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Original Research Article

ANALYSIS OF THE POTENTIAL IMPACT OF SOCIAL MEDIA USAGE ON THE MENTAL HEALTH OF ADOLESCENTS

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Abstract: *The increasing prevalence of social media usage among adolescents has raised concerns about its potential impact on mental health. The interplay between social connectedness, self-esteem, and mental health requires further exploration to understand the mediating mechanisms involved.* ***Objective:*** *To assess the association between social media usage and adolescents' mental health and the impact of social connectedness and self-esteem on this association.* ***Methods:*** *A cross-sectional study was conducted in the Department of Pediatrics and Department of Psychiatry of DHQ, Narowal from October 2022 to October 2024. A total of 500 adolescents aged from 12 to 15 years attending the hospital departments were included in the study. Data was collected by a 25-item self-completion Strengths and Difficulties questionnaire to assess mental disorders in the participants. To evaluate social media usage, participants were about time spent on its usage. Self-esteem and social interaction were also assessed as mediators.* ***Results:*** *In unadjusted analysis, participants with more active hours had poor mental health with a one-point increase in SDQ score with every increase in socialization (95% CI: 0.19-1.68). Unadjusted analysis showed that more hours on social media led to low self-esteem ($p=0.01$) and, hence poor mental health ($p<0.001$). The Monte Carlo test was also significant for an indirect association between self-esteem and mental health ($p=0.02$) with a 70% impact of social media mediated by self-esteem. More hours on social media were related to reduced happiness with friends ($p=0.01$) but this did not lead to poor mental health ($p=0.58$).* ***Conclusion:*** *A higher number of hours spent on social media leads to mental health problems in adolescents in the long term. Additionally, low self-esteem due to social comparison by the use of social media is also an indirect mediator of poor mental health.*

Keywords: Adolescents, Mental Disorders, Mental Health, Depression

Introduction

According to a WHO report, 14% of adolescents are diagnosed with mental disorders, the majority of which onset at age 14 (1). Since the world is progressing, the incidence of mental disorders is increasing drastically in younger generations with authorities considering it a public health priority. Social media has been recognized as one of the major factors responsible for affecting the mental health of adolescents since 97% of them are active on social platforms as a recent survey indicated (2).

Literature conducted to assess the association between the use of social media and the mental health of youngsters has yielded mixed results (3, 4). A trend of depression, anxiety, and stress was noted in adolescents with increased use of social media in some studies while others reported a positive impact of social media (5, 6). Since most of these studies were cross-sectional the results cannot be generalized for representative populations. The topic of mental health is well discussed in Pakistan so the data on its association with social media is limited. However, in developed countries like the UK, a weak relationship between increased social media use and decreased well-being, happiness, and satisfaction was reported especially in women (7).

Review studies have also indicated that social media use can urge adolescents to engage in social comparisons leading to low self-esteem due to experiencing feelings of exclusion and cyberbullying (8). Social connectedness and self-esteem serve as links between mental disorders and the use of social media. This study was conducted to assess the association between social media usage and adolescents' mental health and the impact of social connectedness and self-esteem on this association.

Methodology

A cross-sectional study was conducted in the Department of Pediatrics and Department of Psychiatry of DHQ, Narowal from October 2022 to October 2024. A total of 500 adolescents aged from 12 to 17 years attending the hospital departments were included in the study. Informed consent was obtained from the guardians of the participants to include them in the study. The ethical committee of the hospital approved the study.

Data was collected by a 25-item self-completion Strengths and Difficulties questionnaire to assess mental disorders in the participants. The questions inquired about emotional problems, hyperactivity or inattention, behavioural issues, and social interaction difficulties. The score range was 0 to 40 with a higher score showing poor mental health. A score of ≥ 20 indicated a clinical risk of mental disorders.

To evaluate social media usage, participants were asked two questions. The first question was whether they were active on social platforms like Facebook, Instagram, or Snapchat which could answered by Yes or No. If they responded no,

it was assumed they spent no time on social media. If the response was yes, the answer to the second question was considered which inquired about the time spent on these platforms on a school day. The second question could be answered on a Likert scale from 1 to 5 with 1 being zero hours and 5 being seven hours or more.

Self-esteem was assessed by an 8-item questionnaire which could be responded to on a Likert scale from 1 to 4 with 1 being strongly disagree and 4 being strongly agree. The total score was calculated by the average score of all questions, a high score indicating high self-esteem. Social interaction was evaluated by two questions. The first question inquired about the number of friends they had. The second question asked how participants felt about their friends which could be answered by ranking 1 to 7 with 1 being happy and 7 being not often happy. Age, gender, SDQ score, mother's qualification and marital status, number of employed housemates, and total household income were covariates. All the variables were recorded in the first year of the study and then revised for outcomes in the second year.

All data was analyzed SPSS version 24. The association between mental health and social media usage was evaluated by adjusted and unadjusted multi-variate regression analysis. Monte Carlos test was performed to assess the impact of mediators like self-esteem and socialization.

Results

A total of 500 responses were included in the study. There was no significant difference between male (49%) and female (51%) participants. 450 (90%) of the participants' mothers were married and 50 (10%) were divorced. The majority of mothers were educated with 150 (30%) qualified till high school or college and 150 (30%) with a professional degree. 150 (30%) participants used social media for less than an hour on a school day and 150 (30%) used social media for 1-3 hours. The mean SDQ score was 10.54 ± 4.58 which showed poor mental health. The baseline characteristics of participants are shown in Table I.

Table II shows pairwise correlations between study variables. Results showed that a 2.5% change in mental health scores was accounted for by active social media usage (p=0.01). Table III showed that participants with more active hours had poor mental health with a one-point increase in SDQ score with every increase in socialization (95% CI: 0.19-1.68). However, this association was not significant in the adjusted analysis (95% CI: -0.37 to 0.80, p=0.49). A significant predictor of poor mental health was age at the time of study and mental health problems at baseline. SDQ score increased by 0.55 in year 2 for every point increase in year 1 (95% CI: 0.42-0.71, p<0.001).

Mediation analysis was performed to determine the role of mediators in the development of an association between social media use and mental health. Unadjusted analysis showed that more hours on social media led to low self-esteem (p=0.01) and, hence poor mental health (p<0.001). The Monte Carlo test was also significant for an indirect association between self-esteem and mental health (p=0.02) with a 70% impact of social media mediated by self-esteem. However, this association was insignificant in the adjusted analysis. No association between number of friends and social media use or mental health was noted. More hours on social media were related to reduced happiness with friends (p=0.01) but this did not lead to poor mental health (p=0.58). Sensitivity analysis revealed no significant association between social media usage and mental health.

Table 1: Participants' baseline characteristics in year 1

Characteristics	N (%)
Gender	
Male	245 (49%)
Female	255 (51%)
Mother's qualification	
Illiterate	100 (20%)
High school/ college	200 (40%)
Bachelors or Masters	200 (40%)
Mother's marital status	
Married	450 (90%)
Divorced	50 (10%)
Number of hours spent on social media	
None	125 (25%)
<1 hour	150 (30%)
1-3 hours	150 (30%)
4-6 hours	50 (10%)
≥7 hours	25 (5%)
Mediators in year 1	
Mean SDQ score	10.54 ± 4.58
Mean self-esteem score	3.22 ± 0.39
Number of friends	7.46 ± 6.74
Level of happiness with friends	6.44 ± 1.0
Number of employed housemates	
None	50 (10%)
1	275 (55%)
2	150 (30%)
More than 2	25 (5%)
Mean household income (Rs)	40000
SDQ score in year 2	10.88 ± 5.77

Table 2: Correlation between study variables

Variables	Social media usage in year 1	SDQ at year 2	SDQ at year 1	Self-esteem in Year 2	Happiness with friends in year 2	Number of close friends in Year 2
Social media in year 1	1.00					
SDQ at year 2	0.15** (p=0.0)	1.00				
SDQ at year 1	0.10 ** (p=0.0)	0.600** (p=0.0)	1.00			
Self-esteem in Year 2	-0.09** (p=0.0)	-0.48** (p= 0.0)	-0.44** (p=0.0)	1.00		
Happiness with friends in year 2	- 0.00 (p=0.89)	-0.25** (p=0.0)	-0.22** (P=0.0)	0.33** (p=0.0)	1.00	
Number of close friends in Year 2	0.040* (p=0.04)	-0.019 (p=0.34)	-0.03 (p=0.11)	0.08** (p=0.0)	0.09** (p=0.0)	1.00

**p<0.001, *p<0.05

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Table 3: Multi-variate regression analysis

	Adjusted OR (95% CI)	P value
Mean SDQ in year 2		
Social media usage in year 1	0.18 (-0.37 to 0.80)	0.49
SDQ in year 1	0.49 (0.42-0.71)	<0.001
Gender		
Male	-1.09	0.16
Female	Reference	
Mother's qualification		
Illiterate	Reference	
High school	0.52 (-2.1 to 2.74)	0.70
College	1.99 (-1.05 to 5.09)	0.23
Bachelors or Masters	-0.82 (-2.88 to 1.41)	0.52
Mother's marital status		
Married	-1.11 (-3.32 to 1.08)	0.29
Divorced	Reference	
Number of employed housemates	-0.49 (-1.84 to 0.82)	0.46

Discussion

The results of this showed that social media usage did not have a longitudinal impact on the mental health of adolescents. An unadjusted analysis showed a relationship between social media activity and mental health but this was deemed insignificant after adjusting for gender, previous mental health problems, maternal qualification and marital status, and employed housemates. Similarly, self-esteem was recognized as a significant mediator of this association but after adjustment of variables, this impact was insignificant.

Our results are similar to other studies which found no significant association between online socialization and the satisfaction and well-being of adolescents but rather a reciprocal one.(9, 10) Heffer et al reported in a longitudinal analysis that social media activity was a predictor of poor mental health in young people but poor mental health did lead to increased social media activity in females (11).

Literature has also focused on assessing whether substantial social media activity can be measured by time spent on it.(12, 13) Evidence shows that browsing and messaging on social platforms, both have different effects on mental health (14, 15). Interacting with people through messaging leads to depression and anxiety due to comparison and feelings of envy. Our study only evaluated the active use of social media i.e. messaging which can be the reason that we could not report any significant relationship between social media use and mental health. Research indicates that a healthy use of social media depends on the mode of use and time spent.

The present study explored the role of mediators like self-esteem and socialization to understand the association between the usage of social media and mental problems. Poor self-esteem was found to be a strong mediator of this relationship which is similar to other studies. Jiang and Ngien reported that comparison with peers through social media leads to low self-esteem (16). A recent model backs these results and recognizes social comparison, self-reflection, and social feedback as the reasons social media affects self-esteem (17).

Interaction with peers was not a significant mediator of the association and more hours on social media were related to reduced happiness with friends but this did not lead to poor mental health. Teppers et al found that social media interaction led to experiencing more feelings of loneliness in socially anxious adolescents who compensated it for the lack of offline friends, whereas, youngsters who used social media to expand their friend circle experienced less lonely feelings (18).

Our study has some limitations. The questionnaires were self-reported so results may be subject to self-bias and misunderstanding of the adolescents. Secondly, included adolescents from 12 years old since it is often the minimum age for parents to allow social media use but since the times are progressing younger individuals also use social platforms so our results are inapplicable to that population.

Conclusion

A higher number of hours spent on social media leads to mental health problems in adolescents in the long term. Additionally, low self-esteem due to social comparison by the use of social media is also an indirect mediator of poor mental health.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate
Approved by the department Concerned. (IRBEC-NHR-1323/23)

Consent for publication
Approved

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Conflict of interest

The authors declared absence of conflict of interest.

Author Contribution

MAHMOOD RIAZ (Public Health Practioner)
Coordination of collaborative efforts.
Study Design, Review of Literature.
Conception of Study,
LUBNA RIAZ (Assistant Nursing instructor)
Conception of Study, Final approval of manuscript.

Manuscript revisions, critical input.
Manuscript drafting.

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