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THE RELATIONSHIP BETWEEN SMARTPHONE ADDICTION AND UPPER BODY DISCOMFORT AMONG YOUTH	Search engine: www.ijmaes.org

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ABSTRACT

Background and objectives: Smartphone is ubiquitous in this digital era and the remarkably evolved of technologies is an evident of heavy usage of such gadget in daily life. Recent evidence indicate that there is significant association between upper arm discomfort and smart phone user. However, there is limited finding on the smart phone addiction on upper body discomfort. Therefore, this study aimed to investigate level of smartphone addiction among Kuala Lumpur young adults. **Methods:** *This is a cross sectional analytical type of study. Self-administer questionnaire is used to determine the level of smartphone addiction level and body discomfort.* **Results:** *A total of 290 subjects (80.7% females and 19.3% males) are involve in this study. Majority of respondents (69.7%) suffer mild smartphone addiction and there is significant association with neck and shoulder discomfort (p<0.05). Respondent's belief that the discomfort experience were due to prolonged smartphone usage (74.1%). Furthermore, 84.5% of respondents noted that discomfort experienced was relieved when not using smartphone. There is significant differences between between time spent on smartphone with age categories, gender, occupation and smartphone addiction level (p<0.05).* **Conclusion:** *Time spent on smartphone is consistent to smartphone addiction level. A higher level of smartphone addiction will increase the risk in developing upper body discomfort.*

Keywords: Smartphone Addiction, upper body, Young Adults.

INTRODUCTION

Smartphone undeniably act as a device that effectively delivers addictive content to its users, having the ability to be connected with the internet. When people is addicted smartphone screen, it is not the smartphone that people can't resist but they are subconsciously referring to the content in which the smartphone are delivering [1]. In Malaysia, 77% are said to use internet every day and 59% of them reported use smartphone as a medium to gain access to the internet and spending an average of 3 hours daily browsing through websites. A total of 68% Malaysian population are reported to be internet and smartphone user, 91% of them ranked between the 18-34 years old. Recent publication showed that addiction to smartphone can cause negative impact on physical and psychological health [2]. In the aspect of musculoskeletal problem, there's significant association between upper limb musculoskeletal symptoms with frequency of mobile device usage [3]. Persistent strain on non-neutral limbs position while handling smartphone can place considerable amount of stress on complex structures supporting the joints which lead to fatigue, soreness and discomfort on soft tissue structures. Current evidence rarely focused on association between upper body discomfort and smart phone addiction among young adults. Thus, the objectives of the study is to investigate the relationship between level of smartphone addiction and upper body discomfort among them.

METHOD

The survey was conducted at the shopping mall, known to be most comprehensive information and technologies centre in Kuala Lumpur. This s a cross sectional study using open ended questionnaires. The questionnaires consists of 3 section. Section A is on demographic information pertaining respondent age, highest education level, occupation and marital status. The section B comprise of questions on time spent on smartphone, how subjects positioned their smartphone, body position when using smartphone, level of body discomfort experienced after using smartphone. The development of items was developed based on the literature review. The internal consistency is α = 0.87. The section C is using Modified Smartphone Addiction Questionnaire adopted from Kwon M. et al (2013) study [4]. It consist of 10 questions using 3 point Likert-type self-rating scale. Questionnaire options ranged from 1 (Disagree), 2 (Weakly Agree) and 3 (Strongly agree). The addiction level is categorised to no addiction, mild, severe and the score of less than 10, 11 − 20 and 21 − 30 respectively. The cronbach alpha of such questionnaire is good (α = 0.83). The inclusion criteria of respondents is aged between 18 − 29 years old and using smartphone more than 6 months. The screening process for eligibility is carry out by the researchers. The verbal and writing consent obtained from eligible respondent prior to data collection. To minimize collection bias, respondents need to place the completed answer questionnaire in the given envelop. The numbers of respondents is calculated using Taro Yamane formula (1967) [5]. The estimated numbers of customer is 1000 people a day, level of precision is 0.05, confidence level is determine at 0.95 and total respondents is 286. All data were analyzed using SPSS version 20. Descriptive type of analysis to describe the demographic information and Pearson

correlation to determine the degree of relationship between variables.

RESULTS

A total of 290 respondents involve in this study with majority of them are female (80.7%). Most of the respondents were between age category of 18 – 21 (44.5%) and 22 – 25 years old (44.1%). From 290 subjects, 69.6% are in the category of mild Smartphone Addiction, 29.1% are noted with severe smartphone addiction, and only 1.3% of the subjects are in the classification of no Smartphone Addiction group (Table 1). Majority (55.8%) of the respondents spent time on smartphone less than 30 minutes compared to 12.2% spent between 2 – 3 hours per session. Most of the respondents (74.1%) belief that the body discomfort were due to prolong usage and 84.5% of them noted that there is reduction of discomfort when not using such gadget. Upper back and upper arm are the most body region affected following smartphone usage. Body posture during smartphone usage may be contribute to the discomfort. Most of the respondents (58.6%) adopted sitting position in which such prolong and static neck bending able to cause upper back discomfort. There is significant ($p<0.05$) with weak positive correlation between smartphone addiction levels, gender, age, time spend on smartphone and level of body discomfort (Table2). However, the correlation between severe addiction and upper arm discomfort indicate a moderate positive strength ($r = 0.41$).

Demographic Information	N	%
Age categories		
18 - 21	129	44.5
22 – 25	128	44.1
26 - 29	33	11.4
Gender		
Female	234	80.7
Male	56	19.3
Education level		
School Higher Certificate	119	27.6
Diploma	89	30.7
Degree	82	41.7
Level of smartphone placement		
Chest	199	68.6
Waist	91	31.4
Adopted body position when using smartphone		
Sitting	170	58.6
Lying on back	63	21.7
Lying Sideways	35	12.1
Standing	12	4.1
Lying on stomach	10	3.4

Time spent on smartphone / session		
Less 30 minutes	161	55.8
Between 30 minutes – 1 hours	67	23.2
Between 2 hours – 3 hours	35	12.2
More than 3 hours	27	8.8
Addiction level to smartphone		
No addiction	4	1.3
Mild addiction	202	69.6
Severe addiction	84	29.1
Region body Discomfort		
Upper back	289	99.6%
Upper arm	288	99.3%
Lower arm	55	19%
Hand	144	49.7%

Table 1: Demographic information of respondent (N=290)

	r	P value
Addiction level on basic demographic data		
Gender	0.20	*0.05*
Age	0.20	*0.05*
Time spend on smartphone	0.12	*0.05*
Body discomfort during smartphone usage		
Upper back	0.20	*0.05*
Upper arm	0.33	*0.05*
Lower arm	0.24	*0.05*
Hand	0.34	*0.05*
Mild Addiction levels and body discomfort		
Upper back	0.25	*0.05*
Upper arm	0.34	*0.05*
Lower arm	0.31	*0.05*
Hand	0.23	*0.05*
Severe addiction level and body discomfort		
Upper back	0.20	0.06
Upper arm	0.41	*0.05*
Lower arm	0.33	*0.05*
Hand	0.14	*0.05*

Significant value is when p<0.05; Statistical test = Pearson correlation

Table 2: The relationship between usage of smartphone and various variables

DISCUSSION

Young adults nowadays lived in globalized era, which exposed them to easy access of information and knowledge transfer using various telecommunication devices [6]. The selection of young adult as respondents should be considered a strength of this study. Their exposure on informative technologies device are very much greater compared to generation before them. Furthermore, older aged respondents have higher degenerative disorders which may be one of the confounding factors in this study. The question used to determine the discomfort level, body area affected and time spend on gadgets provide an insight on whether smartphone overuse can led to related discomfort. The study revealed that higher number of youth having mild and severe addiction, indicating that younger aged adult can be easily be influenced and get excited by the convenience offered from smartphone [7]. Previous evidence indicated that prolong usage of smartphone can lead to addiction, low productivity and body discomfort [8, 9, 10]. The respondents need to do self-report regarding estimated time spent on smartphone per session and this might cause bias in reporting. The weak correlation between time spending and addiction may be due to probability of wrongly reported actual time spending on gadget. Obviously, prolong neck bending will alter cervical curvature and creating undue stress and experiencing constant discomfort over adjacent structure [11]. Even though, there is moderately weak correlation between addiction and upper back, arm discomfort the results is consistent with previous study [12, 13, 14]. The limitation of this study is the small respondent size which represents at one shopping mall in Kuala Lumpur. Further study should include population from different geographical area to enable adequate inference on whole population. The unequal numbers of respondents, age categories, has reduce the distribution of symmetrical linear relationships.

CONCLUSION

This study indicate that tendency for people to overuse it and be too dependent on the content smartphone can impair an individual physically. There's higher risk of upper extremity discomfort around upper part of body. Higher level of smartphone addiction indicate longer time spent on smartphone, thus increasing a person's risk in developing upper part of body discomfort overtime. Improvement in smartphone design that emphasize on efficient ergonomic capabilities should be developed in order to curb the discomfort.

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