

ORIGINAL ARTICLE

The Association Between Body Image, Body Mass Index and Social Media Addiction Among Female Students at a Saudi Arabia Public University

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ABSTRACT

Introduction: The internet revolution raised a new type of addiction, which is social media addiction. Social media advertisements are mostly targeting women. Therefore, the excessive use of social networking sites could influence females' body image perception. However, obesity can either be a risk factor or a cause of negative body image. The aims of this study were to assess perceived body image and social media addiction among Princess Nourah University students and to determine the association between them. **Methods:** A cross-sectional study conducted on a sample of 307 female students at Princess Nourah Bint Abdulrahman University at KSA using a multistage systematic random sampling technique whereas every 9th student was included if she is eligible. Data collected through survey includes socio-demographic characteristics, social media addiction scale adapted from Young K. Internet Addiction Test (IAT), body image questionnaire in addition to measuring their weight and height. **Results:** The findings revealed that 73% of the study participants perceived negative body image and 50.1% of them were moderately addicted to social media. On assessing the association using chi-square test, body image and social media addiction was not significantly associated ($p=0.22$). While on assessing the association between social media addiction and BMI, they were significantly associated ($p=0.001$). **Conclusion:** A statistically significant association was found between social media addiction and BMI. No significant association was found between body image and social media addiction. Thus it is recommended that future research try to investigate the main cause for social media addiction and identify the ways to avoid its potential negative consequences.

Keywords: Body image, Social media, Obesity, Internet, Social media addiction

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are few studies linked social networking site usage to health, students could take the advantage of these sites by exchanging health-related information supporting each other (5).

INTRODUCTION

The internet revolution has improved the communication in today's society (1). However, internet era raised a new kind of addiction, which is social media addiction (2). Social media addiction "Is a term used to describe a situation where a user spends too much time on social media (e.g. Facebook, Twitter, Instagram) such that it negatively affects other aspects of his or her daily life like school, work or relationship with others" (3). Globally, Social networking sites (SNSs) have been turned into a basic tool in the university students' lives (4). Despite the influence of technology on individuals' lives there

Years ago, mass media has contributed to form the way of thinking in the community before SNSs exist (6). Nowadays, people follow their idols on whatever they do or say or recommend to them no matter if it serves their own good or not. Moreover, celebrities share their daily activities on social media which may create a perception for the audience about the perfect lifestyle and body image (7). Social media are mostly used by women, therefore their excessive use of SNSs could turn into an addiction, which may influence their body image perception (6,8). "Social networks may not create new problems for women, but they do certainly intensify existing ones" (6). The primary target for advertisements

and the ideal image of the body are females. (7).

Body image is known as how a person perceives himself or a reflection in his mind. It may include feeling about body shape, weight and height, and how to control the movement of the body (9). One of the essential things for a woman is the beauty. Since a slim figure is one of the most common beauty criteria, people with body image dissatisfaction have tried to change their bodies to follow these standards. Consequently, this further exposed them to many psychological risks such as depression, anxiety and eating disorders (10). Thus, affects their professional and social performance. Saudi Arabia has witnessed dramatic changes over the past 40 years, with the import and burgeoning influence of Western lifestyles and beauty ideals.

In recent years, the number of eating disorders in young women has increased as consequence of body image dissatisfaction, which is a concern for them in many western countries such as the United States (7). Studies found that obesity can be influenced by social media addiction and poor body image (11, 12). Obesity is often defined as "A condition of abnormal and excessive fat accumulation in adipose tissue to the extent that health may be adversely affected" (13). Obesity has begun to increase in an inexplicable manner even by genetic factors (14). Indeed, the increase of obesity prevalence has made the United States put the prevention of obesity as their primary priority (15).

In 2014, almost 1.8 billion of 2.5 billion internet users around the world are using social media (16). Starting from 8.5 million Saudi users in social media platforms, the total number enlarged lately into 18.3 million users as stated by the Ministry of Communications and Information Technology (17). A statistic has shown that Saudi Arabia took a place at the top of the list among middle east countries. However, in October 2013, Saudi participants recorded a large number of users on Twitter. (1) A study conducted in 2012 at King Faisal University in Saudi Arabia shows that females have higher body image dissatisfaction than males. It was indicated that, the prevalence of body image dissatisfaction among Saudi female university students estimated to be 33.5%. While the satisfied body image estimated to be 66.5% (18). In 2016 at Bridgewater State University in the United States, among female college students shows that prevalence of body image dissatisfaction was 36%, while the satisfied body image was 17% (7). On the other hand, the prevalence of obesity among adults females aged 20-24 globally is 22%. While in Saudi Arabia the obesity prevalence among adults females aged 20-24 is 44% (19). Risk of mental health problems increase by increasing the hours spent on the internet and social media (20). Despite the fact that body image dissatisfaction and eating disorders are influenced by multiple factors, the hours spent on the internet and social media were proven to be one of the main factors

(21). Negative body image is a public health problem facing females students (22). The increasing of obesity has become a serious health problem at the global level, also, it has been classified as the fifth cause of death (13). Moreover, studies found that obesity can be spread through social media (12). Thus, the current study was designed to assess body image perception among Princess Nourah University students and evaluate the level of social media addiction. In addition, the association between body image perception and social media addiction was also examined.

MATERIALS AND METHODS

Study design and setting

A cross-sectional study was conducted at Princess Nourah University (PNU) from the first of October 2017 until April 2018.

Target population and their criteria

The target population was PNU female undergraduate students. In order to identify the prevalence among Saudis, only Saudi nationality students aged 18 to 26 years old who agreed to participate were included in the study. While students with chronic diseases (cardiovascular diseases, renal disease, diabetes and high blood pressure) and pregnant students were excluded from the study.

Sample size and sampling technique

The sample size needed to conduct this study was 307 participants, using OpenEpi software (23) based on total population size of 2886 student, the prevalence of body image in Saudi Arabia 33.5% (18), 95% confidence interval. A multistage sampling technique, in the first stage, the foundation year and the health colleges were randomly selected. On the second stage, the participants were selected by systematic random sampling, by dividing the total population over the sample size whereas, every 9th student (2886/307) was included if she was eligible.

Data collection tools

A self-administered questionnaire including close and open questions was handed out to participants in an English version. The questionnaire consisted of several items: The 1st item includes sociodemographic characteristics as age, marital status, academic year, college, residency, parents' education and their occupations, in addition to GPA and questions assessing the most frequently used SNSs, the purpose of using SNSs, the first time started using SNSs, the time spent on SNSs daily and satisfaction with body image. The 2nd item includes modified Social Media Addiction scale adapted from Internet Addiction scale, which contains 20 items, with the following responses, 0= Does not apply, 1=Rarely, 2=Occasionally, 3=Frequently, 4=Often and 5=Always. (24) The 3rd item includes standard Body Image Questionnaire which contains 9

items, the responses either yes or no (25). The 4th item includes physical examination using weight and height scales to calculate BMI, where adults with BMI less than 18.50 considered as underweight, Normal weight ranges between 18.50- 24.99, overweight ranges between 25-29.99 and people with BMI equals or more than 30 are considered as obese (26).

Pilot study

A pilot study was done among 20 students from the study population to assess the applicability of the questions and the time needed to complete the questionnaire, which took about 7 to 10 minutes. However, the 20 questionnaires were not included in the study sample size. The finding from the pilot showed that the study's tool is reliable (Cronbach's alpha = 0.86 and 0.67) for Social Media Addiction and perceived body image scales respectively.

Statistical analysis

Data were analyzed using SPSS software version 23 and was presented in tables and graphs (27). Both descriptive and inferential statistics were used whereas chi square test is used to determine the association between the study variables. The questionnaire regarding Social Media Addiction was scored according to (0 = Does not apply, 1= Rarely, 2= Occasionally, 3= Frequently, 4= Often, 5= Always). The maximum score equals 100 points and the minimum score equals 0 points. Then, a participant who got less than 50 points considered as a mild addict, 50 – 79 points considered as a moderate addict, and 80 – 100 points considered as severely addicted.

The questionnaire regarding body image was scored according to (yes=1, no=0). The maximum score equals 9 points and the minimum score equal 0 points. If the participant answered "yes" to three or more questions, it means that the respondent may have a negative body image, whereas if the participant answered "yes" to less than three questions or none, it means that the respondent may have a positive body image.

Ethical considerations

Data were collected after obtaining the approval from PNU research committee (IRB Number 17-0225). Students were asked to sign an informed consent before participating in the study as their anonymity was assured. Results were only used for the purpose of the research.

RESULTS

Table I displays the participants' characteristics, 51.5% of the study participants were in the 18-20 age group, while only 3.3% were in the 24-26 age group. Regarding the academic year, 28.7% of the students were in the fourth year and 12.4% were in the fifth year. It was found that 48.2% of the students were studying in CHRS, whereas 3.3% of them were from medical college and 2.6%

Table I: The socio-demographic characteristics of the participant.

	Item	N	%
Age (years)	18-20	158	51.5
	21-23	139	45.3
	24-26	10	3.3
Academic year	Foundation	44	14.3
	Second	72	23.5
	Third	65	21.2
	Fourth	88	28.7
	Fifth	38	12.4
College	Foundation	44	14.3
	Nursing	75	24.4
	Medicine	10	3.3
	Dentistry	8	2.6
	Pharmacy	22	7.2
	CHRS	148	48.2
	GPA	4.26	153
	4.27	154	50.2
Marital status	Married	9	2.9
	Not married	298	97.1
Having children	Yes	6	2
	No	301	98
Residence	Urban	275	89.6
	Rural	32	10.4
Mother education	Basic school or less	68	22.1
	High school or more	126	41
	Higher education	113	36.8
Father education	Basic school or less	39	12.7
	High school or more	116	37.8
	Higher education	152	49.5
Mother job	Housewife	211	68.7
	Working	96	31.3
Father job	Professional	77	25.1
	Administrative	75	24.4
	Business	85	27.7
	Not working	70	22.8
Total		307 (100.0)	
N (%)			

CHRS- Colleges of health and rehabilitation science. GPA- Grade Point Average.

were from the dentistry college. 50.2% of the students' GPA ranged between 4.27-5. According to the marital status, only 2.9% of the participants were married and 2% of them have children. Regarding the participants' residence, 89.6% of the participants were urban area residents. 41% of the participants reported that their mothers' education level was high school or more, and 22.1% had basic school or less. Whereas 49.5% of students' fathers had higher education, and 12.7% had basic school or less. It was found that 68.7% of the students' mothers were housewives. Regarding father's occupation, 27.7% were businessmen and 22.8% were not working.

Fig. 1 portrayed the most frequently used social networking sites among the sampled students were Snapchat (84.7%), WhatsApp (77.5%), YouTube (62.2%), Instagram (57.7%) and Twitter (55.4%). Regarding the purpose of using SNSs, 74.6% of the study participants use them for finding information, 69.1% used SNSs to keep in touch with their families and friends and 57.7% for entertainment as revealed in Fig. 2.

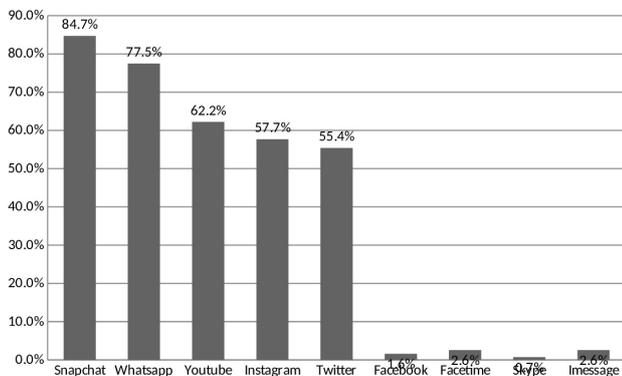


Figure 1: Most frequent used social networking sites

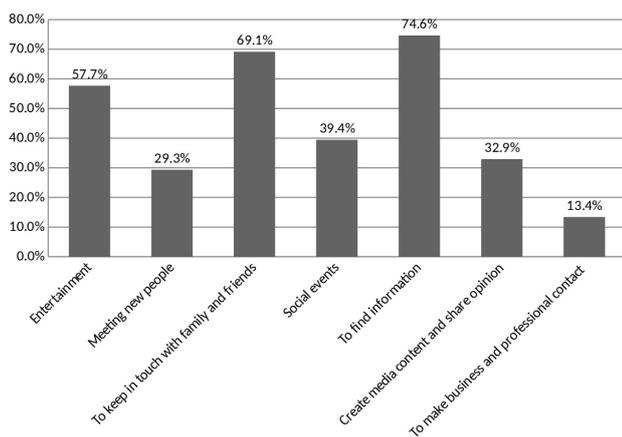


Figure 2: Purpose of using social networking sites

Most of the participants (59.3%) started using social networking sites for more than 6 years as demonstrated in table II. Moreover, the table showed the distribution of the participants according to the time spent on SNSs. 45% of the students were using SNSs for 4-6 hours daily and 0.7% of them were using SNSs for less than an hour. The levels of body image satisfaction, 24.4% of the students were moderately satisfied and 22.1% of them were neutral toward their body image, while 4.2% of them were extremely dissatisfied as displayed in Table II.

Table III illustrated the association between social media addiction and body image and showed the participants' perceived level of social media addiction whereas 2% of the participants suffered from a severe level of addiction and 50.1% were at a moderate level. Similarly, according to body image self-perception, 73% of the participants had negative body image perception. No statistically significant association was found between

Table II: Distribution of the participants according to the first time started using social networking sites, the time spent on using them and their body image satisfaction levels.

Variables	Responses	N	%
First time started using SNSs	< 1 year	2	0.7
	1-3 years	16	5.2
	4-6 years	107	34.9
	> 6 years	182	59.3
Time spent on SNSs daily	< 1 hour	2	0.7
	1-3 hours	46	15.0
	4-6 hours	138	45.0
	7-9 hours	77	25.1
	> 9 hours	44	14.3
	Body Image Satisfaction Levels	Extremely satisfied	53
Moderately satisfied		75	24.4
Slightly satisfied		62	20.2
Neutral		68	22.1
Slightly dissatisfied		15	4.9
Moderately dissatisfied		21	6.8
Total		307	100.0%

SNSs= social networking sites

Table III: The association between social media addiction and body image.

Items	Body image				Total		Chi square test	P value
	Positive		Negative		N	%		
Social media addiction								
Mild level	47	56.6	100	44.6	147	47.8	3.02	0.22
Moderate level	35	42.2	119	53.2	154	50.2		
Severe level	1	1.2	5	2.2	6	2.0		
Total	83	27.0	224	73.0	307	100		

*P-value is significant at ≤ 0.05

social media addiction and body image ($\chi^2(2) = 3.02, p = .22$).

Regarding the association between social media addiction and body mass index a statistically significant association found between social media addiction and body mass index ($\chi^2(6) = 21.2, p = .001$) as revealed in Table IV.

Table V presents the correlation between social media addiction, body image, and some of the participants' characteristics. Social media addiction and body mass index were positively correlated ($p = .036$) the observed correlation coefficient (r) is .120. Furthermore, a

Table IV: The association between social media addiction and body mass index

Level of SMA	BMI								Total	Chi square test	P-value	
	Underweight		Normal		Overweight		Obese					
	N	%	N	%	N	%	N	%				
Mild	28	62.2	76	46.3	28	47.5	15	38.5	147	47.9	21.2	0.001*
Moderate	17	37.8	87	53.0	27	45.8	23	59.0	154	50.2		
Severe	0	0.0	1	0.6	4	6.8	1	2.6	6	2.0		
Total	39	14.6	164	53.4	59	19.2	39	12.3	307	100.0%		

SMA= Social Media Addiction

BMI= Body Mass Index

*P-value is significant at ≤ 0.05 **Table V:** Correlation between social media addiction, body image and sociodemographic characteristics of the participants

Item	Social media addiction	Body image	BMI	GPA	Age
	r (p-value)	r (p-value)	r (p-value)	r (p-value)	r (p-value)
Social media addiction	1	.108(.058)	.120*(.036)	.009 (.871)	-.061(.288)
Body image	.108(.058)	1	.234**(.000)	.039(.500)	-.096(.093)
BMI	.120*(.036)	.234**(.000)	1	.027(.638)	.156**(.006)
GPA	.009(.871)	.039(.500)	.027(.638)	1	-.208**(.000)
Age	-.061(.288)	-.096(.093)	.156**(.006)	-.208**(.000)	1

*Correlation is significant at the 0.05 level. **Correlation is significant at the 0.01 level.

BMI- Body Mass Index. GPA- Grade point average.

significant positive correlation was found between body image and BMI ($p > .000$) the observed correlation coefficient (r) is .234. Similarly, a significant positive correlation found between BMI and participants' age ($p = .006$) the observed correlation coefficient (r) is .156. Whereas, a negative correlation was found between the students' GPA and age ($p > .000$) the observed correlation coefficient (r) is -.208.

DISCUSSION

In this current study, the relation between body image and social media addiction among female health colleges students at Princess Nourah University was investigated half of them were aged between 18-20 years old. More than half of the students started using SNSs for more than 6 years, which means they started using it when they were teenagers, it could be related to their residency. The majority of the participants were urban area residents, so they may have easy access to the internet than rural area residents. A study stated that urban teenagers had an addictive behavior towards SNSs (27). About three-quarters of the participants

reported that finding information was their purpose of using SNSs. That might be because they were university students, therefore they may need to be up-to-date with the new information on their area of the study. A study by Alosaimi in 2016 reported that more than half of the students were using SNSs to engage in educational searches (28).

The GPA of almost half of the students was less than or equal to 4.26. The reason behind that could be the amount of time spent on SNSs, where the majority of them were using SNSs for 4 hours or more. According to Jamal Al-Menayes, there is an inverse relationship between the academic performance and the time spent on SNSs (29). Another study was conducted in Jazan, Saudi Arabia found that the participants' academic performance adversely affected as a result of spending more than 4 hours on social media (4).

As the study population was college students, that may explain why almost half of the participants were categorized in the normal BMI. A study stated that college students tend to follow a healthy diet (30).

The current study reported that half of the students were at the moderate level of social media addiction. Similarly, a study conducted in Saudi Arabia showed the distribution of its participants regarding social media addiction; it was almost the same as the current study (30). In addition, most of the participants were exposed to visual based platforms (the most popular used SNSs were Snapchat, WhatsApp, YouTube, and Instagram, respectively) which lead to share and watch photos or videos of peers and celebrities. They might start to compare themselves to others, which may develop a negative body image. As reported in this study, almost three-quarters were having negative body image. A study conducted in UAE stated that addiction to social media results in negative body image (31).

Regarding social media addiction, one-third of the participants agreed that they always have a fear that life without internet would be boring, empty and joyless while only a few percentages agreed that they haven't experienced that fear. It may explain how the excessive users rely on social media. A similar result was found in another study conducted on Saudi adults (32). After the body image questionnaire was filled, it was found that the majority of the students agreed they want to change something about their bodies, and only one third felt bad about themselves because they don't like their bodies.

This may support the idea that females are always aspired to have the best body as a result of peers pressure. (33) The participants were asked to classify their overall body satisfaction. It was found that only 27% of the participants had a positive body image perception, while nearly two-third of the participants reported that they are satisfied with their body image. However, the difference in the two results may be because the questionnaire was more precise and detailed, which provided a more accurate result than the self-reported question, that was merely about an overall body satisfaction. A significant association was found between social media addiction and BMI. This finding might be because people, females in specific, would spend their time online looking for ideal body measurements and that could result in gaining or losing weight and appetite. However, this result was contrary to another study conducted in Turkey which found no significant relationship between these two variables. The differences between the two studies may be because their sample included both males and females whereas the current study was only on females (34). No Significant association was found between body image and social media addiction. That might be because the participants were health colleges students and their purpose of using SNSs was to search for information rather than entertainment.

BMI was significantly correlated with social media addiction, which could be explained as the excessive use of social media may result in a sedentary lifestyle, that might influence the body mass index. This finding has corresponded with another study which found

similar results (35). Additionally, BMI may affect body image as they have a positive correlation. People may perceive their body image depending on their body measurements.

CONCLUSION

In conclusion, almost half of the participants had a moderate level of social media addiction and approximately three-quarters of the participants reported negative body image perception. However, body image and social media addiction were not significantly associated. A significant positive correlation was found between BMI and social media addiction as well as between BMI and body image. It is highly recommended that people properly manage the amount of time spent on social media to decrease the possibilities of being influenced in a negative way. Moreover, parents are recommended to monitor their children and detect any sign of eating disorders or social media addiction to overcome the problem in its early stage. Health education campaigns related to healthy lifestyle and how to properly use SNSs are required. Further studies are needed to assess the relationship between body image and social media addiction in order to define the main causes, ways to control and avoid their consequences. At the Kingdom level, we recommend an inter-sectoral cooperation and establishing a database between the Ministry of Health (MOH), Ministry of Education and Ministry of Communication and Information Technology to supervise SNSs. Supervision includes preventing any site from advertising for any product or advices regarding excessive dieting and unhealthy lifestyles.

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