

Are social media use disorders associated with higher addictions (alcohol, smoking and waterpipe) among Lebanese adults?

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Research article

Keywords: social media use disorder; cigarette; waterpipe; alcohol use disorder; dependence; addiction.

Posted Date: March 2nd, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-15654/v1>

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Abstract

Background: Since cigarette and waterpipe smoking and alcohol use are on the rise in Lebanon, with no studies on their association with social media use, it was deemed interesting to conduct such a research in the country. The purpose of this study was to evaluate the correlation between social media use disorder, alcohol use disorder and smoking addiction through both cigarettes and waterpipe among a sample of Lebanese adults.

Methods: This cross-sectional study was carried out between January and April 2019. It enrolled 461 residents of the community randomly selected from Lebanon's Mohafazat in a proportionate rate.

Results: The results showed that 107 (23.7%) participants were classified as having social media use disorder. The results of a stepwise linear regression showed that higher social media use disorder score (Beta=0.17), higher alcohol addiction (Beta=0.20), higher cigarette smoking addiction (Beta=0.31) and higher insomnia (Beta=0.05) were significantly associated with more waterpipe addiction. The social media use disorder was not significantly associated with the cigarette dependence and alcohol use disorder.

Conclusion: Our results revealed a significant association between social media use disorder and waterpipe smoking dependence. This study findings might serve as a starting point towards the development and implementation of anti-smoking waterpipe awareness campaigns, similar to those negatively representing cigarette smoking.

Background

Social media represents Internet-based services and technologies that allow users to communicate and share information through virtual communities, such as websites, applications and social networks. The most prominent social media platforms belong to the networking category such as Facebook with 2.3 billion active users, YouTube with 1.9 billion users, WhatsApp with 1.33 billion and Instagram with 1 billion as of 2018¹. The monumental rise of social media use has been witnessed over the past decade, with a current rate of 2.6 billion users worldwide. On average, Internet users spend 136 minutes a day on social media platforms². Motivation behind social media usage can be represented by multiple categories: entertainment, creating and/or maintaining relationships and information seeking. It is important to note that the majority of social media outlets are free to the public, which adds the element of convenience to its usage³.

As social media is becoming more accessible among many populations, cases of its problematic usage are more common. Although social media disorder (SMD) is not officially cited in the DSM-V, symptoms of the disorder can be considered qualifiers for behavioral addiction based on the diagnostic criteria for Internet gaming disorder, which is proposed as a condition requiring further research by addiction specialists⁴. At least five of the nine conditions or criteria listed in the DSM-V must be met within a period

of twelve months in order to determine a diagnosis of Internet gaming disorder. When the criteria determined by the DSM-V for Internet gaming disorder are applied to SMD, it could be manifested in symptoms such as excessive use, preoccupation with social media and inability to control the urge to use social media or the period of usage. In addition, the individual deceives others in order to continue usage, experiences loss of interest in other activities and employs social media to escape negative feelings⁵. Based on the criteria for Internet related addictions, SMD can be described as frequent and excessive use of social media that causes significant distress and impairment, resulting in dependence symptoms⁶.

Addiction is a psychological condition characterized by a pattern of remission and relapse, where individuals engage in a compulsive behavior seeking a rewarding response, whereas terminating said behavior manifests in withdrawal symptoms⁷. Researchers encountered difficulties distinguishing abuse or excess use from addiction, however, physicians currently depend on the number of criteria cited in the DSM-V to judge the possibility of dependence⁸. Alcohol Use Disorder (AUD) is the chronic harmful use of alcohol resulting in a state of dependence to the chemical substance ethanol where alterations in the brain's reward and stress systems occur: individuals suffering from AUD experience physical signs such as tachycardia, sweating and shaking along with psychological effects like anxiety and dysphoria when consumption is stopped or substantially reduced⁹.

Addiction to smoking transpires when an individual becomes dependent to the stimulant drug nicotine, most commonly consumed through cigarettes, cigars and waterpipes. Nicotine quickly acts on the circuits of the brain, causing a rewarding effect and increasing dopamine and noradrenaline levels, which alters the sensitivity of the neurotransmitters to their receptors. Having said that, nicotine cycles rapidly and the slight euphoric reaction lasts briefly, which acts as reinforcement and leads to dependence¹⁰.

One of the few studies conducted on substance abuse in Lebanon reported that 18.3% of a sample of Lebanese students from two major universities was addicted to nicotine and 2.4% met the criteria for AUD, according to the DSM-III¹¹. A more recent assessment showed that 9% of Lebanese university students reported enough symptoms that qualify them for AUD, according to the DSM-IV¹². Another mode of nicotine consumption in Lebanon and the Middle East in general is through waterpipe. Lebanon has the highest prevalence of waterpipe smoking in the Middle Eastern region¹³. Cross-sectional studies conducted on a sample of Lebanese adults showed that 23.27% of university students¹⁴, and 55.12%¹⁵ and 94.6%¹⁶ of adults from the general population in Lebanon were highly dependent on waterpipe smoking respectively. Additionally, the prevalence of smoking both cigarettes and waterpipe was 6.1%¹⁷.

A cross-sectional study in the United States showed that undergraduate university students that excessively use social media were more likely to excessively drink alcohol¹⁸. In addition, another study showed that teenagers who use social media are more likely to be Nicotine and/or alcohol dependent than those who don't¹⁹. An analysis conducted on a sample of images from a popular social media network, Pinterest, showed that waterpipe smoking is associated with enjoyment and relaxation. The

portrayal of the smoking activity positively led to more engagement and reposts on the image-based platform, which subsequently contributes to the normalization of waterpipe consumption²⁰.

Since cigarette and waterpipe smoking and alcohol use are on the rise in Lebanon^{21,22}, with no studies on their association with social media use, it was deemed interesting to conduct such a research in the country. The purpose of this study was to evaluate the correlation between SMD, AUD and smoking addiction through both cigarettes and waterpipe among a sample of Lebanese adults.

Methods

Study design and participants

This cross-sectional study was carried out between January and April 2019. It enrolled 466 residents of the community randomly selected from Lebanon's Mohafazat in a proportionate rate. The Mohafazat are divided into Caza (stratum), divided into villages. From a list provided by the Central Agency of Statistics in Lebanon, we chose two villages per Caza where the questionnaire was distributed randomly to the households, based on a random sampling technique to select the included house²³. Those who agreed to take part in the study were invited to complete the questionnaire via a face-to-face interview. All individuals over the age of 18 were eligible to participate. Excluded were those with dementia (according to one of the family members) and those who refused to complete the questionnaire. Data collection was performed by study-independent clinical psychologists. The methodology used in this study is similar to the one used in previous papers²⁴⁻²⁶.

Minimal sample size

In the absence of similar studies in the country, we hypothesized that social media use disorder would have a medium effect ($r = 0.3$) on increasing waterpipe dependence. According to the G-power software, taking a 5% error and a power of 95%, the minimal sample needed was 134 participants.

Questionnaire

The questionnaire used during the interview was in Arabic, the native language of Lebanon. The first part assessed the sociodemographic characteristics of the participants (age, number of kids, gender, education level, socioeconomic level and marital status). The second part of the questionnaire consisted of measures used in this study as follows:

Social media disorder scale (SMD)

The SMD is a 27 items scale that measure the degree of addiction to social media²⁷. Higher scores indicated higher social media use disorder ($\alpha = 0.847$).

Hamilton depression rating scale (HDRS)

The validated Arabic version of the HDRS was used in this study^{28,29}. Higher scores indicated higher depression. ($\alpha = 0.873$).

Hamilton anxiety scale (HAM-A)

The HAM-A³⁰ is a commonly used scale to measure anxiety in medical and research sites. It consists of 14 items, rated according to a four-point Likert scale (0 = symptoms not present to 4 = very severe symptoms). Higher scores indicated higher anxiety ($\alpha = 0.914$).

Perceived Stress Scale (PSS)

It is a 10-item classic stress assessment instrument³¹. The questions in this scale ask about your feelings and thoughts during the last month, with the answers measured on a 5-point Likert scale: 0 (never) up to 4 (very often). Higher scores indicated higher perceived stress ($\alpha = 0.743$).

Lebanese Insomnia Scale (LIS-18)

This 18-item scale is used for the diagnosis of insomnia on the basis of several validated/universally applicable self-report scales³². Answers are graded on a 5-point Likert scale (1 = Never to 5 = Always), with higher scores indicating higher insomnia ($\alpha = 0.815$).

The Alcohol Use Disorders Identification Test (AUDIT)

The self-reported ten-item screening tool assesses alcohol use, drinking patterns, and alcohol-related issues³³. AUD is considered when the patients score 8 or more ($\alpha = 0.917$).

Lebanon Waterpipe Dependence Scale-11 (LWDS-11)

LWDS-11 test was used to assess waterpipe dependence³⁴. The LWDS-11 includes 11 items measured in 4-point Likert scale ranging from 0 to 3, with higher scores indicating higher waterpipe dependence ($\alpha = 0.899$).

Fagerstrom test for nicotine dependence (FTND)

It contains six items that evaluates the quantity of cigarette consumption, the compulsion to use, and dependence. The higher the total Fagerström score, the more intense is the patient's physical dependence on nicotine³⁵ ($\alpha = 0.725$).

Statistical analysis

SPSS software version 25 was used to conduct data analysis. Missing values were not replaced since they constituted < 10% of the whole database. The Student t-test was used to compare the means between two groups, whereas the ANOVA test was used to compare 3 or more means. Pearson correlation was used for linear correlation between continuous variables. Three stepwise linear regressions were conducted, taking the FTND, LWDS-11 and AUDIT scores as the dependent variables. All variables that showed a $p < 0.05$ in the bivariate analysis were considered as important variables to be entered in the model in order to eliminate potentially confounding factors as much as possible. $P < 0.05$ was considered significant. Cronbach's alpha values were recorded for reliability analysis for all the scales.

Results

The sociodemographic characteristics of the participants are summarized in Table 1. The results showed that the mean age of the participants was 27.29 ± 11.46 years and the mean number of hours spent on social media was 6.22 ± 4.92 . The majority of the participants were females (61.8%), had a university level of education (66.7%), single (68.1%), with a low monthly income (61.4%). Almost all participants use their cellular as the mostly used device on social media (92.9%) and 19.4% were smokers. The mean social media use disorder scale score was 8.15 ± 5.71 . In the absence of a cutoff score for this scale, we used the median as the cutoff point; the results showed that 107 (23.7%) participants were classified as having social media use disorder.

Bivariate analysis

A significantly higher mean FTND score was found in males, married with intermediate monthly income compared to females, single with low monthly income. Higher age ($r = 0.313$), higher depression ($r = 0.133$) and higher insomnia ($r = 0.140$) were significantly associated with higher cigarette smoking addiction (high FTND score).

Higher depression ($r = 0.161$), higher anxiety ($r = 0.176$), higher insomnia ($r = 0.171$) and higher social media use disorder score ($r = 0.161$) were significantly associated with higher waterpipe smoking addiction (high LWDS-11 score).

A significantly higher mean AUDIT score was found in participants with intermediate monthly income and secondary education level compared to low monthly income and university education level. Higher depression ($r = 0.355$), higher anxiety ($r = 0.282$) and higher insomnia ($r = 0.140$) were significantly associated with higher alcohol addiction (high AUDIT score) (Table 2).

Multivariable analysis

The results of a first stepwise linear regression, taking the LWDS-11 score as the dependent variable, showed that higher social media use disorder score (Beta = 0.17), higher alcohol addiction (Beta = 0.20), higher cigarette smoking addiction (Beta = 0.31) and higher insomnia (Beta = 0.05) were significantly associated with more waterpipe addiction.

The results of a second stepwise linear regression, taking the FTND score as the dependent variable, showed that being a male (Beta = -1.35), higher age (Beta = 0.07), higher alcohol addiction (Beta = 0.06), higher waterpipe smoking addiction (Beta = 0.04) and higher insomnia (Beta = 0.01) were significantly associated with more cigarette addiction.

The results of a third stepwise linear regression, taking the AUDIT score as the dependent variable, showed that higher depression (Beta = 0.26), higher anxiety (Beta = 0.11) and higher waterpipe smoking

addiction (Beta = 0.29) were significantly associated with higher alcohol addiction, whereas a higher insomnia (Beta=-0.06) was significantly associated with lower alcohol addiction (Table 3). The social media use disorder was not significantly associated with the FTND and AUDIT scores.

Discussion

The results of this study revealed that 23.7% of the sample of Lebanese adults met the criteria for social media use disorder. The study results suggest no relation between SMD and AUD and dependence to cigarette smoking, whereas SMD was significantly associated with higher waterpipe smoking dependence.

SMD and addiction to waterpipe smoking

Results of our study revealed that higher social media use disorder was significantly correlated with higher levels of waterpipe smoking addiction. A research with the aim of understanding the relation between waterpipe smoking and social media, specifically Twitter, showed that waterpipe smoking was portrayed positively on the platform and was presented as an enjoyable social activity³⁶. Another study on the influence of Instagram on waterpipe consumption also showed that both promoters and individual users depict the act in a favorable light³⁷. Individuals who excessively use social media platforms are more likely to be heavy consumers of waterpipe or dependent to smoking it, as they are more likely to be influenced by its association with pleasure and relaxation on different platforms, without mentioning health risks³⁸. The significant relation of SMD and waterpipe smoking addiction, as opposed to cigarette smoking addiction and AUD, can be explained by the following facts: first, a typical waterpipe smoking session can last up to 90 minutes, which is equivalent to inhaling a cigarette 100 to 200 times, while smoking a cigarette only takes a few minutes³⁹. The relatively longer time period of waterpipe smoking is more likely to be associated with frequent and excessive use of social media as it happens in a longer time frame.

Furthermore, higher anxiety, higher insomnia and higher levels of depression were related to a high level of waterpipe smoking addiction. Similarly, research on waterpipe smoking and mental health issues conducted on a representative sample of US university students showed that diagnoses of depression and anxiety were associated with higher levels of waterpipe smoking⁴⁰. A more recent systematic review confirmed that a significant relation exists between psychiatric disorders diagnoses and higher levels of waterpipe smoking⁴¹.

SMD and addiction to cigarette smoking

SMD was not significantly correlated with dependence to smoking cigarettes according to our results. A possible explanation for our results were conveyed in a study conducted on a sample of New Mexico

residents in the US, where social media campaigns about the harms of smoking were able to make positive changes in attitudes resulting in an improvement regarding smoke-free norms ⁴². An analysis in China showed similar results regarding the effects of anti-smoking social media campaigns on smoking behaviors changing and leading to cessation ⁴³.

SMD and AUD

Our results showed that SMD was not significantly correlated with AUD. On another hand, a study conducted on a sample of university students on the US/Mexico border revealed that alcohol and social media use are correlated: the more hours spent on social media networking sites, the higher the frequency of alcohol consumption ⁴⁴, which could be a motivation for further research among the Lebanese population. We hypothesize that it is most probable that the subject is unable to use social media due to the lack of awareness caused by AUD. Another variable that could account for our results among the Lebanese sample could be religion; Lebanon being a country with a significant Islamic population. A study showed that non-Christian Lebanese university students are less likely to engage in harmful consumption of alcohol, as it is prohibited in the Islamic religion ⁴⁵.

Clinical implications

The analysis conducted with LWDS-11 as a dependent variable and the SMD scale as the independent variable can initiate further investigation about the possibility of SMD or excessive use of social media platforms being a risk factor for substance use or abuse such as waterpipe smoking addiction. Additionally, it reiterates the need for further research on SMD by the APA to be included in the upcoming versions of the DSM as a clinical disorder, and the development of global intervention programs. Furthermore, it highlights the importance of awareness, cessation and prevention programs for waterpipe smoking addiction in mass media, most importantly through social media, especially in Lebanon and the Middle Eastern region.

Limitations

This study is cross-sectional, meaning it doesn't necessarily determine causation between our results: for example, SMD and waterpipe smoking were significantly correlated, however, temporal factors may not be able to explain the significance between SMD and waterpipe smoking dependence and the non-significance between the SMD and cigarette smoking relation, nor can it confirm the hypotheses made regarding the cause behind the significant relation. Second, the data was collected through a self-reported questionnaire, which introduces the element of subjectivity in answering the items. Religion was also not assessed in this study. Finally, the social media disorder scale (SMD) has not been validated for the Lebanese population yet, however, the scale has good psychometric properties and internal consistency, which makes it suitable for evaluating SMD in different cultures ⁴⁶. Having said that, the research was

conducted on a sample from all governorates, however, more studies are needed with a bigger sample. In addition, results showed few discrepancies with various studies and proved its consistency with similar international research.

Conclusion

Social media use disorder is an Internet-based behavioral addiction that can be associated with substance use dependences. Our results revealed a significant relation between SMD and waterpipe smoking dependence. Within the recent years, we have witnessed the normalization and glamorization of waterpipe smoking and a noticeable increase in its consumption, especially in Lebanon. Therefore, anti-smoking waterpipe awareness campaigns, similar to those negatively representing cigarette smoking, must be developed and spread across social media platforms. Additionally, extensive research must be conducted on social media use as a clinical disorder and its possible comorbidities.

Declarations

List of abbreviations

DSM-5= Diagnostic and Statistical Manual of Mental Disorders, Fifth edition

SMD= Social media disorder

IAT= Internet Addiction Test

AUDIT= Alcohol Use Disorders Identification Test

HDRS= Hamilton depression rating scale

HAM-A= Hamilton anxiety scale

PSS= Perceived Stress Scale

LIS= Lebanese Insomnia Scale

LWDS= Lebanon Waterpipe Dependence Scale

FTND= Fagerstrom Nicotine dependence scale

Ethical Approval: The Psychiatric Hospital of the Cross Ethics and Research Committee approved this study protocol in compliance with the Hospital's Regulatory Research Protocol (HPC-004-2019). A written consent was obtained from each participant.

Consent to publish: Not applicable.

Availability of data and materials: The authors do not have the right to share any data information as per their institutions policies.

Competing interests: The authors have no conflicts of interest to report.

Funding: None.

Authors' contributions: SO and SH conceived and designed the survey. MA performed the data collection; CH and SH were involved in the statistical analysis and data interpretation. EA wrote the manuscript. RH critically reviewed the paper; all authors read the manuscript, critically revised it for intellectual content, and approved the final version.

Acknowledgments: All the participants who helped us during this project. The authors would like to thank Dr Sam Barbar and Dr Dina Dagher for their help in the data entry.

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Tables

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