

Internet use and its impact on individual physical health

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Abstract—Internet use has seriously affected individual health in potential and subtle ways. Past research on the subject mainly concentrated on the mental health caused by addictive use, e.g. impulse control disorders, obsessive-compulsive disorder. With the constant development of cyber technology, Internet has been an indispensable element of living and working, which can provide more convenient and efficient support and help. At the same time, the effects of Internet use more than Internet addiction on individual health cannot be ignored in living and working. The present study aims to identify the most common physical complaints associated with Internet use, and further investigate the association between the frequency of Internet use and individual physical health. Five hundred and thirteen participants completed the questionnaires by online or offline manner, which covers demographic questions and questions concerning Internet use and physical complaints. The most common complaints were involving dry eyes, decreased vision and cervical pain. The positive Pearson correlation coefficient was found between the level of physical complaints and the frequency of Internet use, place of residence and education. Especially, the higher amount of time for the Internet use is strongly associated with a higher level of physical complaints.

Index Terms—Internet; Cyberspace; Problematic Internet use; Internet addiction; Physical complaints; Prognostics and health management

I. INTRODUCTION

OVER the past few decades, the Internet has become an indispensable part of popular life, which has profoundly revolutionized how we obtain information, how we communicate, and how we work, learn and play. The number of Internet users has increased dramatically. World Internet Use and Population Statistics updated in Nov 2015 published Internet users have grown to almost three and half billion, which of the world's total population of 46.4% [1]. Between 2000 and 2015, the rate of growth of the Internet use was 832.5%, evolved most notably in Europe growing 7,231.3%. Likewise, according to the 37th statistical report on Internet development by China Internet network information center,

China's Internet users scale up to 688 million in December 2015, reaching 50.3% Internet penetration. As emergence of various access methods, Internet has become much more accessible, whether in the office, at home, at the school, or in other public places. Thus, the amount of time spent in the Internet have considerably increased in recent years, paralleled by emerging concerns about inappropriate Internet use, which leads to negative consequences on our health.

The relentless march of Internet into everyday life has given rise to ongoing debate about the “beneficial Internet” or “harmful Internet”. The usual benefits of Internet clearly and deeply apply for all of us. Considering the rising of Internet penetration, the negative effect of Internet use on both mental and physical wellbeing attracts a worldwide attention. Studies on the negative effect on mental or psychological have a very early start, and most of them focused on the Internet addiction or Internet addiction disorder (IAD) [2, 3, 4, 5, 6]. Internet addiction is a common disorder as an inability of individuals to control their Internet use in addictive behavior, resulting in psychological, academic, family, social and work difficulties or dysfunction. Zhou *et al.* discovered Individuals with IAD and pathological gambling patients present deficiencies in working memory, executive dysfunction and impulsivity, and individuals with IAD are more impulsive than pathological gambling patients [7]. Cyber addiction as a pseudonym of Internet addiction (disorder) is phenomenon accompanying the development of cyber space. From a psychosocial perspective, a demonstration of the cycle of addiction on how people develop cyberaddictions, has been done by Amnon *et al.* to seize the multifactorial aspects of this addiction [8]. A number of conditions and personality traits that may bolster addictive behaviors are analyzed, including low self-control, low self-esteem, sensation-seeking, and interpersonal difficulties [9, 10, 11, 12, 13].

Slightly lagged behind IA, problematic Internet use was proposed to describe the use of the Internet that creates difficulties in a person's mentality, focusing on the important syndrome that is associated with distress, functional impairment and psychiatric disorders [14]. In fact, no clear-cut distinction among these concepts related bad Internet use could be seen in earlier studies, including Internet addiction, problematic Internet use, pathological Internet use [15], Internet dependence [16, 17], compulsive Internet use.

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Gradually, originally confounding research about this field become distinctive, as Young [18] pointed that the study of Internet addiction is complicated and dynamic by the growing value and societal promotion of Internet use. Yellowlees and Marks had an attempt to elaborate on problematic Internet use and Internet addiction, but mainly focus on psychiatric disorder, impulse control and addictive disorders [19]. Not limited to the mental and psychological syndrome, problematic Internet use can be broadly conceptualized as an inability to control one's use of the Internet which leads to negative consequences in daily life [20], significantly related to the amount of time spent on the Internet. Kwiatkowska *et al.* [21] found that individuals using the Internet in excess of 5 h each day face the risk of dependence and are affected on human relationship, which only considered the social consequences of prolonged Internet use. In addition, Yıldız *et al.* [22] examined the influence of problematic and unhealthy Internet use not addiction on healthy lifestyle behaviours in Turkey, such as stress management, diet and exercise, which also considered the Internet usage more than 5 h a day to be problematic.

Additionally, smart devices (i.e., smart phone or computer), as the carrier of we use the Internet, also has a strong influence on our health, which has already aroused the concern of scholars home and abroad. Based on data from two surveys of adolescents implemented in 2010 and 2013 in 7 European countries that used identical methodology, Katerina *et al.* evaluated the changes and the impact of mobile access on excessive Internet use in Europe, which shows that excessive online gaming may more often develop into a problematic behavioural pattern but without precise results [23]. Harwood *et al.* investigated the association between smart device use, smart device involvement and mental health, suggesting that smart device involvement, but not use, was predictive of depression and stress [24].

More or less we know that there are many potential dangers associated with Internet use/overuse, especially mood and social dangers, but we may not know how to assess problematic Internet use. Under this circumstance, Shapira *et al.* propose broad diagnostic criteria and describe three cases to further illustrate the utility of the proposed diagnostic criteria for identifying problematic Internet use [25]. Despite a recent focus on the criteria, the diagnosis of Internet dependence remains problematic. It does not appear in any official diagnostic system, including DSM-IV, and widely accepted diagnostic criteria waits to be proposed. For the comorbid psychiatric disorders caused by problematic Internet use, Spada [20] has summarized two kinds of treatments from relative literatures published in the past decade, including pharmacological treatments and psychotherapeutic treatments. Some case studies suggested that pharmacological treatments might be beneficial as a treatment for problematic Internet use, such as quetiapine gradually added to citalopram to treat problematic Internet use, methylphenidate for the problematic Internet use co-occurring with attention-deficit/hyperactivity disorder, and

bupropion improving depressive mood as well as reducing the severity of excessive online game play [26, 27, 28]. Cognitive behaviour therapy (CBT) has been an accepted psychotherapy approach to work on controlling symptoms caused by the problematic Internet use [29, 30].

Indeed, academic attention has been paid in recent years on what some researchers termed "Internet addiction" characterized by poorly controlled preoccupations, but those interpretation and research are incomplete thorough Internet penetration. Considering the necessities and driving force of Internet in many aspects of humanity including work, study and society, sometimes we use Internet inappropriately or excessively, not because of inability to control. Previous studies related Internet use causing negative consequences in daily life, might not take into account the normal Internet use but inappropriate, of which the impact on physical health is particularly prominent because of changing the way and behaviours we work and live. The general impact of Internet use and significant affecting factors need to be studied. Moody [31] has examined the association between Robert Weiss's bimodal theory of loneliness and Internet use not Internet addiction, and explained that high levels of Internet use were associated with low levels of social loneliness and high levels of emotional loneliness gathered from 166 undergraduate students. Thus, our study was to directly investigate the physical complaints caused by inappropriate and Internet use, and examine the association between the amount of time for Internet use and the level of physical complaints. In relation to physical health and quality of life, this information will have a warning and guiding function to Internet users, and develop new territory for future study.

II. MATERIAL AND METHODS

A. Data Collection

Data were gathered with the spread of questionnaires including online electronic questionnaires and paper questionnaires published to various groups of people. The electronic questionnaires were dispersed with a link via numerous mailing lists and social network sites. The paper questionnaires were distributed to different regions involving different population during the winter vacation. Thus, we can avoid that only those who were more experienced with the computer and the Internet would complete the survey. No reward or incentive was offered for participation that was voluntary with each participant being informed about the study's background.

Following the informed consent process, respondents completed the questionnaire, which contained three sections. The first section assessed the respondent's Internet usage, including the average daily amount of time in Internet and dependence on networks. In this study, the average daily amount for Internet use time is divided into seldom (<1 h/d), casual (≥ 1 and <3 h/d), regular (≥ 3 and <5 h/d), frequent (≥ 5 and <7 h/d), intense (≥ 7 h/d). The degree of dependence on Internet is assessed on 4-point Likert scales. The respondents were also asked to select three online activities in which they spend the most time (use of online-games, social

networking sites, online shopping, storage computing resources, etc). Then, the respondents used the response of

TABLE I. DEMOGRAPHIC CHARACTERISTICS ACCORDING TO THE FREQUENCY OF INTERNET USE

Demographic variables	Total (N=513)	Participants groups				
		Intense(n=162)	Frequent(n=73)	Regular(n=103)	Casual(n=132)	Seldom(n=43)
Gender (%)						
Male	53.0	50.0	58.9	47.6	58.3	51.2
Female	47.0	50.0	41.1	52.4	41.7	48.8
Education (%)						
High school or lower	11.5	5.6	8.2	7.8	12.9	44.2
Junior college	10.5	9.3	9.6	12.6	9.1	16.3
College	53.4	50.6	52.1	59.2	59.8	32.6
Master or higher	24.6	34.6	30.1	20.4	18.2	7.0
Age group (%)						
<20 years old	20.0	13.6	19.2	22.3	23.5	30.2
20 – 25 years old	51.1	61.1	42.5	58.3	45.5	27.9
26 – 30 years old	20.5	21.6	28.8	14.6	22.7	9.3
>30 years old	8.4	3.7	9.5	2.0	8.4	32.6
Place of residence (%)						
Village	11.5	6.8	8.2	10.7	10.6	39.5
Town	11.9	9.9	9.6	12.6	18.2	2.3
City	76.6	83.3	82.2	76.7	71.2	58.1

“Yes” or “No” to indicate whether they suffered from those physical complaints (i.e., waist, neck and wrist complaints, hair loss, fading eyesight, etc.), during or after prolonged Internet use. The final section was developed to identify demographic characteristics (i.e., gender, age, education, residence, occupation, etc.). The participants are required to fill questionnaires according to their actual situation.

B. Participants

By convenience sampling, the initial samples comprised 524 questionnaires were collected from different people, of which 159 are collected from paper questionnaires and the rest are collected from offline electronic questionnaires. But 11 were excluded from the study because they did not complete the questionnaire, representing a completion rate of 97.9%. For electronic questionnaire, there may be more than one questionnaire filled by the same person that affects the statistical analysis results of questionnaire data. The final sample comprised 513 completed questionnaires. In order to ensure validity of data to some extent, restricting same IP address and device are applied to the system, that means the participant of same IP address or device only can fill once. Therefore, almost 513 people (53.0% men and 47.0% women) participate in this survey. The majority of participants were students (259, 50.5%), or employed in professional research (77, 15.0%), official (77, 15%) or service industry (43, 8.4%) positions. The remaining participants were freelance, or employed in skilled manufacture or military positions (57, 11.1%).

C. Statistical analyses

Survey about the influence of inappropriate Internet use on individual physical health with questionnaires was carried

out. All statistical analyses were performed by computer with SPSS version 21.0 statistical software package, mainly involving descriptive statistics, correlation analyses, and regression analysis. Pearson’s correlation coefficients were calculated to assess the strength of the association between the level of physical complaints and participants’ frequency of Internet use, place of residence, education, gender or age. A linear multiple hierarchical regression model was constructed to assess the impact of the increased amount of time for Internet use and other factors on the level of physical complaints. A p-value ≤ 0.05 was considered statistically significant.

III. RESULTS

A. Demographic characteristics according to the frequency of Internet use

Five hundred and thirteen people completed this study responded to the questionnaire. In order to illustrate the Internet usage among different demographic characteristics, the total sample was categorized into five groups according to the frequency of Internet use (i.e., the average daily amount for Internet use time). Table I depicts main demographic characteristics including gender, education and age group on the five groups extracted. It is worth noting that the education in this paper refers to non-students’ maximum educational level and students’ school type.

B. Physical complaints associated with Internet use among different group

Fourteen items of physical complaints were used to assess the adverse effects on individual physical health of Internet use, including dry eyes, declining eyesight, headache, etc. Table II depicts the prevalence of various physical complaints. The most commonly complaints were dry eyes

TABLE II. PHYSICAL COMPLAINTS SUFFERED BY USERS DURING OR AFTER PROLONGED INTERNET USE

Physical complaints	Number of Subjects with complaints	Overall prevalence (95% CI) (n=513)	Males prevalence (95% CI) (n=272)	Females prevalence (95% CI) (n=241)
Dry eyes	378	0.74 (0.70-0.78)	0.71(0.66-0.76)	0.77 (0.71-0.82)
Declining eyesight	329	0.64 (0.60-0.68)	0.63(0.57-0.69)	0.66 (0.60-0.72)
Headache	175	0.34 (0.30-0.38)	0.32(0.26-0.37)	0.37 (0.31-0.43)
Cervical pain	247	0.48 (0.44-0.52)	0.44(0.38-0.50)	0.53 (0.46-0.59)
Lumbar pain	163	0.32 (0.28-0.36)	0.31(0.26-0.37)	0.32 (0.26-0.38)
Decreased anti-fatigue capability	139	0.27 (0.23-0.31)	0.30(0.25-0.36)	0.24 (0.18-0.29)
Fingers numbness	66	0.13 (0.10-0.16)	0.14(0.10-0.18)	0.12 (0.08-0.16)
Wrist pain	55	0.11 (0.08-0.13)	0.13(0.09-0.16)	0.09 (0.05-0.12)
Skin worse	194	0.38 (0.34-0.42)	0.26(0.21-0.31)	0.51 (0.45-0.58)
Weight gain	102	0.20 (0.16-0.23)	0.21(0.16-0.26)	0.18 (0.13-0.23)
Hair greasy	138	0.27 (0.23-0.31)	0.28(0.23-0.33)	0.26 (0.20-0.31)
Hair loss	51	0.10 (0.07-0.13)	0.11(0.07-0.14)	0.09 (0.05-0.13)
Inappetence	45	0.09 (0.06-0.11)	0.11(0.07-0.14)	0.07 (0.03-0.10)
Decreased sleep quality	154	0.30 (0.26-0.34)	0.31(0.25-0.36)	0.29 (0.24-0.35)

TABLE III. MEAN SCORES OF PHYSICAL COMPLAINTS AMONG FIVE GROUPS OF RESPONDENTS

	Intense(n=162)	Frequent(n=73)	Regular(n=103)	Casual(n=132)	Seldom(n=43)
Overall (M, SD)	5.42 (3.37)	4.19 (2.47)	3.70 (2.31)	4.03 (2.57)	3.23 (2.17)
Males (M, SD)	5.37 (3.71)	4.05 (2.49)	3.59 (2.10)	3.90 (2.65)	3.09 (1.95)
Females (M, SD)	5.47 (3.01)	4.40 (2.47)	3.80 (2.50)	4.22 (2.46)	3.38 (2.42)

Note: N = 513; M = mean; SD = standard deviation;

(73.7%), declining eyesight (64.1%) and cervical pain (48.1%), followed by skin worse (37.8%), headache (34.1%), lumbar pain (31.8%), decreased sleep quality (30.0%), decreased anti-fatigue capability (27.1%) and hair greasy (26.9%), then weight gain (19.9%), fingers numbness (12.9%), wrist pain (10.7%), hair loss (9.9%) and inappetence (8.8%).

The number of physical complaints items was counted as the scores by participant's response to the 14 items, which ranged from 0 to 14 and directly reflected the level of physical complaints. The mean scores was 4.35 (SD=2.85, ranging from 0 to 14) indicating the average level of physical complaints (i.e., the level of negative effects of prolonged internet use on individual physical health). In order to determine the average level of physical complaints among different user groups using Internet with different frequency, the various mean scores were calculated (see Table III). The data show intense group with the highest level among overall compared with other groups. Under the same frequency of Internet use, the mean number of physical complaints items was greater for females than for males.

Pearson correlations and a t-test analysis were carried out to determine whether there are significant positive or negative correlations between the level of physical complaints and participants' frequency of Internet use, place of residence, education, gender or age. Regarding the use frequency of Internet, there is a significant positive correlation with the level of physical complaints ($r=0.236$, $p<0.001$);

that is, users with more frequent Internet use are exposed higher level of physical complaints. In addition, there are significant positive correlation associated with the level of physical complaints for place of residence ($r=0.131$, $p=0.003$) and education ($r=0.147$, $p=0.001$). Gender and age haven't evident linear correlation with the level of physical complaints.

C. Predicting the Consequences of inappropriate Internet use

Multiple hierarchical regression (MHR) based on stepwise regression (SR) analysis was then performed to assess the ability of frequency of Internet use to predict the level of physical complaints, considering the influence of place of residence and education. Gender and age were not significantly associated with the level of physical complaint and therefore were not considered. The sequential regression analysis was adopted to screen off the variables without significant influence. Table IV depicts the results of the regression model.

In Step 1, education was entered excluding the frequency of Internet use and place of residence, and only explained 2.2% of the variance in the level of physical complaint, $F(1,511) = 11.27$, $p = .001$. In Step 2, the frequency of Internet use was entered, then explained an additional 4.1% of the variance in the level of physical complaint with significant change, F change (1,510) = 22.49, $p < .001$. Stepwise regression finally analysis revealed that the frequency of

Internet use ($\beta=0.211$, $p < .001$) and education ($\beta=0.90$, $p < .05$) were predictors of level of physical complaint, and the final accounted for 6.3% of the variance, $F(2, 510) = 17.12$, $p < .001$. The frequency of Internet use significantly contributed to seen variance in the level of physical complaint, and education only had as small yet significant influence. The model excluded place of residence, because place of residence had not significant influence on the level of physical complaints in the stepwise analysis. The results of stepwise regression analyses showed that the frequency of Internet use and education entered the regression equation in the final phase.

TABLE IV. RESULTS OF MULTIPLE HIERARCHICAL REGRESSION ANALYSIS IN PREDICTION OF LEVEL OF PHYSICAL COMPLAINTS AMONG INTERNET USERS

	B	SE B	β	t	tolerance	VIF
Step1						
Constant	2.998	.424		7.074		
Education	.467	.139	.147	3.358	1.000	1.000
Step2						
Constant	2.058	.460		4.472		
Education	.285	.142	.090*	2.010	.926	1.080
Frequency of Internet use	.440	.093	.211***	4.742	.926	1.080

Note: $R^2 = .022$ for Step 1, R^2 change = .041 for Step 2 ($p < .001$). Durbin-Watson (DW) = 1.896.
* $p < 0.05$; ** $p < 0.01$; *** $p < .001$.

DW statistics was below but close to 2, which shows there is no self-correlation among residual items. The tolerance was between 0 and 1 and close to 1, which indicates weak multicollinearity of input factors. There is no collinearity among explained variables, with variance inflation factor (VIF) less than 10. However, the determination coefficient (R^2) was 0.063, which means the model only explain 6.3% of the total variance. Therefore, the model had only small effects.

IV. DISCUSSION

Internet has dramatically changed the way of humanity's life and work over the past decade, little by little. When we are enjoying the convenient and efficient services supported by Internet, the negative effects of Internet use on individual health should not be underestimated in living and working. There is increasing dependence on Internet use posing severe health challenges. The aim of the present study was precisely to investigate the effects of Internet use on individual health by gathering data on different demographic groups. This is the first study to examine the influence of the amount of time for Internet use on the level of physical complaints. One hypothesis of this study, which stated that the higher frequency of Internet use would predict higher level of physical complaints, was supported by analyzing

the survey data. The level of physical complaints is associated strongly with the average daily amount of time spent on Internet.

Of the public questioned, 16.18 percent feel that they could hardly get along from day to day without Internet, 70.37 percent think Internet has developed into part of their daily life, 12.87 percent think Internet is dispensable, and only 0.58 percent think they do not require Internet at all, which reflects the deep level dependence on Internet. Elias *et al.* [32] developed a random-digit-dial telephone survey to explain potential phenomena of excessive dependence on Internet constituting problematic behaviors, such as online longer than intended, hard to stay away and conceal use in the United States.

There was not a gender gap in terms of who was getting online found by our study. A survey by Amanda *et al.* [33] released in 2009 has pointed that among adolescents, both boys and girls are equally likely to go online. As the extent of Internet penetration boosts, it is easy to access Internet for the general population. Thus, gender and age differences among groups who use the Internet are diminishing. Specifically, report on "Household Use of Information Technology, Australia, 2014-15" shows that the proportions of males and females accessing the Internet were almost the same [34], consistent with the report by Matthew *et al.* [35] that there are about same computer or Internet use rates for the sexes in overall, in contrast to the 1990s, when boys were more likely than girls to use computers and the Internet. Nevertheless, education plays an important role on Internet use. In 2014-15, 96% of those with a bachelor degree or above were Internet users, and 77% of those educated to year 12 or below were Internet users [34]. Interestingly, we found education have significant influence on the level of physical complaints caused by Internet use.

The survey data show that the most common physical complaints were involving dry eyes, declining eyesight and cervical pain. The cervical pain complaints in the study population was higher than lumbar pain and wrist pain, partly supporting the result by Ranasinghe *et al.* [36] that showed the highest incidence is for neck complaints among computer office workers. Moreover, approximately 30 percent of respondents thought Internet use led to the decline in sleep quality in this study. There is evidence of sleep deprivation due to long hours of Internet use [37, 38]. In a study that examined the relationship between duration of Internet use and psychiatric symptoms among high school students, it was reported that psychological problems appear when the Internet usage exceeds 2h a day [39]. Our results showed that 20 percent of respondents deemed that their weight gain is related to problematic Internet use. In fact, the amount time of Internet use is a contributing factor in sedentary behavior which is linked to obesity. This finding is consistent with what was reported by Vandelanotte *et al.* [40], which discovered that individuals with Internet and computer use for three hours or more were more likely to be overweight and obese compared to non-users. Another study has also

reported that the higher amount of time in Internet use and sedentary behavior strongly associated with overweight and obesity [41]. It is necessary to not only increase participation in physical activity, but also curb screen time and lessen sedentary behavior for weight control [42].

In line with our expectations, the amount of time spent on the Internet greatly affects Internet users. One main finding of this study is that the average daily amount of time spent on Internet (frequency of Internet use) is strongly related to problematic Internet use with physical complaints. It is consistent with those of one study by Mottram and Fleming, in which the higher frequency of Internet use, lack of perseverance, and online group membership are significant predictors of problematic Internet use in Australian students [43]. This finding also supports the result of several previous studies regarding the influence of daily Internet use on healthy lifestyle behaviours [22] and the phenomenon that individuals who spend too much time online tend to lose sleep [44, 45]. But, it is slightly not in accord with data reported by Clark *et al.* [46] who found in their sample time spent online was not related to presence or absence of physical symptoms, whereas the study added these symptoms such as postural misalignment and peripheral muscle weakness, which are usually rare in younger populations, were seen in this population of Internet users. The study about the Internet usage profiles of adults by Hayat *et al.* [47], pointed out that only 37.3% of adults put a time limit for themselves and three-fourths of them stated that they obey this limitation and realizes the necessity to inform the adults about the negative impacts of Internet use generated by inadequacy of legal, physical, psychological and technical information.

In addition to the direct effect, Internet use can also indirectly affect on physical health by affecting users' physical activities and exercise patterns. Zhou *et al.* [48] investigated the impact of Internet use on engagement in leisure activities including mental, social and physical activities in China, concluding that heavy Internet users tend to be less engaged in physical activities than non-Internet users, but mental and social leisure activities are not influenced significantly. Moreover, online time is a significant negative predictor of exercise states, and especially those individuals using the Internet most often in an Internet bar and in school dormitories have worse exercise quality [38].

V. LIMITATIONS

The interpretability and generalizability of the present study's results are limited by several points that need to be solved. Firstly, like many previous studies, participants of this study were not systematically recruited from a population to ensure a representative sample. Although we successfully balanced the participants in terms of gender, it is very difficult to balance participants in terms of age group, education level, and occupation. For example, the age distribution of participants mainly centralized below 35. The impact of special case was amplified due to small sample of some demographic characteristics groups, and it might lead

to weakening of statistical characteristics. Moreover, the vast majority of the participants were recruited from the China, and therefore these conclusions might be difficult to generalize the study's findings of other countries. Thus, further studies would be desirable to migrate into other countries, enhancing the generalizability of the results.

Secondly, interaction effects of complaints were not considered carefully in the research design. Complaints of physical complaints are not independent of each other, and thus an appearance at one symptom is likely to lead to an appearance at another symptom, which could have affected the physical complaints level estimates. For example, frequent eyes dry will make declining eyesight.

A further limitation is that the daily amount of time for Internet use and physical complaints were assessed by self-reported measures, which does not allow for verification of the reliability and validity of the results reduce the questionable accuracy in this study. The measure of daily Internet use relying on respondents' estimates may be fraught with error, such as errors of judgment and distortion by social desirability concerns [49]. In addition, the survey used the simple response of "Yes" or "No" to indicate whether respondents suffered from the physical complaints or not while using Internet. But different people actually have varying degrees on physical complaints. More research would be improved to reveal more reliable data by using objective and more nuanced measures, which are required to easily deploy and implement.

In addition, some aspects still remain to be further studied. As we now know, Internet access is through various devices like computer or smart phone, of which the screen size and the type of display used are different. In this study, the Internet time using different devices were not distinguished, and it is not possible to compare the effects on individual health between different Internet-enabled devices. Previous studies have investigated the effect of individual Internet-enabled device use (e.g. mobile phone [50], computer [36, 51]). Thus, how the screen size and the type of display used of Internet-enabled devices affect the physical health of Internet users should be surveyed in further study. Furthermore, Internet use at different places has diverse impact on individual sociability, which embodies at home has a strong negative impact on communications with relatives as well as social activities, but Internet use at work has no such effect [52]. So, it is also need to identify whether or not the influence extent of where Internet use on physical complaints is different in further study.

Despite those limitations and remaining issues, the relationship between average daily amount of time for Internet use and physical complaints was examined. It is necessary to control the amount of time in Internet use or take steps of health care to prevent physical complaints under specific counseling platform. More and more attention is needed to be paid on the effect of Internet use on our physical health. It is hoped that this research encourages further examination

to explore corresponding effective strategies to prevent and treat these these physical complaints.

VI. CONCLUSION

The negative effects of Internet use on individual physical health were investigated in this study, based on the questionnaires collected from different demographic groups. Analyzing collected data highlighted the most common physical complaints during or after prolonged Internet use. Furthermore, it was found the amount of time for Internet use and education were significant predictors of level of physical complaints. In the cyber world the Internet technologies we depend on every day not only present us with great convenience and efficiency, but also change the former living and working habits and pose some new challenges to individual physical health. It would be impossible to prevent the Internet entering our lives. Instead, Internet will consistently and increasingly seeps into every nook and cranny of our lives as various smart devices continue to surge that allows for Internet use anytime and anywhere. Thus, special attention should be paid to challenges to individual physical health associated with frequent Internet use. Our results suggest that it might be necessary to also take into consideration the adverse effects of further Internet use in inappropriate time and ways. It is hoped that as more and more research are focused on this field, the negative effects of Internet use on individual physical health will be gradually eliminated to achieve that people are no longer enjoying the Internet at the expense of the physical health.

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