Original Research Article

Impact of infodemics on Generalized Anxiety disorder, sleep quality and depressive symptoms among Pakistani Social media users during epidemics of COVID-19

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Abstract

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Novel coronavirus is declared pandemic by World health organization. Following the outbreak there was a lot of misinformation on social media leading stress among masses. Efforts are being made worldwide to reduce COVID-19 but misinformation or infodemics on social media has led to serious issue. The objective of this study was to investigate impact of infodemics on Generalize anxiety disorder (GAD), quality of sleep and depression among Pakistani social media users during epidemics of COVID-19. A web based survey was conducted which included 303 participants. Questionnaire was based on: sociodemographics, generalized anxiety disorder scale, shortened Pittsburgh sleep quality index (short PSQI) and Center for epidemiology scale for depression (CES-D). Statistically significant difference between variables GAD, Quality of sleep and depressive symptoms was found (p <0.05). GAD was significantly associated with variables like occupation, gender and time spent on social media (p = 0.001, p= 0.001, p=0.003) .Prevalence of GAD, Quality of Sleep disturbance and depressive symptoms was found to be 94 (31%), 21 (6.9%) and 42 (13.9%) respectively.

Keywords: Infodemics, epidemics, generalized anxiety disorder, sleep quality, depressive symptoms

INTRODUCTION

In recent years Coronavirus outbreak has caused considerable global health problems. Corona virus are positive-sense RNA viruses which can be viewed under electron microscopy, they are normally present in cows bats, camels and cats (Guarner, 2020). On 31st December 2019 numerous cases of pneumonia were reported in China this issue got highlighted when it was brought to World Health Organization (WHO). Upon investigation it was seen that such strain of coronavirus was never seen before and was named as Novel Corona Virus Disease COVID-19 (Jiang et al., 2020). Situation report published by WHO is updated on daily basis reporting prevalence of COVID-19 globally. This disease can be easily prevented using Centers of Disease Control and Prevention guideline which incorporates avoidance of contact with sick people, avoid touching areas around eyes, nose and mouth, washing hands with soap, cover cough and sneezing and disinfecting household objects of regular use. CDC doesn't recommend healthy people to wear face mask unless they have symptoms so as to avoid the spread to other people. (Wang et al., 2020).

Mortality rate due to corona virus is 2% as reported by

Department of Human and health services. It is also reported that people have started to cure in China (CDC, 2020). Currently there is a lot of misinformation on social media leading to hype and panic among masses. Efforts are being made worldwide to reduce COVID-19 but epidemics of misinformation spreading throughout various platforms of social media has led to serious public health issue.(Hu et al , 2020) 'Infodemics' refers to excessive amount of information which hinders identification of solution. Infodemics leads to spread of rumors, misinformation in a health emergency situation. When the demand for information is high people usually seek information from non-reliable sources present on social media. Misinformation travels rapidly through social media through videos, articles, interviews and pictures providing false claims and people start believing them if they are repeated exposed to them (Vaezi, 2020). This issue was highlighted by WHO for which it has identified such trusted chains which can be used as amplifiers for correct information which includes health care workers and authentic websites. Also social media firms are working with WHO to combat wrong information leading to panic among masses (Oxford, 2020).

In the light of above stated problem the objective of this study was to investigate impact of infodemics on Generalize anxiety disorder (GAD), quality of sleep and depression among Pakistani social media users during epidemics of COVID-19.

MATERIALS AND METHODS

An analytical cross-sectional study was conducted for the duration of 1 month (Feb2020-March2020). A sample of 303was calculated keeping power of study as 80%, level of significance 0.05, 95% Confidence Interval and margin of error as 0.5%. Participants who were regular social media users and agreed to take part in this survey were included in the study. A web based questionnaire was developed to avoid any social contact and to reduce chances of cross-infections. It comprised of i) sociodemographics of participants ii) Generalized anxiety disorder scale (GAD-7) (Spitzer, 2006) iii) shortened Pittsburgh Sleep Quality index (short PSQI) (Famodu, 2018) iii) Center for Epidemiology Scale for depression (CES-D). (González et al, 2017) All these scales were based on likert scale the scores were added to find mean score in order to measure the severity of condition.GAD-7 is based on four point likert scale ranging from 0-3 'not at al', 'several days', 'more than half days', 'nearly every day' with scores'0-21' with cutoff 9 increasing scores indicates increasing anxiety scores in last 2 weeks. CES-D is based on four point likert scale ranging from 0-3 'rarely to most of the times'with total score 0-60 cutoff >28 indicates greater depressive symptoms in last 1 month. Short- PSQI is a four point likert scale ranging from 0-3 'rarely to most of the times' with score ranging

from 0-27 cutoff> 18 indicating poor quality of sleep increasing score indicates the severity of anxiety in last 2 weeks. Data was analyzed using SPSSv.21. Due to non-parametric data Kruskalwallis test was applied to look for significant differences between GAD, quality of sleep, depressive symptoms and to explore their relationship with time spent on social media in reading information about COVID-19 and other variables. Later on univariate analysis and multivariate analysis was done using generalized linear model. In univariate analysis p- value < 0.25was considered statistically significant, whereas in multivariate analysis p-value < 0.05 was considered statistically significant,

RESULTS

Out of 303 participants 97 (32%) were males whereas, 206 (68%) were females with age ranges between 20-50 years. Mean age was found to be 25 ± 0.4 years.

When occupation of participants was inquired it was seen that 92(30.4%) were enterprise or institution workers, 88 (29%) were students at different levels, 77 (25.4%) belonged to other professions, 25(8.3%) were health care workers whereas 21(6.9%) were teachers at different levels like schools, colleges or universities. All the participants were social media users. It was found that 171 (56.4%) spent < half an hour on seeking information regarding COVID-19on social media, 107 (35.3%) spent nearly 1 hour each day whereas only 25 (8.3%) spent more than an hour reading information on social media from different sources whatever they came across.

Among study participants prevalence of GAD, Quality of Sleep disturbance and depressive symptoms was found to be 94 (31%), 21 (6.9) and 42 (13.9%) respectively.

Statistically significant differences between variables GAD, Quality of sleep and depressive symptoms was found (p <0.05) table 1. GAD was also found to be significantly associated with variables like occupation, gender and time spent on social media (p = 0.001, p= 0.001, p=0.003) respectively. Sleep quality was found to be significantly associated with variables like occupation and gender (p=0.03, p= 0.008). Depressive symptoms was found to be significantly associated with occupation, gender and time spent on social media (p= 0.005, p= 0.038, p =0.01).

GAD scores were greatest among school, college and university students (64.8%) and least was found among health care workers (8%). GAD scores were high in females. Among all females, 66(32.0%) reported no anxiety at all while 68% reported being anxious from several days to nearly everyday. Among males 46 (47.4%) reported no anxiety at all. Similarly, sleep disturbance and depressive symptoms were found more in students as compared to other occupations.

Table 1. Differences between dependent and independent variables (n=303)

Variables	n(%)	Occupation	Gender	Age	Time spent on social media
GAD	94(31%)	0.001	0.001	0.559	0.003
Sleep quality	21(6.9%)	0.034	0.008	0.247	0.193
Depressive symptoms	42 (13.9%)	0.005	0.038	0.432	0.014

Kruskalwallis test

Table 2: Univariate Analysis (Generalized linear model) n=303

Variables	Generalized Anxiety Disorder			Quality of sleep			Depressive symptoms		
	β (S.E)	p-value	95% CI	β (S.E)	p-value	95% CI	β (S.E)	p-value	95% CI
Time Spent on Social Media									
Less than an hour	0.003(0.21)	0.004	-0.25 to -0.58	-0.110(0.21)	0.601	-0.53 to 0.38	-0.035(0.21)	0.009	-0.43 to -0.40
Nearly an hour	0.163(0.22)	0.009	-0.43 to 0.43	-0.260(0.22)	0.220	-0.70 to 0.16	-0.105(0.22)	0.038	-0.46 to -0.40
More than an hour	ref								
Age	-0.023(0.01)	0.055	-0.04 to 0.00	0.003(0.11)	0.825	-0.02 to 0.02	-0.021(0.11)	0.070	-0.04 to 0.00
Gender									
Male	-0.396(0.12)	0.001	-0.63 to -0.15	-0.270(0.12)	0.028	-0.51 to -0.02	-0.23(0.12)	0.055	-0.47 to 0.01
Female	ref								
Occupation									
Healthcare worker	-1.281(0.23)	<0.001	-1.73 to -0.82	-0.522(0.23)	0.023	-0.97 to -0.07	-0.622(0.23)	0.007	-1.07 to -0.17
Teacher	-0.861(0.24)	<0.001	-1.34 to -0.37	-0.39(0.24)	0.106	-0.88 to 0.08	-0.610(0.24)	0.013	-1.09 to -0.12
Student	-0.370(0.15)	<0.001	-0.68 to -0.07	-0.11(0.15)	0.460	-0.42 to 0.19	-0.360(0.15)	0.020	-0.66 to -0.58
Employee	-0.502(0.15)	0.015	-0.80 to -0.20	-0.052(0.15)	0.734	-0.35 to 0.25	-0.399(0.15)	0.010	-0.70 to -0.09
others	ref								

'β' = coefficient of regression, S.E= Standard error, p-value > 0.25, CI = Confidence interval

Results of generalized linear model showed that in univariate analysis GAD was significantly and positively associated with the time spent on social media whereas, it was significantly and inversely associated with gender and occupation. As compared to those individuals who spent more than an hour in reading about COVID-19 on social media, those who spent less than an hour show lesser scores (β = 0.003 p=0.004) followed by those who spent nearly 1 hour in reading about COVID-19 (β = 0.163, p=0.009) table 2.

Quality of sleep was significantly and inversely associated with gender only (β = -0.270, p=0.028). Depressive symptoms was found to be significantly and inversely associated with time spent on social media and occupation. As compared to those individuals who spend more than an hour in reading about COVID-19 those who spend less than an hour showed lower scores (β = -0.035 p=0.009) followed by those who spent nearly one hour (β = -0.105 , p= 0.038) Hence inverse linear trend can be seen.

Table 3 shows results of multivariate analysis, GAD was still found to be significantly associated with gender and occupation (p < 0.0.5) . Whereas, depressive symptom was found to be associated with occupation only (p <0.05)

Table 3: Multivariate Analysis (Generalized linear model) n=303

Variables	Generalized Anxiety Disorder			Depressive symptoms		
	β (S.E)	p-value	95% CI	β (S.E)	p-value	95% CI
Time Spent on Social Media						
Less than an hour	0.228(0.21)	0.292	-0.19 to 0.65	0.037 (0.22)	0.835	-0.40 to 0.47
Nearly an hour	0.116(0.22)	0.603	-0.32 to 0.55	0.045(0.21)	0.867	-0.37 to 0.46
More than an hour	ref					
Gender						
Male	-0.307(0.12)	0.001	-0.55 to -0.06	------	------	------
Female	ref					
Occupation		< 0.001				
Healthcare worker	-1.281(0.23)	<0.001	-1.66 to 0.74	-0.620(0.23)	0.007	-1.08 to -0.17
Teacher	-0.900(0.24)	<0.001	-1.34 to -0.41	-0.611(0.24)	0.013	-1.90 to -0.12
Student	-0.395(0.15)	0.012	-0.70 to -0.08	-0.366(0.15)	0.019	-0.67 to -0.05
Employee	-0.497(0.15)	0.001	-0.80 to -0.19	-0.40(0.15)	0.010	-0.70 to -0.09
Others	ref			ref		

'β' = coefficient of regression, S.E= Standard error, p-value > 0.05, CI = Confidence interval

DISCUSSION

Following the outbreak of Novel corona virus in China and its spread into different parts of the world various measures were enforced to prevent its spread further. These precautionary measures included prohibiting public gatherings, using masks and people were encouraged to stay at home (Tavakoli et al., 2020). Similar measures were taken in Pakistan and educational institutions were shut down preemptively as a control measures which led to panic among the residents. With the increase in number of cases people suffer from mental stress and worry of being infected by the disease, the situation was exacerbated by myths and misinformation (Bao, 2020). There was a lot of misinformation too revolving about the spread of disease leading to exaggeration about the present state of the disease. A world report was published by Zarocostas (2020) on 'how to fight infodemics' which clearly stated that WHO is not only fighting epidemic but also infodemics. Social media is posing a serious threat by amplifying the situation as stated by WHO director general. With the outbreak of disease director of Infectious Hazards management addressed the lancet stating that every outbreak of COVID-19 was accompanied by tsunami of information on social media out of which all of them might not be correct amplifying this phenomenon. Another statement by the social media manager of WHO communication department was that they are working hard to direct people to reliable sources when they search for coronavirus on google so that people come across evidence based knowledge. To overcome this problem WHO has formed various platforms to combat infodemics spreading through social media (WHO, 2020).

In present study high prevalence was reported for GAD 31% but prevalence was lower for Sleep quality disturbance and depressive symptoms 6.9 % and 13.9

respectively. In present study females had higher prevalence of the above mentioned symptoms when compared to males this finding was congruent with a Chinese study which reported high prevalence in females. (Huang et al., 2020). The reason might be due to the fact that females tend to be more anxious towards emergencies as compared to males and perceive situations emotionally.

In current study prevalence of GAD was reported as 31% which is slightly lower than China which was reported by a study during epidemic of COVID-19, in present study disturbance in quality of sleep is reported as 6.9% which is very low when compared to China which reported as 18.2 %, similarly we also found a low prevalence of depressive symptoms among masses i.e 13.9% in contrast to Chinese study which reported as 20.1% . Hence, we can say that these symptoms exist low in Pakistan as compared to Huang et al(2020)due to the low prevalence of the condition till date.

Similarly, students exhibited more of these symptoms as compared to healthcare workers and other profession the reason might be due to the better understanding of the current situation among different occupations. Students tend to get more panic due to young age and less experience towards the situations in life in contrast to others. Whereas, a study by Xing et al (2020) on mental health status of medical personnel who were dealing with coronavirus in China showed that anxiety among medical personnel were significantly higher when compared to normal population. Other study revealed that healthcare workers had poor quality of sleep during COVID-19 epidemics (Kang, 2020).
Anotherkey finding of present research is that participants who surfed social media for greater duration reading information about outbreak of COVID-19 from various sources they come across exhibited more scores for GAD than those who spent lesser hours in doing so. This finding is in agreement to Huang et al. (2020).

Limitations

This study has several limitations. Firstly, due to cross-section study design it cannot assess cause effect relationship which might not be able to give true picture of this relationship. Secondly, a web-based survey was conducted in order to avoid any possibility of cross-infection which might have led to selection bias of our study sample and under estimation of the current situation. Thirdly, non-social media users were not included in this study hence comparison cannot be made.

CONCLUSION

Prevalence of GAD is high among Pakistanis, where as other symptoms like sleep disturbance and depression is low. Hence, initiatives should take by authorities to direct people to reliable sources of information.

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