Acute and chronic musculoskeletal pain situations among the working

population and their pain education needs: An exploratory study

Running title: Prevalence of pain in working population

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Shuk Kwan Tang[1]*, Mimi Mun Yee Tse[1], Sau Fong Leung[1] and Theofanis Fotis[2]

[1]*School of Nursing, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong*

[2]*School of Health Sciences, University of Brighton, Westlain House, Village Way, Brighton, BN1 9PH, UK*

Corresponding Author:

Ms. S. K. Tang

School of Nursing, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong

Email: skangel.tang@connect.polyu.hk

Keywords

Chronic pain; electronic pain management education; online survey; pain; working population

Key messages

- The survey explored the prevalence of pain among Hong Kong working

  population.

- Their preference of using electronic pain management materials was examined.

- 71.6% of the participants were in chronic pain and it was a high prevalence.

Abstract

Background. Pain affects a person's physical and psychological well-being, work performance and productivity. Working population bear their pain and continue to work which may contribute to the worsening of their pain condition. However, their pain situation was not well-examined.

Objectives. The aim of the study was to explore the prevalence of acute and chronic pain in the working population in Hong Kong, understand their pain management strategies, and determine their preferences with regard to the use of electronic pain management materials.

Methods. This was an exploratory online survey. The participants' pain history, their preferences in methods of pain management, the source of the pain management education that they had received, sources and preferences in relation to the use of the Internet for pain education, and the participants' demographic characteristics were collected.

Results. A total of 210 participants joined the study, 67% of whom were experiencing pain. Of the group in pain, 71.6% were in chronic pain that has persisted for three months or more. Pain intensities ranged from 2.82 to 3.82 on a ten-point numeric scale. Of the participants, 85.7% reported not receiving adequate pain management education, and 91.4% of those agreed pain services were inadequate. Websites and

healthcare professionals were the sources from which they obtained their pain

management education.

Conclusion. The high prevalence of pain in the working population requires special

attention. Healthcare professionals should be proactive and an online pain

management programme can be a solution to address the critical problem of pain in

the working population.

Background

The majority of humans experience chronic musculoskeletal pain. Pain is "an unpleasant sensory and emotional experience associated with actual or potential damage, or described in terms of such damage" (1). Acute and chronic pain are differentiated by their duration. Acute pain persists for less than three months, whereas chronic pain is pain that an individual experiences for more than three months. Chronic pain refers to non-cancer pain (2). It is not solely a physical disturbance, but also affects work performance and the activities of daily living (3, 4). When pain is present, people might take sick leave and rest (4). However, more often, people bear their pain and continue to work (5). Pain has a great impact on the working population; it has been found that the work performance and productivity of working people with chronic pain are inferior to those of their counterparts without pain (6).

People look for ways to reduce their pain. Patients with chronic pain will often resort to self-initiated treatments, such as analgesics, exercise, and massage (3, 4, 7). It is essential to ensure that they have the ability to self-manage their pain. The concept of the self-management of chronic conditions emerged in addition to traditional health education. It is about equipping patients with the skills to identify their problems and make decisions about their daily care (8, 9). Self-management

programmes incorporating information technology have become a trend, as they allow

for access at any time, lead to improvements in behaviour and symptoms, and

facilitate patient empowerment (10-12). Different Internet-based programmes have

demonstrated satisfactory results in enhancing the self-management abilities of

patients (13, 14).

The prevalence of pain has been found to be high in adults worldwide. Studies

investigating the prevalence of pain in people of different ethnicities have

demonstrated that people everywhere are suffering from pain. In Japan, it has been

reported that 39.2% of the respondents in a study presented with chronic pain, but the

study included students as their subjects (15). Malmberg-Ceder et al. revealed that

77% of the female workers in their study suffered from chronic pain (5). Neck and

shoulder pain are commonly found among the working population with chronic pain

(16, 17). In Hong Kong, the prevalence of pain ranges from 34.9% to 45.9% (3, 18).

However, the results are from a study that targeted the general population. The

working population, which comprises the largest portion of the Hong Kong

population, was not specifically examined (19, 20).

Since the cross-sectional studies in Hong Kong were carried out through

telephone interviews targeting the general public, the prevalence of pain and the pain

management methods used by the working population and online users are not

known. Also, studies have focused on the prevalence of pain and on the use of

pharmacological and non-pharmacological interventions (3, 4, 18). There is a lack of

studies on the pain characteristics and pain management preferences of adults with

acute pain in comparison to those with chronic pain. In addition, there are no studies

examining the working population's preferences in the use of the Internet for pain

management education.

The aim of this study was to explore, through an online survey, the prevalence

of acute and chronic pain among the working population in Hong Kong, to understand

their pain management strategies, and to determine their preferences with regard to

the use of electronic pain management materials. The Checklist for Reporting Results

of Internet E-Surveys was adopted to guide the writing of the report (21).

Methods

Study design

A cross-sectional online survey was adopted and a questionnaire was developed for

use in the study. Ethical approval was granted from the Human Subjects Ethics

Subcommittee of the Hong Kong Polytechnic University (HSEARS20160804003).

The initial process of recruitment started with the working population with pain. The

survey was conducted from August to October 2016.

Samples and procedure

According to the 2011 Census, the size of the labour force was 3,727,407 (19). With a

95% confidence level and a 7% margin of error, the estimated sample size for the

present survey was 196. The criteria for the inclusion of participants from the working

population were those (a) aged fifteen or above, (b) who had performed a job during

the seven days before joining the survey or who had worked for pay or profit during

the seven days before participating in the survey, (c) who could understand Chinese,

and (d) who had an electronic device that they could use to access the Internet (22).

Participants were recruited by snowball sampling. The initial recruitment was carried

out in the community by distributing the link to the survey and posting the link on

Facebook, to attract a wide range of participants. The participants were encouraged to

forward the survey to others. The survey was available on Google Form. The

participants were required to read through the information sheet. They then gave their

consent to take part in the survey by clicking the "Continue" button to begin the

survey. The data that were collected were stored in Google Drive. Google provides an

information security service and data encryption to its users (23). Verification of users

is required. Only the members of the research team had the login name and password

required to access the account.

Measures

The questionnaire was reviewed and validated by one registered nurse and two occupational therapists with extensive experience in pain management. The Item-level of Content Validity Index (I-CVI) score was 1.0, indicating that the contents were valid (24, 25). The survey was comprised of five sections, namely, pain history, preferences in pain management, source of pain management education received by the participants, preferences in using the Internet, and the demographic characteristics of the participants. The participants had to indicate if they were experiencing any pain. Those who answered "Yes" would proceed to the remaining sections. Those who answered "No" would be directed to section three, on the source of their pain management education.

Section one was about the pain history of the participants, and consisted of seven items: the duration of pain, pain intensity rated using a zero to ten numeric scale, pain locations, reasons for the presence of pain, and the patterns of pain. Section two, containing fifteen items, was on the management of pain. There were questions concerning the use of pharmacological and non-pharmacological interventions for managing pain, and on sleep quality, activities of daily living affected by pain, and level of perceived depressed mood. Section three was on the

source of the pain management education received by the participants, and consisted

of five items. The participants were asked to indicate where they had obtained their

pain education materials, the adequacy of the pain education, the mode of delivering

the pain education, and what contents they preferred to have included in an online

pain management education programme. Section four was on the participants'

preferences with regard to the use of the Internet, and consisted of three items: the

number of hours that they spent on the Internet per day, the tools that they used to

access the Internet, and the activities that they performed on the Internet. Section five

was the section on demographic characteristics, and contained ten items. The

participants were required to complete every item in a section before they could

proceed to the next section. They were allowed to revise their choices before

submitting the questionnaire. The items in the sections were not randomized.

Data Analysis

The IBM Statistical Package for the Social Sciences, SPSS for Windows version 23.0

was used to analyse the data. A Chi-square test and a Mann-Whitney U Test were used

to examine the demographic data and the outcome measurements of the acute pain

and chronic pain groups. A *p-value* of 0.05 was considered statistically significant.

Results

Demographic characteristics

A total of 210 participants completed the online survey. Of these, 67.1% (n = 141) reported the presence of pain. The majority were female participants (70.5%). Their mean age was 38.02 years. More than half of the participants were single and had a post-secondary level of education. Over 80% of the participants with pain worked as professionals and did not have any chronic illnesses. Their demographic data are presented in Table 1. There were no statistical differences in demographic characteristics between the non-pain and pain participants.

The demographic data of the present survey was compared to the results of the 2016 Population By-census of Hong Kong and Wong & Fielding's study about the prevalence of chronic pain in Hong Kong in 2011 (18). The percentage of female participants were higher in the present study than the population aged 15 or above in the 2016 Population By-census. The participants in the present study was in a younger age range. The percentage of the married population was 58.4% in the 2016 Population By-census and was higher than the survey participants. The percentage for occupations were similar except for professionals and service and sales workers. For the education level, over 80% of the both the survey participants and 2016 Population

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By-census reach secondary and post-secondary level. Gender, age, living status, monthly income and personal health history cannot be compared because these results from the 2016 Population By-census focused on the whole population.

[Table 1 near here]

Prevalence of pain and pain intensity in different body sites

Of the 141 participants with pain, 28.4% of them (n = 40) had acute pain and 71.6% (n = 101) had chronic pain (Table 1). While in the whole survey population (n = 210), the prevalence of acute pain was 19% and chronic pain was 48.1%. The total mean pain score of all of the pain participants was 2.85 (SD = 1.57), including the acute pain mean score (Mean = 2.46, SD = 2.35) and chronic pain mean score (Mean = 3.01, SD = 1.62) (Fig 1). The most common pain sites were the neck and bilateral shoulders. The right shoulder received the highest mean score for pain of 3.82 (SD = 2.391). Straining (70.9%) and stress (39%) were the top reasons for the pain felt by the participants. Nearly half of the participants with chronic pain (49.5%) reported that their pain could present at any time and that the pattern was intermittent (64.4%). An episode of pain could persist for an average of two hours in the acute pain participants and four hours in the chronic pain participants.

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[Figure 1 near here]

Preferences in pain management among acute and chronic pain participants

Over 70% of the participants with pain did not take any analgesics when they experienced pain (Table 2). However, they perceived analgesics to be an effective measure to reduce pain, especially the acute pain participants (65%) ($p < 0.05$). However, 31.2% of all of the pain participants did not consider taking any form of analgesic. Over 80% of the participants thought that non-pharmacological interventions were useful for relieving pain. Of the participants, 30.5% would buy and take over-the-counter medications, 48.9% would self-administer non-pharmacological interventions, and 29.8% did not attempt any interventions to manage their pain. The most common non-pharmacological interventions chosen were massage (64.8%), bed rest (39.4%), and use of a hot pad (38%) (Table 2).

[Table 2 near here]

Pain and perceived depressed mood and quality of life

The participants reported that they experienced depressed mood related to pain. They

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perceived that they sometimes and even often experienced depressed mood (27%). Of the participants with chronic pain, 78.1% perceived that they seldom to often experienced depressed mood, more than the 67.5% of those with acute pain (p = 0.023). Overall, 68.1% of the pain participants indicated that their activities of daily living were affected by pain, with the percentage being higher among chronic pain participants, at 74.3% (p = 0.012). A total of 84.4% of the participants perceived that pain affected their quality of life from seldom to often, with the figure being higher among chronic pain participants (88.2%) than among acute pain participants (75%) (p = 0.004) (Table 3).

[Table 3 near here]

Internet usage and preferences in pain education

All of the participants (n = 210) were asked about their Internet usage and preferences in pain education because they are stakeholders in the pain services that are offered in society. Over half (51%) of them expressed an interest in taking part in an online pain management programme, while 61% found the use of online materials to deliver pain management education to be acceptable. The participants were most interested in non-pharmacological methods of pain management (78.1%). Eighty-seven per cent of the

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participants spent at least one hour per day on the Internet. The mobile phone was the

device that they most commonly used to access the Internet (65.7%). Over 60% of the

participants obtained their pain education from websites and healthcare professionals

(Table 4). A large majority of the participants (85.7%) expressed the opinion that they

did not receive adequate pain management education, and an even greater percentage

(91.4%) also rated the public pain services as inadequate.

[Table 4 near here]

Discussion

The present survey investigated the pain situations of the working population in Hong

Kong. The demographics of the participants in this study were similar to those of the

Hong Kong labour force in general, such as in gender and age distribution (26).

However, a higher percentage of the participants in this study worked as professionals

(36.2%) and had a higher level of post-secondary education (66.7%) than the general

working population. This could be because this study was an online survey and the

participants were required to have knowledge of how to access online resources.

The prevalence of pain in the present survey was 67%, which was higher than

in previous studies. The prevalence of chronic pain was even higher, at 71.6%. In

addition, the participants had a pain intensity score of 2.85 (SD = 1.57). The

prevalence of pain in Japan's general population was lower, at 39.2% (15). The

prevalence of chronic pain was also found to be lower in the United Kingdom (35% to

51.3%) and Portugal (36.7%) (27, 28). In a study in Finland focused on female

workers, 77% were reported to have chronic pain (5). Workers in the United States

and Denmark also reported a lower pain intensity (16, 17). The mild to moderate pain

scores and the intermittent nature of the pain could be why the participants in this

study were able to withstand the pain and continue to work.

The sites with higher levels of pain intensity were those on the upper limbs.

Musculoskeletal pain is the most common pain complaint from adults (16, 17). People

depend a great deal on the Internet and use computers to maintain communications

and conduct business. The use of computers did not have a clear causal relationship

with pain (29). Improper posture might be the cause of the pain in the upper limbs.

Work-related musculoskeletal pain has been reported in different studies involving

office workers who frequently use computers (16, 30). The use of a mouse and

keyboard, and a prolonged sitting position are risk factors for musculoskeletal

disorders (31, 32). For an office worker, maintaining the proper position during work

and having an ergonomically designed chair and table are essential to maintaining a

proper posture. The failure to maintain a proper posture can explain why pain was

It is alarming to discover that the majority of pain sufferers did not take any analgesics (70.2%). Although more acute pain sufferers than chronic pain sufferers perceived the usefulness of analgesics, they did not take analgesics and or even consider trying them ($p < 0.05$). Instead, both groups perceived non-pharmacological interventions to be useful. The mild to moderate pain intensity reported by the participants would affect their choice of pain management method. A possible reason for why they avoided analgesics is that they were afraid of the side effects of analgesics. They might not have felt secure about using analgesics because they did not have adequate knowledge about these medications (35). Rather, they used non-pharmacological methods such as massages, bed rest, hot pads, and exercise. These methods were convenient and easy to apply. A massage may have an immediate and short-term pain relieving effect on neck and shoulder pain (36). This helps to explain why those among the working population who suffered from pain in the neck and upper limbs ranked massages as their most favoured choice of non-pharmacological intervention.

A comparatively large percentage of participants (29.8%), especially acute pain sufferers (37.5%), did not try any interventions to manage their pain. A similar result was found in an Indian study, where 30% of the respondents did not receive

treatment for chronic pain (37). In addition, acute pain can result from surgery or

trauma (38). It can persist in a person and gradually become chronic pain if it remains

untreated (39). The transition from acute to chronic pain involves complex

interactions inside the body by continuous pain responses, leading to

pathophysiological changes in the processing of pain (38, 39). The prevalence of

chronic pain (71.6%) was far higher than that of acute pain (28.4%) because people

did not treat their pain in the acute stage and the pain became chronic. Workers may

take sick leave because of pain, and even be unable to work due to functional

disability (27). Also, chronic pain participants experienced more depressed mood

(32.6%) and a lower quality of life (44.6%) than those with acute pain (p < 0.05).

Studies from around the world have indicated that chronic pain contributes negatively

to depressive mood and quality of life (40, 41). Pain education can start at an early

stage of pain to increase awareness of the problem and prevent its progressive

development to chronic pain.

A need to develop and provide pain education to the working population was

found in the present study. The participants reported that the available pain education

and pain service programmes were inadequate. The use of web-based health

programmes is beneficial, especially for the working population. Because of their

work schedules, they are often unable to attend health talks and classes. E-learning

programmes have been established and are used in adult learning (42). The ease of

access, infrastructure, availability of support, and competence in the use of computers

are elements contributing to the success of an online programme (43). It facilitates the

improvement of health knowledge and self-efficacy in the management of disease.

The contents of the web-based pain management programme can be tailor-made

according to individual choices and needs, to enhance rates of participation. The

opinions from the potential learners provide a direction for the researchers to follow

in developing a suitable online learning platform for pain education.

Some limitations were found in the present survey. Selection bias and

sampling bias may exist. The demographic data of the survey participants were

compared to the results of 2016 Population By-census of Hong Kong and Wong and

Fielding's study (18, 26). Higher percentages of females and younger participants

were noted in the present study. The percentage of the married population was lower

in the present survey. As the present survey targeted to the working population, some

demographics cannot be compared as majority of the results in the 2016 Population

By-census and Wong and Fielding's study focused on the general population(18, 26).

Also, those among the working population who do not access the Internet or who do

not have an electronic device to access the Internet would not have been able to

participate. The generalizability and validity of the results were limited. The

psychological parameters of the non-pain group were not assessed. A sub-group

analysis was not performed for participants of different age groups.

Conclusions

The high prevalence of pain and inadequate pain education and pain services found in

the present study reflect the need for society to find a way to manage the problem.

Advances in information technology and mobile devices can facilitate the efforts of

the working population to learn pain knowledge and pain management techniques

through a web-based pain education programme. It is possible to make use of the

Internet to deliver pain management education in order to provide a convenient and

easy way for the working population, who have busy schedules, to gain access to

education programmes.

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Declaration of conflicting interests

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Data availability

Data not publically available.

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Table 1. Demographic characteristics of the participants (210 participants recruited to an online survey in August to October 2016)

	2016 Population By-census	Wong & Fielding's study (n = 5,001)	Total (n = 210)		Non-pain group (n = 69)		Pain group (n = 141) Acute pain (n = 40)		Pain group (n = 141) Chronic pain (n = 101)		p-value[#]
	%	%	n	%	n	%	n	%	n	%	
Presence of pain	Not available	35 (Chronic pain)	-		69	32.9	40	28.4	101	71.6	-
Gender											0.840
Male	27.4[†]	45.2	62	29.5	21	30.4	11	27.5	30	29.7	
Female	48.5[†]	54.8	148	70.5	48	69.6	29	72.5	71	70.3	
Age											0.062
Mean	42.3 (Median) [‡]	Not available	38.02								
15-30	18.4[ϵ]	25.1[ɸ]	90	42.9	32	46.4	22	55	36	35.6	0.635
31-50	20.8[ϵ]	38.9	70	33.4	20	29	11	27.5	39	38.6	
51-70	30.8[ϵ]	36.1	50	23.7	17	24.6	7	17.5	26	25.7	
Marital status											0.953
Single	Not available	Not available	116	55.2	40	58	27	67.5	49	48.5	
Married	58.4[†]	61.1	85	40.5	26	37.7	12	30	47	46.5	
Divorced	4.6[†]	1.6	6	2.9	2	2.9	1	2.5	3	3	
Widowed	6.4[†]	2.5	3	1.4	1	1.4	0	0	2	2	
Occupation											0.109
Managers and administrators	10.1[‡]		21	10	8	11.6	2	5	11	10.9	
Professionals	7[‡]		76	36.2	16	23.2	18	45	42	41.6	
Associate professionals	20.5[‡]		37	17.6	11	15.9	6	15	20	19.8	
Clerical support workers	14.1[‡]	Not available	34	16.2	15	21.7	6	15	13	12.9	
Service and sale workers	17.2[‡]		13	6.2	4	5.8	3	7.5	6	5.9	
Craft and related workers	5.6[‡]		5	2.4	2	2.9	1	2.5	2	2	
Plant and machine operators	4.3[‡]		6	2.9	4	5.8	1	2.5	1	1	

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and assemblers											
Elementary occupations	20.9‡		11	5.2	6	8.7	2	5	3	3	
Others	0.1‡		7	3.3	3	4.3	1	2.5	3	3	
Education level											0.107
No formal education	20†	3.7	1	5	1	1.4	0	0	0	0	
Primary level		14	12	5.7	7	10.1	2	5	3	3	
Secondary level	47.3†	54	57	27.1	19	27.5	6	15	32	31.7	
Post-secondary level	32.7†	28.4	140	66.7	42	60.9	32	80	66	65.3	
Living status											0.864
Alone			20	9.5	8	11.6	3	7.5	9	8.9	
With spouse			28	13.3	11	15.9	5	12.5	12	11.9	
With spouse and children	Not available	Not available	61	29	18	26.1	8	20	35	34.7	
With children			10	4.8	4	5.8	1	2.5	5	5	
With relatives			83	39.5	25	36.2	21	52.5	37	36.6	
With friends			8	3.8	3	4.3	2	5	3	3	
Monthly income (USD$)											0.596
768 or below	14.3‡		14	6.7	8	11.6	2	5	4	4	
767 - 1280	11.3‡		10	4.8	3	4.3	2	5	5	5	
1281 - 2562	39.1‡	83.9	77	36.7	23	33.3	17	42.5	37	36.6	
2563 - 3843	15.1‡		39	18.6	13	18.8	9	22.5	17	16.8	
3844 - 5124	7.4‡		32	15.2	10	14.5	7	17.5	15	14.9	
5125 - 7686	6.6‡	9.8	22	10.5	6	8.7	3	7.5	13	12.9	
7687 or above	6.2‡	6.3	16	7.6	6	8.7	0	0	10	9.9	
Personal health history (Multiple answers can be chosen)											
No chronic illnesses			162	81.9	61	88.4	32	80	79	78.2	0.087
Hypertension			11	5.2	2	2.9	5	12.5	4	4	0.287
Diabetes mellitus	Not available	Not available	6	2.9	1	1.4	3	7.5	2	2	0.392
Heart disease			4	1.9	1	1.4	2	5	1	1	0.736
Stroke			1	0.5	0	0	0	00	1	1	0.483
Gout			5	2.4	1	1.4	0	0	4	4	0.536

Respiratory disease	4	1.9	1	1.4	0	0	3	3	0.736
Arthritis	10	4.8	3	4.3	1	2.5	6	5.9	0.844
Cataract	1	0.5	0	0	0	0	1	1	0.483
Others	11	5.2	1	1.4	3	7.5	7	6.9	0.085

Percentages may not add up to 100% because of rounding.

[#] A Chi Square Test was used to compare the non-pain and pain groups.

*p < 0.05 was considered significant.

[†] Data retrieved from population aged 15 or above.

[‡] Data retrieved from working population aged 15 or above.

[ε] Data retrieved from the general population.

[Φ]Age ranged from 18-29.

Table 2. Methods of pain management used by acute and chronic pain sufferers (141 participants with pain recruited to an online survey in August to October 2016)

	Total (n = 141)		Acute pain (n = 40)		Chronic pain (n = 101)		p-value[#]
	n	%	n	%	n	%	
Take analgesics when pain is present							
Yes	42	29.8	12	30	30	29.7	0.972
No	99	70.2	28	70	71	70.3	
Perceived usefulness of analgesics							
Yes	65	46.1	26	65	39	38.6	0.011*
No	32	22.7	4	10	28	27.7	
Would not consider taking any form of analgesics	44	31.2	10	25	34	33.7	
Non-pharmacological interventions used by the participants [+]							
Massage	92	64.8	25	62.5	67	66.3	
Bed rest	56	39.4	20	50	36	35.6	
Exercise	54	38	12	30	42	41.6	
Hot pad	54	38	15	37.5	39	38.6	
Analgesic balm or oil	49	34.5	6	15	43	42.6	
Perceived usefulness of non-pharmacological interventions							
Yes	116	82.3	33	82.5	83	82.2	0.482
No	12	8.5	2	5	10	9.9	
Would not consider using any non-pharmacological interventions	13	9.2	5	12.5	8	7.9	
Interventions chosen when pain presents [+]							
Self-administering non-pharmacological interventions	69	48.9	19	47.5	50	49.5	0.830
Buy and take over-the-counter medications that do not require a prescription	43	30.5	11	27.5	32	31.7	0.627
Did not attempt any interventions	42	29.8	15	37.5	27	26.7	0.208
Seek help from doctors	31	22.1	6	15	25	24.8	0.198

Percentages may not add up to 100% because of rounding.

[#] A Chi Square Test was used to compare the two groups.

*p < 0.05 was considered significant.

⁺Multiple answers could be chosen.

Table 3. Psychological effects of pain on acute and chronic pain sufferers (141 participants with pain recruited to an online survey in August to October 2016)

	Total (n = 141)		Acute pain (n = 40)		Chronic pain (n = 101)		p-value[#]
	n	%	n	%	n	%	
Depressed mood because of pain[@]							
None	35	24.8	13	32.5	22	21.8	0.023*
Seldom	68	48.2	22	55	46	45.5	
Sometimes	31	22	4	10	27	26.7	
Often	7	5	1	2.5	6	5.9	
Activities of daily living were affected by pain[#]							
Yes	96	68.1	21	52.5	75	74.3	0.012*
No	45	31.9	19	47.5	26	25.7	
Quality of life was affected[@]							
None	22	15.6	10	25	12	11.9	0.004*
Seldom	66	46.8	22	55	44	43.6	
Sometimes	39	27.7	6	15	33	32.7	
Often	14	9.9	2	5	12	11.9	

Percentages may not add up to 100% because of rounding.

[#] A Chi Square Test was used to compare the two groups.

[@] A Mann-Whitney U Test was used.

*$p < 0.05$ was considered significant.

Table 4. Participants' preferences in pain management education and their Internet use (210 participants recruited to an online survey in August to October 2016)

	Frequency	
	N	%
Pain management topics in which the participants expressed an interest (Multiple answers could be chosen)		
Non-pharmacological methods of pain management	164	78.1
Pharmacological methods of pain management	137	65.2
The relationship between pain and disease	114	54.5
Definition and mechanisms of pain	98	46.7
How pain affects an individual's physical and psychological health	83	39.5
Time spent on the Internet per day		
Less than one hour	27	12.9
1 – 2 hours	65	31
3 – 6 hours	75	35.7
More than 6 hours	43	20.5
Device most frequently used for accessing the Internet		
Computer	69	32.9
Mobile phone	138	65.7
Both	3	1.4
Places to get information about pain management (Multiple answers could be chosen)		
Websites	136	64.8
Healthcare professionals	128	61
Friends	66	31.4
Media	39	18.6
Pamphlets	26	12.4
Posters	8	3.8

Percentages may not add up to 100% because of rounding.

Fig 1. Mean pain intensity of participants' body sites (141 participants with pain recruited to an online survey in August to October 2016)

Right shoulder
Mean = 3.82
SD = 2.391
Range = 1 - 9

Left shoulder
Mean = 3.52
SD = 2.175
Range = 1 - 7

Neck
Mean = 3.45
SD = 2.092
Range = 1 - 10

Lower back
Mean = 3.01
SD = 1.949
Range = 1 - 7

Upper back
Mean = 3.32
SD = 2.279
Range = 1 - 9

Right knee
Mean = 3.00
SD = 2.076
Range = 1 - 9

Left knee
Mean = 2.79
SD = 1.997
Range = 1 - 9

Right foot
Mean = 2.91
SD = 2.412
Range = 1 - 9

Left foot
Mean = 2.91
SD = 2.412
Range = 1 - 9