareunia · Quality of life · Depression · Mood

**Abstract**
***Background/Aims:*** To investigate the independent importance of different types of pelvic pain on quality of life and depressive symptoms. ***Methods:*** A cross-sectional study was performed on patients with pelvic pain. A 10-cm visual-analogue scale (VAS) was used to investigate intensity of intermenstrual pelvic pain, dysmenorrhea or deep dyspareunia. The SF-36 form and the Zung Self-Rating Scale for Depression (SDS) were used to investigate quality of life and depressive symptoms, respectively. ***Results:*** The final study group consisted of 248 patients, 175/248 (70.6%) with intermenstrual pelvic pain, 46/248 (18.5%) with dysmenorrhea and 27/248 (10.9%) with deep dyspareunia associated or not with dysmenorrhea. Mean VAS score for dysmenorrhea was higher than that for deep dyspareunia ($p < 0.003$) and intermenstrual pelvic pain ($p < 0.0001$). Women with intermenstrual pelvic pain had the worst SF-36 ($p < 0.0001$) and SDS ($p < 0.002$) scores. SF-36 was independently and inversely related to intermenstrual pelvic pain (CR –1.522; 95% CI –2.188 to –0.856; $p < 0.0001$), and less strongly to dysmenorrhea (CR –0.729; 95% CI –1.487 to 0.030; $p = 0.06$). Indeed, only the physical component summary of SF-36 was independently related to dysmenorrhea (CR –0.956; 95% CI –1.783 to –0.129; $p = 0.024$). The SDS score was independently related only to intermenstrual pelvic pain (CR 0.573; 95% CI 0.241–0.904; $p = 0.0008$). ***Conclusions:*** Patients with intermenstrual pelvic pain have the worst SF-36 and SDS scores. Intermenstrual pelvic pain seems to be more strongly associated with a reduced quality of life and depressive mood.



## Introduction

Pelvic pain refers to many different conditions including pain occurring exclusively during menstruation (dysmenorrhea), sexual intercourse (dyspareunia), and in the interval between menses (intermenstrual pelvic pain). When lasting for 6 or more months, the latter defines so-called chronic pelvic pain [1], whose prevalence in women between 18 and 50 years of age is reported to vary from 14.7% in the USA [2], to 21.5–25.4% in Australia [3], the UK [4] and New Zealand [5].

Pelvic pain is often caused by concomitant [6], not always gynecological [7] diseases [5, 8], and is favored by

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predisposing factors [9]. Although pelvic pain can negatively influence quality of life [2, 10–12] and mood [13, 14], the independent role exerted by dysmenorrhea, dyspareunia or intermenstrual pelvic pain has never been clarified and it was thus investigated in the present study.

## Materials and Methods

The internal review board approved the study. Women, 16–50 years of age, recruited consecutively at the outpatient department for pelvic pain of our hospital, signed a consent form for the use of sensitive data in research analysis. Inclusion criteria were a regular menstrual cycle and the presence of any type of undiagnosed pelvic pain in the preceding 6 months. Each enrolled woman completed four questionnaires investigating general and gynecological history, intensity of pain, separately for dysmenorrhea, intermenstrual pelvic pain and dyspareunia, quality of life by the SF-36, and depressive symptoms by the Zung Self-Rating Scale for Depression (SDS).

Intermenstrual pelvic pain was previously defined as recurrent or constant pelvic pain, unrelated to menstrual periods, intercourse or pregnancy [4, 5]. Dysmenorrhea was defined as pelvic pain occurring during or shortly before/after menstrual periods. Dyspareunia was defined as deep pelvic pain occurring during sexual intercourse or within the 24 h thereafter. For comparison, three mutually exclusive groups were formed: (1) intermenstrual pelvic pain, with or without dysmenorrhea and dyspareunia; (2) dysmenorrhea, with only menstrual pain, and (3) dyspareunia, with deep pain during intercourse with or without dysmenorrhea, but without intermenstrual pelvic pain.

A 10-cm visual analogue scale (VAS) was used to evaluate pain intensity [9]. The SF-36, the most widely used questionnaire in the field of pelvic pain [15], was used, in a validated Italian version, to quantify health-related quality of life [16]. The SF-36 contains eight domains investigating physical functioning, role-physical limitation, bodily pain, general health, vitality, social functioning, role-emotional limitation, mental health. These domains can be summarized into two general groups: physical component summary and mental component summary. The total item score of the SF-36 ranges from 0 to 100, higher scores indicating a better quality of life.

The SDS, a well-established self-rating screening measure also in the field of pelvic pain [17], was used to evaluate depressive symptoms. SDS performs similarly to the Beck Depression Inventory, the Hospital Anxiety and Depression Scale and the General Health Questionnaire, with the advantage of being simpler and easier to use [18, 19]. It is composed of 20 items, each with 4 answers ranging between 1 and 4. The total score ranges between 20 and 80, higher scores indicating worst depressive symptoms.

Statistical analysis was performed using the statistical package StatView (version 5.01.98, SAS Institute Inc., Cary, N.C., USA). Comparisons among groups were performed by one-factor analysis of variance (ANOVA), followed when significant by Fisher's post hoc test. Linear regression analyses were performed between pain intensity and SF-36 or SDS scores (dependent variable). Multiple-regression analyses were used to define which type of pain (intermenstrual, dysmenorrhea or dyspareunia) was independently related to quality of life or depression scores. Analyses were corrected for age, BMI, marital status (single, married or divorced), previous pregnancies (yes/no), wish of pregnancy (yes/no), education (high or low), length of menstrual flow (days). Categorical data were entered as dummy variables. Marital status was entered as two dummy variables (married and divorced vs. single). A single dummy variable was used for education (high: secondary school and graduation versus low: primary school), pregnancies (yes/no) and desire of pregnancy (yes/no).

For all analyses, statistical significance was considered at a two-tailed p value of 0.05. All the results are expressed as means ± standard deviations (SDs).

## Results

Among 300 consecutive women, 248 had consistent symptoms that could be included in one of the three mutually exclusive groups. Among these, 231/248 (93.1%) reported dysmenorrhea, 175/248 (70.6%) reported intermenstrual pelvic pain and 146/248 (58.9%) reported dyspareunia. The mean dysmenorrhea VAS score (6.8 ± 2.4) was higher than that for dyspareunia (5.8 ± 2.8; $p < 0.003$) and intermenstrual pelvic pain (5.5 ± 2.6; $p < 0.0001$).

175/248 (70.6%) women were included in the group withintermenstrual pelvic pain, 46/248 (18.5%) in the group with dysmenorrhea, and 27/248 (10.9%) in the group with dyspareunia. Among women with intermenstrual pelvic pain, 160 also had dysmenorrhea (160/175, 91.4%), and 119 suffered from dyspareunia (119/175, 68.0%). Among women with dyspareunia, 25 also had dysmenorrhea (25/27, 81.5%). There was no difference in the characteristics of the three groups in terms of age (31.9 ± 7.6 years), BMI (22.45 ± 4.9), education (12.4 ± 3.6 years), number of term pregnancies (0.88 ± 1.28), miscarriages (0.16 ± 0.42), voluntary abortions (0.20 ± 0.61) and flow length (5.03 ± 1.62 days).

*Health-Related Quality of Life*

The mean SF-36 score was lower in women with intermenstrual pelvic pain (56.8 ± 17.7) than in those with dysmenorrhea (69.2 ± 17.8; $p < 0.0001$). Similarly, in women with intermenstrual pelvic pain, physical (53.6 ± 19.2) and mental (53.2 ± 21.2) component summaries of SF-36 score were lower ($p < 0.001$) than in women with dysmenorrhea (67.5 ± 21.4 and 67.5 ± 20.4, respectively).

SF-36 score was not related to a woman's age but it was inversely related to the intensity of intermenstrual pelvic pain ($r = 0.285$; $p = 0.0001$), of dysmenorrhea ($r = 0.139$; ■ = 0.028) and of dyspareunia ($r = 0.165$; ■ = 0.009). This

was true even considering the physical component summary of SF-36. The mental component of SF-36 was related inversely only to the intensity of intermenstrual pelvic pain (r = 0.240; p = 0.0001) and of dyspareunia (r = 0.184; p = 0.0035), but not of dysmenorrhea (r = 0.083; p = 0.19).

In a regression model including age, BMI, marital status, educational level, menstrual flow length (days), previous pregnancies, further desire for pregnancy, intensity of dysmenorrhea, of intermenstrual pelvic pain and of dyspareunia as independent variables, the SF-36 score was independently related (r = 0.307) only to intermenstrual pelvic pain (CR –1.522; 95% CI –2.188 to –0.856; $p < 0.0001$) and, to a lower degree, dysmenorrhea (CR –0.729; 95% CI –1.487 to 0.030; p = 0.06). The physical component summary of SF-36 was independently related (r = 0.335) to intermenstrual pelvic pain (CR –1.792; 95% CI –2.518 to –1.066; $p < 0.0001$) and dysmenorrhea (CR –0.956; 95% CI –1.783 to – 0.0129; p = 0.024), while the mental component was only independently related to intermenstrual pelvic pain (CR –1.610; 95% CI –2.429 to –0.792; r = 0.240; p = 0.0001).

*Depressive Symptoms*

The SF-36 score was inversely related to the SDS score (y = 109.4 – 1.26x; r = 0.611; p = 0.0001).

Women with intermenstrual pelvic pain showed a higher SDS score (40.2 ± 9.1) than women with dysmenorrhea alone (35.5 ± 8.4; $p < 0.002$), but not dyspareunia (37.8 ± 10.6; p = 0.23). The SDS score was not related to the intensity of dysmenorrhea (r = 0.10; p = 0.11) or dyspareunia (r = 0.011; p = 0.09), but was directly related to the intensity of intermenstrual pelvic pain (r = 0.216; p = 0.0008).

In the multiple regression model, SDS was independently related (r = 0.216) only to the intensity of intermenstrual pelvic pain (CR 0.573; 95% CI 0.241–0.904; p = 0.0008).

## Discussion

Women with intermenstrual pelvic pain did not differ from women with dysmenorrhea alone or dyspareunia on any of the basal features, apart from quality of life and depressive mood that were worse in these women. This may be the consequence of symptoms such as dysmenorrhea and dyspareunia, which often coexist with intermenstrual pelvic pain. On the other hand, when all types of pain are entered into multiple regression analysis, health-related quality of life and mood are negatively associated mainly with intermenstrual pelvic pain, even if this is the less intense pain on a VAS scale. Reduced health-related quality of life is associated with depressive mood [12, 14].

Pelvic pain can be cyclic or noncyclic, spontaneous or induced, predictable or unpredictable.

The prototype of cyclic, spontaneous and predictable pelvic pain is dysmenorrhea. It occurs during every menstrual cycle, at a precise moment, more or less similarly. Women can usually cope with this type of pain, with no major impact on their quality of life and mood, except for a small alteration of the physical domains of their health-related quality of life.

Deep dyspareunia is noncyclic, it is induced and predictable. The cause-effect relationship with sexual intercourse makes it somewhat preventable. It could have an impact on women's quality of life by influencing both physical and mental domains, but its role is apparently obscured by intermenstrual pelvic pain, which is often associated. Intermenstrual pelvic pain is a spontaneous, not always cyclic, not preventable and unpredictable type of pain. Inability to control and predict its occurrence probably makes intermenstrual pelvic pain the most debilitating type of pelvic pain, and the one mostly associated with a poor health-related quality of life. Women with intermenstrual pelvic pain also totaled the worst depressive scores. This evidence adds to the observation reported in a previous study which documented the association between depressive symptoms and pain intensity without discriminating between the different types of pelvic pain. The association of pain with psychological disturbances reported in the present and previous studies [12] may be interpreted in a bidirectional way, i.e. depression favors pain perception or pain depresses mood [20]. Interventional studies on both sides are necessary to clarify this issue, but it is likely that medical treatment of depressive mood may help to improve the quality of life of women with pelvic pain [21, 22].

One of the most important limitations of this research is that, in addition to pelvic pain, quality of life and depressive symptoms can depend on different coexisting elements that were only evaluated partially in the present study. Furthermore, we did not take into account the single organic cause of pelvic pain, which was considered as a unique syndrome. In some studies, knowledge of the causes of pain per se does not influence quality of life and psychological status [23, 24]. In other studies, it seems that the diagnosis itself can influence quality of life and mood [17, 25] because psychological effects could arise

from specific diseases (for example, the risk of infertility associated with endometriosis). Accordingly, it is likely that in our study the 'knowledge bias' has been eliminated by including subjects unaware of the organic cause of their pain.

The present data have been obtained in a selected population of women examined in an outpatient department for pelvic pain. Accordingly, the results are limited to women requesting treatment for their pain, and cannot be generalized to the general population. Among this selected sample of subjects, intermenstrual pelvic pain seems to be most strongly associated with a reduced quality of life and depressive mood.


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