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An investigation of physical pain among Swedish community adults: Sample demographics and pain characteristics

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Abstract

This report presents the demographics of a community sample of 1184 Swedish adults (M_{age} = 48.72, *SD* = 12.17; 75.5 % women, 1.3 % other or undisclosed gender identity) who currently experience physical pain of various origins. Data was collected via an internet survey advertised through patient societies, social media, and healthcare clinics during 2017. Although the majority identified as women, results show that the sample demographics with regards to the area of residence, living conditions, educational level, and occupational status corresponded well with the Swedish general population. Most respondents reported that their pain had been clinically diagnosed, and diseases of the musculoskeletal system (M00 − M99) and the nervous system (G00 − G99) were the most common. The described sample is suitable for use in future studies examining correlates of physical pain, for example by describing or comparing more homogenous sample subsets.

Abstrakt

Denna rapport beskriver ett urval av 1184 vuxna svenskar ($M_{ålder}$ = 48.72, *standardavvikelse* = 12.17; 75.5 % kvinnor, 1.3 % annan eller ej angiven könsidentitet) som upplever olika typer av fysisk smärta. Data samlades in via en internetenkät, som under 2017 utannonserades via olika patientföreningar, sociala medier och vårdcentraler. I bortsett från att de flesta av deltagarna identifierade sig som kvinnor, så var fördelningen i förhållende till boendeort, boendesituation, utbildning och sysselsättning jämförbar med Sveriges population i allmänhet. Majoriteten angav att deras smärta hade blivit kliniskt diagnosticerad, och muskuloskeletala (M00 − M99) samt nervologiska sjukdomar (G00 − G99) var de mest förekommande. Framtida studier kan undersöka korrelat till smärta genom att till exempel beskriva eller jämföra olika grupper inom detta urval.

Direct costs of pain conditions, including hospitalization and medical care, are often exceeded by the indirect costs such as social insurance (Dagenais, Caro, & Haldeman, 2008; Ekman, Jönhagen, Hunsche, & Jönsson, 2005; Maniadakis & Gray, 2000; van Tulder, Koes, & Bouter, 1995). In Sweden, for example, the largest expense within the government-funded social insurance is work disability benefits (Försäkringskassan, 2017). Besides monetary costs of work absenteeism, indirect societal expenses for pain conditions can also be attributed to revenue losses due to decreased productivity. Productivity losses can include declining work performance (Boonen, Brinkhuizen, Landewé, van der Heijde, & Severens, 2010), increased need for unpaid caregiving from relatives (Boonen, 2006), and greater risk of unemployment (Giladi, Scott, Shir, & Sullivan, 2015). For the affected individual, chronic pain is associated with an increased risk of comorbid mental disorders (Attal, Lanteri-Minet, Laurent, Fermanian, & Bouhassira, 2011; Demyttenaere et al., 2007; Härter et al., 2007), poor physical functioning (Schaefer et al., 2014), and limitations in daily life (Picavet & Schouten, 2003; Torrance, Smith, Bennett, & Lee, 2006). As Leadley, Armstrong, Lee, Allen, and Kleijnen (2012) report a 27 % prevalence of chronic pain in the European Union, understanding the characteristics of pain is important to develop effective interventions and support systems with the potential to lower societal costs and reduce individual suffering.

The majority of research on pain correlates utilizes clinical samples, or samples who currently receive sick pay or work disability benefits. Those samples may not, however, adequately represent the variability of chronic pain. For example, while gender and socioeconomic status contribute to the prevalence of chronic pain (Andersson, Ejlertsson, Leden, & Rosenberg, 1993; Torrance et al., 2006; Tsang et al., 2008), these factors also influence the frequency and intensity of experienced symptoms (Bouhassira, Lantéri-Minet, Attal, Laurent, & Touboul, 2008; Fillingim, King, Ribeiro-Dasilva, Rahim-Williams, & Riley, 2009; Kroenke & Spitzer, 1998). Furthermore, previous cohort studies show that not all who experience pain actively seek treatment (Carey et al., 1996; Côté, Cassidy, & Carroll, 2001; Walker, Muller, & Grant, 2004; Von Korff, Dworkin, Le Resche, & Kruger, 1988). Groups who are more likely to seek medical care include women, and individuals who experience high pain intensity and pain disability (Ferreira et al., 2010). These factors additionally influence what kind of treatment is sought. Côté et al. (2001) found significant differences with regards to disability and comorbidities between individuals seeking medical as compared to chiropractic care. Extent of healthcare contacts and pain characteristics may in turn affect whose pain condition is diagnosed and consequently granted sick pay or work disability benefits,

especially considering that a recent report from the Swedish Social Insurance Agency advocates restriction of the total number of sick leave recommendations (Försäkringskassan, 2016).

Therefore, as several studies suggest that sociodemographic factors and pain characteristics of the general population may not be adequately represented in samples commonly utilized in pain research, we suggest expanding the current field of knowledge with research utilizing samples with larger variability. This includes, for example, community participants who experience pain of various origins, yet who does not necessarily seek specific kinds of treatment or currently receive sick pay or work disability benefits. In the current report, we describe the demographics of such a sample collected in Sweden during 2017. The purpose is to provide an initial overview of the data, from which subsamples relevant for future studies could be extracted.

Methods

Measures

Demographic data collected in the current study includes age, gender identity, where in Sweden and the size of the city which participants live in, whether they share a household with a partner and children younger than 18 years, highest level of completed education, extent of their current sick-leave episode, the estimated duration of their pain from its earliest onset, and their current occupation. Table 1 provides response scales for these variables, except occupation (text answer) and the number of children under 18 years living in the same household. Original categories for this variable were *No children*, *1 child*, *2 children*, *3 children*, *4 children*, and *More than 4 children*; the latter four were prior to analysis aggregated into a single *≥ 2 children* category due to a prominent floor effect.

Current occupation among participants who were employed was coded according to the International Classification of Occupations 2008 (ISCO-08; Statistiska Centralbyrån [SCB], 2012). The ISCO-08 is a four-level hierarchical classification system, where occupations are grouped according to their similarity in terms of the required skill level and skill specialization. ISCO-08 levels include: major (e.g. *2: Professionals*), sub-major (e.g. *22: Health professionals*), minor (e.g. *222: Nursing and midwifery professionals*), and unit (e.g. *2221: Nursing professionals*). Occupations were coded to the available level of detail, such that "executive" was coded on the major (i.e. *1: Managers*) and "psychiatry nurse" on the unit level (i.e. *2221: Nursing professionals*). Participants who explicitly stated that they were retired, unemployed/job seeking, or studying were given separate codes, whereas ambiguous answers

were coded as not classifiable. Two independent coders rated the occupations. Their initial concurrence was 88.18 %, and the discrepancies were subsequently discussed until consensus.

Participants were additionally asked to indicate whether their pain was clinically diagnosed or not. Disclosed clinical disorders were coded according to the 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) from the World Health Organization (2016), while ambiguous or extraneous answers were coded as not classifiable. Interrater reliability was assessed by comparing two independent coders with an initial concurrence of 80.74 %. The discrepancies were subsequently discussed individually until agreement was reached.

Procedure

The study was advertised through Swedish patient societies, social media, and health-care clinics during 2017. Advertisements on social media were aimed towards discussion forums specifically dedicated to individuals living with physical pain. Similarly, patient societies who promoted the study represented patients diagnosed with a variety of musculoskeletal and nervous system diseases where pain is a primary symptom.

The advertisements invited individuals fulfilling at least one of three eligibility requirements to partake in an online survey regarding their living conditions and healthcare experiences in exchange for a lottery ticket. The eligibility requirements for participation were (i) that they due to their pain had been in contact with healthcare providers during the past year, (ii) that they were currently receiving sick pay because of their pain, or (iii) that they perceived that their level of pain had a significant impact on their quality of life. After filling out the questionnaire and providing demographic data, participants were given the opportunity to register for a follow-up qualitative study.

The study was approved by the Regional Ethics Board at Gothenburg University (no. 1120-16).

Results

From 2461 participants who began filling out the questionnaire, 1184 participants were selected for further analysis as they had completed the survey with answers provided to ≥ 85 % of the questions. A detailed breakdown of their demographics can be found in Table 1. Participants who identified as neither men nor women or whose gender identity was undisclosed (n = 15) are henceforth reported as part of the total, but excluded in comparisons between genders due to small subsample size.

Table 1.

Descriptive Statistics.

	Total (*N* = 1184)		Women (*N* = 894)		Men (*N* = 275)		Test for gender differences
Variable	*n*	Distribution	*n*	Distribution	*n*	Distribution	
Eligibility requirements							
Healthcare contact within the last year	1184	Yes = 95.8 %, No = 4.2 %	894	Yes = 96.6 %, No = 3.4 %	275	Yes = 93.5 %, No = 6.5 %	$\chi^2(1) = 5.43$, $p = .02$
Receives sick-pay or disability benefits	1184	Yes = 50.7 %, No = 49.3 %	894	Yes = 52.9 %, No = 47.1 %	275	Yes = 43.6 %, No = 56.4 %	$\chi^2(1) = 7.23$, $p = .007$
Pain significantly impacts life	1184	Yes = 96.8 %, No = 3.2 %	894	Yes = 96.9 %, No = 3.1 %	275	Yes = 96.4 %, No = 3.6 %	$\chi^2(1) = 0.17$, $p = .68$
Age	1177	*M* = 48.72, *SD* = 12.17, Range = 18 – 89	889	*M* = 46.21, *SD* = 10.94, Range = 18 – 78	273	*M* = 56.72, *SD* = 12.50, Range = 20 – 89	$t(1160) = -13.41$, $p < .001$, Cohen's $d = .89$
Region of Sweden	1180	Southern = 51.3 %, Middle = 33.8 %, Northern = 14.9 %	892	Southern = 49.4 %, Middle = 34.4 %, Northern = 16.1 %	273	Southern = 56.8 %, Middle = 32.2 %, Northern = 11 %	$\chi^2(1) = 6.21$, $p = .05$
Size of city	1184	Larger city = 43.5 %, Smaller city = 38.3 %, Rural area = 18.2 %	894	Larger city = 43.1 %, Smaller city = 38.4 %, Rural area = 18.6 %	275	Larger city = 45.1 %, Smaller city = 37.8 %, Rural area = 17.1 %	$\chi^2(1) = .47$, $p = .79$
Lives with a partner	1180	Yes = 69.7 %, No = 30.3 %	891	Yes = 70 %, No = 30 %	274	Yes = 69.7 %, No = 30.3 %	$\chi^2(1) = .01$, $p = .92$
N children under 18 years living in the household	1175	0 = 66.6 %, 1 = 15.1 %, ≥ 2 = 18.2 %	889	0 = 62.7 %, 1 = 17.4 %, ≥ 2 = 19.9 %	271	0 = 79 %, 1 = 8.1 %, ≥ 2 = 12.9 %	$\chi^2(2) = 25.69$, $p < .001$
Educational level	1175	Elementary = 9.6 %, Upper secondary = 50.9 %, University = 39.5 %	889	Elementary = 8.2 %, Upper secondary = 50.6 %, University = 41.2 %	271	Elementary = 14 %, Upper secondary = 53.1 %, University = 32.8 %	$\chi^2(2) = 11.26$, $p = .004$
Employment status	1091	Employed = 82.1 %, Unemployed = 7.4 %, Studying = 1.4 %, Retried = 9.1 %	833	Employed = 86.4 %, Unemployed = 8 %, Studying = 1.6 %, Retried = 4 %	244	Employed = 68.4 %, Unemployed = 5.7 %, Studying = 0.4 %, Retried = 25.4 %	$\chi^2(3) = 109.10$, $p < .001$
Extent of current sick-leave	1178	Not on sick-leave = 50.3 %, Part-time = 22.7 %, Full-time = 26.5 %	890	Not on sick-leave = 47.8 %, Part-time = 23.7 %, Full-time = 28.5 %	274	Not on sick-leave = 58.8 %, Part-time = 19.7 %, Full-time = 21.5 %	$\chi^2(2) = 10.34$, $p = .006$
Pain duration in years	1077	*M* = 19.93, *SD* = 12.96, Range = 0.1 – 74	814	*M* = 20.65, *SD* = 12.69, Range = 0.25 – 58	250	*M* = 17.32, *SD* = 13.55, Range = 0.1 – 74	$t(1062) = 3.56$, $p < .001$, Cohen's $d = .25$

Nearly all participants reported that they had been in contact with healthcare providers during the last year and that their pain had a significant impact on their quality of life. Approximately half of the sample was currently receiving sick pay. Concurrent with the finding that women received sick-pay significantly more often than men, women were more likely to report that they were either on half- or full-time sick-leave due to their pain. The majority of the sample lived in the southern parts of Sweden and in large cities, often with a partner. Most did not, however, share a household with children below the age of 18, and men less so than women. The most frequently reported educational level was upper secondary school (sv. *gymnasium*), but women were more likely to have a university degree whereas men were more likely to only have finished elementary school. Being employed was the most common occupational status, yet men were more likely than women to report that they were retried. This finding agrees with that men were on average significantly older than women ($M_{\text{difference}} = 10.51$ years); yet, women estimated that their pain had lasted slightly longer than men ($M_{\text{difference}} = 3.33$ years).

Among participants who indicated current employment, these reported working within one ($n = 791$), two ($n = 72$), three ($n = 15$), or four ($n = 3$) different occupations, or as self-employed ($n = 15$). A breakdown of their occupations classified according to the major level of the ISCO-08 standard is available in Table 2. The most common categories included major level 2: professionals (30.81 %) and major level 5: service and sales workers (30.7 %). Women were more likely than men to work within service and sales, and men more frequently reported that they worked as technicians or associate professionals, within craft or related trades, or as operators and assemblers.

In total, 983 participants reported that their pain was clinically diagnosed; 52.1 % of these reported one diagnosis, 19.2 % two diagnoses, 6.5 % three diagnoses, 2 % four diagnoses, 1.2 % five diagnoses, 0.8 % six to eight diagnoses, and 2.4 % left the answer blank. Whereas 88 % of 892 women reported that their pain condition was clinically diagnosed, this was only reported by 72.5 % of 273 men; a difference which was statistically significant, $\chi^2(1) = 37.98$, $p < .001$. The distribution of all disclosed diagnoses is presented in Table 3, showing that the five most commonly reported diagnoses could be classified musculoskeletal or connective tissue diseases (58.13 %), nervous system diseases (38.15 %), injury due to external causes (7.33 %) genitourinary system diseases (5.02 %), and symptoms not elsewhere classified (4.42 %). Women reported musculoskeletal and genitourinary diseases more often than did men, who on the other hand reported diseases of the nervous system or injury due to external causes more frequently than women. Furthermore, men were

Table 2.

Distribution of Occupations Categorized According to ISCO-08 Standard Among Currently Employed Participants.

Major level		Total (*N* = 896)		Women (*N* = 719)		Men (*N* = 167)		Test for gender differences
		n	% of *N*	*n*	% of *N*	*n*	% of *N*	
1:	Managers	32	3.57 %	22	3.06 %	9	5.39 %	$\chi^2(1) = 2.19$, $p = .14$
2:	Professionals	278	31.03 %	231	32.13 %	42	25.15 %	$\chi^2(1) = 3.10$, $p = .08$
3:	Technicians and associate professionals	114	12.72 %	83	11.54 %	31	18.56 %	$\chi^2(1) = 5.96$, $p = .02$
4:	Clerical support workers	106	11.83 %	89	12.38 %	15	8.98 %	$\chi^2(1) = 1.51$, $p = .22$
5:	Service and sales workers	273	30.47 %	244	33.94 %	28	16.77 %	$\chi^2(1) = 18.78$, $p < .001$
6:	Skilled agricultural, forestry, and fishery workers	18	2.01 %	16	2.23 %	2	1.20 %	$\chi^2(1) = 0.72$, $p^a = .55$
7:	Craft and related trades workers	40	4.46 %	17	2.36 %	23	13.77 %	$\chi^2(1) = 40.99$, $p < .001$
8:	Plant and machine operators, and assemblers	18	2.01 %	9	1.25 %	9	5.39 %	$\chi^2(1) = 11.66$, $p = .001$
9:	Elementary occupations	21	2.34 %	20	2.78 %	1	0.60 %	$\chi^2(1) = 2.79$, $p^a = .10$
0:	Armed forces occupations	1	0.11 %	0	-	1	0.60 %	$\chi^2(1) = 4.31$, $p^a = .19$
-	Unclassifiable	68	7.59 %	42	5.84 %	26	15.57 %	$\chi^2(1) = 18.10$, $p < .001$

Note. *Unclassifiable* indicates that the answer provided by participants was not possible to interpret according to the first level of ISCO-08 coding.

[a] Significance value derived from 2-sided Fisher's exact test due to expected frequency < 5 in at least one cell.

Table 3.

Distribution of Diagnoses Categorized According to ICD-10 Among Participants Who Reported That Their Pain Condition Was Clinically Diagnosed.

	Total (*N* = 996)		Women (*N* = 785)		Men (*N* = 198)		Test for gender differences
	n	% of *N*	*n*	% of *N*	*n*	% of *N*	
Infectious diseases (A00-B99)	2	0.20 %	1	0.13 %	1	0.51 %	$\chi^2(1) = 1.11$, $p^a = .36$
Neoplasms (C00-D48)	1	0.10 %	0	-	1	0.51 %	$\chi^2(1) = 3.97$, $p^a = .20$
Endocrine and metabolic diseases (E00-E90)	10	1.00 %	7	0.89 %	3	1.52 %	$\chi^2(1) = .61$, $p^a = .43$
Mental and behavioral disorders (F00-F99)	18	1.81 %	14	1.78 %	4	2.02 %	$\chi^2(1) = .05$, $p = .82$
Diseases of the nervous system (G00-G99)	380	38.15 %	281	35.80 %	94	47.47 %	$\chi^2(1) = 9.13$, $p = .003$
Diseases of the ear (H60-H95)	3	0.30 %	2	0.25 %	1	0.51 %	$\chi^2(1) = .33$, $p^a = .49$
Diseases of the circulatory system (I00-I99)	3	0.30 %	2	0.25 %	1	0.51 %	$\chi^2(1) = .33$, $p^a = .49$
Diseases of the respiratory system (J00-J99)	3	0.30 %	3	0.38 %	0	0.00 %	$\chi^2(1) = .76$, $p^a = 1.00$
Diseases of the digestive system (K00-K93)	18	1.81 %	16	2.04 %	1	0.51 %	$\chi^2(1) = 2.19$, $p^a = .22$
Diseases of the skin (L00-L99)	1	0.10 %	1	0.13 %	0	0.00 %	$\chi^2(1) = .25$, $p^a = 1.00$
Diseases of the musculoskeletal system (M00-M99)	579	58.13 %	499	63.57 %	73	36.87 %	$\chi^2(1) = 46.14$, $p < .001$
Diseases of the genitourinary system (N00-N99)	50	5.02 %	50	6.37 %	0	-	$\chi^2(1) = 13.29$, $p < .001$
Pregnancy and childbirth (O00-O99)	2	0.20 %	2	0.25 %	0	-	$\chi^2(1) = .51$, $p^a = 1.00$
Congenital malformations (Q00-Q99)	32	3.21 %	29	3.69 %	3	1.52 %	$\chi^2(1) = 2.38$, $p = .12$
Symptoms not elsewhere classified (R00-R99)	44	4.42 %	32	4.08 %	11	5.56 %	$\chi^2(1) = .83$, $p = .36$
Injury due to external causes (S00-T98)	73	7.33 %	45	5.73 %	28	14.14 %	$\chi^2(1) = 16.26$, $p < .001$
Unclassifiable	18	1.81 %	8	1.02 %	9	4.55 %	$\chi^2(1) = 11.57$, $p^a = .002$
No answer	28	2.81 %	11	1.40 %	17	8.59 %	$\chi^2(1) = 29.44$, $p < .001$

Note. *Unclassifiable* indicates that the answer provided by participants was not possible to interpret according to ICD-10, whereas *No answer* means that the participant indicated that their condition was clinically diagnosed but did not indicate any diagnose.

[a] Significance value derived from 2-sided Fisher's exact test due to expected frequency < 5 in at least one cell.

more likely than women to provide diagnoses that were not possible to interpret according to ICD-10 or to leave the answer blank.

Discussion

This report described the demographics of a community sample of 1184 Swedish adults. These respondents had either been in contact with healthcare providers during the past year due to pain, were currently receiving sick pay because of pain, or had pain with a major impact on their quality of life. The sample was predominantly comprised of individuals between approximately 36 to 61 years old, who lived in the Southern urban parts of Sweden and shared their household with a partner but not children below 18 years of age. The demographics of our sample coincide well with Sweden in general. In 2017, the population density was the largest in southern Sweden (SCB, 2018e), most Swedish citizens lived in urban parts (SCB, 2018d), the majority of the population fall between a age span of 30 − 50 years (SCB, 2018c), a shared household was more common than one person households, and living without children was more common than living with (SCB, 2018a). Furthermore, the employment (82.1 %) and unemployment (7.4 %) rate is comparable to data in Sweden as a whole (SCB, 2018b). With the exception of that Swedish men are more frequently employed as professionals compared to women (SCB, 2018f), gender differences between occupations adequately match national data.

Other significant differences between gender in our sample include that women were more likely than men to be on sick-leave, and receive sick-pay or work disability benefits; a trend which is also represented in statistics from the Swedish Social Insurance Agency (Försäkringskassan, 2015, 2016). Although these results could be influenced by that men in our sample to a larger extent were ineligible for sick pay or work disability benefits, as they were more likely than women to be retired. Moreover, men in the current sample more frequently reported diseases of the nervous system, and women more frequently diseases of the musculoskeletal system. Yet the percentage of men and women with these diagnoses are equal with regard to the total number of healthcare visits in Sweden (Socialstyrelsen, 2018). It should, however, be noted that all clinical diagnoses were self-reported and therefore subject to bias. Such bias could include that diseases are diagnosed by oneself instead of a clinician, reporting non-specific symptoms instead of a specific diagnosis (e.g. reporting “back pain” instead of “lumbago”), or forgetting or neglecting to report a clinical diagnosis.

Previous international studies had shown that the prevalence of pain is higher among women compared to men, both with regards to musculoskeletal (Tsang et al., 2008) and neuropathic pain (Bouhassira et al., 2008; Torrance et al., 2006). These factors might partly

account for why the majority of respondents identified as women (75.5 %). However, as women are more likely than men to partake in psychological survey research (Gosling, Vazire, Srivastava, & John, 2004), this could also reflect a sampling bias. Acknowledging one's pain and seeking social support could differ as a function of gender and pain characteristics, which in turn could have influenced the demographics of the current sample as participants were primarily recruited through social media and patient societies.

In addition to issues with nonprobability sampling and self-report data discussed above, the influence of attrition on the current sample should be acknowledged. Approximately half of participants who began the survey terminated it prior to completion, or left more than 85 % of the survey blank. As we found significant associations between men and providing uninterpretable or no answers in response to occupation and clinical diagnoses, it is possible that the current sample is demographically biased. However, with the exception of gender imbalance, the characteristics of our sample are similar to that of the general Swedish population. Nevertheless, future studies examining pain correlates utilizing the current sample should control for demographic variables to reduce the impact of attrition.

In conclusion, the demographics of the current sample of community adults who currently experience pain adequately match the Swedish population in general. We additionally found significant differences between women and men on several variables included in the current study. Future studies should therefore acknowledge potential gender effects on pain correlates. Furthermore, the considerable variability suggested by the wide range of occupations and clinical diagnoses prompt that future studies divide the current sample into more homogenous subsamples (e.g. similar diagnoses, within age spans). Depending on the hypothesis, these subsamples could then be examined separately or compared to each other for a more comprehensive understanding of the correlates and consequences of pain. However, nonprobability sampling and attrition could have influenced the distribution of our current sample, which warrant that future studies control for demographic variables to reduce bias.

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