

**Biopsychosocial predictors of suicide risk in patients with interstitial cystitis/bladder pain syndrome**

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**Abstract**

**Introduction:** The impact of interstitial cystitis/bladder pain syndrome (IC/BPS) is prevalent and severe. Studies examining the IC/BPS prevalence and predictors of suicide risk are limited by their lack of theoretically relevant suicide research variables. This research reports suicide risk prevalence its biopsychosocial predictors for a community IC/BPS sample.

**Methods:** Self-identified female patients suffering from IC/BPS (N=813; 18–80 years, M=46.60, standard deviation [SD] 14.10) recruited from online IC/BPS support groups completed measures of demographic, pain, symptoms, and psychosocial variables. Descriptive statistics, correlations, and multivariable logistic regressions examined prevalence, variable associations, and suicide risk prediction.

**Results:** Suicide risk prevalence was 38.1%. Suicide risk was associated with greater odds for exposure to suicide, psychache, hopelessness, and perceived burdensomeness to others. Further, examining suicide risk by levels of pain showed that exposure to suicide and hopelessness were consistent suicide risk predictors across pain levels; psychache for lower levels of pain, perceived burdensomeness in moderate and severe pain levels, and depression in moderate levels of pain.

**Conclusions:** The high prevalence of suicide risk is alarming and signifies an imperative for recognizing this risk within the IC/BPS population. The identified psychosocial risk factors may be used in refining screening and treatment and in directing future IC/BPS research.

## Introduction

Suicide prediction and prevention have not significantly improved over the past several decades.<sup>1</sup> Suicide is one of the most extreme outcomes associated with interstitial cystitis/bladder pain syndrome (IC/BPS). The prevalence of suicidal thinking in IC/BPS samples was reported at 11%, with marital status and depression predicting worse outcomes.<sup>2</sup> More current IC/BPS tertiary care data reported a 23% endorsement of suicidal thinking, predicted by helplessness and depression over and above pain and IC/BPS symptoms.<sup>3</sup> Evolving IC/BPS suicide risk research must expand to include relevant suicide risk predictors such as unemployment,<sup>2,4,5</sup> marital status,<sup>2</sup> and comorbid insomnia,<sup>6</sup> psychosocial variables of family suicide history/exposure,<sup>5</sup> and the specific construct “psychache” defined as the chronic mental pain that leads individuals to seek permanent escape.<sup>7</sup> Further, hopelessness, thwarted belongingness (i.e., thoughts of loneliness and a lack of reciprocal care) and perceived burdensomeness (i.e., perceiving oneself a liability to others) are also critical theoretically supported variables in predicting suicide risk.<sup>4</sup>

Our study objectives were to determine a point-prevalence estimate for suicide risk in female patients with IC/BPS, and to statistically predict such risk by pain level using various clinically relevant biopsychosocial variables. \

## Methods

### Participants

Participants self-identifying with a diagnosis of IC/BPS were recruited from online IC/BPS support groups and completed online questionnaires. All qualifying participants were female, over the age of 18 years and were able to read and write in English. Exclusion criteria included: on-going symptomatic urethral strictures, on-going neurological disease or disorder affecting the bladder or bowel fistula, history of cystitis caused by tuberculosis, radiation therapy, or cytoxan/cyclophosphamide therapy, having undergone augmentation cystoplasty or cystectomy, an active autoimmune or infectious disorder (e.g., Crohn’s disease or ulcerative colitis, lupus, rheumatoid arthritis, multiple sclerosis, or HIV), history of cancer (with the exception of skin cancer), presence of a major psychiatric disorder or other psychiatric or medical issues that would interfere with study participation (e.g., dementia, psychosis, upcoming major surgery), or severe cardiac, pulmonary, renal, or hepatic disease. These are the same exclusion criteria used by Sutcliffe et al.<sup>8</sup> to ensure that pain reported by IC patients is not attributable to other causes. Additionally, to assess participants as currently suffering from IC/BPS, the RICE Case Definition Questionnaire was used to exclude 192 participants who had

not experienced bladder pain in at least 3 of the previous 6 months, leaving a final sample of 813 participants with current consistent bladder pain.

### ***Demographic and clinical variables***

Participant age, gender, ethnicity, country of origin, education, relationship status, occupational status, diagnosis, suicide exposure (i.e., “Do you know a family member or other person that has died by suicide?”), presence of insomnia, and smoking habits were collected.

### ***Diagnosis***

The RAND Interstitial Cystitis Epidemiology (RICE) Case Definition Questionnaire assessed the validity of participants’ self-reported IC/BPS diagnosis.<sup>9</sup> The RICE Questionnaire consists of 5 items used to classify IC/BPS patients according to pain and urgency criteria. Item 1 contains three questions that ask the patient if they have A) Ever experienced pelvic/bladder pain, B) experienced this pain for the majority of any 3 months out of the previous 6 months, and C) experienced this pain for the majority of the previous 3 months. Items 2, 4 and 5 pertain to urination urgency in the previous 3 months, with item 2 asking if the patient experienced this feeling at any point in the previous 3 months, item 4 asking if this urgency gets better/worse/stays the same after urination, and item 5 asking the average daily frequency of urination. Item 3 pertains to perceived cause of urination urgency, whether it is due to pain/discomfort in the pelvic area or due to fear of wetting oneself. Items are scored such that endorsement of parts B and C of item 1 as “yes” categorize patients as “currently experiencing pelvic/bladder pain”; endorsement of item 2 as “yes”, in addition to item 3 as “pain, pressure or discomfort” and/or item 5 as  $\geq 10$ , categorize patients as “experiencing urgency”.

### ***Urologic symptoms***

The O’Leary-Sant Interstitial Cystitis Symptom and Problem Indices (ICSI; ICPI) is a self-report questionnaire of four items assessing the frequency of specific IC symptoms and four items assessing frequency of urination, urination with little physical warning, nocturia, and bladder pain, and how problematic those symptoms were.<sup>10</sup>

### ***Pain***

Two domains assessing an individual’s pain over the past two weeks used Numeric Pain Rating (NPR) scales. Domain One assessed average, highest, and lowest pain from zero (*no pain*) to ten (*worst pain I’ve ever had*). Domain Two asked whether they experienced pain flares, the frequency, average duration, the severity of and distress caused by these flares from zero (*none*) to ten (*the worst possible severity/distress*).

### ***Depressive symptoms***

The Patient Health Questionnaire – 9 is a reliable, self-report measure that consists of nine items assessing depression within the past two weeks using ratings from zero (*not at all*) to three (*nearly every day*).<sup>11</sup> A total was calculated by summing items and used as a depression index; higher scores indicate greater depression.

***Pain catastrophizing***

The Pain Catastrophizing Scale is a reliable, self-report measure assessing appraisals of pain experiences using 13 items ranging from zero (*not at all*) to four (*all the time*).<sup>12</sup> The items sum, providing a total and subscales (rumination, magnification, helplessness); higher scores indicate greater catastrophizing.

***Hopelessness***

The State Hopelessness Scale (SHS) is a reliable, self-report measure of 10 items assessing pessimism about the future.<sup>13</sup> Participants were asked how much they agreed with statements from one (*strongly disagree*) to four (*strongly agree*) in the past week. Summed items create a total; higher scores indicate greater hopelessness.

***Psychache***

The Psychache Scale (PAS) is a reliable self-report measure of 13 items assessing aspects of psychache (free-floating, non-situation-specific anguish, hurt, angst, humiliation, or internal perturbation that leads individuals to seek permanent escape).<sup>14</sup> Items were rated from zero (*never*) to five (*always*) and summed for total scores; higher scores indicate greater psychache.

***Social support***

Social support was assessed using a single Numeric Rating Scale item asking “How much do you feel supported by others in your life? (family, friends, significant other, coworkers, doctors, etc.)” Support was described as any type of support (emotional, practical, companion, etc.). Participants were asked to rate their level of support on a rating scale from zero (*no support at all*) to ten (*complete support*).

***Interpersonal needs***

The Interpersonal Needs Questionnaire-10 (INQ-10) is a reliable self-report measure of ten items assessing the role a participant plays in their social circle in two areas: thwarted belongingness and perceived burdensomeness.<sup>15-16</sup> Participants respond to items using a rating scale from one (*not at all true for me*) to seven (*always true for me*). Thwarted belongingness assesses loneliness and lack of reciprocal care from one’s social circle. Perceived burdensomeness evaluates self-hate and perceiving oneself as a liability to others; higher scores indicate greater loneliness or perceived burden.

***Suicide risk***

The Suicidal Behaviors Questionnaire – Revised (SBQ-R) is a four-item questionnaire.<sup>17</sup> Item 1 assesses lifetime suicidality (suicidal thoughts and actions), and participants were asked to rate their experiences on a rating scale from one (never) to six (I have attempted to kill myself, and really hoped to die). Item 2 assesses suicidal ideation in the past year, and participants were asked to rate the frequency of ideation on a rating scale from one (never) to five (very often). Item 3 assesses lifetime suicide plans and participants were asked to rate frequency and intent using a rating scale from one (no) to five (yes, more than once, and really wanted to do it). Item

4 assesses self-reported future risk of suicide, and participants were asked to rate the likelihood that they would commit suicide in the future using a rating scale from zero (never) to six (very likely). As usually assessed, a total suicide risk score was calculated summing the weighted items. Scores  $> 6$  and  $> 7$ , respectively, indicate clinically significant suicide risk compared to general and psychiatric inpatient populations.

### ***Procedure***

This study recruited from January 2016 until January 2017 after acquired University Research Ethics Board clearance. Recruiting occurred through online patient support groups (i.e., the Interstitial Cystitis Network and Interstitial Cystitis Association). Participants accessed the questionnaires link from the support group's webpages where they consented to participate on a secure online platform. Questionnaire completion was approximately 30-40 minutes. All participants were asked to complete the questionnaires and as per REB ethical requirements, all participants were permitted to refuse answering select questions as they desired.

### ***Data analysis***

Missing values and outliers' analyses used IBM SPSS,<sup>18</sup> with missing values described as random. No participant omitted  $> 20\%$  of any measure, thus none were excluded. Participants missing values were replaced with the mean sample score of the item.<sup>19</sup> Suicide risk prevalence (SBQ-R) was assessed by splitting the sample using the general population and inpatient population cut-offs. All variables that correlated significantly ( $p < .05$ ) with suicide risk were employed in multivariable logistic regressions. The sample was divided by pain level into three groups for analyses: pain groups were created by using low, moderate, and high pain based on the average Numeric Pain Rating scores, mirroring previous research in pain ratings of mild (0-4.5), moderate (4.6-7.4), or severe pain (7.5-10) splits. This was an important step allowing for the multivariable logistic regression analyses suicide risk by pain levels.

## **Results**

### ***Participants***

A total of 1065 individuals participated. Participants ( $n=813$ ) ranged in age from 18-80 years ( $M = 46.60$ ,  $SD = 14.10$ ). Participants were predominantly Caucasian (93.1%), from North America (90.1%), and living with a spouse/partner (76.1%). Furthermore, 45.9% were currently employed and 51.9% possessed a post-secondary degree. Mean symptom scores were calculated for the ICSI ( $M = 13.12$ ,  $SD = 3.91$ ) and the ICPI ( $M = 11.41$ ,  $SD = 3.22$ ).

### ***Prevalence of suicide risk***

Using the adult general population SBQ-R cut-off, creating an at-risk group ( $n = 310$ ,  $M = 9.73$ ,  $SD = 2.65$ ) and a not at-risk group ( $n = 503$ ,  $M = 3.96$ ,  $SD = 1.11$ ), with 38.1% of the sample meeting the suicide risk threshold. Using a more conservative cut-off score of an adult inpatient psychiatric population, 28.7% ( $n = 233$ ) reported risk for suicide (see Figure 1). Further, we

noted the elevated endorsement of 31.1% for a single suicidal thought item as employed in older studies (e.g., 11%).<sup>2</sup>

### *Evaluation of statistical predictors*

Correlations of all variables with suicide risk were in the appropriate direction. Strong correlations were found between average, highest, and lowest pain ( $r_s \geq .74$ ,  $p_s \leq .01$ ), ICPI and ICSI total scores ( $r = .81$ ,  $p < .01$ ), pain and flare distress ( $r = .88$ ,  $p < .01$ ), and depression and psychache scores ( $r = .71$ ,  $p < .01$ ). Due to multicollinearity concerns, ICPI and ICSI scores were combined as a total O'Leary-Sant Index score. Both depression and psychache scores remained as separate predictors, because they are correlated but distinct factors.<sup>20</sup>

*Logistic Regression for Suicide Risk Group.* Binary logistic regression analysis was used to determine risk of suicide for the entire sample ( $N = 813$ ; see Table 1). The regression identified 76% of cases [ $\chi^2(1) = 7240.30$ ,  $p < .01$ ]. In this model of suicide risk, the predictors of greater risk included a previously reported exposure to suicide (OR = 2.71, 95% CI 1.84-4.01), and the greater presence of psychological factors such as psychache (i.e., psychological pain)(OR = 1.04, 95% CI 1.02-1.07), greater hopelessness (OR = 1.12, 95% CI 1.06-1.17) and more perceptions that the participant was a burden to others (i.e., perceived burdensomeness; OR = 1.07, 95% CI 1.03-1.11). Interestingly, greater pain catastrophizing was not associated with greater suicide risk in the expected direction (OR = .978, 95% CI .95-.99). An OR of less than 1 means that the first group was less likely to experience the event. This is difficult to quantify because an OR value below 1.00 may not directly interpretable, but suggests that the suicide risk group experienced less pain catastrophizing, in direct contrast to the zero-order correlations that show pain catastrophizing was associated with greater suicide risk ( $r = .13$ ,  $p < .05$ ).

### *Logistic regression for suicide risk group in low, moderate, and severe pain*

As shown in Table 2, low, moderate, and high pain groups were based on the average Numeric Pain Rating scores, mirroring previous research in pain ratings of mild (0-4.5), moderate (4.6-7.4), or severe pain (7.5-10).<sup>21</sup> In this sample, scores from 0-4 represented low ( $n = 217$ ,  $M = 3.03$ ,  $SD = 1.12$ ), 5-6 moderate ( $n = 267$ ,  $M = 5.58$ ,  $SD = .50$ ), and 7-10 severe pain ( $n = 329$ ,  $M = 7.86$ ,  $SD = 1.01$ ). The overall series of results were in the expected directions. The low pain regression ( $\chi^2(14) = 66.117$ ,  $p < .00$ ; 76.5% identified) showed greater exposure to suicide (OR = 2.27, 95% CI 1.06-4.86), greater insomnia (OR = 2.39, 95% CI 1.05-5.43), psychache (OR = 1.07, 95% CI 1.01-1.13), and hopelessness (OR = 1.17, 95% CI 1.05-1.30) acted as predictors for greater suicide risk. For moderate pain ( $\chi^2(14) = 89.329$ ,  $p < .00$ ; 78.7% identified), an exposure to suicide (OR = 2.66, 95% CI 1.31-5.39), greater depression (OR = 1.08, 95% CI 1.01-1.16), hopelessness (OR = 1.09, 95% CI 1.00-1.18), and greater perceived burdensomeness (OR = 1.08, 95% CI 1.01-1.16) were predictors for greater suicide risk. For high pain ( $\chi^2(14) = 131.978$ ,  $p < .00$ ; 77.2% identified), not living with a partner (OR = .46, 95% CI .24-.87), exposure to suicide (OR = 3.13, 95% CI 1.67-5.88), hopelessness (OR = 1.13, 95% CI 1.05-1.22), and perceived burdensomeness (OR = 1.07, 95% CI 1.02-1.12) were

predictors. As in the previous analyses, the pain catastrophizing index (OR = .95, 95% CI .92-.99) suggests that the suicide risk group experienced less pain catastrophizing.

## Discussion

A 38.1% prevalence of suicide risk is alarming; a value greater than estimates in chronic back pain (19%) and patients with wide-ranging chronic pain issues (14%).<sup>22-23</sup> Further, 31.1% of this sample also endorsed a one-item thoughts of suicide assessment, that has been used in older IC/BPS research reporting a rate of 11%.<sup>23</sup>

Examining the overall sample regression, predictors such as exposure to suicide, psychache, hopelessness, and perceived burdensomeness predicted suicide risk. It was also noted that IC/BPS symptoms (i.e., O'Leary-Sant Index) did not predict suicide risk. Hepner et al.<sup>2</sup> found a similar effect, showing that symptom severity does not independently predict likelihood of suicide risk. These are also the first results to indicate that psychosocial factors such as hopelessness, perceived burden and psychache act as independent predictors of IC/BPS suicide risk. In our pain group regressions, pain moderates the profile of psychosocial predictors with the exception of thwarted belongingness failing to predict risk, confirming previous pain research.<sup>24</sup> Perhaps, in this sample, hopelessness is a prime clinical concern as it predicted risk across all pain groups.

Research on suicide attempters of several ages and clinical severity shows psychache and hopelessness are recurrently and robustly confirmed variables in suicide attempts within suicide theory.<sup>25-26</sup> Suicide theory also highlights the importance of psychache, in conjunction with hopelessness, for the development of the desire to die,<sup>27</sup> but no previous research has examined these relations in patients with IC/BPS or by pain levels. Indeed, psychache predicted suicide risk in low pain and perceived burdensomeness in moderate and severe pain. In our IC/BPS sample, it may be that physical pain moderates the predictors of suicide risk. It may be that the shift to more severe pain may transition the psychache and hopelessness variables into depression, hopelessness, and a perception of being a burden to others, as exemplified in the moderate pain regression. In severe pain, perceived burdensomeness and hopelessness remain associated to higher suicide risk. This association may be supported by other variables such as a person's self-worth, but longitudinal research is needed to study such effects.

Among the other findings, marital status, exposure to suicide, and insomnia were predictors of suicide risk. Marital status displayed significant value but only for the severe pain group.<sup>2</sup> As well, for high pain, pain catastrophizing was unexpectedly found to be lower in the group higher in suicide risk. Indeed, pain catastrophizing was significantly correlated with pain and suicide risk in this study. Multicollinearity was ruled out as a cause, and the most likely explanation is that other psychological variables are suppressing the effect of pain catastrophizing in the analyses.

Exposure to suicide was a significant predictor of suicide risk across all pain levels, confirming the strength of this life experience. Indeed, we have concerns about how to support individuals who have been exposed to suicide. Studies show that exposure to suicide can lead to a variety of negative experiences such as depression, as well as increased risk of suicide

ideation, or even attempts have been reported.<sup>22, 28</sup> Recent work has highlighted a lack of investigation into mechanisms of the association between exposure to suicide and vulnerability to suicide. As Miklin et al.<sup>29</sup> suggests, “suicide exposure” may involve related but also independent events. For example, the witnessing of another’s grief after a suicide is an event, but the impact of such exposure(s) also depends on the way individuals ascribe meaning to the death in the context of their own lives. The current study did not collect variables to help address such issues, but future research in IC/BPS and suicide could examine such impacts as predictors in suicide ideation.

The fact that “extent of disease”, in this study the ICSI/ICPI score, was not a predictor of suicide risk is an important finding, particularly for clinicians who might use these tools commonly in practice. From a clinical perspective, a community urologist practice can incorporate these findings into IC/BPS care through increased awareness of the psychosocial suicide risk factors, that may trigger suicide assessment(s). Symptoms are of concern for patients but it seems psychosocial factors may be more salient in suicide risk; there is no doubt a recursive relationship between these variables. In regard to the management of suicide risk when identified, referral to a multidisciplinary clinic is suggested if available. It is suggested that IC/BPS management should move towards an approach that integrates managing disease activity and psychological well-being concurrently. Clinical interventions in IC/BPS patients with high risk of suicide should target psychosocial predictors of suicidal behaviour (i.e., history of suicide exposure, hopelessness, being a self-perceived burden to others, psychache, depressive symptoms) to mitigate their downstream effects.

Limitations of this research include the possibility of selection bias in this online sample. Given this possibility, the alarming rate may suggest that patient engaged in online support activities or groups might contain patients that are more distressed but without a comparison group this will remain speculation. Another study limitation can be the use of self-report methods, which may be considered less reliable than professional assessments, but self-report remains the gold-standard on patient reporting of distress and depressive symptomatology making such a limitation unavoidable in this suicide research. Further, online survey responses show strong reliability and validity while acknowledging self-selection biases.<sup>30</sup> Therefore, we believe that online responses are as valid as in-person, acknowledging they may overestimate effects. This study was also cross-sectional with correlation-based analyses, where causality cannot be established. However, the results are supported by previous IC/BPS suicide research.<sup>2, 3</sup> Suicide risk is an important measure of suicidality, but may not fully predict suicide mortality, and therefore these figures may provide an overestimation of the likelihood of suicide mortality in this sample. Finally, generalizability of findings should be cautioned due to sample homogeneity.

## Conclusions

The results confirm that suicide risk is a significant concern within the IC/BPS population and work is needed to understand how to address the increased needs of the at-risk women. Suicide risk is more related to psychosocial factors than physical IC/BPS factors. With many suicide



risks modifiable by targeted treatment, perhaps a suicide risk identification and prevention intervention strategy in IC/BPS management is justified. In particular, hopelessness, psychache, perceived burdensomeness, and exposure to previous suicide are important predictors to include in developing clinical interventions and future research in IC/BPS.

DRAFT

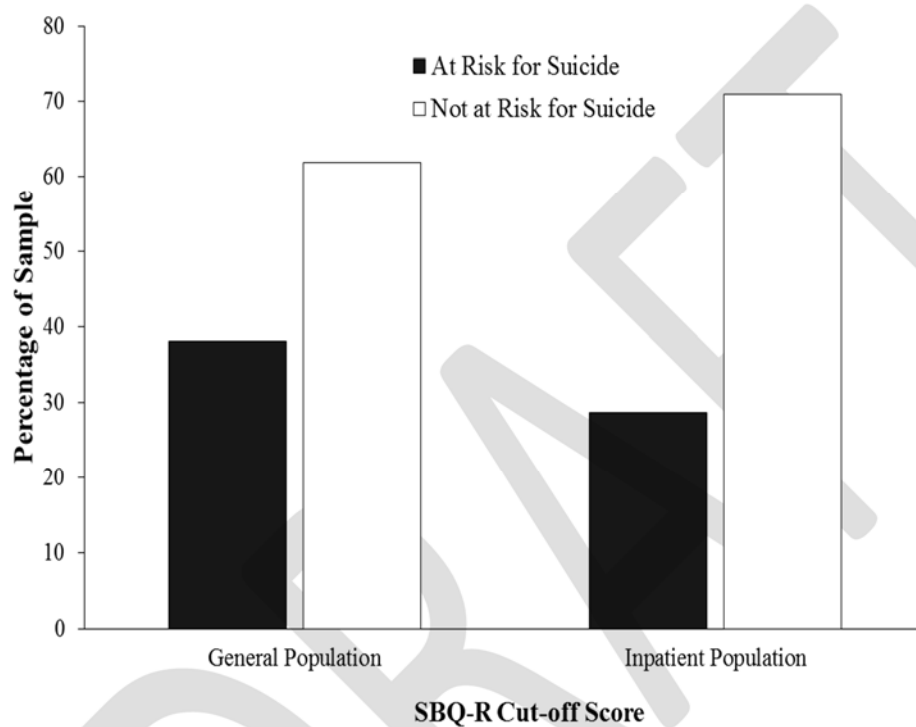
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## Figures and Tables

**Fig. 1.** Percentage of participants in the sample at risk for suicide risk using cut-off scores of  $> 6$  (adult general population) and  $> 7$  (adult inpatient population).



<b>Table 1. Logistic regression predictors for suicide risk for overall sample (N=813)</b>				
<b>Predictor variables</b>	<b>Wald</b>	<b>p</b>	<b>OR</b>	<b>CI (95%)</b>
Age	0.44	0.506	1.00	0.98–1.01
Marital status	2.61	0.106	1.40	0.93–2.09
Exposure to suicide	<b>25.16</b>	<b>0.000</b>	<b>2.71</b>	<b>1.84–4.01</b>
Insomnia	1.92	0.166	1.30	0.90–1.86
Social support	0.12	0.735	0.99	0.92–1.07
Average pain	1.31	0.253	0.94	0.84–1.05
Flare severity	0.05	0.827	1.01	0.95–1.07
O’Leary-Sant Index	1.12	0.290	0.98	0.95–1.02
Catastrophizing	<b>10.25</b>	<b>0.001</b>	<b>0.97</b>	<b>0.95–0.99</b>
Psychache	<b>11.42</b>	<b>00.001</b>	<b>1.04</b>	<b>1.02–1.07</b>
Depression	2.23	0.136	1.03	0.99–1.08
Hopelessness	<b>20.85</b>	<b>0.000</b>	<b>1.12</b>	<b>1.06–1.17</b>
Perceived Burden	<b>14.11</b>	<b>0.000</b>	<b>1.07</b>	<b>1.03–1.11</b>
Thwarted belongingness	1.34	0.246	1.02	0.99–1.05

Bolded text indicates significant predictors. CI: confidence interval; OR: odds ratio.

<b>Table 2. Logistic regression predictors for suicide risk per pain group</b>												
<b>Predictor variable</b>	<b>Low pain (n=217)</b>				<b>Moderate pain (n=267)</b>				<b>Severe pain (n=329)</b>			
	<b>Wald</b>	<b>p</b>	<b>OR</b>	<b>CI (95%)</b>	<b>Wald</b>	<b>p</b>	<b>OR</b>	<b>CI (95%)</b>	<b>Wald</b>	<b>p</b>	<b>OR</b>	<b>CI (95%)</b>
Age	2.06	0.151	0.98	0.96–1.01	0.18	0.668	1.01	0.98–1.03	0.00	0.954	1.00	0.98–1.02
Marital status	0.91	0.340	1.53	0.64–3.69	0.57	0.449	0.761	0.38–1.54	<b>5.59</b>	<b>0.018</b>	<b>0.46</b>	<b>0.24–0.87</b>
Exposure to suicide	<b>4.44</b>	<b>0.035</b>	<b>2.27</b>	<b>1.06–4.86</b>	<b>7.37</b>	<b>0.007</b>	<b>2.66</b>	<b>1.31–5.39</b>	<b>12.73</b>	<b>0.000</b>	<b>3.13</b>	<b>1.67–5.88</b>
Insomnia	<b>4.32</b>	<b>0.038</b>	<b>2.39</b>	<b>1.05–5.43</b>	0.34	.562	0.827	0.44–1.57	1.51	.219	1.45	0.80–02.60
Social support	00.68	0.409	1.07	0.91–1.27	0.00	00.955	1.00	0.87–1.15	0.99	00.319	0.94	0.84–1.06
Average pain	0.34	0.560	0.90	0.64–1.28	0.02	0.893	1.04	0.56–1.97	0.34	0.562	0.92	0.68–1.23

Flare severity	0.57	0.452	0.96	0.85– 1.07	0.90	0.343	1.06	0.94– 1.18	0.00	0.999	1.00	0.89– 1.13
O’Leary-Sant Index	0.69	0.406	0.97	0.91– 1.04	0.05	0.831	1.01	0.95– 1.18	0.82	0.365	.98	0.93– 1.03
Catastrophizing	1.98	0.159	0.97	0.94– 1.01	2.95	0.086	0.97	0.93– 1.01	<b>7.32</b>	<b>0.007</b>	<b>00.95</b>	<b>0.92– 0.99</b>
Psychache	<b>5.36</b>	<b>0.021</b>	<b>1.07</b>	<b>1.01– 1.13</b>	3.18	0.075	1.04	1.00– 1.09	3.30	0.070	1.03	1.00– 1.07
Depression	0.04	0.850	.99	0.91– 1.08	<b>4.70</b>	<b>0.030</b>	<b>1.08</b>	<b>1.01– 1.16</b>	0.57	0.450	1.03	0.96– 1.10
Hopelessness	<b>7.91</b>	<b>0.005</b>	<b>1.17</b>	<b>1.05– 1.30</b>	<b>4.06</b>	<b>0.044</b>	<b>1.09</b>	<b>1.00– 1.18</b>	<b>10.98</b>	<b>0.001</b>	<b>1.13</b>	<b>1.05– 1.22</b>
Perceived burden	1.59	0.207	1.07	0.96– 1.19	<b>4.87</b>	<b>0.027</b>	<b>1.08</b>	<b>1.01– 1.16</b>	<b>7.02</b>	<b>0.008</b>	<b>1.07</b>	<b>1.02– 1.12</b>
Thwarted belongingness	0.54	0.465	1.03	0.96– 1.10	0.08	0.784	1.01	0.95– 1.07	1.31	0.253	1.03	0.98– 1.09

**Bolded text** indicates significant predictors. CI: confidence interval; OR: odds ratio.