

Interaction between Internet Browsing Habit and Dyspepsia Syndrome in Adolescent

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ABSTRACT

Background: Patients, including adolescent, with dyspepsia symptoms in our daily clinical practice have been interacting with internet search engine to find medical information which induced or worsened their dyspeptic symptoms. Aim of the study is to know the interaction of internet browsing habit and dyspepsia syndrome in adolescent.

Method: Grade 12 level students of senior high schools in Yogyakarta, Indonesia were included in the study with stratified random sampling method. We use two simple questions to reveal the students internet browsing habit, question no. 1: "Did you ever browse information about diseases in the internet?" and question no. 2: "Did you ever browse information about your medical complaint in the internet?" We used validated Gastrointestinal Symptom score (GIS) to reveal the students dyspepsia symptoms. Data were analyzed with Chi-square and Kruskal-Wallis tests.

Results: There were 665 (477 girls and 188 boys) senior high school students (age range: 16-20 years old) included in this study. Based on question no 1, the result showed significantly different ($p < 0.001$) between students with and without the dyspepsia syndrome, and the question no 2 also showed similar result ($p = 0.002$). The Kruskal-Wallis test between GIS and question no 1 showed significantly different ($p < 0.001$) and the similar result was also found between GIS and question no 2 ($p < 0.001$).

Conclusion: The internet browsing habit may influence the development of dyspepsia syndrome in adolescent and further study is needed to find the cause and effect relationship.

Keywords: internet browsing habit, dyspepsia syndrome, adolescents, GIS

ABSTRAK

Latar belakang: Pasien dengan gejala dispepsia termasuk remaja, sering berinteraksi dengan mesin pencarian di internet untuk menemukan informasi medis yang dapat memicu atau memperberat gejala yang dirasakan. Tujuan studi ini adalah mengetahui pola interaksi kebiasaan berselancar di internet dan gejala dispepsia pada remaja.

Metode: Siswa kelas 12 Sekolah Menengah Atas (SMA) di Yogyakarta, Indonesia dilibatkan dalam studi ini dengan metode pengambilan sampel stratified random sampling. Peneliti menggunakan dua pertanyaan

sederhana untuk mengungkapkan kebiasaan berinteraksi dengan mesin pencari di internet, yaitu 1: “Apakah Anda pernah mencari informasi mengenai penyakit di internet?” dan 2 : “Apakah Anda pernah mencari informasi tentang keluhan medis Anda di Internet?” Peneliti menggunakan kuesioner Gastrointestinal Symptom score (GIS) untuk mendiskripsikan gejala dispepsia pada responden. Data dianalisis dengan metode Chi-square dan uji Kruskal-Wallis.

Hasil: Terdapat 665 (477 siswa perempuan dan 188 siswa laki-laki) siswa SMA (dengan rentang 16-20 tahun) dilibatkan dalam studi ini. Berdasarkan pertanyaan No 1, hasil menunjukkan hasil yang berbeda secara statistik ($p < 0.001$) antar kelompok dengan dan tanpa sindrom dispepsia. Sedangkan pertanyaan no 2 menunjukkan hasil serupa ($p = 0.002$). Uji Kruskal-Wallis antara GIS dan pertanyaan No 1 menunjukkan perbedaan signifikan ($p < 0.001$) dan hasil serupa ditemukan pada GIS dan pertanyaan No 2 ($p < 0.001$).

Simpulan: Kebiasaan berinteraksi dengan mesin pencari internet dapat mempengaruhi berkembangnya gejala dispepsia pada pasien remaja. Studi selanjutnya dibutuhkan untuk menemukan hubungan sebab dan akibat fenomena ini.

Kata kunci: Kebiasaan berinteraksi dengan mesin pencarian di internet, gejala dispepsia, remaja, GIS

INTRODUCTION

Smartphone has been becoming a daily necessity in human life. Many daily activities can be linked through this gadget including fake and evident based medical information.

A meta-analysis showed that the problematic smartphone usage was reported in approximately one in every four children and young people.¹ Other meta-analysis also showed that excessive use of internet associated with cognitive deficits.²

There were many patients, including adolescent, with dyspepsia symptoms in our daily clinical practice have been interacting with internet search engine in the smartphone to browse the medical information that might induced or worsened their dyspeptic symptoms without realized that the medical information was fake or true, and aim of the study was to know the pattern of internet browsing habit and dyspepsia symptoms in adolescents.

METHOD

Grade 12 level students from 5 senior high schools in Yogyakarta, Indonesia who agree and eligible were included in this survey study with stratified random sampling method by randomly drew the high schools in Yogyakarta city and then we included all students of the elected high schools, between January 2019 and February 2019. Subjects with confirmed organic dyspepsia diagnosis, gastrointestinal bleeding, daily persistent abdominal pain or vomiting, unexpected lowering of body weight, history of NSAID or Cox-2 inhibitor, erythromycin, corticosteroid, tetracycline,

bisphosphonate, iron, potassium supplement, acarbose, digitalis, theophylline and orlistat usage were excluded. In this preliminary study, we used two simple questions to reveal the students internet browsing habit, question number 1 : “Did you ever browse information about diseases in the internet?” (answer choice: a.never; b.once; c.more than once); question number 2.: “Did you ever browse information about your medical complaint in the internet?” (answer choice: a.never;b. once;c.more than once),however these questions were not validated yet. We used validated Gastrointestinal Symptom (GIS) score to reveal the students dyspepsia symptoms. Descriptive statistics were used to evaluate the distribution of each variable.³ Data were presented as frequency counts and percentage. Chi-square and Kruskal-Wallis test were used to evaluate the independent samples with $p < 0.05$ considered to be significant. The protocol was approved by Biomedical Research Ethics Commission of the Faculty of Medicine, Universitas Gadjah Mada, Yogyakarta, Indonesia.

RESULTS

There were 665 (477 girls and 188 boys) senior high school students (age range : 16-20 years old) included in this study. When they browsed about the diseases in the internet the result showed that subjects with dyspepsia syndrome who browsed it only once in the internet was significantly higher than subjects who never browsed it ($p < 0.01$) and the significant result was also found between only once and browsed more than once ($p < 0.001$) (Table 1).

Table 1. The role of internet browsing about diseases information in developing dyspepsia syndrome

Did you ever browse information about diseases in the internet	Dyspepsia syndrome		Total (n)	P value
	Yes n (%)	No n (%)		
Never	60 (65.9)	31 (34.1)	91	< 0.01
Only once	296 (79.4)	77 (20.6)	373	
Total	356	108	464	
Never	60 (65.9)	31 (34.1)	91	0.96
More than once	129 (64.2)	72 (35.8)	201	
Total	187	104	291	
Only once	296 (79.4)	77 (20.6)	373	< 0.0001
More than once	129 (64.2)	72 (35.8)	201	
Total	425	149	574	
Never	60 (65.9)	31 (34.1)	91	0.11
Ever (once + more than once)	425 (74)	149 (26)	574	
Total	485 (72.9)	180 (27.1)	665	

Table 2. The role of internet browsing about medical complaint information in developing dyspepsia syndrome

Did you ever browse information about your medical complaint in the internet	Dyspepsia syndrome		Total (n)	P value
	Yes n (%)	No n (%)		
Never	77 (63.6)	44 (36.4)	121	0.002
Only once	263 (78.5)	72 (21.5)	335	
Total	341	117	458	
Never	77 (63.6)	44 (36.4)	121	0.33
More than once	144 (68.9)	65 (31.1)	209	
Total	222	110	332	
Only once	263 (78.5)	72 (21.5)	335	0.02
More than once	144 (68.9)	65 (31.1)	209	
Total	407	137	544	
Never	77 (63.6)	44 (36.4)	121	0.01
Ever (once + more than once)	407 (74.8)	137 (25.2)	544	
Total	484 (72.8)	181 (27.2)	665	

When they browsed their medical complaint, the subjects with dyspepsia syndrome showed significantly higher in who browsed it only once compared never ($p = 0.002$), between more than once and only once ($p = 0.02$), and between never and ever samples ($p = 0.01$) (Table 2).

Subjects with more than once browsing did not increase the probability when we compared it with subjects who never browse about the diseases (Table 1) and their medical complaint informations (Table 2)

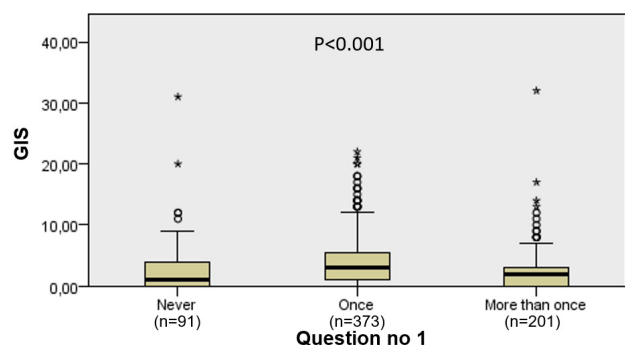


Figure 1. GIS difference based on question no 1 (Kruskal-Wallis test)

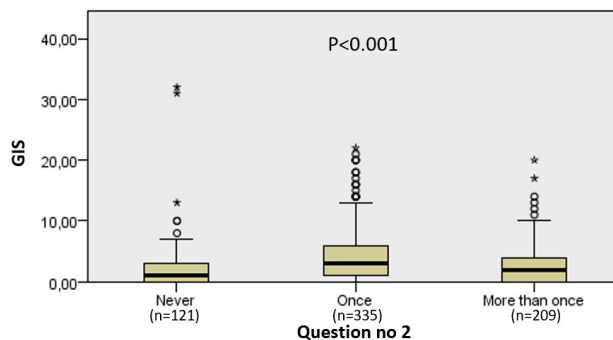


Figure 2. GIS difference based on question no 2 (Kruskal-Wallis test)

Figure 1 and 2 showed that even only once internet browsing experience can influence the GIS score significantly.

DISCUSSION

This study showed that at least once internet browsing about diseases and their medical complaint linked to their dyspepsia symptoms even though we still can not consider it as cause and effect

relationship. Smartphone use among high school students is negatively associated with academic and social-emotional outcome, and also cognitive deficits.⁴ Problematic smartphone usage which associated with measures of poor mental health, such as depression, anxiety, stress, poor sleep quality and poor educational attainment was found in approximately one in every 4 children and young people.⁵ Dyspepsia, especially functional dyspepsia, is also related with the psychosocial disorders. Increased level of psychological stress may precede fullness sensation of functional dyspepsia patients.⁶ Anxiety in hypersensitive patients with functional dyspepsia negatively correlated with pain and discomfort threshold and also with compliance.⁷ Improvement anxiety and absence of irritable bowel syndrome was associated with improvement of functional dyspepsia symptoms severity over 3 to 6 months.⁸

Internet browsing habit can further goes to be internet addiction. In millennial generation, it is more susceptible to internet addiction due to modern culture changing, especially when their parents are busy, therefore there are lack of control over their kids.⁹ Actually the large number of internet usage among teenagers and adolescents give some advantages by facilitating access to information, communication with family and friends, networking and refreshing time. Excessive internet usage could further goes to internet addiction problems. There are some similarities between excessive behavioral pattern of internet with substance addiction. According to neuroimaging studies, there are some changes in the brain structure of addictive syndromes that might impair the executive functions of planning and reasoning.¹⁰ A prevention program for internet addiction is important because of the possibility of many negative effects of this dependency. Some of the prevention programs are putting some rules and regulation at home to restrict the duration of use of internet, increasing of adult supervision of adolescent's media use, school should provide education about 'using internet wisely', improving parent-adolescent communication, and putting some government regulations for internet access.¹⁰ Earlier research showed that internet addiction is a predictor of stress, depression, anxiety and loneliness. Therefore, it is important to prevent internet addiction in adolescent, in order to prevent the incidence of functional dyspepsia in this group.

In anxiety patients, the autonomic nervous system moves resources away from digestion in order to activate other processes in the brain, thus slowing

digestion process and making it less efficient. There is a bidirectional gut-brain networks that links emotional, cognitive, and gut functions. The gut-brain axis involves direct and bidirectional pathways between cognitive and emotional centers in the brain with peripheral intestinal functions. This connection allows psychological disorder such as anxiety and depression can affect motor activity, sensory, and secretory in the gastrointestinal tract and cause symptoms in functional dyspepsia.¹¹

This preliminary study was performed based only on adolescent patients with dyspepsia symptoms and the unvalidated simple questionnaire was the weakness of this study. Further study is needed in patients with confirmed functional dyspepsia diagnosis after upper endoscopy examination with detail and validated questionnaire. Educating patients seem an important part of treating dyspepsia patients especially to prevent the medical fake news-related anxiety that is provoked by the internet browsing habit.

CONCLUSION

In conclusion, the internet browsing habit may influence the development of dyspepsia syndrome in adolescent and further study is needed to find the cause and effect relationship. Further study in functional dyspepsia patients will confirm the role of internet browsing habit in provoking or worsening of dyspepsia syndrome.

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