***Pharmacy Education*** (2024) 24(1) 311 - 321
https://doi.org/10.46542/pe.2024.241.311321

RESEARCH ARTICLE

# Social media addiction, depression and life satisfaction in Turkish pharmacy students: A correlational study

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**Keywords**
Depression
Pharmacy student
Satisfaction
Social media addiction
University

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## Abstract

**Background:** Although research on pharmacy students remains limited, this study is the first of its kind in the field of pharmacy in Turkey and aims to investigate the impact of social media addiction on depression and life satisfaction among pharmacy students. **Methods:** A cross-sectional, descriptive study of 597 students was conducted between September and October 2023 at the pharmacy faculty of a university in Turkey. Three instruments were used to collect the necessary data: the socio-demographic data form, Social Media Addiction Scale, Penate Basic Depression Scale and Life Satisfaction Scale. All of these were combined into a single questionnaire. **Results:** A positive but weak yet significant correlation existed between pharmacy students' total Social Media Addiction Scale (SMAS) score and their total Basic Depression Scale (BDS) score. Conversely, a negative but weak yet significant relationship was observed between pharmacy students' total SMAS and Life Satisfaction Scale (LSS) total scores. According to the results of multiple linear regression analysis, social media addiction and life satisfaction were identified as predictors of depression. **Conclusion:** In developing countries, such as Turkey, there is a lack of sufficient academic literature on this topic. Future research should not only monitor these relationships but also focus on prevention and treatment strategies.

## Introduction

According to the "*October 2023 Digital World*" Report, 66.9% of Turkey's total population is engaged in social media usage (Datareportal, 2023). Social media addiction, considered a subtype of internet addiction, is a behavioural addiction linked to technology use. The excessive time university students dedicate to social media can diminish their regular social interactions, potentially resulting in emotional distress and psychological alienation among the youth (Hou *et al.*, 2019; Adel Eladl, 2021).

Research indicates that 78% of studies investigating the impact of social media addiction on college students have identified various adverse effects on their academic performance, happiness, and social interactions (AlBarashdi, 2020). These repercussions encompass issues like depression (Keles *et al.*, 2020; Wong *et al.*, 2020) and reduced life satisfaction (Hawi & Samaha, 2017).

Depression is a mood disorder that profoundly affects an individual's emotions, thoughts, and behaviours, leading to impairment in social or occupational functioning (Joffres *et al.*, 2013). Available data underscore the alarmingly high prevalence of depression among university students (January *et al.*, 2018; Rith-Najarian *et al.*, 2019). Additionally, extensive internet and social media usage have been associated with influencing depression (Hussain *et al.*, 2017; Foroughi *et al.*, 2019). Over the past decade, social media addiction has been recognised as a significant factor contributing to the development of depression (Yücens & Üzer, 2018; Zhou *et al.*, 2020).

Life satisfaction plays a pivotal role in individuals' physical and mental well-being. It is defined as "*the degree to which an individual actively and subjectively*

*assesses the fulfillment of their needs, desires, and overall quality of life*" (Tas & İskender, 2018; Karataş *et al.*, 2021). Furthermore, research indicates that social media use can have a detrimental impact on life satisfaction (Adel Eladl, 2021; Gelvoligaya, 2021).

Numerous studies have consistently demonstrated that technological addiction, including Internet and social networking site addiction, is positively associated with depression and negatively associated with academic performance. Collectively, these factors contribute to reduced life satisfaction (Lepp *et al.*, 2014; Kabasakal, 2015; Hawi & Samaha, 2016; Samaha & Hawi, 2016). The consequences of social media addiction are particularly pronounced among university students, including those pursuing healthcare-related fields. These effects can compromise the quality of care provided by healthcare professionals and undermine the efficiency of the healthcare system (Cain, 2018; Al Saigh *et al.*, 2022). Hence, the examination of the underlying causes of this pathological condition in pharmacy students becomes a vital step in identifying at-risk populations and guiding preventive interventions. While research on pharmacy students remains limited (Unni *et al.*, 2015; Opoku-Acheampong *et al.*, 2017), this study, the first of its kind in the field of pharmacy in Turkey, aimed to assess the relationship between the extent of social media addiction among pharmacy students in Turkey with depression and life satisfaction.

## Methods

### *Study design*

This cross-sectional, descriptive study was conducted between September and October 2023 at the Faculty of Pharmacy in Turkey.

### *Study sample*

The G*power program was used to calculate the sample size based on the following parameters: two-tailed hypothesis test, significance level of 0.05, and power of 0.20, which indicated a required sample size of 470.

### *Instrument development*

The first section of the questionnaire consisted of demographic information on the study participants, including their age, gender, purpose and frequency of Internet use, and Internet usage habits. The second section consisted of a combination of three questionnaires: The Social Media Addiction Scale, Penate Basic Depression Scale and Life Satisfaction Scale.

### *The social media addiction scale*

The assessment of students' social media addiction levels was conducted using The Social Media Addiction Scale (SMAS) developed by Bakır Aygar and Uzun (Ayğar & Uzun, 2018). The questionnaire is composed of 26 items, each rated on a five-point Likert scale ranging from 1 to 5, resulting in total scores ranging from 26 to 130. It encompasses three subdimensions that include control difficulties, deprivation, impaired functioning, and social isolation. Cronbach's alpha coefficient for the SMAS was 0.92.

### *Penate basic depression questionnare*

The Basic Depression Scale (BDS), developed by Penate et al (Peñate *et al.*, 2014) was validated for use in Turkish by Tekindal and Tekindal (Tekindal & Tekindal, 2021). The BDS measures depression across three dimensions: anhedonia, low self-esteem, and sadness, using a set of questions. The Cronbach's alpha coefficient of the BDS was 0.93.

### *Life satisfaction scale*

The assessment of students' life satisfaction levels was conducted using The Life Satisfaction Scale (LSS) developed by Köse et al. (Köse *et al.*, 2022). The scale comprises a total of seven items for students and there are no items requiring reverse scoring. The total scale scores range from 7 to 35, with higher scores reflecting greater life satisfaction. Cronbach's alpha coefficient for the LSS was 0.79.

### *Data collection*

Data were collected using an online questionnaire between September and October 2023. A questionnaire was created using Google Forms. Students received an email explaining the objectives and scope of the study. Subsequently, it was disseminated among WhatsApp groups, encouraging participation on a voluntary basis. To ensure anonymity, no personal identifying information was requested, and the data collection process did not include such inquiries. The questionnaire was open for approximately two months, and the students were reminded every ten days to enhance the response rate. The questionnaire required an estimated 20 min to complete. A total of 612 students participated in the study. Data from 15 participants were excluded from the analysis because of identified errors and deficiencies. Subsequently, the analysis was conducted using data obtained from 597 participants.

### *Ethical consideration*

Ethical approval was obtained from the Atatürk University Clinical Research Ethics Board (IRB Approval No. B.30.2.ATA.0.01.00/528).

### *Data analysis*

Statistical analyses were performed using Statistical Package for the Social Sciences (SPSS v.26). The normality of the variables was assessed using the Shapiro-Wilk test, and the data were determined to follow a normal distribution. Descriptive statistical methods of frequency, percentage, minimum, maximum, mean, and standard deviation were used to characterise the participants' demographics, levels of social media addiction, depression, and life satisfaction. Pearson's correlation analysis was used to explore the relationships between scale scores. Independent samples *t*-tests and analysis of variance (ANOVA) were employed to compare participants' demographics with their levels of social media addiction, depression, and life satisfaction. To identify group differences, the Tukey HSD test was applied. Spearman's correlation coefficient was used to examine the correlation between continuous variables. The significance level for the study was set at $p < 0.05$. Multiple linear regression was used to test whether social media addiction and life satisfaction could predict depression.

## Results

A total of 597 students participated in this study. Sociodemographic characteristics and Internet usage among the students were as follows: 73% of the students were females, while 27% were males. About 21.1% were in their third year, and the average age of the participants was 21.18 (±1.77) years. A total of 68.2% of the participants resided in dormitories, and 41.7% reported having an average family income. In terms of Internet use, 71.2% of the students owned a personal computer, and 50.3% used the Internet daily for an average of 3 to 6 hours (Table I).

**Table I: Personal characteristics of the pharmacy students (N = 597)**

| General characteristics | Mean ± SD | N (%) |
|---|---|---|
| Age | 21.18 ± 1.77 | |
| **Gender** | | |
| Female | | 436 (73) |
| Male | | 161 (27) |
| **Year of study** | | |
| First year | | 111 (18.6) |
| Second year | | 117 (19.6) |
| Third year | | 126 (21.1) |
| Fourth year | | 125 (20.9) |
| Fifth year | | 118 (19.8) |
| **Place of residence** | | |
| Alone at home | | 55 (9.2) |
| Dorm | | 407 (68.2) |
| At home with the family | | 135 (22.6) |
| **Family income** | | |
| Low | | 77 (12.9) |
| Below average | | 198 (33.2) |
| Average | | 249 (41.7) |
| High | | 73 (12.2) |
| **Owning a personal computer** | | |
| Yes | | 425 (71.2) |
| No | | 172 (28.8) |
| **Daily internet use** | | |
| 1-3 h | | 212 (35.5) |
| 3-6 h | | 300 (50.3) |
| >6 h | | 85 (14.2) |
| **Purposes of social networking**[a] | | |
| Communicate with friends | | 446 (74.7) |
| Create a social circle | | 147 (24.6) |
| Make new friends | | 80 (13.4) |
| Share information | | 331 (55.4) |
| Share video, sound | | 374 (62.6) |
| Play games and spend time | | 250 (41.8) |
| Other | | 114 (19.1) |

[a] More than one option is marked
SD: Standart Deviation

The scores for the SMAS, BDS, and LSS among pharmacy students are presented in Table II. Pharmacy students achieved an average score of 64.14 ± 16.91 on the SMAS, indicating moderate Internet addiction. They obtained scores of 36.65 ± 10.05 for control difficulty and deprivation, 19.74 ± 7.38 for functional impairment, and 7.75 ± 3.54 for social isolation, as measured by the three SMAS subscales. Pharmacy students also had an average BDS score of 39.76 ± 12.89, indicating a low level of depression. Their scores were 21.29 ± 7.59 for anhedonia, 13.74 ± 4.73 for low self-esteem, and 4.73 ± 2.15 for the sadness subscale. Furthermore, pharmacy students received an average score of 24.38 ± 5.29 on the LSS, indicating a high level of life satisfaction (Table II).

**Table II: SMAS, BDS and LSS scores of pharmacy students**

| | | Mean ± SD N (%) | Low score | High score | Score range |
|---|---|---|---|---|---|
| SMAS | Control difficulty and deprivation | 36.65 ± 10.05 | 12 | 60 | 12-60 |
| | Functional impairment | 19.74 ± 7.38 | 10 | 47 | 10-50 |
| | Social isolation | 7.75 ± 3.54 | 4 | 19 | 4-20 |
| | SMAS total | 64.14 ± 16.91 | 26 | 116 | 26-130 |
| BDS | Anhedonia | 21.29 ± 7.59 | 11 | 44 | 11-44 |
| | Low self-esteem | 13.74 ± 4.73 | 7 | 28 | 7-28 |
| | Sadness | 4.73 ± 2.15 | 3 | 12 | 3-12 |
| | BDS total | 39.76 ± 12.89 | 22 | 80 | 21-84 |
| LSS | LSS total | 24.38 ± 5.29 | 7 | 35 | 7-35 |

SD: Standart Deviation
SMAS: Social Media Addiction Scale; BDS: Basic Depression Scale; LSS: Life Satisfaction Scale

The relationships between the SMAS, BDS (including its subscales) and LSS are detailed in Table III. A positive but weak yet significant correlation existed between pharmacy students' total SMAS scores and their total BDS scores ($r$ = 0.292, $p$ < 0.05). There was also a positive but low correlation between pharmacy students' "*control difficulty and deprivation*" scores and their total BDS score and its subscales ($r$ = 0.148, $p$ < 0.05; $r$ = 0.103, $p$ < 0.05; $r$ = 0.114, $p$ < 0.05; $r$ = 0.144, $p$ < 0.05). Additionally, there was a positive and moderate correlation between pharmacy students' "*function impairment*" scores and their total BDS scores and subscales ($r$ = 0.345, $p$ < 0.05; $r$ = 0.318, $p$ < 0.05; $r$ = 0.329, $p$ < 0.05; $r$ = 0.375, $p$ < 0.05). Moreover, a positive but low correlation was observed between pharmacy students' "*social isolation*" score and their total BDS score and its subscales ($r$ = 0.190, $p$ < 0.05; $r$ = 0.181, $p$ < 0.05; $r$ = 0.163, $p$ < 0.05; $r$ = 0.206, $p$ < 0.05). These findings suggest that an increase in social media addiction among pharmacy students is associated with an increase in their level of depression. More specifically, control difficulty, deprivation, function impairment, and social isolation significantly contributed to the depression levels of pharmacy students. Conversely, a negative but weak yet significant relationship was observed between pharmacy students' total SMAS scores and their LSS total scores ($r$ = -0.221, $p$ < 0.05). There was also a negative but weak yet significant correlation between control difficulty and deprivation and the LSS total score ($r$ = -0.098, $p$ < 0.05). Similarly, a negative but weak yet significant relationship existed between functional impairment and LSS total score ($r$ = -0.288, $p$ < 0.05). However, a negative but weak yet significant correlation was found between the social isolation scores of pharmacy students and their LSS total scores ($r$ = -0.178, $p$ < 0.05). These results indicate that as social media addiction levels increased among pharmacy students, their levels of life satisfaction decreased (Table III).

**Table III: Relationships between SMAS and BDS/its subscales and LSS**

| | | BDS and subscales | | | | |
|---|---|---|---|---|---|---|
| SMAS and subscales | | Anhedonia | Low self-esteem | Sadness | BDS total | LSS total |
| Control difficulty and deprivation | $p$ | 0.000 | 0.012 | 0.005 | 0.000 | 0.016 |
| | $r^a$ | 0.148* | 0.103* | 0.114* | 0.144* | -0.098* |
| Functional impairment | $p$ | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | $r^a$ | 0.345* | 0.318* | 0.329* | 0.375* | -0.288* |
| Social isolation | $p$ | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | $r^a$ | 0.190* | 0.181* | 0.163* | 0.206* | -0.178* |
| SMAS total | $p$ | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | $r^a$ | 0.279* | 0.238* | 0.245* | 0.292* | -0.221* |

[a]Pearson correlation analysis
*$p$ < 0.05
SMAS: Social Media Addiction Scale; BDS: Basic Depression Scale; LSS: Life Satisfaction Scale

Table IV provides a comparison of the personal characteristics of the pharmacy students with their average SMAS scores. Female students tended to have higher social media addiction scores than their male counterparts did. Additionally, a significant difference was observed in total social media addiction and its subscale, "*control difficulty and deprivation*," concerning students' gender *(p* < 0.05). Second-year students exhibited the highest social media addiction scores, and a significant difference was observed in the total social media addiction and its subscale, "*functional impairment*," based on their university year (*p* < 0.05). Nevertheless, no significant differences were found in the total SMAS scores based on place of residence, family income, or personal computer ownership (*p* > 0.05). However, students living alone at home, those with a higher family income, and those who own computers generally have higher SMAS scores. Furthermore, a significant difference was observed between the amount of time pharmacy students spent online and their total SMAS scores and subscales (*p* < 0.05). Students who spent six hours or more on the Internet displayed a greater tendency toward control difficulty and deprivation, a more pronounced functional impairment, and increased social isolation. No correlation was found between pharmacy students' total SMAS or subscale scores and their age (*r* = 0.001, *p* > 0.05) (Table IV).

**Table IV: Comparison of the personal characteristics of the students with their SMAS score averages**

| General characteristics | Control difficulty and deprivation Mean±SD | Functional impairment Mean±SD | Social isolation Mean±SD | SMAS total Mean±SD |
|---|---|---|---|---|
| **Age** | | | | |
| *r*[c] | -0.015 | 0.053 | -0.064 | 0.001 |
| *p* | 0.721 | 0.200 | 0.117 | 0.985 |
| **Gender** | | | | |
| Female | 38.01 ± 9.71 | 19.99 ± 7.26 | 7.58 ± 3.41 | 65.59 ± 16.38 |
| Male | 32.94 ± 10.04 | 19.07 ± 7.66 | 8.19 ± 3.87 | 60.20 ± 17.23 |
| *t* ; *P* | 5.611[a] ; 0.000* | 1.357[a] ; 0.175 | -1.844; 0.066 | 3.489; 0.001* |
| **Year of study** | | | | |
| First year | 34.87 ± 9.83 | 17.34 ± 5.72 | 8.07 ± 3.94 | 60.29 ± 15.55 |
| Second year | 38.15 ± 9.77 | 21.09 ± 8.01 | 7.91 ± 3.78 | 67.16 ± 17.66 |
| Third year | 36.19 ± 9.65 | 19.65 ± 6.51 | 8.06 ± 3.35 | 63.90 ± 16.19 |
| Fourth year | 36.50 ± 9.76 | 19.53 ± 7.86 | 7.16 ± 2.99 | 63.18 ± 16.42 |
| Fifth year | 37.47 ± 11.04 | 20.98 ± 7.94 | 7.56 ± 3.61 | 66.01 ± 18.02 |
| *F* ; *P* | 7.801[b] ; 0.127 | 4.914[b] ; 0.001* 1>2-3-4-5** | 1.495[b] ; 0.202 | 2.877[b] ; 0.022* 1>2–5** |
| **Place of residence** | | | | |
| Alone at home | 36.58 ± 9.26 | 20.80 ± 7.41 | 8.15 ± 3.37 | 65.53 ± 15.13 |
| Dorm | 36.67 ± 10.24 | 19.29 ± 7.29 | 7.71 ± 3.58 | 63.67 ± 17.14 |
| At home with the family | 36.61 ± 9.84 | 20.67 ± 7.52 | 7.68 ± 3.53 | 64.97 ± 16.94 |
| *F* ; *P* | 0.003[b] ; 0.997 | 2.420[b] ; 0.090 | 0.386[b] ; 0.680 | 0.504[b] ; 0.605 |
| **Family income** | | | | |
| Low | 36.43 ± 9.19 | 18.83 ± 6.03 | 6.99 ± 3.29 | 62.25 ± 14.12 |
| Below average | 36.08 ± 10.39 | 19.87 ± 7.61 | 7.80 ± 3.53 | 63.74 ± 17.73 |
| Average | 36.38 ± 10.09 | 19.73 ± 7.63 | 7.59 ± 3.34 | 63.71 ± 16.83 |
| High | 39.34 ± 9.54 | 20.38 ± 7.16 | 8.93 ± 4.25 | 68.66 ± 17.17 |
| *F* ; *P* | 2.048[b] ; 0.106 | 0.594[b] ; 0.619 | 4.130[b] ; 0.007* 4>1–2-3** | 2.162[b] ; 0.091 |
| **Owning a personal computer** | | | | |
| Yes | 37.00 ± 10.20 | 20.00 ± 7.61 | 7.77 ± 3.58 | 64.77 ± 17.32 |
| No | 35.78 ± 9.63 | 19.09 ± 6.75 | 7.69 ± 3.47 | 62.56 ± 15.79 |
| *t* ; *P* | 1.334[a] ; 0.183 | 1.369[a] ; 0.172 | 0.267[a] ; 0.789* | 1.446[a] ; 0.149 |
| **Daily Internet use** | | | | |
| 1-3 h | 32.63 ± 9.00 | 17.30 ± 5.42 | 7.00 ± 3.09 | 56.93 ± 13.78 |
| 3-6 h | 37.95 ± 9.53 | 20.01 ± 7.24 | 7.84 ± 3.51 | 65.80 ± 15.54 |
| >6 h | 42.07 ± 10.61 | 24.87 ± 9.15 | 9.29 ± 4.17 | 76.24 ± 20.07 |
| *F* ; *P* | 35.590[b] ; 0.000* 3>1–2** 2>1–3** | 36.182[b] ; 0.000* 3>1–2** 2>1–3** | 13.441[b] ; 0.000* 3>1–2** 2>1–3** | 49.364[b] ; 0.000* 3>1–2** 2>1–3** |

[a]Independent samples *t* test; [b]ANOVA; [c]Pearson correlation analysis; *$p < 0.05$; **LSD test
IAT: Young's internet addiction test; SD: Standart deviation

Table V provides a comparison of the personal characteristics of pharmacy students with their BDS and LSS scores. In addition to the highest average total depression scores observed in students who used the Internet for more than six hours a day, a significant difference was also found between daily Internet use and their average total BDS scores and its subscales ($p < 0.05$). Moreover, no correlation was found between total BDS scores and all subscale scores of pharmacy students and their age ($r = 0.032$, $p > 0.05$; $r = 0.009$, $p > 0.05$; $r = 0.036$, $p > 0.05$; $r = 0.028$, $p > 0.05$). It was determined that the life satisfaction level of pharmacy students who used the Internet for 1-3 hours daily and first-year students was higher. Additionally, a significant difference was observed in the level of life satisfaction among pharmacy students based on their year of study and daily internet use ($p < 0.05$). However, no significant differences ($p > 0.05$) were found in life satisfaction levels based on gender, place of residence, family income, or personal computer ownership. Male pharmacy students, those living alone at home, students with high family incomes, and those without personal computers exhibited higher life satisfaction levels. Moreover, a weak but significant negative correlation was found between pharmacy students' total LSS scores and their age ($r = 0.054$, $p < 0.05$). This indicates that as students' age increases, their life satisfaction levels decrease (Table V).

**Table V: Comparison of students' personal characteristics with their BDS and LSS score averages**

| General characteristics | Anhedonia Mean±SD | Low self-esteem Mean±SD | Sadness Mean±SD | BDS total Mean±SD | LSS total Mean±SD |
|---|---|---|---|---|---|
| **Age** | | | | | |
| *r*[c] | 0.032 | 0.009 | 0.036 | 0.028 | -0.102* |
| *p* | 0.430 | 0.829 | 0.374 | 0.489 | 0.013 |
| **Gender** | | | | | |
| Female | 21.40 ± 7.58 | 14.04 ± 4.77 | 4.82 ± 2.16 | 40.27 ± 12.89 | 24.29 ± 5.33 |
| Male | 20.09 ± 7.62 | 12.91 ± 4.55 | 4.47 ± 2.11 | 38.38 ± 12.82 | 24.62 ± 5.19 |
| *t* ; *P* | 0.582[a] ; 0.561 | 2.604[a] ;0.009* | 1.776[a] ; 0.076 | 1.591[a] ; 0.112 | -0.676[a] ; 0.05 |
| **Year of study** | | | | | |
| First year | 20.14 ± 7.28 | 13.71 ± 4.61 | 4.41 ± 1.97 | 38.27 ± 12.19 | 26.03 ± 5.49 |
| Second year | 22.03 ± 7.43 | 14.05 ± 4.99 | 4.88 ± 2.31 | 40.97 ± 12.93 | 24.35 ± 4.91 |
| Third year | 22.29 ± 8.10 | 13.83 ± 4.70 | 4.81 ± 2.23 | 40.94 ± 13.47 | 24.26 ± 5.37 |
| Fourth year | 20.54 ± 7.64 | 13.23 ± 4.94 | 4.63 ± 2.09 | 38.40 ± 13.35 | 23.50 ± 5.39 |
| Fifth year | 21.36 ± 7.29 | 13.89 ± 4.39 | 4.89 ± 2.12 | 40.14 ± 13.30 | 23.92 ± 5.01 |
| *F* ; *P* | 1.786[b] ; 0.130 | 0.528[b] ; 0.715 | 1.013[b] ; 0.400 | 1.265[b] ; 0.282 | 3.861[b] ; 0.004* 1>2-3-4-5** |
| **Place of residence** | | | | | |
| Alone at home | 20.22 ± 7.21 | 12.53 ± 4.34 | 4.51 ± 2.24 | 37.25 ± 12.49 | 25.29 ±5.37 |
| Dorm | 21.27 ±7.81 | 13.87 ± 4.81 | 4.79 ± 2.21 | 39.93 ± 13.27 | 24.37 ± 5.31 |
| At home with the family | 21.81 ± 7.06 | 13.84 ± 4.62 | 4.63 ± 1.94 | 40.27 ± 12.84 | 24.04 ± 5.20 |
| *F* ; *P* | 0.864[b] ; 0.422 | 1.995[b] ; 0.137 | 0.602[b] ; 0.548 | 1.181[b] ; 0.308 | 1.009[b] ; 0.334 |
| **Family income** | | | | | |
| Low | 21.43 ±7.74 | 13.34 ± 4.62 | 4.51 ± 2.11 | 39.27 ± 12.87 | 22.55 ± 4.87 |
| Below average | 21.61 ± 7.54 | 14.16 ± 4.85 | 4.75 ± 2.18 | 40.52 ± 12.85 | 23.77 ± 5.45 |
| Average | 21.16 ± 7.68 | 13.91 ± 4.70 | 4.85 ± 2.19 | 39.92 ± 13.14 | 24.78 ± 5.05 |
| High | 20.75 ± 7.37 | 12.42 ± 4.46 | 4.51 ± 1.92 | 37.67 ± 12.14 | 26.59 ± 10.12 |
| *F* ; *P* | 0.279[b] ; 0.840 | -0.801[b] ; 0.423 | -0.070[b] ; 0.944 | -0.403; 0.687 | 0.792; 0.429 |
| **Owning a personal computer** | | | | | |
| Yes | 21.26 ± 7.43 | 13.64 ± 4.74 | 4.72 ± 2.14 | 39.62 ± 13.82 | 24.49 ± 12.74 |
| No | 21.37 ± 7.99 | 13.98 ± 4.71 | 4.74 ± 2.18 | 40.09 ± 13.29 | 24.11 ± 5.17 |
| *t* ; *P* | -0.165[a] ; 0.869 | 0.343[a] ; 0.732 | -1.828[a] ; 0.068 | 0.301[a] ; 0.764 | -1.547[a] ; 0.122 |
| **Daily internet use** | | | | | |
| 1-3 h | 20.49 ±7.59 | 13.36 ± 4.38 | 4.53 ± 1.96 | 38.38 ± 12.25 | 24.71 ± 5.40 |
| 3-6 h | 21.11 ± 7.21 | 13.64 ± 4.60 | 4.62 ± 2.06 | 39.37 ± 12.27 | 24.52 ± 4.94 |
| >6 h | 23.92 ± 8.37 | 15.02 ± 5.75 | 5.62 ± 2.66 | 44.56 ± 15.40 | 23.07 ± 6.03 |
| *F* ; *P* | 6.472[b] ; 0.002* 3>1–2** | 3.918[b] ; 0.020* 3>1–2** | 8.931[b] ; 0.000* 3>1–2** | 7.414[b] ; 0.001* 3>1–2** | 3.”142[b] ; 0.044* 3>1–2** |

Abbreviation: TMI = Time Management Inventory; TPS = Tuckman Procrastination Scale
[a]Independent samples *t*-test; [b]ANOVA; *$p < 0.05$; **LSD test

Multiple linear regression analysis was conducted to predict depression based on life satisfaction and social media addiction. The results indicated that life satisfaction and social media addiction together significantly predicted depression ($F$ = 137.851, $p$ < 0.001). These two variables jointly account for 32% of the variance in depression ($R^2$=0.315). Both variables individually predicted depression significantly ($p$ < 0.05). The predictive importance of variables on depression ranked as follows: life satisfaction (β = 0.493) and social media addiction (β = 0.183). Life satisfaction appeared to be a stronger predictor of depression (49.3%), whereas social media addiction had a comparatively lesser impact (18.3%) (Table VI).

**Table VI: Multiple linear regression analysis to predict depression according to life satisfaction and social media addiction**

| | B | Standard error | β | *t* | *p* | R | $R^2$ | *F* | *p* |
|---|---|---|---|---|---|---|---|---|---|
| Life satisfaction | -1.202 | 0.085 | 0.493 | -14.191 | .000* | | | | |
| Social media addiction | 0.140 | 0.027 | 0.183 | 5.265 | .000* | 0.563 | 0.315 | 137.851 | 0.000* |

*$p$ < 0.05

## Discussion

The findings revealed moderate addiction, low levels of depression, and high life satisfaction among participants. This is consistent with existing research conducted with students in Turkey. For instance, Kula et al. (2020) and Bozoglan et al. (2013) found high levels of satisfaction among students in their studies. Similarly, Köse and Doğan (2018) observed moderate levels of social media addiction among young adults. Aydın et al. (2021) reported that most students exhibited mild depression in their study.

This study assessed the relationship between social media addiction, depression, and life satisfaction among pharmacy students. Pharmacy students showed a weak positive correlation between social media usage and depression and a weak negative correlation between social media usage and life satisfaction. It was also determined that the three variables were interconnected.

A study conducted with Omani University students revealed that the majority of students use social media for purposes such as seeking information, completing educational activities, engaging in chat, communicating, discussing academic assignments, and sharing files and resources (Al Musawi, 2016). In this study, the majority of pharmacy students reported using social media to communicate with their friends. This may explain the low depression levels of the students in this study.

The findings of this study highlight that no significant difference was observed between students' ages and social media addiction, which is in line with the results of another study conducted in Türkiye. (Gazi et al., 2017) The results of this study showed that the older the participants were, the lower their depression scores were, which is not consistent with the conclusion of another study from Turkey (Aydin *et al.*, 2021).

The results of this study highlighted significant gender differences in social media usage, which is inconsistent with the conclusions of other documented studies (Salem *et al.*, 2016; AlBarashdi & Aldhafri, 2019). Also, this study showed that the prevalence of social media consumption was higher among female students, which is inconsistent with the conclusion of other documented studies conducted in Turkey (Çam & Isbulan, 2012). Another finding is that similar to this study, women tend to have higher social media consumption than men (Gazi *et al.*, 2017). The findings in this study supported that female students had higher levels of depression, in line with the results of another study conducted in the United Arab Emirates (Al Saigh *et al.*, 2022). The results of this study highlighted that female students tend to have lower life satisfaction compared to male students, which was reported in previous literature (Diener *et al.*, 2017; Kim *et al.*, 2021).

In this study, the majority of students were from middle-income families, but no significant difference was found between family income and total SMAS scores. Similar to this study, in a study conducted with students in Turkey by Savacı et al., there was no significant difference between income level and degree of social media addiction (Savacı *et al.*, 2021).

The results of this study showed that students who used social media sites for longer periods had significantly higher levels of social media addiction than those who used them for shorter periods. This is

consistent with previous findings that the longer the duration of Internet use, the higher the level of social media addiction The results of this study show that the longer people use the internet/social media, the more depressive they become, in line with the results of another study conducted in Turkey (Aydin *et al.*, 2021).

Studies have reported that first-year university students encounter more adjustment difficulties and are more likely to report depressive symptoms than students in other years (Yücens & Üzer, 2018; Zhou *et al.*, 2020). In this study, however, third-year students exhibited higher levels of depression. This may be attributed to the intensification and increased academic demands in the pharmacy curriculum starting in the third year.

According to a study by Tandoc Jr. et al., the use of social media reduces depression due to its provision of communication and socialisation (Tandoc Jr *et al.*, 2015). However, in another study, it was suggested that social media addiction among students can lead to psychological disorders like depression (Pantic, 2014). The results of this study showed a positive relationship between social media usage and depression levels, in line with the results of another study conducted in Lebanon (El-Helo *et al.*, 2018).

This study showed that the level of social media usage was identified as a significant predictor of depression. Accordingly, pharmacy students with high levels of social media usage had a higher probability of reporting depressive symptoms, which is in agreement with previous findings (Al Saigh *et al.*, 2022).

The findings of this study supported a negative relationship between social media addiction and life satisfaction, which is inconsistent with the conclusion of other documented studies that showed a strong positive correlation between life satisfaction and social media addiction, demonstrating that social media addiction positively influences life satisfaction (Zhan *et al.*, 2016; Mohammed, 2020). Other studies showed a negative relationship between social media addiction and life satisfaction, in line with the findings of this study (Satici & Uysal, 2015; Błachnio *et al.*, 2016; Longstreet & Brooks, 2017; Sahin, 2017; Adel Eladl, 2021). These findings align with studies that generally suggest that individuals with social media addiction have lower life satisfaction and well-being. (Chen *et al.*, 2016; Wenninger *et al.*, 2014) Individuals who use social media for extended periods tend to perceive that others have more satisfying lives, which can lead them to become dissatisfied with their own lives. This cyclical negative relationship suggests that these individuals spend more time using social media apps to stop thinking about their dissatisfaction and seek satisfaction again (Adel Eladl, 2021).

***Limitations***

As far as known, this study represents the first endeavour to investigate the relationship between depression and levels of both social media addiction and life satisfaction among pharmacy students. Therefore, this study provides valuable information about awareness training and preventive measures for social media addiction and its impact on students. This study has a few limitations. As the study had a cross-sectional design, precise causal interpretation of the results was not possible. Although the response rate of the target population was acceptable and the results were comparable to other findings, the findings may not be generalisable to all pharmacy students, as the analysis was conducted solely on students from one pharmacy faculty in Turkey. In addition, data collection relying on students' self-reports is also considered a limitation because of the potential for self-report bias. The utilisation of self-report scales as a measurement tool introduces potential sources of bias, including social desirability and recall errors. These biases may constrain the precision of the results in capturing students' genuine experiences.

## Conclusion

The findings have shown a weak but significant correlation between social media addiction, depression, and life satisfaction among pharmacy students. Social media addiction and life satisfaction were identified as predictors of depression. With the ever-increasing demand for social media, this problem may worsen over time. Therefore, future studies are needed to explore these relationships, considering that today's weak relationships may evolve into moderate ones. In developing countries, such as Turkey, there is a lack of sufficient academic literature on this topic. Future research should not only monitor the mentioned relationships but also focus on prevention and treatment strategies.

## Conflict of interest

The authors declare no conflict of interest.

## Source of funding

The authors did not receive any funding.

## Acknowledgement

The researchers express their gratitude to all the participants who generously devoted their time to this study.

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