

**Persistent Physical Symptoms and mental health problems among individuals seeking
work rehabilitation**

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Author Note

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Abstract

Objective: Persistent Physical Symptoms (PPS) are symptoms without a known biological cause. They are common and associated with psychological distress, work disability and unemployment. This study aimed to examine the prevalence of PPS and their association with clinical levels of general anxiety, depression, social anxiety, health anxiety or post traumatic symptoms in a work rehabilitation setting and to identify individuals within that setting that might benefit from psychological treatment for PPS. **Method:** A sample of 324 individuals seeking work rehabilitation filled out questionnaires measuring PPS and mental health problems. To estimate how many service seekers might benefit from psychological treatment for PPS we identified participants who reported both PPS and psychological distress, defined as an elevated score on measures of general anxiety, depression or health anxiety. **Results:** Eighty point nine percent of participants reported having one or more PPS and 61.7% reported having two or more. Those with PPS were more likely to report clinical levels of depression, anxiety and health anxiety than those without and the number of PPS was positively correlated with symptoms of depression, anxiety and health anxiety. Almost 65% of the participants were identified as having PPS, being psychologically distressed and willing to accept psychological treatment. **Conclusions:** There is a clear need for specialized treatment for PPS within vocational rehabilitation in Iceland as service seekers commonly have PPS, are psychologically distressed and are willing to accept psychological treatment. Such treatment should preferably be transdiagnostic as the prevalence of multiple PPS is high in this sample.

Keywords: Persistent Physical Symptoms, PPS, Work rehabilitation, Mental health, Medically Unexplained Symptoms.

Persistent Physical Symptoms and mental health problems among individuals seeking work rehabilitation

Persistent Physical Symptoms (PPS) are physical symptoms that cannot be explained by any known biological or physical pathology despite thorough examination. PPS can range in number, duration and severity, from a single mild symptom to multiple chronic symptoms that are severe and disabling. Such symptoms are extremely common across medical and non-medical settings. Many different types of PPS have been described and further defined as syndromes, e.g., irritable bowel syndrome, chronic fatigue, fibromyalgia, non-cardiac chest pain, premenstrual syndrome and chronic pain.

The definition and terminology of PPS is controversial. People commonly meet criteria for more than one PPS condition and there are considerable similarities and overlap between different conditions in case definition, reported symptoms and in non-symptom associations. This has led some researchers to conclude that PPS is better described as one syndrome than many (Dimsdale et al., 2011; Wessely et al., 1999; Wessely & White, 2004). This lack of agreement has led to a lack of consistency in definitions and terminology used for PPS.

Persistent physical symptoms is a new overarching term which seems to be more acceptable to patients than older terms (Marks & Hunter, 2015; Picariello et al., 2015) and is more in accordance with the latest changes made to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5)(American Psychiatric Association, 2013).

PPS are very commonly presented in all healthcare settings. Research indicates that about one third (Roca et al., 2009) of all patients seeking consultation in primary health care have one or more PPS and that PPS comprise between 15% and 30% of all primary care

consultations (Kirmayer et al., 2004). It has been estimated that the prevalence of PPS (Carson et al., 2000; Nimnuan et al., 2001) in secondary care is between one third and two thirds of patients and at about one fifth of patients who frequently attend secondary care specialities (Reid et al., 2001).

PPS are associated with high rates of disability (den Boeft et al., 2016; Harris et al., 2009a; Hoedeman et al., 2010; Rask et al., 2017) and psychological distress (Budtz-Lilly, Vestergaard, et al., 2015a; Harris et al., 2009a) and many tend to follow a chronic course with high levels of psychiatric comorbidity, although these symptoms can also be present in the absence of a mental disorder (Harris et al., 2009a; Löwe et al., 2008; Roca et al., 2009). In addition, PPS carry with them a considerable social cost in the form of: 1) higher health care use (Barsky AJ et al., 2005; Budtz-Lilly, Vestergaard, et al., 2015a; Harris et al., 2009a) that tends to increase with number of PPS and symptom severity (Katon et al., 1991) and there is evidence that inappropriate information, over-investigation and over-treatment are common in the management of these patients (Kouyanou et al., 1998; McGorm et al., 2010); 2) increased health care cost (Barsky AJ et al., 2005; Konnopka et al., 2013; Rask et al., 2017; Reid et al., 2001) that is twice as high for those with multiple PPS than for those without (Barsky AJ et al., 2005) and those with well-defined medical symptoms (Rask et al., 2017); 3) increased work disability (den Boeft et al., 2016; Loengaard et al., 2015; Rask et al., 2017), and 4) increased absence from work due to sick leaves (den Boeft et al., 2016; Harris et al., 2009a; Hoedeman et al., 2010; Loengaard et al., 2015). Not surprisingly PPS are associated with high unemployment rates (Amland et al., 2014; Momsen et al., 2016), an increased risk for becoming unemployed (Hoedeman et al., 2010; Loengaard et al., 2015) and increased risk of

permanent disability pension even after adjustment for both psychiatric and chronic medical comorbidity(Rask et al., 2017).

The strong association between PPS, work disability, unemployment, and risk for permanent disability pension provides a clear rationale for taking a closer look at PPS in the context of work rehabilitation. This is particularly important as effective treatments are available for many different PPS conditions. As little is known about PPS in relation to work rehabilitation, we conducted a study at VIRK – Vocational Rehabilitation Fund in Iceland (<https://www.virk.is/is/english/mission-and-activities-of-virk>), where individuals with employment difficulties linked to ill health or injury are referred. VIRK is a private organization of which all the major labour unions and both public and private employers in the labour market are members.

The primary goal was to estimate the prevalence of PPS in this particular population and whether there is an association between the presence of PPS and mental health diagnoses as indicated by caseness on self-report scales. Secondly, we wanted to know whether different PPS subtypes differ in relation to the above-mentioned factors. Thirdly, we wanted to see whether we could identify service seekers at VIRK who might benefit from psychological treatment for PPS.

Method

Participants

The sample consisted of people from all sectors of the labour market who sought work rehabilitation through VIRK, in the capital area of Iceland between June 2017 and May 2018. In Iceland almost everyone in the labour market is a member of a trade union and the participants in this study belonged to unions representing: store and office workers, university graduates, state and municipal employees, manual labourers or trade workers. Service users were not eligible for participation if they were under the age of 18, had started receiving rehabilitation from VIRK or had limitations in their language or reading ability that prevented them from filling out questionnaires. Three hundred eighty-three service seekers were invited to participate in the study of which 324 (84.6%) agreed and 59 (15.4%) declined. Limitations with language and reading abilities were the most common reason for exclusion but a few cases were excluded because the service users started receiving rehabilitation before the study questionnaires could be administered. Not all eligible service seekers were invited to participate in the study. The most common reasons for missed recruitment opportunities were that the counsellors forgot to present the study to their clients or they were never instructed to do so by their supervisors. In addition to that, counsellors within all unions occasionally deemed it to be too invasive for clients to participate, as they were either exhausted or emotionally upset during the counselling session.

Procedure

VIRK's counsellors presented the study to eligible clients during one of their first sessions. They asked for their informed consent and gave a battery of self-report

questionnaires to those agreeing to participate. Participants filled out the questionnaires after the counselling session and put them in a sealed mailbox upon completion. Information about participants was retrieved from VIRK's database and matched with the questionnaire data using research identification numbers. This study was approved by the National Bioethics Committee of Iceland (application no. VSN-16-045).

Measures

Background information

Information on participants' gender, age, marital status and their highest level of education was retrieved from VIRK's database. The response options for 1) marital status were single, married or cohabiting with a partner, divorced or widowed, and for 2) highest education completed were primary school, secondary school, vocational education at secondary school level, other vocational education, university and other.

Psychological measurements

The Persistent Physical Symptoms Checklist (PPSC). Is a self-report instrument that measures persistent problems with seven types of physical symptoms that clearly interfere with daily life, i.e., sleep problems, pain, chronic tiredness fatigue or muscle problems, gastrointestinal problems, heart and chest symptoms, dizziness and/or related problems and gynaecological problems. Respondents are asked whether they have had problems with each of the symptoms for more than six months (except one month for sleep problems), whether their symptoms have a known cause, and then indicate on a 9-point scale to what extent each symptom interferes with their lives. The criteria for a particular PPS type are met if the problem has been present for an extended period of time, does not have a medical explanation,

and definitely interferes with daily life (≥ 4). Previous validation of the checklists in a small validation sample suggests adequate convergent validity (Flóvenz, Salkovskis, Svendsdóttir, et al., n.d.). If occasional missing items on the PPSC prevented us from concluding whether the criteria for a particular PPS symptom was met it was counted as absent.

The Short Health Anxiety Inventory (SHAI) (Alberts et al., 2013; Salkovskis, 2002).

Is a 14-item self-report scale that measures health-related anxiety. Answers are rated on a 4-point scale, with a total score between 0 and 54. Each item consists of four statements and the participant is asked to choose the one that best describes his/her feelings, over the past six months. The instrument has good psychometric properties (Alberts et al., 2013) and total scores of 18 or more differentiate reliably between those that meet DSM-IV criteria for hypochondriasis and those that do not. The Icelandic version also has good psychometric properties (Viðarsson, 2016) and in this study Cronbach's alpha was 0.89.

The Patient Health Questionnaire-9 (PHQ-9) (Kroenke et al., 2001). is a 9-item self-report scale rated on a 4-point scale that measures the participant's severity of depression over the last two weeks (Kroenke & Spitzer, 2002). The scale has cut-off points of 5, 10, 15 and 20, which are interpreted as mild, moderate, moderately severe and severe depression. Both the original and the Icelandic version of the PHQ-9 have good psychometric properties (Kroenke et al., 2001; Kroenke & Spitzer, 2002; Pálsdóttir, 2007) and Cronbach's alpha in our sample was 0.81.

The Generalized Anxiety Disorder-7 (GAD-7) (Spitzer et al., 2006) measures symptoms of general anxiety over the last two weeks. It consists of 7 items rated on a 4-point scale, with a total score that ranges from 0 to 21. The GAD-7 has cut-off points at 5, 10 and

15, which are interpreted as mild, moderate, and severe anxiety. Both the Icelandic and the original version of the GAD-7 have good psychometric properties (Ingólfssdóttir, 2014; Spitzer et al., 2006) and Cronbach's alpha in our sample was 0.88.

The Social Phobia Scale (SPS) and the Social Interaction Anxiety Scale (Mattick & Clarke, 1998) are two companion measures for assessing social anxiety. The SPS measures fear of being observed by others during everyday activities and the SIAS measures fear of engaging socially with others. Both scales consist of 20 items, rated on a 5-point scale with a total score that ranges from 0 to 80. The original and the Icelandic versions of both scales have good psychometric properties (Ólafssdóttir, 2012; Osman et al., 1998) and in our sample SIAS had a Cronbach's alpha of 0.94 and the SPS of 0.96. In this study we considered social anxiety scores to be in the clinical range if the combined total score of SIAS and SPS met a cut-off of 74 as this scoring method has been shown to best discriminates between those with and without social anxiety disorder in an Icelandic sample (Ólafssdóttir, 2012).

Traumatic experiences. Participants were asked about past traumatic events with the following single, yes or no, question taken from the Icelandic version of MINI International Neuropsychiatric Interview version 5.0 (Lecrubier et al., 1997; Sheehan & Lecrubier, 1998): *Have you ever experienced or witnessed or had to deal with an extremely traumatic event that included actual or threatened death or serious injury to you or someone else?*

The Impact of Event Scale Revised (IES-R) (Beck et al., 2008; Sundin & Horowitz, 2002) measures symptoms of post-traumatic stress. The scale consists of 22 items measured on a 5-point scale with a total score that ranges from 0 to 88. A score of 33 or higher has been shown to discriminate between people with and without Post Traumatic Stress Disorder

(PTSD) (Creamer et al., 2003). The IES-R has good psychometric properties (Creamer et al., 2003) and Cronbach's alpha was 0.95 in our sample.

Alcohol Use Disorders Identification Test (AUDIT) (Saunders et al., 1993) measures hazardous or harmful alcohol consumption. The scale consists of 10 items, scored from 0 to 4. Total scores range from 0 to 40 and total scores of 8 or more have been shown to indicate hazardous or harmful alcohol use (Saunders et al., 1993). The AUDIT has been shown to have good psychometric properties (Reinert & Allen, 2007) and in our sample it had a Cronbach's alpha of 0.86.

Drug Use Disorders Identification Test (DUDIT) (Berman et al., 2005) is an 11 item scale that is used to screen for substance-related problems and is intended to be used with the AUDIT. Total scores range from 0 to 44. According to a Swedish study a total score of 2 for women and 6 for men could be used as a cut-off score for harmful substance use in a general population sample (Berman et al., 2005) whereas an American study indicates that a total score of 8 could discriminate between patients with drug related problems and only alcohol related problems (Voluse et al., 2012). In the current study DUDIT scores were considered to indicate problematic substance use if they met a cut-off score of 6. The scale has been shown to have good psychometric properties (Berman et al., 2005; Voluse et al., 2012) and in our sample it had a Cronbach's alpha of 0.93.

The Work and Social Adjustment Scale (WSAS) (Mundt et al., 2002) measures impaired functioning in five areas of everyday life: the ability to work, manage a home, form and maintain close relationships and engage in social or private leisure activities. The scale consists of five items measured on an 8-point scale with a total score that ranges from 0 to 40.

Scores between 10 and 20 have been associated with significant functional impairment and scores over 20 a more severe pathology (Mundt et al., 2002). The scale has been shown to have good psychometric properties (Mundt et al., 2002; Zahra et al., 2014) and in our sample it had a Cronbach's alpha of 0.84.

Data analysis

First, we examined the prevalence of PPS in our sample; χ^2 tests were used to determine whether there were significant associations between having PPS and clinical levels of general anxiety, depression, social anxiety, health anxiety or post traumatic symptoms. This was followed by correlating the number of PPS with continuous measures of those psychological variables found to be related to the presence of PPS. Next it was intended to examine differences between PPS subtypes and the measures of psychological distress. Finally, in order to estimate how many service seekers at VIRK might benefit from psychological treatment for PPS, we identified participants who both reported PPS and psychological distress, defined as an elevated score on the PHQ-9, the GAD-7 or the SHAI.

Results

Prevalence and descriptives.

The majority of participants (262, 80.9%) reported having one or more PPS on the PPSC, while 62 (19.1%) reported no such symptoms. Table 1 shows the numbers and percentages of participants, with and without PPS, with respect to gender, educational level and relationship status.

Table 1*Gender, education and relationship status of participants, with and without PPS*

Demographic variables	All participants	Participants with PPS	Participants without PPS	χ^2
Gender				
Male	71 (21.9%)	54 (20.6%)	17 (27.4.0%)	1.358
Female	253 (78.1%)	202 (79.4%)	45 (72.6%)	
Education completed				
Primary school	82 (27.2%)	63 (26.1%)	19 (31.7%)	1.899
Secondary school	103 (34.2%)	81 (33.6.2%)	22 (36.7%)	
Other vocational education	19 (6.3%)	15 (6.2%)	4 (6.7%)	
University degree	97 (32.2%)	82 (34.0%)	15 (25.0%)	
Relationship status				
Single	161 (52.8%)	131 (53.7%)	30 (49.2%)	9.748*
Married or cohabiting	97 (31.8%)	83 (34.0%)	14 (23.0%)	
Separated or widowed	47 (15.4%)	30 (12.2%)	17 (27.9%)	

Note. PPS = Persistent physical symptoms.

* $p < 0.05$

More than three quarters of our participants were female and the gender distribution was similar in both groups. Participants that met criteria for at least one PPS were more likely to be separated than those who did not meet these criteria. They were also younger on average ($M=38.40$, $SD= 11.63$) than participants that did not ($M=43.15$, $SD= 13.16$), $t(305)=2.780$, $p=0.006$, $r= 0.16$. Based on average WSAS scores, participants with PPS were more functionally

impaired ($M= 25.73$, $SD= 7.86$) than those without ($M= 16.46$, $SD= 9.70$), $t(76.937)=-6.832$, $p < 0.01$, $r= 0.61$. Seventy-eight percent of participants with PPS, and 35.6% of participants without had WSAS scores in the clinical range (>20), $\chi^2(1) = 40.802$, $p<0.01$. The odds of scoring above cut-off were 6.41 times higher for participants with PPS than without. Based on participants' scores on the AUDIT and the DUDIT, 24.0% ($n=76$) of the sample are likely to have or have had alcohol- or drug-related problems during the past year. Of these, 15.8% ($n=12$) reported that they were abstinent. There was no significant difference in the prevalence of such problems, $\chi^2(1) = 0.043$, $p=0.835$, nor in average scale scores between those with and without PPS, $t_{AUDIT}(317)=0.01$, $p = 0.992$ and $t_{DUDIT}(316)= -0.121$, $p =0.904$.

PPS and mental health

Table 2 shows the numbers and percentages of participants with and without PPS who score above cut-off on measures of health anxiety, depression, general anxiety, social anxiety and symptoms of post-traumatic stress.

Table 2

Numbers and percentages of participants, with and without PPS, with scores above cut-off on the SHAI, PHQ-9, GAD-7, IES-R and the combined SIAS and SPS

Measure	All participants	Participants with PPS	Participants without PPS	χ^2	OR
SHAI ≥ 18	104 (32.7%)	95 (37.0%)	9 (14.8%)	11.05*	3.39
PHQ-9 ≥ 10	245 (75.9%)	218 (82.2%)	27 (44.3%)	40.97*	6.24
GAD-7 ≥ 10	170 (52.8%)	148 (56.7%)	22 (36.1%)	8.45*	2.32
SIAS/SPS ≥ 74	93 (29.1%)	80 (31.0%)	13 (21.0%)	2.44	-
IES-R ≥ 33	114 (37.9%)	95 (38.9%)	19 (33.3%)	0.34	-

Note. PPS = Persistent physical symptoms; OR = Odds ratio; SHAI = Short Health Anxiety Inventory; PHQ-9 = Patient Health Questionnaire-9; GAD-7=Generalised Anxiety Disorder-7; SPS = Social Phobia Scale; SIAS = Social Interaction Anxiety Scale; IES-R = Impact of Event Scale-Revised;

^a IES-R scores were only calculated for participants who reported a past traumatic experience.

* $p < 0.05$

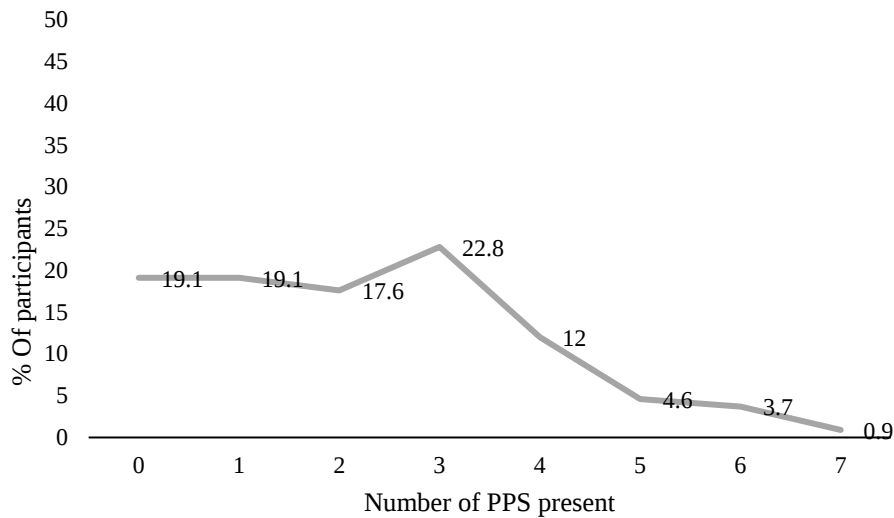
As can be seen in Table 2, participants with one or more PPS were more likely to report symptoms of depression, anxiety or health anxiety in the clinical range. They were not more likely to report symptoms of social anxiety and post-traumatic stress disorder in the clinical range nor were they more likely to have experienced a traumatic event in their past.

Number and types of persistent physical symptoms

Figure 1 shows the percentage of participants who met criteria for a number of the seven different PPS types. Sixty-one point seven percent of participants reported having two or more PPS.

Figure 1

Percentage of participants who met criteria for a number of PPS types.



The number of PPS a participant reported was significantly correlated with depressive symptoms, using Pearson's r . $r_{\text{PHQ-9}} = 0.52$, $p < 0.001$, general anxiety symptoms $r_{\text{GAD-7}} = 0.38$, $p < 0.001$, health anxiety symptoms, $r_{\text{SHAI}} = 0.33$, $p < 0.001$.

It was not possible to look at the association between the particular types of PPS and psychological factors because too few participants met criteria only for a single PPS type.

Figure 2

Prevalence of different PPS types.

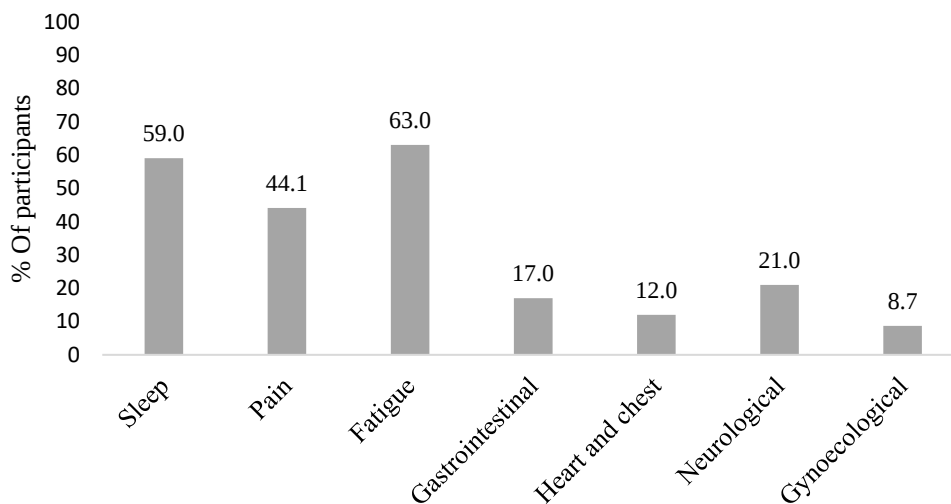


Figure 2 shows the prevalence of the seven different PPS types. The most common PPS are fatigue and muscle problems, followed by sleep problems and pain. Neurological, gastrointestinal and heart and chest related symptoms are also fairly common, but much less than the other three. Out of all possible combinations of symptoms, the five most common combinations account for 54.2% of all PPS cases. These are: 1) sleep problems, pain and fatigue and muscle problems accounting for 17.9% of all cases; 2) sleep problems and fatigue and muscle problems, accounting for 9.9% of all cases; 3) fatigue and muscle problems, accounting for 9.9% of all cases; 4) sleep problems, accounting for 9.2% of all cases; and 5) sleep problems, pain, fatigue and muscle problems and neurological symptoms, accounting for 7.3% of all cases.

VIRK service seekers who might benefit from psychological treatment for PPS

The number and percentages of participants with PPS and elevated scores on the PHQ-9, the GAD-7 (≥ 10 and ≥ 15) or the SHAI (≥ 18) and an elevated score on any of the three scales are presented in Table 3.

Table 3

Prevalence of depression, anxiety and health anxiety symptoms in the clinical range in participants with PPS

Measure	Participants with PPS N (%)
PHQ-9 ≥ 10	218 (83.2%)
PHQ-9 ≥ 15	119 (45.6%)
GAD-7 ≥ 10	148 (56.7%)
GAD-7 ≥ 15	70 (26.8%)
SHAI ≥ 18	95 (37.0%)
PHQ-9 ≥ 10 , GAD-7 ≥ 10 or SHAI ≥ 18	226 (86.6%)
PHQ-9 ≥ 15 , GAD-7 ≥ 15 or SHAI ≥ 18	159 (61.4%)

As can be seen in Table 3, a high percentage of those who report PPS have high levels of depression, anxiety and health anxiety symptoms. Crucially, 91.7% of participants with PPS reported that they believed it would be helpful to discuss their PPS and how their PPS affect them with a trained professional and would accept such help if offered. If we use the conventional cut-off score of 10 for the PHQ-9 and the GAD-7, 64.6% of the participants, VIRK service seekers would be identified as having PPS, being psychologically distressed and

willing to accept psychological help for their symptoms. If we use the higher cut-off score of 15, 46.2% of the total sample would meet these criteria.

Discussion

In this study, a sample of people attending work rehabilitation were evaluated for prevalence and correlates of PPS. The prevalence was unexpectedly high at 80.9%, the modal number of PPS was three and the presence and number of PPS were associated with depression, anxiety and health anxiety. In addition, most participants with PPS and high levels of psychological distress reported being willing to accept psychological treatment for their symptoms. This suggests there is a need for specialised treatment for PPS within vocational rehabilitation and the high prevalence of multiple PPS indicates that such a treatment should preferably be transdiagnostic to some degree(Salkovskis et al., 2016). It was not possible to look at the association between particular types of PPS and psychological factors as too few participants reported single PPS.

To our knowledge this is the first study of its kind in the context of work rehabilitation. In other settings where prevalence of PPS has been examined the rates found were substantially lower. Studies have indicated that about a third of primary care patients (Roca et al., 2009), between one third and two thirds of secondary care patients(Carson et al., 2000; Nimnuan et al., 2001) and about one fifth of patients who frequently attend secondary care specialities (Reid et al., 2001) have one or more PPS. In two studies soon to be submitted for publication, the prevalence of PPS within both English and Icelandic primary care was estimated using the PPSC. In these studies, 31.1% of English and 24.5% of Icelandic primary care patients met criteria for one or more PPS and in both samples the modal number was one.

PPS are correlated with common psychiatric disorders such as anxiety and depression (Budtz-Lilly, Vestergaard, et al., 2015a; Löwe et al., 2008) and about 40-60% of primary care patients with PPS have a comorbid depression or anxiety disorder (Harris et al., 2009a; Löwe et al., 2008). In our total sample, depression, anxiety and health anxiety were all extremely common, with 80.1% meeting caseness for depression, anxiety or health anxiety on self-report scales. The presence of PPS was nonetheless associated with depression, anxiety and health anxiety and 86.6% of people with PPS met caseness on one or more of those measures.

Our overall sample is broadly similar to the population of people seeking work rehabilitation in Iceland. Comparisons with reports from VIRK Vocational Rehabilitation Fund (VIRK Vocational Rehabilitation Fund, 2018) may show differences in terms of education. This is not surprising because the present study did not include participants who did not speak Icelandic or had insufficient reading skills.

A high number of first-time service seekers at VIRK were not recruited in the study. This happened, most likely, for both random and non-random reasons. The main non-random reason was that counsellors occasionally deemed it too invasive to ask their client to participate in the study because of their emotional state. This might have excluded a small group of VIRK service seekers who possibly have particularly severe symptoms. Despite these limitations, we have a sample that largely represents the targeted population and the response rate was high (85%).

In this study, the prevalence of PPS was high and they were associated with having clinical levels of anxiety, depression and health anxiety. It is not clear which variables are primary and secondary, or whether there is a more complex interplay between them. Consequently, it is

possible that treating the PPS might resolve the psychological distress or it might be the case that depression and anxiety need to be targeted specifically in the treatment of PPS.

Our results are based on self-report and in the future, it would be preferable to confirm our results with more robust methods such as diagnostic interviews using standardized instruments such as the MINI. It would also be interesting to know to what extent these problems predict work disability and how they influence the outcome and length as well as drop-out rate from the work rehabilitation.

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