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Relationship between Internet Addiction and Dietary Behaviors of Students, Studying in a Teaching Hospital

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ABSTRACT

Background: Problematic Internet Use (PIU) as an impulse-control disorder including "internet addiction" is commonly described as "a person's incapability to overcome their excessive internet use, which in turn leads to distress and weakening of daily functional activities". This study aimed to determine the dietary behavior of internet addicts among students.

Methods: In a cross-sectional study in Fatima Memorial College of Medicine and Dentistry, 176 students aged 18-28 years were enrolled. A self-constructed questionnaire was used to evaluate demographic profile, level of internet addiction, dietary habits, physical activity, and snacking, and lifestyle patterns.

Results: Totally, 46.6% of students were mildly addicted to internet and 46% skipped the breakfast. Among internet addicted persons, snacking was found very common due to hunger, habit and lack of time for proper meal. The daily intake of fruits, vegetables, dairy, bread and cereal and meat was below WHO recommended amount and only 2.8% took appropriate amount. Only meat and fried food consumption were significantly and positively correlated with internet addiction.

Conclusion: The study findings showed that addiction of students to the internet is increasing day by day and its negative effects on dietary patterns are evident. There is a need to plan interventions focusing on reducing screen time and promoting healthy eating.

Introduction

Problematic Internet Use (PIU) is universally described to be "a person's inability to control their excessive internet use, which in turn leads to distress and functional impairment of daily activities" (1). The worldwide prevalence of PIU is approximately 6% with highest users (10.9%) from the Middle East and the lowest (2.6%) being for the people from

Northern and Western Europe (2). The menace of internet addiction remains problematic especially among young people around the world. In US, 8.1% of people from 18-22 years age group were found to be internet addicts (3). Among Middle East countries, Saudi Arabia revealed that 1.9% of the students had severe and 49.5% had moderate addiction to internet (4). In Kuwait, 10.3% students have high and 24.5% had low levels of obsession to internet (5).

In Pakistan, as reported by the recent statistics, one from every six students was addicted to internet (6). In Lahore alone, 9.6% of university students were found to be severely addicted to internet and 41.9% of them fell for moderate level of internet addiction (7). A survey among medical undergraduates of Karachi showed that 65.6% of students were mildly addicted, 18.5% were moderately and 0.9% were severely addicted internet users (8). In Turkey, dietary behaviors among internet addicted youth have also shown a worse trend. PIU and eating attitudes demonstrated a significant positive correlation (r=0.77, $p<0.01$) among the students (9). In Egypt, A study revealed that 62.5% PIUs had a habit of skipping breakfast (10). In Korea, likewise, 20.4% of students were highly internet addicts and had a routine skipping dinner. Poor appetite, snacking between meals, inadequate nutrient intake and poor diet quality were also reported in highly internet addicts (11).

Dietary habits in internet addicted Pakistani youth have also shown unhealthy behaviors like meal skipping, increased meal size, high prevalence of snacking of fast foods, carbonated beverages and the use of fried food items (7). A survey from multiple universities of Pakistan also reported the use of cigarettes and tea, while surfing internet for longer duration (12). There is very limited available data regarding internet over-use and its effects on dietary habits and the overall lifestyle pattern of the youth population. In particular, this has not been studied in medical colleges of Lahore. Therefore, we aimed to investigate the association between internet addiction and dietary behaviors of university students aged 18-28 years.

Materials and Methods

This was a cross-sectional study conducted at Fatima Memorial College of Medicine and Dentistry, Lahore, Pakistan. A total of 176 participants of both genders within 18-28 years old were recruited for the study by using following formula of $N=(z/e)^2$ P(1-P), while z=1.645, e=5%, and P=20.4% (11). A self-constructed questionnaire was used which comprised demographic characteristics, anthropometric measurements (including height,

weight, and BMI of participants); lifestyle patterns (bedtime, sleep disturbance and tobacco use), recent changes in dietary habits (meal size, appetite, eating speed), snacking pattern (skipping breakfast, lunch, dinner, reasons for skipping, snacking items, reasons for snacking, frequency of snacking), diet quality, and Internet Addiction Test (IAT) (Figures 1-4). The IAT questionnaire consists of 12 items that measure mild, moderate, and severe levels of Internet Addiction. This test was used as a reliable and valid measure of addictive use of internet (13).
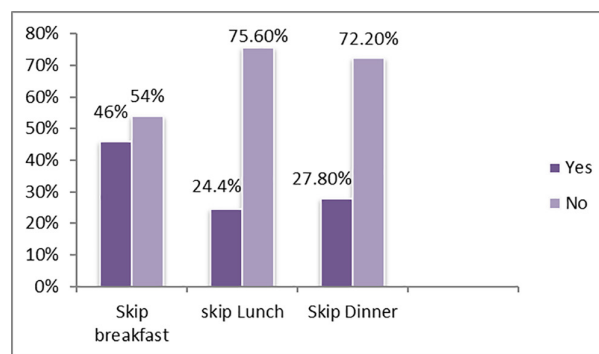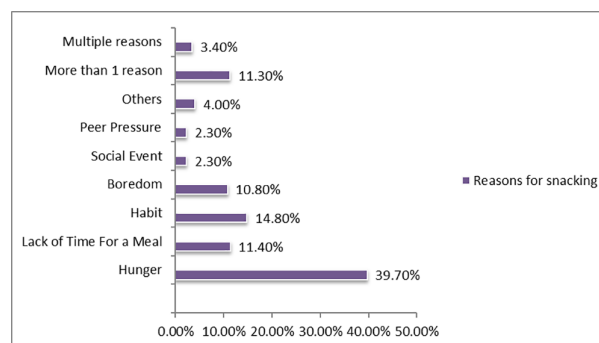

Figure 1: Patterns of meal skipping.

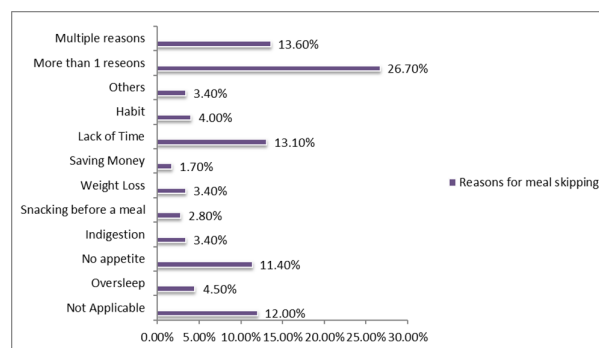**Figure 2:** Reasons for snacking

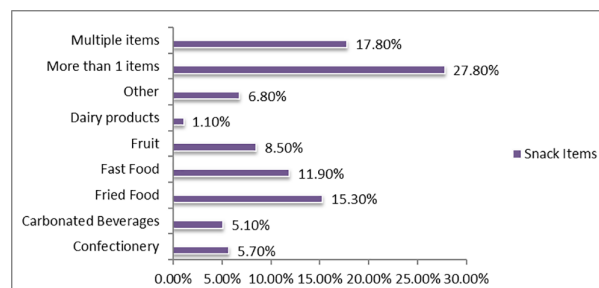**Figure 3:** Reasons for meal skipping

Figure 4: Snacking Items

A brief introduction was given to students for clear understanding of topic of research; and later a consent form was signed by all participants. An Institutional Review Board approval was also taken from the Institutional Review Board of Fatima Memorial College of Medicine and Dentistry to carry out research in the premises (IRB# FMH-08-2017-IRB-277-M dated September 23, 2017).

Data was entered in SPSS software (Version 22, Chicago, IL, USA). Qualitative variables were assessed using number and percentage. Mean and standard deviation were calculated for quantitative variables. Chi-square was used for post-stratification.

Results

Among 176 participants, 27.80% were from 18-22 years age group and 72.20% from 23-28 years age group. Totally, 80.70% were female and 19.3% were male. A total of 46.6% of participants were mildly and 38.1% were moderately addicted to internet followed by 2.8% who were severely addicted. It was found that 12.5% of population were internet users, but not addicted to it. Internet addiction results showed that 21% of the study participants often stayed online for longer periods in comparison to 21.6% who occasionally failed to decrease the time of being online (Table 1).

The present study showed that 46% of the participants skipped their breakfast, while 27.8% skipped their dinner (Figure 1). Moreover, 26.7% of students skipped their meals due to multiple reasons like hunger, lack of time for a meal, habit, boredom, a social event or a peer pressure. Totally, 39.7% of

people snacked because of hunger and 27.8% of participants ate more than 1 item as snack; however, fried food displayed a major contribution as a snack item (15.3%); followed by fast foods (11.9%). Among 63.1% of participants, the frequency of snacking was 1-2 times/day.

Multiple reasons were detected for meal skipping of 40.3% including oversleep, anorexia, indigestion, snacking before a meal, weight loss, saving money, and habit. Lack of time (13.1%) was reported as an important reason for meal skipping too. Snacking of 1-2 times/day (63.1%) were common that was due to hunger (39.7%), habit of snacking (14.8%) and lack of time for eating meal (11.4%). Fried (15.3%) and fast foods (11.9%) contributed principally to snacking; however, 27.8% of students ate more than one item as snacking habit.

Only 2.84% of the study participants were taking appropriate diet. Table 2 shows that 60% of severly addicted users were taking vegetables, fruits, meals and variety of foods below recommended levels. A non-significant relationship was detected among diet quality and level of internet addiction. A significant positive relationship was noticed for meat and fried food intake with internet addiction. It was shown that 68.2% of internet users who were not addicted to inernet were taking less than one or two fried food items per day (p=0.024). Less than 2 or 3 serving of meat per day was reported by 68.3% of mildly addicted internet users (p=0.029).

Discussion

This study showed that 46.6% of participants

Table 1: Internet Addiction Test.						
Statements	Does not apply	Rarely	Occasionally	Frequently	Often	Always
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Stay online longer	15 (8.5)	31 (17.6)	37 (21.1)	32 (18.2)	37 (21)	24 (13.6)
Neglect household chore	28 (15.9)	44 (25)	39 (22.2)	28 (15.9)	23 (13)	14 (8)
Complaints by others for being online	24 (13.6)	45 (25)	38 (21.6)	27 (15.9)	19 (10.8)	23 (13.1)
Suffering of academic performance	40 (22.7)	43 (24.4)	23 (13.1)	31 (17.6)	19 (10.8)	20 (11.4)
Boredom without internet	26 (14.8)	37 (21)	24 (13.6)	26 (14.8)	23 (13.1)	40 (22.7)
Act annoyed without internet	35 (19.9)	50 (28.4)	25 (14.2)	30 (17)	28 (15.9)	8 (4.6)
Lose sleep due to internet	31 (17.7)	37 (21)	40 (22.7)	18 (10.2)	27 (15.3)	23 (13.1)
Fantasize being online	50 (28.4)	36 (20.5)	30 (17)	32 (18.1)	20 (11.5)	8 (4.5)
Always ask for "just few more minutes online"	15 (8.5)	30 (17)	35 (19.9)	29 (16.5)	26 (14.8)	41 (23.3)
Failed reducing time of being online	29 (16.5)	36 (20.5)	38 (21.6)	36 (20.5)	21 (11.9)	16 (9)
Prefer spend time online than going out	61 (34.7)	53 (30.1)	24 (13.6)	19 (10.8)	12 (6.8)	7 (4)
Mood swings once online	56 (31.8)	45 (25.6)	35 (19.9)	10 (5.7)	14 (8)	16 (9)

Table 2: Dietary habits based on level of internet addiction.

Variable		Level of internet addiction				
		Not addicted	Mild	Moderate	Severe	
		Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	p value
I take 2 or 3 servings of dairy products everyday	Recommended	6 (27.3)	12 (14.6)	16 (23.9)	1 (20)	0.724
	Above recommendation	2 (9.1)	7 (8.5)	5 (7.5)	1 (20)	
	Below recommendation	14 (63.6)	63 (76.8)	46 (68.7)	3 (60)	
I eat 2or3 servings of meat products everyday	Recommended	7 (31.8)	23 (28)	17 (25.4)	2 (40)	0.029
	Above recommendation	1 (4.5)	3 (3.7)	14 (20.9)	0 (0)	
	Below recommendation	14 (63.6)	56 (68.3)	36 (53.7)	3 (60)	
I eat 3 or 4 servings of vegetables everyday	Recommended	7 (31.8)	31 (37.8)	21 (31.3)	2 (40)	0.892
	Above recommendation	2 (9.1)	5 (6.1)	7 (10.4)	0 (0)	
	Below recommendation	13 (59.1)	46 (56.1)	39 (58.2)	3 (60)	
I eat 2 or 3 servings of fruits everyday	Recommended	11 (50)	31 (37.8)	35 (52.2)	2 (40)	0.347
	Above recommendation	3 (13.6)	12 (14.6)	4 (6)	0 (0)	
	Below recommendation	8 (36.4)	39 (47.6)	28 (41.8)	3 (60)	
I eat three meals everyday regularly	Recommended	12 (54.5)	33 (40.2)	31 (46.3)	1 (20)	0.241
	Above recommendation	0 (0)	9 (11)	9 (13.4)	1 (20)	
	Below recommendation	10 (45.5)	40 (48.8)	27 (40.3)	3 (60)	
I eat five varieties of food everyday	Recommended	7 (31.8)	30 (36.6)	31 (46.3)	2 (40)	0.112
	Above recommendation	0 (0)	8 (9.8)	9 (13.4)	0 (0)	
	Below recommendation	15 (68.2)	44 (53.7)	27 (40.3)	3 (60)	
I eat 1 or 2 fried foods everyday	Recommended	3 (13.6)	19 (23.2)	29 (43.3)	1 (20)	0.024
	Above recommendation	4 (18.2)	9 (11)	4 (6)	2 (40)	
	Below recommendation	15 (68.2)	54 (65.9)	34 (50.7)	2 (40)	
I add 1 or ½ tea spoon full salt or soy sauce often	Recommended	8 (36.4)	16 (19.5)	20 (29.9)	1 (20)	0.260
	Above recommendation	5 (22.7)	9 (11)	11 (16.4)	1 (20)	
	Below recommendation	9 (40.9)	57 (69.5)	36 (53.7)	3 (60)	
I eat 2 or 3 miscellaneous items between meals	Recommended	5 (22.7)	8 (9.8)	11 (16.4)	1 (20)	0.619
	Above recommendation	3 (13.6)	12 (14.6)	9 (13.4)	0 (0)	
	Below recommendation	14 (63.6)	62 (75.6)	47 (70.1)	4 (80)	

were mildly and 38.1% were moderately addicted to internet followed by 2.8%, who were severely addicted. This present study also revealed that 12.5% of the study population were internet users, but were not addicted to it. Age group of 18-28 years old were the most prevalent internet addicts that resembles the study in France reporting an increase in internet use and the greatest time spent online by a population from 15 to 25 years old (14). It was shown that 12.3% of individuals have tried to decrease their time on internet utilization, while 12.4% often remained online for more time than actually wanted to spend that is identical to our finding demonstrating that 21% of participants often stayed longer online and 21.6% occasionally tried to reduce their time of being online, but with failure (15).

In our study, the rate of not eating breakfast in addicted browsers was considerably large (46%) and the same as our results, other researchers observed an increased prevalence of missing meal in severe addicts to internet and increased rate of missing meal was associated with to munching before meal. Reports have confirmed that increased rate of snacking was seen in internet addicts and adults who snacked more often and skipped dinner more frequently in comparison to others (16). The reasons of meal skipping have been also described by Kim et al. that observed 19.5% skipped meals due to lack of time, while 67.2% reported snack 1-2 times/day and 53.2% due to hunger. Favourite snack items of the participants were bakery products and caloric dense foods. The present study showed that only 2.8% of the study particiapnats were taking appropriate diet, while Kim et al. evidenced the quality of diet of internet addicted users not to be up to the marked point and intake of suggested food choices was also not satisfactory (11).

The results of this study demonstrated that 60% of severely addicted students consumed less than the recommended amount of vegetables, fruits, meals, and variety of foods below recommendations but no significant relationship was found between diet quality and level of internet addiction. In contrasts, there was a significant relationship between meat and fried food intake, and internet addiction. About

68.2% internet users, who were not addicted to the internet, consumed less than 1 or 2 fried foods a day. Less than 2 or 3 servings of meat per day were reported by 68.3% of mildly addiected internet users. Kim et al, (2010) showed that quality of diet of addicted users was not up to the mark and intake of suggested food choices was also not satisfactory.

Despite the limited number of participants, this study could be effective to show the effect of internet overuse a few studies have examined this correlation.

Conclusion

This study revealed that internet addiction among students is increasing day by day and its negative effects on dietary patterns are evident. There is a need to plan interventions focusing on reducing screen time and promoting healthy eating. This study could be used as a stepping stone to generate data on the dietary behaviors related to internet addiction among young people in Pakistan which ultimately help to develop interventions in order to improve the dietary behaviors.

Conflict of Interest

None declared.

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