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Social Networks and Students: Educational Performance, Psychological Well-Being, and Mental Health

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Abstract

Background: Social network websites are defined as web-based services that provide individuals with an opportunity to connect and communicate with other people for sharing information. The use of these networks is growing dramatically, which may have various effects on individuals' lives.
Objectives: The present study hypothesized that using social networks has a negative effect on educational performance, psychological well-being, and mental health.
Methods: We selected 315 students from Shiraz, Iran, in 2017 (185 girls and 130 boys with an average age of 16.88 and 15.9 years, respectively) from six high schools at the fourth grade to evaluate the effect of social networks on educational performance, psychological well-being, and mental health. Students were selected using a convenience sampling method. The research plan was sub-projects of correlated plans and data were analyzed by stepwise regression analysis with SPSS version 21 at a significance level of < 0.05. The exclusion criteria included students' dissatisfaction and age of under 15 and above 18.
Results: We found that 90.8% of the students were using social networks. In general, virtual networks had negative (-0.25; P = 0.001) and positive (0.23; P = 0.001) correlations with educational performance and depression, respectively. Particularly, social network websites had positive relationships with anxiety and stress in male students and negative relationships with grade point average (GPA) and psychological well-being in female students. Regression analysis revealed that social networks had significant effects on depression, educational performance, psychological well-being, stress, anxiety, and GPA. Among different social networks (Telegram, WhatsApp, Instagram, and Facebook), Instagram negatively predicted educational performance, psychological well-being, and depression while WhatsApp and Telegram predicted depression and GPA, respectively. Moreover, Telegram, in particular, predicted stress and anxiety among male students.
Conclusions: These findings necessitate to pay attention to this phenomenon and its consequences.

Keywords: Social Network Sites, Educational Performance, Psychological Well-Being, Mental Health, Depression, Anxiety, Students

1. Background

Social network sites (SNSs) are those web-based services that allow individuals to create personal profiles, share their photos and personal information, join groups, and communicate with them (1). It appears that these networks are an essential part of the daily lives of many people (1) and thus they inevitably make some changes in people's social relations (2). Statistics show a rapid increase in the number of users of SNSs. For example, in 2016, Telegram claimed to have more than 100 million monthly active users and that 15 billion messages are transmitted in this network on a daily basis (3). By 2013, WhatsApp and Instagram had 200 and 100 million members, respectively, but the numbers increased to one billion members for WhatsApp and 600 million members for Instagram in 2016. Facebook users still are on top and according to the January report of 2017, Facebook enjoyed one billion and 871 million members (4, 5). Human needs for communication, socialization, and keeping friends have been stated as some of the reasons for the expansion of these networks (6). Also, communication with others (7), comprehending social rules (1), recreation (8), social support (9), and experience exchange (10) may be other reasons of people to use such networks.

The educational performance of students may be disturbed due to a reduction in the study time (11, 12). Increased anxiety, stress, and depression (13-15), particularly, if the person is engaged with groups that demonstrate

symptoms of depression (16), as well as reduced mental health (17), are some of the adverse and significant effects of using such websites. The excessive use of social networks can lead to internet addiction that has a variety of negative effects on a person's physical and mental health (18).

On the other hand, social networks may be used optimally in the educational or therapeutic process (19, 20). Wellman et al. noted that the internet has a positive impact on people and improves not only online relationships with friends but also increases offline ones such as face to face relations and phone connections (21). Akhavan-Malayeri et al. showed that membership and participation in social networks enhance individual's social capital, which results in increased happiness and reduced negative emotion; also, shy people and those with difficulty in making social contacts could rebuild their social capital (9). Contrasting their earlier research, Kraut et al. concluded that social networks have a positive impact on mental health (22).

Several studies have evaluated the general impact of technology on academic performance in children and adolescents. Espinosa et al. examined the role of technology in early childhood development through a longitudinal study. Their results indicated that access to technology could improve students' academic achievement by encouraging the parents' use of educational technology (23). Other studies found that the use of the Internet for entertainment was strongly correlated with academic dysfunction (24). Overall, the review of the literature shows that the findings are still controversial about the role of these networks and their relationships with academic performance, psychological well-being, and mental health. Several different studies have shown their positive and negative impacts on academic performance and psychological health. Given the huge number of Internet users, especially among students, the evaluation of issues associated with these networks is essential to make the right decision and take appropriate preventive actions.

Due to the paucity of investigations of this issue in Iran, clarifying the impact of social networks on academic performance, psychological well-being, and the indicators of mental health, as considered in this study, may be helpful to plan for scheduling these networks. In this study, it was attempted to evaluate particularly the most widely used social networks including WhatsApp, Telegram, and Instagram.

2. Objectives

The present study hypothesized that using social networks has a negative effect on educational performance, psychological well-being, and mental health. Therefore, we sought to answer the following questions in this study: What are the effects of WhatsApp, Telegram, and Instagram on educational performance, psychological well-being, and mental health? Is the relationship of virtual social networks with educational performance, mental health, and psychological well-being mediated by gender?

3. Methods

3.1. Participants and Settings

The study population included all high school students in Shiraz in 2017. The statistical sample consisted of 315 students (185 girls and 130 boys with an average age of 16.9 and 15.9 years and standard deviation of 0.8 and 0.73, respectively) from six high schools at the fourth grade. The students came from three fields of biology, mathematics, and humanities, and were selected by a convenience sampling method. The research plan was sub-projects of correlated plans and data were analyzed by stepwise regression analysis with SPSS version 21 at a significance level of < 0.05. Students' dissatisfaction and age of under 15 and above 18 were the exclusion criteria of the study. The research tool was given to the students in the form of booklets with answer sheets either in class groups or individually. An explanation about each scale was presented at the beginning of the booklet.

3.2. Instruments and Procedures

3.2.1. Depression, Anxiety, and Stress Scales with 21 Questions (DASS-21)

The tool was designed to assess depression (21 items), anxiety (21 items), and stress (21 items), as the indicators of mental health scored ranging from "never" (0) to "always" (3) (25). In Iran, the validity of this tool was approved in Samani and Jokar study (26) and the test-retest reliability coefficient for the whole scale was 0.82 and the alpha reliability coefficients for the stress, depression, and anxiety subscales were reported to be 0.87, 0.85, and 0.75, respectively.

3.2.2. Educational Performance Test

This tool was designed based on Pham and Taylor study, which has been validated for Iranian society (27). The study by Goltash et al. confirmed the validity of the questionnaire, as well as its reliability by Cronbach's alpha of 84% (28). This tool has 48 phrases scored ranging from "none" (1) to "very high" (5).

3.2.3. Life Satisfaction Scale

This tool, developed by Diener et al., has five questions to measure the cognitive components of subjective well-being (29). Participants indicated how much they were satisfied with their lives and how much their lives were close to their ideals (30). The questions were scored from "strongly disagree" (1) to "strongly agree" (5). The Cronbach's alpha coefficient and test-retest coefficient were 0.84 and 0.64 for this scale, respectively (30). Moreover, Bayani et al. investigated the reliability of the scale with the methods of Cronbach's alpha and test-retest reliability with a month-interval and reported the coefficients of 0.83 and 0.69, respectively (31).

In addition, information was obtained about social networks via six questions (membership, the main social network they used, the number of days they used social networks in a week, the number of hours they used social networks in a day, their social networks of choice, and the most important reasons for using social networks). The students were explained about goals, plans, confidentiality of information, and research purposes of the study. Then, students willing to participate completed the questionnaires. The participants filled out consent forms before answering the questions. The participation in this study was voluntary and anonymous and the study procedure posed no harm to participants. Therefore, the study was compatible with ethical guidelines.

4. Results

We selected 315 students in Shiraz, Iran, in 2017 (185 girls and 130 boys with an average age of 16.88 and 15.9 years, respectively) from six high schools at the fourth grades to evaluate the effects of social networks on educational performance, psychological well-being, and mental health of the students.

Table 1 shows the mean, standard deviation, and internal consistency of scale scores. According to Table 1, the research tools enjoyed high and acceptable internal consistency. Based on the results, 90.8% of the participants were using online social networks. Moreover, 63.7% of the students were engaged with these networks for two hours per day (a minimum of zero and a maximum of four hours), 63% were the members of more than three social networks, and among various social networks, WhatsApp, Instagram, and Telegram had the most frequency of users. It was found that 80% of the participants were WhatsApp users, 72.9% were Instagram users, and 72.9% were Telegram users. Communication with friends (67.5%) and entertainment (72%) were the most common reasons for individuals to use social networks.

Pearson correlation coefficient was used to examine the relationship between variables in the study and the results are demonstrated in Table 2. As depicted in the matrix, the use of social networks had negative correlations with psychological well-being, academic performance, and grade point average (GPA). There were also positive relationships with depression, anxiety, and stress. Moreover, according to the matrix, we obtained different results based on gender. The social networks use had significant relationships with anxiety and stress only in boys and the same was true about psychological well-being and GPA only in girls. These results of multiple linear regression analysis with a stepwise model of variable selection (Table 3) showed that the use of social networks significantly predicted academic performance, psychological well-being, GPA, depression, anxiety, and stress.

Given the fact that the covariance matrix of variables related to academic performance was different in male and female students (Box's M = 72.242; F = 1.551; df = 45 & 211536.94; Sig. = 0.01), the main results of study were presented separately for girls and boys, as well as the total population. More specifically, from among different social networks (Telegram, WhatsApp, Instagram, and Facebook), using Instagram negatively predicted academic performance (β = -0.19, Adj. R^2 = 0.03, F = 11.65, P = 0.001), well-being (β = -0.16, Adj. R^2 = 0.02, F = 8.89, P = 0.003), depression (β = 0.23, Adj. R^2 = 0.05, F = 18.44, P = 0.001), and stress (β = 0.15, Adj. R^2 = 0.02, F = 7.74, P = 0.006). WhatsApp use significantly predicted depression (β = 0.12, Adj. R^2 = 0.01, F = 4.87, P = 0.02). Moreover, the use of Telegram was a significant predictor of GPA (β = -0.12, Adj. R^2 = 0.01, F = 4.04, P = 0.04).

5. Discussion

This study aimed at investigating the influence of social networks on academic performance, psychological well-being, and mental health indicators. In general, the results showed that the use of virtual networks had negative relationships with psychological well-being, academic performance, and GPA and positive correlations with depression, anxiety, and stress. These findings indicated that the increased use of social networks led to decreased academic performance, psychological welfare, and GPA and increased depression, anxiety, and stress. Moreover, the results indicated the relationships of virtual networks usage with stress and anxiety were meaningful only in boys and the correlations of the use of virtual networks with well-being and GPA were significant only in girls.

O'Brien study (11) and Kirschner and Karpinski study (12) confirmed that academic performance is decreased due to wasting time. The use of virtual networks takes

Table 1. Mean, Standard Deviation, and Internal Consistency of the Students' Scores on Social Network Use, Academic Performance, Well-Being, Depression, Anxiety, and Stress in Male and Female Students (Females = 185, Males = 130)

Variable	Mean			Std. Deviation	Cronbach's α
	Girls	Boys	Total		
SNU (social network usage)	1	1.05	1.02	1.10	0.86
Depression	2.04	1.86	1.97	0.01	0.82
Anxiety	1.84	1.70	0.05	1.78	0.75
Stress	2.38	1.96	2.21	0.02	0.80
Academic performance	3.31	3.35	3.33	0.15	0.89
Well-being	3.28	3.55	3.39	0.14	0.82

Table 2. Correlation Matrix of Academic Performance, Mental Health, and Well-Being

	SNU	Academic Performance	Well-Being	Depression	Anxiety	Stress	GPA
SNU (social network usage)	1	-0.25[a]	-0.16[a]	0.23[a]	0.12[b]	0.13[b]	-0.16[b]
Academic performance	-0.25[a]	1	0.45[a]	-0.48[a]	-0.38[a]	-0.42[a]	0.35[a]
Well-being	-0.16[a]	0.45[a]	1	-0.59[a]	-0.35[a]	-0.50[a]	0.09
Depression	0.23[a]	-0.49[a]	-0.59[a]	1	0.62[a]	0.71[a]	-0.15[b]
Anxiety	0.12[b]	-0.38[a]	-0.35[a]	0.62[a]	1	0.66[a]	-0.11
Stress	0.13[b]	-0.42[a]	-0.50[a]	0.71[a]	0.66[a]	1	-0.01
GPA	-0.16[b]	0.35[a]	0.09	-0.15[b]	-0.11	-0.01	1

[a] $P < 0.01$.
[b] $P < 0.05$.

Table 3. Multivariable Linear Regression of SNU (Social Network Usage) Effect on Academic Performance, Depression, Anxiety, Stress, Well-Being, and GPA Among High School Students (N = 315)[a]

Dependent Variables	β Coef			P.β			Adj. R^2			SE			F			P.F		
	Total	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys
Academic performance	-0.25	-0.22	-0.30	0.001	0.003	0.001	0.06	0.04	0.08	20.89	19.05	23.16	21.41	9.33	13.05	0.001	0.003	0.001
Depression	0.23	0.23	0.26	0.001	0.002	0.003	0.05	0.05	0.06	4.84	4.94	4.61	16.95	9.76	9.19	0.001	0.002	0.003
Anxiety	0.12	0.09	0.2	0.02	0.23	0.02	0.01	0.01	0.03	4.11	4.23	3.88	4.89	1.41	5.62	0.02	0.23	0.02
Stress	0.13	0.12	0.22	0.02	0.1	0.01	0.01	0.01	0.04	4.63	4.43	4.35	5.43	2.65	6.59	0.02	0.1	0.01
Well-being	-0.16	-0.19	-0.14	0.004	0.01	0.09	0.02	0.03	0.01	4.38	4.35	4.31	8.24	6.92	2.84	0.004	0.01	0.09
GPA	-0.15	-0.19	-0.12	0.01	0.01	0.2	0.02	0.03	0.01	1.73	1.10	2.13	6.68	6.72	1.59	0.01	0.01	0.2

Abbreviations: GPA, grade point average; P.F, sig. of F; P.β, sig. of β; SE, standard error of the estimate; β Coef., standardized coefficient of beta.
[a] Predictor (constant) variable: SNU (social network usage).

the useful time of students and decreases their focus on lessons and doing homework, and their GPA declines consequently. According to the results of this study and other research such as Javadinia et al. study (8), most people use these networks for entertainment and finding friends rather than for scientific reasons. Consequently, these activities waste a significant amount of time and adversely affect doing homework among students, especially if they are busy doing such activities in the classroom. The finding is in line with the study by Kubey et al. (24).

The negative impact on depression is consistent with the results of Pantic et al. (14) and Kraut et al. (15) studies. GPA reduction due to the use of social networks, as already pointed out, can indirectly increase the levels of depression in students. Further, the use of virtual networks may reduce the actual social relations; this may result in the loss of positive social support and consequently lead to depression. Moreover, depression can develop as a result of failed attempts to establish a friendship with the opposite sex; this matter, of course, calls for further research. The excessive use of the Internet and social networks also leads to immobility and restricts physical movement; this issue along with the reduction of relations with others in the real world, as well as social isolation, yields the in-

creased levels of depression and deterioration of psychological well-being. Moreover, it is plausible that students with various types of mental health problems including depression could be more prone to use these networks, which is an argument requiring much more research for further clarification. Instagram and WhatsApp proved to have significant impacts on academic performance and increase the level of depression, which may be due to the more use of these networks by the students.

The decreased ability of the individual due to the lack of participation in real social settings proved to be one of the reasons for the adverse impact of social networks on psychological well-being. Also, social networks may keep teenagers away from family members and cause social isolation. On the other hand, the person might experience a crisis of self-value as a result of social comparison with people in these networks, particularly given the fact that people usually enhance their social persona in such media. Based on our results, Instagram had the most detrimental effect on psychological well-being and it also had a significant negative effect on the levels of depression and stress. This platform is used for sharing photos and videos wherein people usually present the best of themselves. Of course, this well-decorated presentation is just partially faithful to the realities of everyday life, but the comparison of one's self with this well-ornamented presentation of a successful other may negatively affect the individuals' psychological well-being and mental health.

In contrast to their earlier research, Kraut et al. (22) concluded that social networks had a positive impact on well-being and mental health. Akhavan-Malayeri et al. (9) also stated that social networks not only reduce the negative mood but also increase happiness. These authors along with Wellman et al. (21) were of the opinion that these networks increase social support through increasing interpersonal relationships and that this factor guarantees individuals' mental health. This could be interpreted that if these networks are used moderately, they can yield positive results. Wanjohi et al. (32) reached a conclusion that it is critical for students to be oriented toward self-management skills to maintain a balance between the use of virtual networks and academic performance. Furthermore, although one's socialization remains a source of social capital from different aspects, it can also have disadvantages including depression due to socialization with depressed individuals, as reported in Rosenquist et al. (16) study.

Meanwhile, students are required to follow a particular type of subculture when they are members of such networks and act accordingly in order to win the acceptance of other members. As a result, a given student must spend too much time to identify with others. Also, in many instances what the individual is required to follow is incongruent with wider social norms and brings him/her into conflict with the norms and values accepted and preached by the family of origin. This can also have detrimental effects on the individuals mental health and well-being.

According to the results, as students develop a better academic performance, their levels of depression, stress, and anxiety decrease, giving rise to enhanced psychological well-being. On the other hand, the excessive use of social networks results in poor academic performance; in this regard, social networks indirectly exert a negative effect on their mental health and well-being. Based on these findings, academic performance is negatively correlated with anxiety. Consequently, the use of social networks, via a negative impact on academic performance, increases anxiety. This is also consistent with the findings of Farahani et al. study (13). The results also demonstrated that using social networks was associated with increased levels of anxiety and stress. Unlike female students, these results were significant in male students. This suggests that perhaps male students use social networks in a different manner than females, a suggestion which, of course, requires further research.

Since the Internet and social networks are the media with various blessings and burdens, both positive and negative poles call for recognition and consideration in order to optimize the user's experience. The results of this study can help us to achieve this goal. Due to students' penchant for social networks, they put a considerable amount of their time on these networks. This fact leaves adverse effects on their academic status and may result in dropouts. It can also have adverse effects on their mental health and psychological well-being. As a result, proper planning is required in this regard to increase the awareness and understanding of students and families through institutions and educational/cultural organizations. The results of this study may have implications in further decision making and policy planning. Also, it is noteworthy to recall that children are susceptible towards their parents; hence, it is essential to modify the parents' use models and strategies. It is of vital importance that both positive and negative consequences of social networks are evaluated in detail in future research.

5.1. Limitations

It should be noted that there are some limitations in this study that inhibit the generalization of the results. Different aspects and qualities of social network using must be seriously taken into consideration in future research. Our sampling method and correlational design also exerted restrictions in the results that should be addressed in future research. Future research can use random sampling

and experimental designs that allow for causal inference. The result of this study could help educational managers to inform and teach students how to use social networks.

Footnotes

Authors' Contribution: Improving original idea, study design, and correspondence: Mehdi Reza Sarafraz; original idea, data collection, data analysis, and writing the manuscript: Haniyeh Chavoshi; writing the manuscript in English and editing: Mahyar Alinaghi.

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