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Social Media Use for Health-Related Information and Self-Medication Practices among Youth: Cognitive Dissonance Perspective

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Abstract *- This research explores the relationship between social media use for health information and self-medication practices among youth and focuses on the mediating role of knowledge of medicines. By adopting cognitive dissonance theory, specifically this research aims to understand how the extent to which conflicting information from social media influences youth's beliefs and behaviors regarding self-medication practices. An empirical study was conducted using an online survey method to collect data from 330 students representing youth at the University of Management and Technology Lahore, Pakistan. The descriptive analyses were performed using SPSS, while the effects were examined by Smart PLS software. The statistical results of direct effects show that social media use for health-related information significantly affects self-medication practice and knowledge of medicine risks. However, knowledge of medicine risks does not affect self-medication practices. The indirect effect results indicate that the relationship between variables is not statistically significant. This study concluded that increased use of social media among youth is associated with greater knowledge of medicine and more self-medication practices. However, knowledge of medicine risks does not impact their self-medication practices because the degree of dissonance (importance and ratio) is low regarding knowledge of medicine risks compared to self-medication practices, indicating no inconsistency between their beliefs and behaviors. The research also provided valuable recommendations for health policymakers, media health communicators, and social media users to address self-medication practices.*

Keywords - Social media, health information, medicine risks, self-medication practices, youth

1. Introduction

Social media refers to various online platforms, including social networking sites, blogs,

collaborative services, and content-hosting sites.[1] These platforms allow users to create and share content, establish self-profiles, and form social networks through connections, such as followers, friends, or groups.[2] Dixon's statistical report of 2023 indicated that 4.84 billion people worldwide use social media platforms for various purposes across different sectors.[3] Over the past decade, there has been a surge in the use of social media for health-related information globally, people are using these platforms to seek information about their diseases, medication, and pandemics. This trend is also prominent in a developing country like Pakistan, where females use social media platforms to seek health information about clinical symptoms, treatments, and medications.[4] Men actively seek and share health-related information on social media to maintain their fitness and healthy lifestyle.[5] These growing trends in the use of social media for health-related information have the potential to influence individual behaviors. Recent studies reported that health-related content on YouTube educates patients and empowers them to manage their healthcare.[6] Facebook campaigns promote health-related beliefs.[7] Similarly, medicines advertising on social media platforms and information promotes self-medication behaviors.[8] Additionally, disseminating misinformation about the COVID-19 vaccine on social media also influenced public behavior.[9]

1.1 Statement of Problem

Despite evidence that social media use for health-related information influences behaviors and self-medication, a prevalent practice in Pakistan, the specific relationship between social media use for health-related information and self-medication practices among Pakistani youth remains unclear. Furthermore, the literature lacks an understanding of how knowledge of medicines acquired through social media mediates the influence of social media on youth's self-medication beliefs and behaviors. Therefore, this lack of knowledge hinders the development of effective strategies to address potential risks associated with social media's role in youth self-medication practices.

1.2 Objectives of the Study

1. To investigate the relationship between social media use for health-related information and self-medication practices among youth.
2. To examine whether knowledge of medicine risks as a mediating role creates cognitive dissonance and influences self-medication behaviors among youth.

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Social media is an influential source of health-related information and may affect individual behaviors. Therefore, it is important to understand how youth react to health-related information received from social media and what information they value most. Additionally, the World Health Organization has recognized that adverse effects resulting from self-medication practices pose a global public health challenge.[10] Therefore, understanding the factors influencing self-medication practices is essential for public health.

This study is important in developing strategies to reduce the risks associated with self-medication to public health by identifying psychological factors influencing self-medication. Moreover, these insights are important to health communicators and social media policymakers about how social media shapes individual behaviors. This study holds potential value for researchers in the future to comprehend the emerging dimensions of social media's impact on health communication.

Over the past decade, a substantial amount of literature has explored the use of social media for health communication, including seeking and sharing health information, treatment methods, medicine use, patient support, managing health-related matters, doctor reviews, and participating in discussion forms.[11][12][13]

2.1 Social Media Use for Health-Related Information

The use of social media to access health-related information has increased globally, changing the way healthcare is managed.[14] For instance, people turn to platforms like YouTube to learn about health topics, diagnose their conditions with the help of videos, and even manage their healthcare.[15] Partners use WhatsApp to communicate and share medical information with patients,[16] while Twitter has become a platform for patients to share personal health experiences.[17] Public Health Organizations utilize Facebook, Twitter, and Instagram to raise awareness about health issues.[18] Pharmaceutical companies use Facebook and YouTube to advertise their medicine.[19] This trend is also evident in Pakistan, particularly among youth. For example, females are more active on social media to seek information on medicines, seasonal diseases, and guidance on health issues.[20] Pakistani men prioritize fitness and healthy lifestyle and they are active participants on social

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media platforms to seek and share health-related information.[21]

2.2 Knowledge of Medicines through Social Media

Several studies have provided evidence that using social media for health-related information increases knowledge of medicines. For instance, Joseph reported that individuals obtain information about medicine from social media for self-diagnosing and self-treating.[22] Carneiro noted that users of Facebook groups consistently shared information about medication usage and adverse effects.[23] Warren identified that the use of social media is positively associated with increased access to health-related information and peer support among men.[24] Similarly, Alhaddad reported that people use social media to seek information about medicines.[25]

2.3 Effects of Social Media on Individual Behavior

Several studies have shown that health-related information on social media influences individual behaviors.[26] For instance, Househ acknowledged that social media empowers patients and enables them to manage their healthcare.[27] Mahmood found that information about COVID-19 shared through social media was associated with increased awareness of potential risks and encouraged precautionary behaviors.[28] Islam reported widespread rumors and conspiracy theories swirling on social media undermine public confidence in the COVID-19 vaccine, especially due to a lack of reliable information.[29] Hui argued that Facebook campaigns promote help-seeking beliefs for depression.[30] Al-Dmour identified medication information on social media as playing a mediating role between health awareness and behavioral change.[31]

2.4 Self-Medication Practices

Self-medication involves using medicines based on self-diagnosis without consulting physician, its overuse or misuse can potentially harm an individual's health, leading to adverse effects, drug resistance, and reduced treatment effectiveness.[32] Bennadi acknowledges that due to its harmful

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effects, self-medication is a significant global public health challenge today. He reported the adverse effects of self-medication can be estimated from its prevalence, which in developed countries ranges from 8% to 12 %, while in developing countries, it ranges from 12.7% to 81.3%.[33] In a developing country like Pakistan, this prevalence level is very high. Various studies highlighted the alarmingly high prevalence of self-medication in Pakistan, with rates reported as 85% in Karachi, 66% in KPK, and 79% in Lahore.[34] [35] Healthcare professionals have identified many reasons for the prevalence of self-medication in Pakistan including, insufficient enforcement of regulatory policies,[36] easy availability of medicines without prescriptions, cost-saving on doctor fees, a lack of emergency healthcare services, and hospitals located at far distance.[37] Nasir observed that individuals rely on media sources of information. As self-medication, commonly used medicines include antipyretics for fever, analgesics for pain, multivitamins or food supplements for fitness or weakness, antibiotics for infection control, and sleeping pills for sleep-related issues.[38] Additionally, media sources also cause self-medication. For instance, Ephrem argued that social media information promotes an individual's self-medication behaviors, with females being more affected than males.[39] Advertising of medicine on social media increases the knowledge of medicine and influences self-medication behaviors.[40] DeSanctis argued that the prevalence of self-medication is social media sources.[41]

A substantial amount of literature (international and national) identified the rise of social media as a source of health-related information, which is associated with increased knowledge of medicines, and self-medication practices.[42] However, despite the growing body of research in the field of health communication in Pakistan, there is a lack of research exploring the relationship between social media use for health-related information and self-medication practices among youth. Additionally, it is unclear to what extent knowledge of medicines mediates the influence of social media on the beliefs and behaviors of youth regarding self-medication. Therefore, this research provides a strong rationale to fill the gap between social media and health correlation.

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3. Theoretical Framework

This study adopted the cognitive dissonance theory due to its clear delineation of the variables under investigation, particularly in exploring the relationship between social media use for health-related information and self-medication practices among youth, with a focus on the mediating role of knowledge of medicine risks.

In 1957, Leon Festinger introduced cognitive dissonance theory.[43] He argued when people hold two or more inconsistent beliefs, attitudes, and behaviors or when their behaviors are inconsistent with their beliefs they experience a state of psychological discomfort called cognitive dissonance. Leon Festinger further explained the intensity of cognitive dissonance depends on the importance and ratio of cognitions. Therefore, the greater the degree of dissonance, the more they try to reduce dissonance by changing their beliefs or behaviors or finding ways to justify them. This phenomenon is relevant to youth who obtain health-related information from social media and practice self-medication. They may initially perceive self-medication as beneficial to their disease, but, when they acquire new information about medication risks through social media, they may face inconsistency between their existing beliefs and self-medication behaviors. This inconsistency may influence their self-medication practices. Thus, this study formulates the following hypothesis based on these observations.

H1: There is a significant relationship between social media use for health-related information and self-medication practices.

H2: Knowledge of medicine risks as a mediating role creates dissonance between social media use for health-related information and self-medication practices.

3.1 Conceptual Definitions

1. *Social media use for health-related information.* The engagement with social media platforms to seek information related to health for various purposes.
2. *Knowledge of medicine risks.* The level of understanding an individual has about medications, including dosages, potential side effects, and adverse reactions.
3. *Self-medication practices.* The act of using the medication without a doctor's advice or prescription
4. *Cognitive dissonance.* The state of psychological discomfort is when an individual experiences two or more contradictory beliefs, values, and behaviors or behaviors that are inconsistent with their beliefs.

3.2 Conceptual Framework

1. The independent variable shows the social media use for health-related information
2. The dependent variable shows the self-medication practices
3. The mediating variable shows the knowledge of medicine risks

Path A represents the direct relationship between the independent variable and the dependent variable. Path B represents the indirect relationship between the independent variable and the mediator variable. Path C represents the indirect relationship between the mediator variables and the dependent variable.

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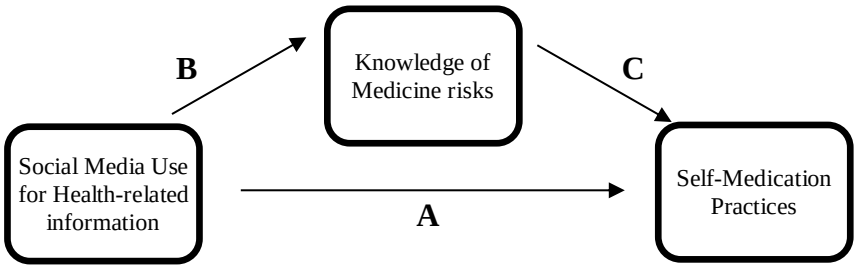

4. Methods

An empirical approach was employed to operationalize the variables, utilizing a survey method with a non-probability sampling at the University of Management and Technology Lahore, Pakistan. The accessible population for the study comprised 2344 UMT students aged 18 to 29 years, categorized as youth and active social media users.

4.1 Instrument and Measurement

A self-structured questionnaire was developed using online Google Forms to measure variables adapted from prior research.[44] [45] The questionnaire utilized five-point Likert scales ranging from strongly disagree, disagree, neither, agree, and strongly agree. It comprised six sections; screener filter, demographic information, use of specific social media platforms for obtaining information, specific purposes related to health information, knowledge of medicine risks, and self-medication practices. The reliability of the instrument was tested before the data collection. The questionnaire demonstrated good reliability with Cronbach's Alpha values above the accepted threshold of 0.7 and convergent validity above the recommended threshold of 0.5.

4.2 Data Collection and Analysis

For the data collection, a Google Form link of the questionnaire was sent to 2344 UMT students (accessible population) using their university email IDs, consisting of 1116 males and 1228 females. First, participants were asked if they seek health-related information from social media and practice self-medication. If "yes," they were asked to respond to the subsequent questions. Among the respondents, 330 individuals provided responses representing the potential population. To analyze the data descriptive analyses were conducted through SPSS and the correlation and mediating effects were examined through Smart PLS software.

5. Results and Interpretation

Table 1: Demographic Statistics of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Female	219	66.4	66.4	66.4
	Male	111	33.6	33.6	100.0
Age	18-21	49	14.8	14.8	14.8
	22-25	185	56.1	56.1	70.9
	26-29	96	29.1	29.1	100.0

[44] Ferreira Regina Alves, José Precioso, and Elisardo Becoña. "Knowledge, attitudes, and practice of self-medication among university students in Portugal: A cross-sectional study." *Nordic Studies on Alcohol and Drugs* 38, no. 1 (2021): 50.

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Education	B.A	75	22.7	22.7	22.7
	BS/Master	82	24.8	24.8	47.6
	MS/M. Phil	164	49.7	49.7	97.3
	PhD	9	2.7	2.7	100.0
Total Respondents = 330					

Table 1 presents demographic statistics. Responses from 330 Pakistani youth ages 18-29 were included in our analysis, there were 33.6% males and 66.4% females. The majority of respondents were aged 22 to 25 years and 49.7% educational background of MS/M.Phil.

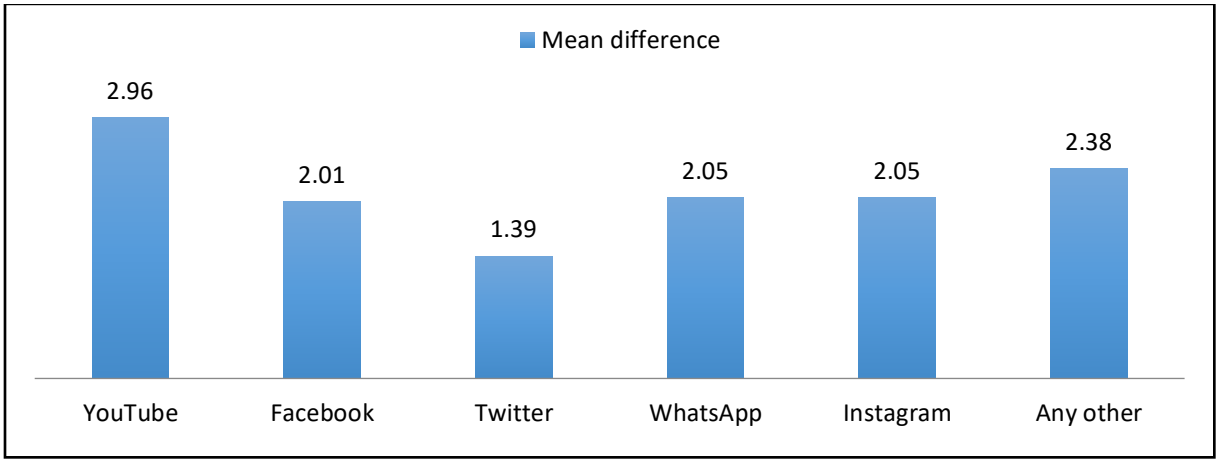

Figure 1: Descriptive statistics of youth engagement with social media platforms for seeking health-related information

Figure 1 mean score shows that users exhibit the highest level of engagement with YouTube (M=2.96), while Twitter (M=1.39) receives the lowest level of engagement.

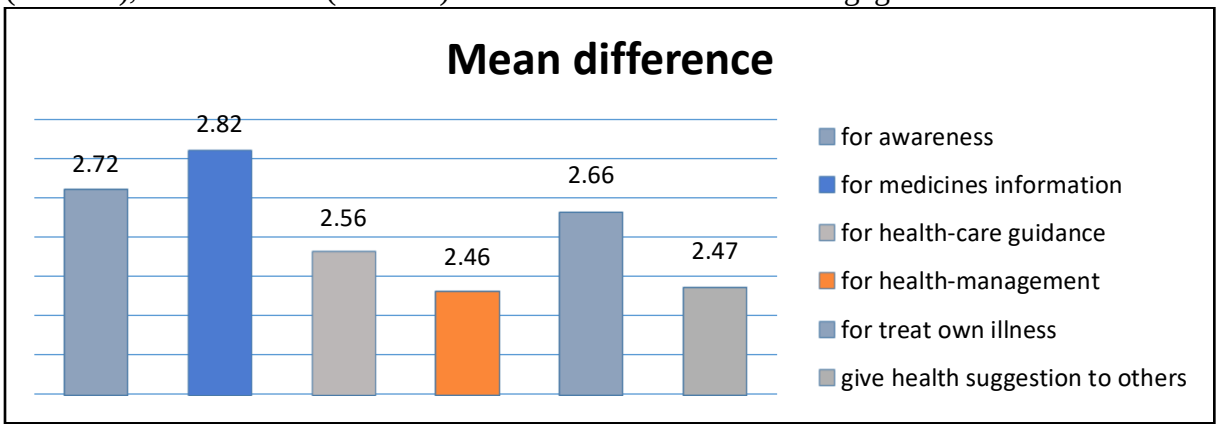

Figure 2 Descriptive statistics of youth's specific purposes related to health information

Figure 2 presents the descriptive statistics of youth's specific purposes for health-related information seeking from social media platforms. Based on the mean differences, it can be observed that participants reported seeking information related to medicines from social media (M=2.82) the most, followed by seeking health information for awareness (M=2.72), seeking information to treat their illness (M=2.66), seeking information for healthcare guidance (M=2.56), seeking information to give health-related suggestions to others (M=2.47), and seeking

information for healthcare management (M=2.46).

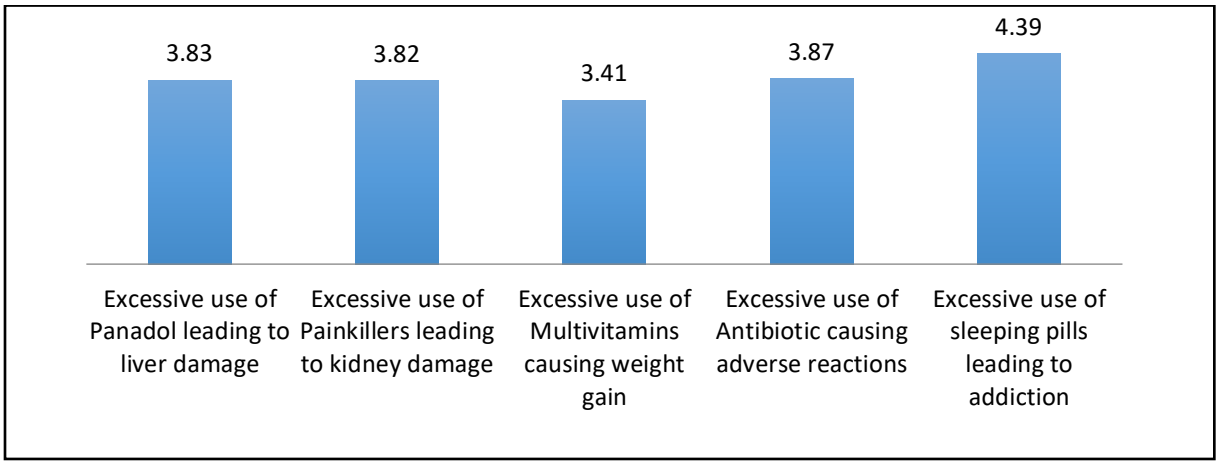

Figure 3: Descriptive statistics of youth's knowledge about medicine risks

Figure 3 presents descriptive statistics of youth's knowledge about medicine risks. Based on the mean differences, it can be observed that the highest potential harm is reported for excessive usage of sleeping pills leading to regular addiction (M = 4.39), followed by excessive usage of antibiotics causing adverse reactions (M = 3.87), excessive usage of Panadol leading to liver damage (M = 3.83), excessive usage of pain relief medicine causing kidney damage (M = 3.82), and excessive usage of multivitamins causing high blood pressure and weight gain (M = 3.41).

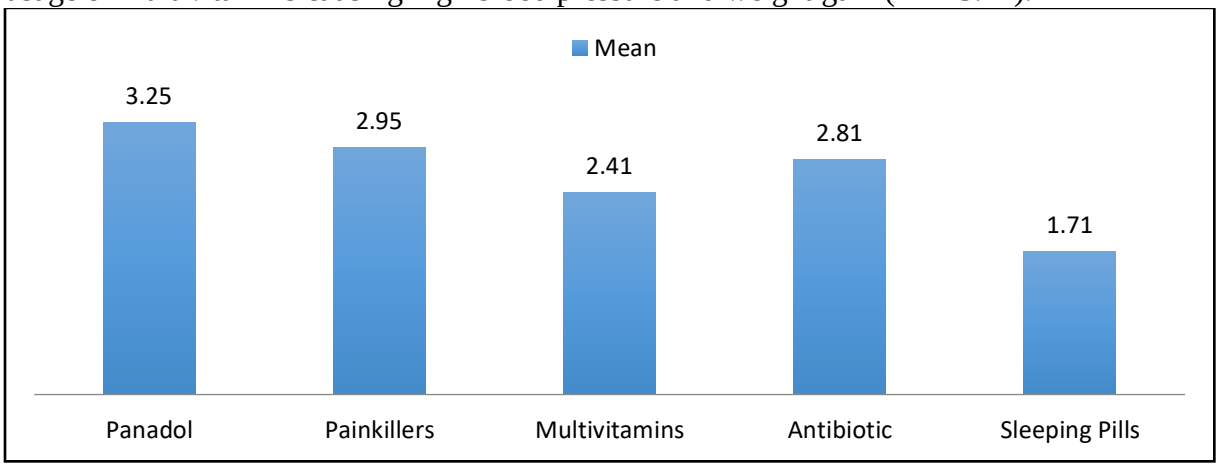

Figure 4 Descriptive statistics of youth self-medication practices

Figure 4 presents descriptive statistics of youth self-medication practices. Based on the mean differences, it can be observed that the highest usage reported was for Panadol use for headaches and fever (M = 3.25), followed by antibiotic use (M = 2.81), painkillers for body pain (M = 2.95), multivitamins or food supplements for fitness or body weakness (M = 2.41), and the lowest usage reported was for sleeping pills used for sleep (M = 1.71).

5.1 Hypothesis Testing

The Smart PLS software was employed to test the hypothesis.

Table 2: Direct Effect

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
- Social Media use for Health-related information->Self-Medication Practice	0. 308	0.314	0.054	5.664	000
- Social Media use for Health-related information -> Knowledge of Medicine risks	0.284	0.302	0.052	5.497	000
- Knowledge of Medicine risks ->Self-Medication Practice	0.031	0.044	0.066	0.469	0.031

Table 2 presents the direct effect results of the relationship between three variables: “Social Media Use for Health-Related Information,” "Knowledge of Medicine risks," and "Self-Medication Practice." The first column shows the path coefficient is 0.308, indicating that a one-unit increase in “Social Media use for Health-Related Information” leads to a 0.308-unit increase in “Self-Medication Practice.” The value of the T statistic is 5.664, above the significance level of 1.96 ($p < 0.05$), indicating a significant relationship. The second column shows the path coefficient is 0.284, indicating that a one-unit increase in social media use for health-related information” leads to a 0.284-unit increase in “Knowledge of Medicine risks.” The value of the T statistic is 5.497, above the significance level of 1.96 ($p < 0.05$), indicating a significant relationship. The third column shows the path coefficient is 0.031, indicating that a one unit increase in “Knowledge of Medicine risks” leads to a 0.051 unit increase in “Self-Medication Practice.” The value of the T statistic is 0.469, below the significance level of 1.96($p<0.05$), indicating that the relationship is insignificant. Based on these results, Hypothesis 1 “there is a significant relationship between social media use for health-related information and self -medication practice” is supported.

Table 3: Indirect Effect

	Original sample (O)	Sample mean (M)	Std. deviation (STDEV)	T statistics (|O/STDEV|)	P values
Social Media for Health -> Knowledge of Medicine Risks ->Self-Medication Practice	0.19	0.013	0.02	0.435	0.03

Table 3 presents the indirect effect of social media use for health-related information on self-medication practice through the mediator variable of knowledge of medicine. The path coefficient (O=0.19), indicates the indirect effect. The sample mean (M=0.013) suggests the indirect effect is small. The standard deviation (STDEV=0.02), indicates that the indirect effect is relatively stable. The value of the T statistic (T=0.435) shows that the effect is not significant. The p-value is 0.03, indicating that the indirect effect is significant at the 0.05 level, but not at the more stringent 0.01 level. Based on these results, Hypothesis 2 “knowledge of medicine risks as a mediating role creates dissonance between social media use for health-related information and self-medication practice” has not been proved.

6. Discussion

The main objective of this study was to explore the relationship between social media use for health-related information and self-medication practices among youth. Further, it was to explore

whether knowledge of medicine risks as a mediating role creates any cognitive dissonance in this relationship and affects their self-medication practices. The mean scores for social media use for health-related information revealed that youth had the highest inclination to seek information related to medicines, followed by seeking health information for awareness, treating their illnesses, seeking healthcare guidance, providing health-related suggestions to others, and managing healthcare. These results are similar to previous research studies, which demonstrated that social media is used for health-related information.[46] [47] [48] The mean scores for knowledge of medicine risks revealed that youth had the highest knowledge of medicines risks of sleeping pills, which can lead to regular addiction, followed by the excessive use of antibiotics, which can cause adverse reactions; excessive use of Panadol, leading to liver damage; excessive use of pain relief medicine, causing kidney damage; and excessive use of multivitamins, which can result in high blood pressure and weight gain. These findings align with previous research studies conducted.[49] The mean scores for self-medication practices among youth revealed that youth had the highest use of Panadol for headaches and fever, followed by antibiotics, painkillers for body pain, and multivitamins or food supplements for fitness or body weakness. The lowest reported usage was for sleeping pills for sleep or depression. These findings align with previous research studies conducted, which reported similar results.[50] [51]

Hypothesis (H_1**)** the direct effects statistics show that increased social media use for health-related information among youth is associated with a higher level of knowledge about medicine risks and self-medication. On the other hand, hypothesis (H_2) indirect effects statistics suggests that the mediating role of knowledge about medicine risks does not lead to cognitive dissonance and does not influence self-medication practices. This result aligns with previous research studies, such as Folusayo reported that individuals who had good knowledge about self-medication risks did not experience cognitive dissonance in their self-medication behaviors.[52] Similarly, McMaster reported no cognitive dissonance in smokers who were well-informed about the risks of smoking.[53] Ong argued that individuals often disregard inconsistent information that creates dissonance and seeks information that aligns with their beliefs.[54] Moreover, Festinger's statement further clarifies this study's findings. He argued that the importance and ratio of cognitions determine the degree

[46] Mahmoud S Alhaddad, "The use of social media among Saudi residents for medicines-related information." *Saudi Pharmaceutical Journal* 26, no. 8 (2018): 1106.
[47] Grajales et al., "Social media: a review and tutorial of applications in medicine and health care." *Journal of Medical Internet Research* 16, no. 2 (2014): e2912.
[48] Yuehua Zhao, and Jin Zhang. "Consumer health information seeking in social media: a literature review." *Health Information & Libraries Journal* 34, no. 4 (2017): 268.
[49] Ashitha Ephrem et al., "A study to assess the effect of media in promoting self-medication use." *Int J Res Rev* 9 (2022): 348.
[50] Mahsood L Khalid, and N. Ali l. The public health problem of OTC antibiotics in developing nations. *Res Social Adm Pharm*, 5 (2016): 801.
[51] Aziz et al., "Pattern of medication selling and self-medication practices: A study from Punjab, Pakistan." *PloS one* 13, no. 3 (2018): e0194240.
[52] Moses Adeola Folusayo et al., "Assessment of knowledge and practice of self-medication among undergraduates of Prince Abubakar Audu University, Anyigba Kogi State, Nigeria." *Journal of Scientific and Innovative Research* 11, no. 4 (2022): 76.
[53] Christine McMaster, and Christina Lee. "Cognitive dissonance in tobacco smokers." *Addictive behaviors* 16, no. 5 (1991): 349.
[54] Swee-Jin Andy Ong, Lynn Frewer, and Mei-Yen Chan. "Cognitive dissonance in food and nutrition–A review." *Critical reviews in food science and nutrition* 57, no. 11 (2017): 2330.

of dissonance.[55] In this study's context, if the importance and ratio of knowledge about medicine risks are higher than those of self-medication, the degree of dissonance will be high. Conversely, if the importance and ratio of knowledge about medicine risks are lower, and the youth believe that self-medication is effective in managing disease, the dissonance will be minimal. The study finds that youth prefer self-medication over acknowledging the risks of medication, and knowledge of medicine risks does not cause dissonance among them.

Public health campaigns on social media can reduce the practices of self-medication among youth by increasing awareness about medicine risks. Establishing forums on social media where youths can ask questions about self-medication with health professionals. Enhancing youth's ability to critically evaluate health information on social media can be beneficial.

7. Conclusion

This study concluded that increased use of social media among youth is associated with greater knowledge of medicine and more self-medication practices. However, knowledge of medicine risks does not create cognitive dissonance and does not impact their self-medication practices, as the degree of dissonance is lower regarding knowledge about medicine risks compared to self-medication practices, indicating no inconsistency between their beliefs and behaviors.

Limitations and Suggestions for Future Research

It is recommended to conduct similar research on social media use for health-related information and self-medication practices among mature age groups. As this study was limited to a specific university-level sample in Pakistan, it is suggested to expand the research to other regions within the country. In addition to the cognitive dissonance perspective explored in this study, it is suggested to examine this topic from other theoretical frameworks or media theories to gain a more comprehensive understanding of how youth respond to inconsistent information regarding self-medication. Researchers may consider incorporating open-ended questions in the data collection instrument for a more descriptive exploration of participants' perspectives and experiences.

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