

Factors Related to Healthcare Utilization of Physical Discomfort in Electronic Device Users at Home

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ABSTRACT

OBJECTIVE This study aims to discern the factors influencing the utilization of healthcare services among individuals experiencing physical discomfort from electronic device usage at home.

METHODS A retrospective cross-sectional study was performed. The sociodemographic information, exercise habits, working organization, behavioral patterns, treatment methods, healthcare service usage, and responses to the modified online Thai Cornell Musculoskeletal Discomfort Questionnaires (CMDQ) were reviewed from the web-based online questionnaire surveyed from November 29th to December 28th, 2021. The impact of various factors on healthcare utilization was assessed using multivariable logistic regression.

RESULTS Three hundred and thirty-four participants were included, primarily female (70%) and with a mean age of 35.0±7.3 years. Most common was neck discomfort (24.9%) with 48.5% experiencing chronic symptoms and 52.1% reporting severe discomfort. The majority (72.4%) indicated discomfort in multiple areas (5–7 regions). The methods of treatment consisted of complementary and alternative medicine (23.7%), conventional medicine (16.5%), and both (22.5%). Healthcare services were accessed by 56% of the participants, with 35.9% choosing private healthcare. Healthcare utilization was significantly associated with being aged ≥ 45 years (odd ratio = 5.476, 95%CI 1.953, 15.356), short break durations (odd ratio = 1.809, 95%CI 1.010, 3.240), having an ergonomic policy in the organization (odd ratio = 2.119, 95%CI 1.161, 3.866), chronic symptoms (odd ratio = 1.901, 95%CI 1.047, 3.452), severe discomfort (odd ratio = 2.121, 95%CI 1.218, 3.693), and multiple discomfort areas (odd ratio = 2.384, 95%CI 1.060, 5.362).

CONCLUSIONS Healthcare utilization for addressing physical discomfort among electronic device users is influenced by various factors, including age, short break duration, ergonomic policy in the organization, chronic or severe discomfort, and the extent of discomfort distribution. Prioritizing healthcare facilities for individuals experiencing chronic and severe discomfort is warranted.

KEYWORDS musculoskeletal pain, consumer health information, health-seeking behavior, computers, sitting position

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INTRODUCTION

Pain is one of the leading causes of physical discomfort and is characterized by an unpleasant feeling (1). Almost 69.7% of office workers reported experiencing musculoskeletal discomfort (2). Neck, shoulder, and back pain were the most frequent complaints. Intense pain affected 30% of those people. The risks were obesity, high stress, inappropriate seating (3), and longer working duration (4). With the development of technology, people have more opportunities to work from home, particularly during the Coronavirus 2019 outbreak. A recent study found the prevalence of physical discomfort increased to 97% during the pandemic. The majority of them suffered from chronic and severe pain (3). However, the prior study concentrated on risk factors for musculoskeletal disorders in office employees, with no investigation on healthcare utilization.

Previous research showed that the prevalence of healthcare seeking behavior for musculoskeletal pain differs globally, ranging between 20% and 60% (5–7). Predisposing factors (e.g. demographic, social, and mental factors), enabling factors (e.g. income, health insurance), and need factors (a person's health status or severity) are the aspects of understanding patient usage of healthcare. These factors all contribute to the utilization of healthcare resources (8). Prior studies revealed the significant predictors of increased healthcare access in musculoskeletal conditions were of an older age, multiple pain areas (9), disability, and the occurrence of an adverse medication reaction (5). According to research on chronic musculoskeletal pain by Sugai and colleagues, choosing physician consultation in the hospital or clinic was linked with female, high income, suffering from moderate to severe pain, and high pain intensity (6). Moreover, a variety of healthcare facilities, such as clinics and primary care, may have an effect on the sort of therapy chosen. One study found that persistent musculoskeletal pain was mostly managed in primary care rather than secondary care (10). Due to differences in population, diagnosis, and the healthcare system, each study was varied.

To determine the scope of the issue of muscu-

loskeletal discomfort, especially in developing nations, epidemiological data is crucial. This data can be utilized to support and plan strategies for the healthcare setting. Thailand still lacks data on this population. The present study aims to identify factors associated with receiving healthcare services in electronic device users who worked from home and were experiencing physical discomfort.

METHODS

Study design

This study was a retrospective cross-sectional study. It was approved by the Ethics Committee, Lerdsin Hospital, and has been performed in accordance with the ethics standards of the Declaration of Helsinki. The certification number is LH661006. We reviewed the data from the questionnaire that was surveyed from 29th November to 28th December 2021 by Google Forms as the platform for a web-based survey. The survey was approved by the Siriraj Institutional Review Board (SIRB), Faculty of Medicine Siriraj Hospital, Mahidol University 620/2564 (IRB3), certification number 828/2021. Most of the extracted data has not been published before. However, the overlapping contents included mean age, gender, group of stress level, electronic devices used, symptoms duration, and group of discomfort severity were similar to the previous publication (3).

Participants

The inclusion criteria were participants aged between 18–60 years old who spent more than 50% of the electronic device usage time in a sitting position at home. They had to use the device for more than 2 hours per day, at least 3 days per week for at least 2 months. They had physical discomfort in at least one upper-body area. The exclusion criteria included individuals with a history of musculoskeletal or neurological conditions or surgery that resulted in abnormal sensation or discomfort in a sitting position, and participants who had incomplete data. A total of 365 participants data was reviewed. Of that total, 31 participants met the exclusion criteria (Figure 1). The eligible data had 334 participants.

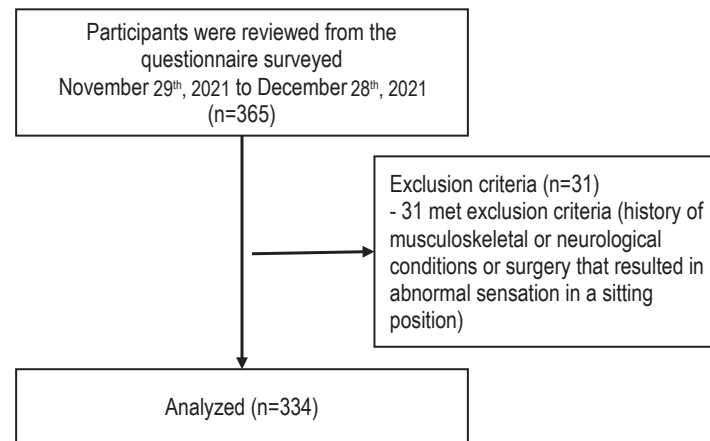


Figure 1. Flow chart of participants recruitment

Data sources

Operation definition

Healthcare utilization was defined as the use of healthcare services including government/private hospital or clinic.

Self-care was defined as any means of individuals to manage physical discomfort without healthcare service including self-modality, ergonomic adjustment, muscle stretching, exercise, and yoga.

Conventional medicine was defined as treatments that is widely accepted and used by most healthcare professionals including medication and/or physical therapy.

Complementary and alternative medicine (CAM) was defined as any means of treatments that falls outside of conventional medicine including massage, acupuncture, and chiropractic.

Sociodemographic data

The data consisted of gender, age, marital status, education level, income, stress levels in the past few weeks on a 5-point Likert scale (0=none, 4=very stressful), physical exercise, sleep duration, types and ergonomic policies of the organization the participants were working with, working behaviors, healthcare rights, methods of treatment (conventional medicine, CAM), self-care, healthcare service (government or private), frequency of healthcare access, and symptoms duration.

Physical discomfort data

Modified online Thai-translated Cornell Musculoskeletal Discomfort Questionnaires (CMDQ) was used to assess physical discomfort. This modified version selected areas of interest to be neck, left and right shoulders, left and

right upper back, and left and right lower back. With regard to Discomfort, Frequency, and Interference Scores, we used only the Discomfort Score because from the previous study, all these three scores were strongly related to each other (3). The Discomfort score was divided into three categories: slightly, moderately, and very uncomfortable. We classified the severity of discomfort into two groups: non-severe and severe (participants answered very uncomfortable in at least one area). The number of discomfort areas was divided into three groups: less than 3 areas defined as few discomfort areas group, 3-4 areas was several discomfort areas group, and 5-7 areas was multiple discomfort areas group.

Study size estimation

The sample size was calculated by using The Rule of Thumb. One factor used 5-10 samples. We estimated approximately 15 factors affected healthcare utilization. There were two behaviors (use and not use healthcare service). The calculated sample size was 300 samples in total. Eventually, we used all 334 samples.

Statistical analysis

Data were analyzed using the PASW Statistics version 18.0 program (SPSS Inc., Chicago, IL., USA). A p -value of 0.05 or less was accepted as statistical significance. Quantitative data were reported as numbers and percentages. Means and standard deviations were used as summary measures for normally distributed data. Pearson's chi-squared test was performed to analyze the differences in categorical data (factors and

types of healthcare utilization). Multivariable logistic regression analysis was used to find associations between possible factors (socio-demographic data, stress level, sleep duration, working behaviors, symptoms duration, discomfort severity, and number of discomfort area) and receiving healthcare service. Confidence Interval for each diagnostic parameter was also estimated at 95% level.

RESULTS

There were 334 participants who met the criteria. According to the baseline characteristics, most of the participants were female (70%). The mean age was 35.0 ± 7.3 years and 68.3% were single. Most of the education level was Bachelor's degree or higher (97.6%). Most of the participants had enough income compared to expenses (45.8%). High stress level was found in 41.3% of the participants. The majority of participants (47.3%) reported exercising for at least 15 minutes per session 1-2 times per week. Most of them slept for ≥ 6 hours per night (72.2%). Laptop computers were commonly used (66.2%) (Table 1).

Participants who worked in private organizations made up 51.5% of the total, with 33.2% working for government institutions. They worked for ≥ 6 hours without a break (62.3%). Less than 30 minutes of break duration was reported by 56.9% of the participants. Around half of the participants (51.8%) stated that there was no ergonomic policy in their organizations (Table 1).

The most common severe discomfort area was neck (24.9%), followed by right shoulder (23.1%). Chronic symptoms and severe discomfort were reported at 48.5% and 52.1% respectively. Multiple discomfort areas group was the highest (72.4%). Almost 96% of participants did not do self-care. The methods of treatment showed conventional medicine (16.5%), CAM (23.7%), or both (22.5%). More than half of the participants (56%) received healthcare services, among those, private healthcare was chosen by 35.9%. Most participants visited the hospital when they occasionally got symptoms (79.6%) (Table 1). Each participant had at least one healthcare rights. Social Security Scheme (50%), Health Insurance (35.6%), and Civil

Table 1. Demographic data of participants

Demographic data	N (%)
Gender	
Female	235 (70.4)
Male	99 (29.4)
Age (year)	35.0 (7.3) ⁱ
< 45	304 (91.0)
≥ 45	30 (9.0)
Marital status	
Single	228 (68.3)
Married	101 (30.2)
Widowed/divorced	5 (1.5)
Education	
Lower Bachelor's degree	8 (2.4)
Bachelor's degree	147 (44.0)
Upper Bachelor's degree	179 (53.6)
Income	
Less than expenses	44 (13.2)
Equal expenses	137 (41.0)
More than expenses	153 (45.8)
Stress level (Likert)	
0-2	196 (58.7)
3-4	138 (41.3)
Physical exercise	
No	75 (22.5)
1-2 times per week	158 (47.3)
≥ 3 times per week	101 (30.2)
Sleep duration	
< 6 hours	93 (27.8)
≥ 6 hours	241 (72.2)
Electronic devices used	
Laptop computer	221 (66.2)
Desktop computer	74 (22.1)
Mobile phone	29 (8.7)
Tablet	10 (3.0)
Types of organization	
Government	111 (33.2)
State enterprise	15 (4.5)
Private employee	172 (51.5)
Freelance	36 (10.8)
Working duration without break	
2-4 hours	43 (12.9)
> 4-6 hours	83 (24.9)
> 6 hours	208 (62.3)
Break duration	
< 30 minutes	190 (56.9)
≥ 30 minutes	144 (43.1)
Ergonomic policy	
None	173 (51.8)
Knowledge/workshop	88 (26.3)
Equipment/budget	34 (10.2)
Both knowledge/workshop and equipment/budget	39 (11.7)
Symptoms duration	
< 6 weeks	123 (36.8)
6-12 weeks	49 (14.7)
> 12 weeks	162 (48.5)

Table 1. Demographic data of participants (continue)

Demographic data	N (%)
Areas of severe physical discomfort	n=334
Neck	83 (24.9)
Left shoulder	59 (17.7)
Right shoulder	77 (23.1)
Left upper back	41 (12.3)
Right upper back	57 (17.1)
Left lower back	55 (16.5)
Right lower back	68 (20.4)
Discomfort severity	
Non-severe	160 (47.9)
Severe	174 (52.1)
Number of discomfort area	
Few areas	41 (12.3)
Several areas	51 (15.3)
Multiple areas	242 (72.4)
Self-care	
No	320 (95.8)
Yes	14 (4.2)
Methods of treatment	
None	125 (37.3)
Conventional medicine	55 (16.5)
CAM	79 (23.7)
Conventional medicine and CAM	75 (22.5)
Healthcare service	
None	147 (44.0)
Government	26 (7.8)
Private	120 (35.9)
Both	41 (12.3)
Frequency of receiving healthcare	n=187
Weekly	26 (13.9)
Monthly	12 (6.4)
Occasionally	149 (79.6)

^aMean (SD), CAM; complementary and alternative medicine

Servant Medical Benefit Scheme (22.5%) were the most common.

The factors that impacted healthcare utilization were aged ≥ 45 years (odd ratio = 5.476, 95%CI 1.953, 15.356), break duration < 30 minutes (odd ratio = 1.809, 95%CI 1.010, 3.240) having an ergonomic policy in the organization (odd ratio = 2.119, 95%CI 1.161, 3.866), chronic symptoms (odd ratio = 1.901, 95%CI 1.047, 3.452), severe discomfort (odd ratio = 2.121, 95%CI 1.218, 3.693) and multiple discomfort areas group (odd ratio = 2.384, 95%CI 1.060, 5.362) (Table 2).

They more frequently sought out private healthcare service than either government healthcare or both in the age of under 45 ($p = 0.010$), break duration < 30 minutes ($p = 0.039$), chronic symptoms ($p < 0.001$), severe discomfort

($p < 0.001$), and multiple discomfort areas group ($p < 0.001$) (Table 3).

DISCUSSION

The present study is the first to demonstrate an association between physical discomfort and seeking healthcare utilization in electronic device users who worked from home in sitting position. Even though the population and diagnosis of musculoskeletal pain were heterogeneous in several studies, the characteristics relating to the stage and severity of the disease were crucial considerations, whereas demographic status had little impact on the decision to seek healthcare (11). The major findings in our study were more pronounced in the domain of short break duration, persistent, severe, and widespread discomfort.

Around half of the participants (56%) received healthcare services. This ratio was comparable to Sugai's finding. We discovered no association between cost and receiving healthcare services, contrary to what Sugai indicated (6). This could be because the majority of participants in this study had greater income than expenses (45.8%), and most basic musculoskeletal condition treatments in Thailand are reimbursable. The age ≥ 45 years (9.0%) and chronic symptoms (48.5%) were related to receiving healthcare services. Growing older is typically accompanied by complex health issues and is frequently linked with chronic musculoskeletal pain (12). Older age may exacerbate the underlying disorders and make people concerned about serious illnesses. Therefore, they sought to consult a doctor for a precise diagnosis and more competence (6).

Severe discomfort (52.1%) and multiple discomfort areas (72.4%), similar to the other studies, were additional characteristics associated with receiving healthcare services. The studies also reported that the greater the number of pain areas related to the greater the amount of healthcare contact in the long-run (9) and the decline in physical and mental quality of life (QoL) (13, 14). However, high stress levels were not connected with seeking healthcare service in this study. In spite of the fact that high stress levels were related to severe discomfort in computer users (3), they

Table 2. Univariate and multivariate analysis to identify factors independently associated with seeking healthcare service

Factors	Healthcare service			
	Univariable analysis ¹		Multivariable analysis ²	
	Unadjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Gender				
Female	Ref.	0.890	Ref.	0.949
Male	1.034 (0.644, 1.660)		0.982 (0.567, 1.702)	
Age (years)				
< 45	Ref.	0.005	Ref.	0.001*
≥ 45	3.460 (1.375, 8.705)		5.476 (1.953, 15.356)	
Stress level				
0-2	Ref.	0.289	Ref.	0.952
3-4	1.269 (0.817, 1.972)		0.984 (0.575, 1.683)	
Income				
Less expenses	Ref.	0.253	Ref.	0.185
Equal expenses	1.495 (0.756, 2.958)		1.674 (0.775, 3.617)	
More expenses	1.761 (0.896, 3.461)		2.049 (0.952, 4.414)	
Physical exercise				
≥ 3 times per week	Ref.	0.391	Ref.	0.535
1-2 times per week	1.359 (0.783, 2.359)		1.228 (0.642, 2.350)	
No	1.503 (0.823, 2.745)		1.506 (0.734, 3.088)	
Sleep duration				
≥ 6 hours	Ref.	0.318	Ref.	0.089
< 6 hours	1.278 (0.790, 2.065)		1.572 (0.933, 2.649)	
Working duration				
2-4 hours	Ref.	0.612	Ref.	0.110
> 4-6 hours	0.820 (0.492, 1.366)		0.612 (0.334, 1.122)	
> 6 hours	1.167 (0.597, 2.280)		1.947 (0.861, 4.404)	
Break duration				
≥ 30 minutes	Ref.	0.033	Ref.	0.046*
< 30 minutes	1.612 (1.040, 2.497)		1.809 (1.010, 3.240)	
Ergonomic policy				
None	Ref.	0.075	Ref.	0.014*
Knowledge/workshop	1.614 (0.953, 2.733)		2.119 (1.161, 3.866)	
Equipment/budget	1.168 (0.557, 2.448)		1.360 (0.586, 3.158)	
Both	1.193 (0.593, 2.403)		1.346 (0.630, 2.878)	
Symptoms duration				
< 6 weeks	Ref.	< 0.001	Ref.	0.035*
6-12 weeks	1.292 (0.663, 2.515)		0.768 (0.365, 1.619)	
> 12 weeks	3.467 (2.118, 5.678)		1.901 (1.047, 3.452)	
Discomfort severity				
Non-severe	Ref.	< 0.001	Ref.	0.008*
Severe	3.085 (1.968, 4.834)		2.121 (1.218, 3.693)	
Number of discomfort area				
Few areas	Ref.	< 0.001	Ref.	0.036*
Several areas	1.279 (0.536, 3.049)		1.227 (0.311, 2.202)	
Multiple areas	3.837 (1.890, 7.791)		2.384 (1.060, 5.362)	
Self-care				0.098
No	Ref.	0.008	Ref.	
Yes	0.202 (0.055, 0.736)		0.278 (0.064, 1.202)	

¹Chi-square test, ²Multiple logistic regression.

*Statistically significant, CI, confidence interval; Ref, reference

Table 3. Characteristic and types of healthcare service comparing in various groups

Variables	Types of healthcare service ¹				p-value
	None (n=147)	Government (n=26)	Private (n=120)	Both (n=41)	
Gender					
Female	104 (70.7%)	19 (73.1%)	85 (70.8%)	27 (65.9%)	0.916
Male	43 (29.3%)	7 (26.9%)	35 (29.2%)	14 (34.1%)	
Age (years)					
< 45	141 (95.9%)	22 (84.6%)	108 (90.0%)	33 (80.5%)	0.010*
≥ 45	6 (4.1%)	4 (15.4%)	12 (10.0%)	8 (19.5%)	
Stress level					
0–2	91 (61.9%)	19 (73.1%)	64 (53.3%)	22 (53.7%)	0.196
3–4	56 (38.1%)	7 (26.9%)	56 (46.7%)	19 (46.3%)	
Income					
Less expenses	24 (16.3%)	3 (11.5%)	14 (11.7%)	3 (7.3%)	0.275
Equal expenses	61 (41.5%)	15 (57.7%)	45 (37.5%)	16 (39.0%)	
More expenses	62 (42.2%)	8 (30.8%)	61 (50.8%)	22 (53.7%)	
Physical exercise					
No	38 (25.9%)	4 (15.4%)	23 (19.2%)	10 (24.4%)	0.808
1–2 times per week	68 (46.2%)	13 (50.0%)	57 (47.5%)	20 (48.8%)	
≥ 3 times per week	41 (27.9%)	9 (34.6%)	40 (33.3%)	11 (26.8%)	
Sleep duration					
< 6 hours	45 (30.6%)	7 (26.9%)	30 (25.0%)	11 (26.8%)	0.790
≥ 6 hours	102 (69.4%)	19 (73.1%)	90 (75.0%)	30 (73.2%)	
Working duration					
2–4 hours	17 (11.6%)	8 (30.8%)	13 (10.8%)	5 (12.2%)	0.062
> 4–6 hours	40 (27.2%)	7 (26.9%)	23 (19.2%)	13 (31.7%)	
> 6 hours	90 (61.2%)	11 (42.3%)	84 (70.0%)	23 (56.1%)	
Break duration					
< 30 minutes	74 (50.3%)	17 (65.4%)	79 (65.8%)	20 (48.8%)	0.039*
≥ 30 minutes	73 (49.7%)	9 (34.6%)	41 (34.2%)	21 (51.5%)	
Ergonomic policy					
None	83 (56.5%)	11 (42.3%)	59 (49.2%)	20 (48.8%)	0.350
Knowledge/workshop	32 (21.8%)	8 (30.8%)	34 (28.3%)	14 (34.1%)	
Equipment/budget	15 (10.2%)	5 (19.2%)	9 (7.5%)	5 (12.2%)	
Both	17 (11.5%)	2 (7.7%)	18 (15.0%)	2 (4.9%)	
Symptoms duration					
< 6 weeks	73 (49.7%)	10 (38.5%)	33 (27.5%)	7 (17.1%)	< 0.001*
6–12 weeks	26 (17.7%)	3 (11.5%)	17 (14.2%)	3 (7.3%)	
> 12 weeks	48 (32.6%)	13 (50.0%)	70 (58.3%)	31 (75.6%)	
Discomfort severity					
Non-severe	93 (63.3%)	13 (50.0%)	42 (35.0%)	12 (29.3%)	< 0.001*
Severe	54 (36.7%)	13 (50.0%)	78 (65.0%)	29 (70.7%)	
Number of discomfort area					
Few areas	28 (19.0%)	1 (3.9%)	11 (9.2%)	1 (2.5%)	< 0.001*
Several areas	32 (21.8%)	3 (11.5%)	10 (8.3%)	6 (14.6%)	
Multiple areas	87 (59.2%)	22 (84.6%)	99 (82.5%)	34 (82.9%)	
Self-care					0.053
No	136 (92.5%)	25 (96.2%)	118 (98.3%)	41 (100.0%)	
Yes	11 (7.5%)	1 (3.8%)	2 (1.7%)	0 (0.0%)	

* Statistically significant, ¹Pearson Chi-square test

might be able to manage it themselves. Alternatively, their discomfort might not have an impact on their overall QoL.

Surprisingly, having an organization's ergonomic policy (knowledge or workshops) was connected with an increase number of subjects receiving healthcare services. This factor

was also not related to severe discomfort or a higher number of discomfort areas. It might be that this policy was ineffectual. Wisit and colleagues revealed that only knowledge was not enough to reduce musculoskeletal discomfort, adjustments in ergonomic behavior and regular practice could do more benefit (15).

Our study found that break duration of < 30 minutes correlated with receiving healthcare services. Long periods of sitting could lead to musculoskeletal pain due to muscle fatigue or overactivity. Changes in behavior in break time promoted improvement of physical discomfort in office workers. Several studies indicated that taking a 15–60 minutes break could help prevent musculoskeletal discomfort in computer users (16, 17). When the discomfort subsides, the need for healthcare may reduce. It should be encouraged to have breaks during work shifts.

There was no significant relationship between physical exercise and the use of healthcare services. One systematic review study indicated that many kinds of exercise for at least 15 minutes three times per week could reduce musculoskeletal discomfort among office workers (18). This study found that 30% of the participants exercised at least 15 minutes three times a week. It seemed to be beneficial in terms of pain. However, there was no significant related between exercise and severe discomfort in subgroup analysis. Thus, severe discomfort might be a key factor to seeking healthcare services in the present study.

Among subjects who underwent healthcare services, considering the healthcare subtype, participants with chronic, severe, and widely spread discomfort appeared to prefer private healthcare over government healthcare in our study. This might be because private healthcare was easier to obtain, with no long waiting for treatment in Thailand's healthcare setting. Moreover, one-third of the participants have health insurance; their private hospital's costs may be covered by health insurance.

The neck (24.9%) was the most common site of severe discomfort. This was similar to a prior study that investigated in office workers (2). A recent study also revealed that the neck was the most frequent area for discomfort in

home computer users during the COVID-19 pandemic (19). This could imply that the most common discomfort area was not related to the workplace. Additionally, the majority of the participants (66.2%) in this study applied laptop computers which was similar to a current study (19). Because of the device's design, users have to flex their necks. Myofascial pain can be aggravated via muscle and spine imbalance. An ergonomic adjustment should be considered to reduce neck muscle activity.

Regarding the methods of treatment, the finding showed that conventional medicine (16.5%), CAM (23.7%), and both techniques (22.5%) were used. This corresponds to the outcome of Andarini's study, which was carried out in Indonesia (5). Probably because both countries have close cultural and behavioral aspects of seeking treatment for musculoskeletal pain. However, our study revealed CAM group was slightly higher than the conventional medicine group or both method groups, though receiving more than one method of treatment is also recommended by a guideline to be more effective than receiving only one (20,21). It was similar to the finding of Artus and colleagues which showed that using CAM in chronic musculoskeletal pain was more helpful (22). Based on affordability, socioeconomics, and community concept, CAM was chosen over conventional treatment in developing nations like our own (23).

Self-care is the initial step in pain management, and the majority of patients viewed it favorably (24). Even though a large percentage of them (53.1%) were in the group of those who had significant discomfort, we discovered that 95.8% of participants did not practice self-care. However, there was no statistical significance found in relation to healthcare utilization. Self-stretching exercises, using a hot pack, and adjusting one's own ergonomic position were considered to self-care activities in our study. These were active methods that some people might not preferred.

Although around half (52.1%) of them were experiencing severe conditions, the most frequent usage of healthcare was found to be infrequent (79.6%). In contrast, Nakamura's research on chronic musculoskeletal pain found that the most prevalent treatment frequencies

were once and many times a week, followed by once every 2 weeks or less and daily (25). This could be because we performed the questionnaire during the COVID-19 pandemic. Concerns about infection risk affected patients' receiving healthcare service significantly. The consequence of the situation caused substantial reductions in a wide range of healthcare activities (26). It was difficult to gain frequent access to the hospital. Though the frequency of contact with healthcare decreased during the pandemic, the significant factors related to healthcare utilization remained consistent with earlier studies.

Limitation

The investigation was conducted during the COVID-19 pandemic, hence access to hospitals was limited. This was a summary of the survey results. It was necessary to get specific information, such as hospital records. Physical discomfort was reported by the patient without any clinical evaluation data. Emotions might have an impact on the factor of discomfort. Further study should assess this parameter. Patient satisfaction, convenience of service access, treatment outcome, and ergonomic considerations of workstations should be incorporated for future research.

Our findings underscore the importance of our take-home message. The most prevalent severe discomfort area identified was the neck, emphasizing the significance of maintaining proper neck posture when using computers. Notably, the study reveals that short break durations, persistent and severe discomfort, and the widespread distribution of musculoskeletal discomfort among electronic device users working from home significantly impact the likelihood of seeking healthcare services.

CONCLUSIONS

Epidemiologic data have highlighted a distinct preference among individuals employing electronic devices at home and experiencing physical discomfort, favoring private healthcare options over government healthcare. Notably, the utilization of complementary and alternative medicine emerged as the favored treatment modality. Several key factors were identified as significantly linked to the uptake of

healthcare services, including an age threshold of 45 years, short break durations, the presence of chronic symptoms, the severity of discomfort, a higher number of discomfort areas, and the existence of ergonomic policies within organizations. These findings underscore the imperative for dedicated medical resources, encompassing both personnel and facilities, to cater to the needs of this specific patient population. Furthermore, optimizing work-break schedules and refining ergonomic policies holds promise for enhancing overall effectiveness.

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CONFLICT OF INTEREST

The authors have no conflicts of interest to report.

ADDITIONAL INFORMATION

Author Contribution

C.P.: conceptualization, methodology, writing – review & editing; P.N.: data curation, software, writing– original draft preparation W.D.: investigation, supervision

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