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Impact of covid-19 pandemic on well-being and mental health of business community

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People around the world of developing countries have faced severe issues during this long pandemic outbreak, and harshly affected mentally, economically and socially. Financial pondering and worries have caused serious psychological and mental health problems among the people whatever is their income. Well-being and mental health of business community are the target constructs of this article to be discussed. The present study was aimed to investigate the demographical backgrounds in relationship to well-being, mental effects and financial causes. An online self-administered data was collected from a sample of population (n=100) in Timergara, Dir Lower, Khyber Pakhtunkhwa, Pakistan. We developed a study with psychometric properties of major scales included well-being, impact event on depression anxiety stress scale (DASS). The event impact was significantly, and negatively associated with wellbeing ($r = -.43, p < .01$), and positively associated with stress ($r = .60, p < .01$), anxiety ($r = .60, p < .01$) and depression ($r = .58, p < .01$). However, a negative event impact on wellbeing ($B = -.23, p < .001$), stress ($B = .17, p < .001$), anxiety ($B = .16, p < .001$), depression ($B = .17, p < .001$) was observed with a predictor (R^2) accounted on 43%, 36%, 36%, 36% of variance on outcome, respectively. The results were healthy and generalized to the population of Dir community, Pakistan, in relation to their income loss and effects on mental well-being. It could be assumed that not only ecological, climatic or any other features were the only effective responsible factors, in fact, the psychological and economic impacts seemed to be the major factors affected the most.

Keywords: COVID-19 Pandemic, Business Community, Event Scale Impact, Psychological, Well-being

INTRODUCTION

Back in history various pandemic outbreaks left a fear with mental and economic issues. The new virus, a global threat (Wang, 2020) caused by a novel corona virus first detected in December 2019, around a seafood market in the Chinese city of Wuhan Hubei Province (Nishiura, 2020), now reached more than 213 countries around the globe including Pakistan (Shuaib et al. 2020). It is by far the largest outbreak of atypical pneumonia since the severe acute respiratory syndrome (SARS) outbreak in 2003. It is reported that COVID-19, like SARS, is a beta coronavirus that

can be spread to humans through intermediate hosts such as bats (Paules et al. 2020), though the actual route of transmission is still debatable worldwide. The average incubation period is estimated to be 5.2 days, with significant variation among various patients (Li, 2020) and it may be capable of asymptomatic spread also (Rothe, 2020). The symptoms of COVID-19 range from no symptoms (asymptomatic) to severe pneumonia and can lead to death. The evidence from analyses of cases to date is that COVID-19 infection causes mild disease (i.e. non- or mild pneumonia) in about 80% of cases and most

cases recover, 14 % have more severe disease and 6% experience critical illness. It is reported that older men with medical comorbidities are more likely to get infected and that too with worse outcomes (Chen, 2020). Severe cases can even lead to cardiac injury, respiratory failure, acute respiratory distress syndrome and death as well (Holshue, 2020).

A recent study scale has reported multifaceted public health interventions in addition to the physical health, the potential psychological and mental health impacted by the COVID-19 pandemic should also be taken seriously. Although previous research has suggested that the mental impact of a major disaster had a wider and longer effect on people compared to physical injuries, mental health attracts far fewer personnel for planning and resources (Allsopp et al. 2019). Studies conducted on the psychological impact of previous infectious outbreaks, such as the severe acute respiratory syndrome (SARS) that is similar to the COVID-19 pandemic, have found heavy psychological burdens among healthcare workers and the general public such as anxiety, depression, panic attacks, or psychotic symptoms (Maunder et al. 2003; Xiang et al. 2020). Healthcare workers who were quarantined, worked in SARS units, or had family or friends infected with SARS, had considerably more anxiety, depression, frustration, fear, and post-traumatic stress than those who had no such experience (Xiang et al. 2020; Wu et al. 2009). A recent systematic review and meta-analysis has summarized the prevalence of depression and anxiety among healthcare workers during the COVID-19 (Pappa et al. 2020). After the publication of the review (Pappa et al. 2020), many more studies from other countries (e.g. Italy, Spain, Iran, Israel) have been published and some of these studies extended the study population from healthcare workers to the general public and patients with pre-existing conditions (e.g. cancer, psychiatry, epilepsy, type 2 diabetes). In the same case, a few studies have suggested that the psychological impact of COVID-19 may be different among healthcare workers, the general public and patients (Luo et al. 2020).

Although consequences of financial worry and rumination have not been investigated earlier, related studies suggest that financial worry and rumination affect mental health, psychological well-being, and cognitive functioning. First, a growing body of correlational studies has indicated that current money management stress,

debt-related stress, and financial threat are negatively associated with subjective well-being (Netemeyer et al. 2018) and mental health (Marjanovic et al. 2015). Furthermore, financial worry and rumination may mediate the effects of income and debt on these psychological outcomes. Several studies have shown that income has a positive causal effect and having debts a negative effect on mental health (Gathergood, 2012), psychological well-being (Haushofer & Shapiro, 2016), and cognitive functioning (Mani et al. 2013). Additionally, some recent studies have found that constructs similar to financial worry and rumination mediate these relationships (Johar et al. 2015). Altogether, these findings suggest that financial worry and rumination may also affect these psychological outcomes.

The crisis of reduced income, losing jobs, unavailability of goods, and poor hygienic conditions are already prompting even broader social exclusion of vulnerable groups by stigmatizing them. This may include mentally impaired, low-income families, unemployed individuals, migrants and undocumented workers. Extreme impoverishment results in cognitive, affective and physical deficit. People struggling with excessive financial difficulties are prone to mental health issues such as depression, substance abuse, especially alcohol abuse, and suicidal tendency (Yang et al. 2017). The more debt they struggle with, the higher the likelihood of mental disorders (Jenkins et al. 2016). According to an empirical study of Stuckler et al. (2009), after the rise of unemployment, there was a 28% increase in suicide rates. Leaders are required to intervene with strategically devised social protection programs for risky hypersensitive population. The COVID-19 pandemic outbreak has forced many businesses to close, leading to an unprecedented disruption of commerce in most industry sectors. Retailers and brands face many short-term challenges, such as those related to health and safety, the supply chain, the workforce, cash flow, consumer demand, sales, and marketing. However, successfully navigating these challenges will not guarantee a promising future, or any future at all. This is because once we get through this pandemic, we will emerge in a very different world compared to the one before the outbreak. Many markets, especially in the fields of tourism and hospitality, no longer exist. All organizational functions are intended to prioritize and optimize spending or postpone tasks that will not bring value in the current

environment. Companies, especially start-ups, have implemented an indefinite hiring freeze. At the same time, online communication, online entertainment, and online shopping are seeing unprecedented growth (Donthu and Gustafsson, 2020).

There are extensive researches on psychological impact of COVID19 on general population and other professions but the researcher did not found any single study on the business community. Nobody on a wide range felt the need of the study on this specific research to be carried on this population. Changes on a large scale in the business market especially job holders and labor, received a panic if they face loss in income, jobs or daily wages and thus, it can cause psychological harm to well-being while disturbing their daily lives.

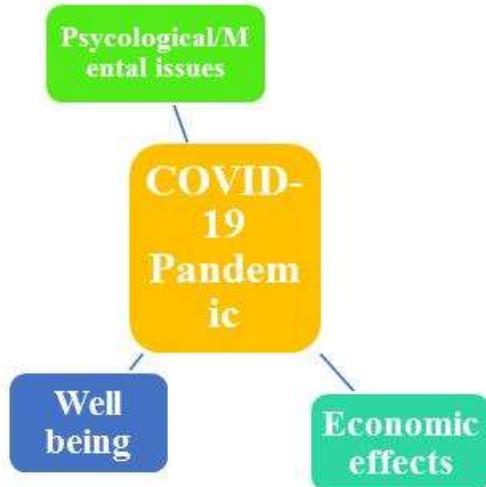


Figure 1. Research model of pandemic relation with psychological/well-being and economic effects

MATERIALS AND METHODS

Site description and geography

Present study was carried out during December, 2020 at Timergara, Dir Lower, Khyber Pakhtunkhwa, Pakistan. Dir Lower is one of the 26 districts of the north-western Khyber Pakhtunkhwa province of Pakistan. It lies between 34°84' North latitude and 71°90' East longitude, having an average altitude of 1112 meters above sea level. The topography of Dir Lower is dominated by mountains and hills which are part of the ranges of southern Hindukush lies in the valley of valley of River Panjkora. It is bounded on the north by Dir Upper district, on the east by

Swat district, on the south by Malakand district and Bajaur agency, while on the west it is bordered by Afghanistan. The total geographical area of the district is 1,58,300 hectares. It is a rugged, mountainous zone with peaks rising to 5,000 meters (16,000 ft.) in the north-east. Major valley of the area include Timergara (Headquarter City and Business area). Where, total reported area of the District is 1,42,638 ha (Figure 1).



Figure 1: Map of studied area Timergara, Dir Lower, Khyber Pakhtunkhwa-Pakistan

Study Measures

A cross sectional survey was conducted and sample of 100 respondents from the business community were selected through convenient sampling (stratified random sampling), and participated in the survey with self-administered questionnaire.

Universe of the study

Stratified random sampling was done on the basis of active and social nature of the business community personals. A well designed study questionnaire was modified and scheduled according to the business locality to collect the recent information according to their opinions, and then sent through online Emails, WhatsApp etc. Efforts were made to keep it simple and understandable obtained. The interview schedule contained both open-ended and closed ended questions to collect relevant desired information (Wingenbach et al. 2003; Sanaullah and Pervaiz, 2019).

Demographics characteristics

The research survey was based on online platform observation targeting business community on a small scale of 100 respondents. A basic information sheet which included information about the subject's marital status, educational qualifications, income per month and current business type.

The Warwick-Edinburgh Mental Well-being Scale

It is 14-item scale covering both hedonic and eudaimonic aspects of mental health including positive affect (feelings of optimism, cheerfulness, and relaxation), satisfying interpersonal relationships and positive functioning (energy, clear thinking, self-acceptance, personal development, competence, and autonomy). It has good content validity and high test-retest reliability (Tennant et al. 2007). The total score was determined by adding the score of all the 14 items. A higher score indicates greater positive well-being. A score of ≤ 40 has been reported to indicate high risk for depression (Clarke et al. 2011)

DASS 21-item

The 21-item DASS version was used to assess depression, anxiety, and stress. There are 7 items for each subscale. The responses were collected on a 4-point rating scale ranging from 0 "didn't apply to me at all" to 3 "Applied to me very much or most of the time". Cronbach's alphas were found to be 0.85 for stress subscale, 0.75 for anxiety and 0.80 for depression subscales. The aggregated number for each subscale was multiplied by 2 and interpreted as suggested by the authors (Lovibond and Lovibond, 1995).

The impact of event scale

IES has a worldwide reputation in measuring various traumatic experiences in different samples and seems to be very effective, both for epidemiology and intervention purposes. Revised Impact of Event Scale consists of 22 questions and a scoring range of 0 to 88 (Creamer et al. 2003).

Research analysis

The data was analyzed with the help of SPSS (Version-21) and Stata (V-12) softwares using Mean and Standard Deviation with an acceptance mean value of ≥ 3.00 (SanaUllah et al. 2021). Correlation and Regression analysis were carried out to make inferences. In addition to information

on demographic characteristics, the questionnaire included the validated Depression, Anxiety, and Stress Scales (DASS-21). The Warwick-Edinburgh Mental Well-being Scale and the Impact of Events Scale-Revised (IES-R) instrument.

RESULTS AND DISCUSSION

We assessed the demographic profile on initial basis to study questions nearly related to the respondents (Figure 1 & Table 1). The study mainly involved the effects of business community that's why we were used to select sample according to the community. The mean age of the sample was 38.86 ± 9.13 . The results also indicated that the majority 73% were married and graduate with high level of education (54%) while rest of them were of intermediate (25%) level (Figure 1). Most of the community respondents had income level above 41,000 per month and studied business area consisted of mainly green food (12%), building materials (8%) and medicine (7%) (Table 1).

Psychometric properties of the study investigated for major scales included well-being, impact event scale, stress, anxiety and depression (Table 2). The values of alpha ranged ($\alpha = .81$ to $.90$) indicated that the scale has good reliabilities. Further, the values of Skewness and Kurtosis showed that the data was normally distributed and was suitable for further inferential statistics.

Best rather to predict, we utilized the data resources to study the statistical association among event impact, wellbeing, stress, anxiety and depression (Table 3). The results showed that the event impact was significantly and negatively associated with wellbeing ($r = -.43$, $p < .01$) and significantly and positively associated with stress ($r = .60$, $p < .01$), anxiety ($r = .60$, $p < .01$) and depression ($r = .58$, $p < .01$). Results also indicated that the wellbeing is significantly and negatively associated with stress ($r = -.40$, $p < .01$), anxiety ($r = -.39$, $p < .01$) and depression ($r = -.38$, $p < .01$).

Contributions of research study also focused the effect of event impact on wellbeing and stress (Table 4; Table 5). The results showed that the event impact has negative effect on wellbeing ($B = -.23$, $p < .001$). Further, the value of R^2 indicates that the predictor accounted 43 percent of variance on outcome. The results showed that the event impact has negative effect on stress ($B = .17$, $p < .001$). Further, the value of R^2 indicates that the predictor accounted 36 percent of variance on outcome.

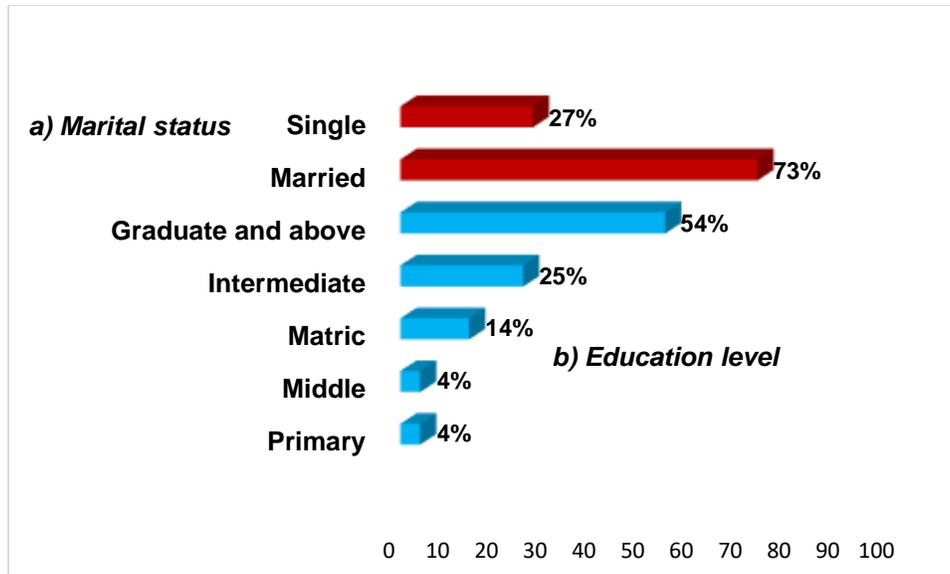


Figure 1: Demographic profile showing marital status and education level of the respondents

Table 1: Socio-demographic characteristics of the sample (N=50) based on income and business

Variable	Category	Frequency (f)	Percentage (%)
Income			
	10000-20000	4	4.00
	21000-30000	5	5.00
	31000-40000	5	5.00
	40000 Above	86	86.00
Business Type			
	Green Food	12	12.00
	Building Materials	8	8.00
	Fertilizers	3	3.00
	Stationary	5	5.00
	Furniture	2	2.00
	Medicine	7	7.00
	Other	63	63.00

Note: Mean Age 38.86 ± 9.13

Table 2: Descriptive Statistical details of the Scales

Scale	K	α	Range					
			M	SD	Potential	Actual	Skew	Kurt
WB	14	.81	36.80	7.10	14-70	20-54	.02	-.02
IES	22	.90	41.08	13.32	0-88	5-74	-.61	.29
Stress	7	.87	10.47	3.84	0-21	0-18	-.81	.45
Anxiety	7	.82	10.43	3.48	0-21	2-17	-.55	-.13
Depression	7	.82	9.00	3.15	0-21	1-16	-.53	-.004

Table 3: Statistical Association among study major Variables

Variable	1	2	3	4	5
Impact Event	1				
Wellbeing	-.43**	1			
Stress	.60**	-.40**	1		
Anxiety	.60**	-.39**	.84**	1	
Depression	.58**	-.38**	.87**	.80**	1

Table 4: Effect of Event on Wellbeing

Effect	Estimate	SE	95% CI		
			LL	UL	p
Event Impact	-.23	.05	-.32	-.13	.000
R ²	.43	-	-	-	-
F	21.85				.000

Table 5: Effect of Event on Stress

Effect	Estimate	SE	95% CI		
			LL	UL	P
Event Impact	.17	.02	.13	.22	.000
R ²	.36	-	-	-	-
F	54.00				.000

Table 6: Effect of Event on Anxiety

Effect	Estimate	SE	95% CI		
			LL	UL	P
Event Impact	.16	.02	.12	.20	.000
R ²	.36	-	-	-	-
F	55.45				.000

Table 7: Effect of Event on Depression

Effect	Estimate	SE	95% CI		
			LL	UL	P
Event Impact	0.14	0.02	0.10	0.18	.000
R ²	0.34	-	-	-	-
F	49.67				.000

In account to understand the approach towards study impacts, the community respond well and adapt quickly to model research impacts of the effect of event impact on anxiety and depression (Table 6, 7). The results showed that the event impact has negative effect on anxiety ($B = .16, p < .001$). Further, the value of R^2 indicates that the predictor accounted 36 percent of variance on outcome. The results showed that the event impact has negative effect on depression ($B = .17, p < .001$). Further, the value of R^2 indicates that the predictor accounted 36 percent of variance on outcome.

Major factors contributed to effect the mental health of people around economic community

“Social interaction may not only be the reason to effect lives, but a psychological effective element is initiated when insecurity and income loss occurred”.

“A bad experience was observed the time when we only utilized our savings, and on other hand expenses were more”.

“Business tensions were experienced in severity when people reported aroused mental health during lock down, as they also didn't receive any social, emotional and financial support”.

“Business communities were not only suffered due their economic and mental issues but the drawn down setup of their dealings, family emotions and needs, zero or low income, no contact with supportive workers/labors and isolations, put a lot of pressures and closed the services”.

DISCUSSION

The main aim of the present research was to explore the levels of psychological distress (stress, anxiety, and depression) and wellbeing among business community. Grover et al. (2020) conducted a study in India on general population during covid-19 and about 70% of the participants (71.7%) had score ≤ 40 , which suggesting poor mental well-being which supports our results. Our study is supporting by an online survey in India which shows that stress, depression, and anxiety has negative correlation with the well-being (Grover et al. 2020). A comparison of our findings the increase of COVID-19 confirmed cases significantly increased anxiety, depression, and stress in the front-line medical team (Xu et al. 2020). Furthermore, the results showed that the event impact has negative effect on wellbeing ($B = -0.23, p < .001$) and the results can be compare

with the study of Dawel et al. (2020) which shows negative effect of COVID-19 on wellbeing among a sample of Australian adults.

Employees relying heavily on extrinsic rewards and incentives to boost their self-esteem, may now feel less accomplished and experience depression (Giorgi et al. 2015). Job insecurity is a stressor on its own. Work functions as a major determinant of individual well-being, and this is the exact reason why public welfare policies aiming at increasing collective psychological well-being typically include measures and interventions for the working population and prospective working population, such as career development counselling, scholarship and training. Depression and anxiety were associated with impaired psychosocial and occupational functioning (Hussain et al. 2011; Alonso et al. 2004; Druss et al. 2009). The economic breakdown caused by catastrophes is often followed by an increase in depression and anxiety disorders since it affects not only emotional and social functioning but also causes disruptions in psychological and economical effects (Reichert and Tauchmann, 2011). Both rumination and worry are negative thinking styles that share some characteristics and can operate interactively. Both are forms of repetitive, pessimistic, self-focused thoughts, are associated with mental health-problems such as anxiety and depression, and are found to impair cognitive functions (Nolen-Hoeksema et al. 2008). A recent study conducted by Harvard Business School also reveals that many small businesses are temporarily closed and have laid off their employees by 40% relative to January (Bartik et al. 2020). These findings indicate that most of the participating enterprises are struggling to survive by various means. Similarly, a recent survey regarding the impact of COVID-19 on SMEs operating in the U.S conducted by Senz (2020), shows that 65% of small businesses believe that they cannot survive if the ongoing crisis lasts four months. This means that in case of prolonged lockdowns, there are higher chances that many Pakistani MSMEs could not sustain to survive and will go bankrupt or out of business (Shafi et al. 2020).

CONCLUSION

According to our opinions this study could be assumed the first one to express business and psychological effects in the country, especially Khyber Pakhtunkhwa Province in general. The study results indicated a close statistical association among event impact, wellbeing,

stress, anxiety and depression. The event impact was found significantly and negatively associated with wellbeing, and positively associated with stress, anxiety and depression. It was also observed that the wellbeing was significantly and negatively associated with stress, anxiety and depression.

CONFLICT OF INTEREST

The authors declared that present study was performed in absence of any conflict of interest.

ACKNOWLEDGEMENT

As a matter of fact, providing overall income and loss of business community was not in range to be surveyed through online data constraints limitations. However, the survey study with cross sectional nature helped in exploring an association between well-being and mental health with economic effects.

AUTHOR CONTRIBUTIONS

HU and SA designed the research and carried out the research survey. HU analyzed the data. AB and HU performed the literature search and prepared the original draft manuscript. AB reviewed and finalized the manuscript. SA supervised the research study. All the authors read and approved the final manuscript.

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REFERENCES

Allsopp K., Brewin C.R., Barrett A., Williams R., Hind, D., Chitsabesan P. & French P. 2019. Responding to mental health needs after terror attacks. *Bmj*, 366.

Alonso J., Angermeyer M.C. & Lépine J.P. 2004. The European Study of the Epidemiology of Mental Disorders (ESEMeD) project: an epidemiological basis for informing mental health policies in Europe. *Acta Psychiatr Scand.* 109: 5-7. doi:10.1111/j.1600-0047.2004.00325.x.

Bartik A., Bertrand M., Cullen Z.B., Glaeser E.L., Luca M. & Stanton C. 2020. How are small businesses adjusting to COVID-19? Early evidence from a survey. Harvard Business School Working Paper. 20(102): 1-37.

Cao Z., Zhang Q., Lu X., Pfeiffer D., Jia Z., Song H., & Zeng D.D. 2020. Estimating the effective reproduction number of the 2019-nCoV in China. *MedRxiv*.

Chen N., Zhou M., Dong X., Qu J., Gong F., Han Y. & Yu T. 2020. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *The Lancet*, 395(10223), 507-513.

Clarke A., Friede T., Putz R., Ashdown J., Martin S., Blake A. & Stewart-Brown S. 2011. Warwick-Edinburgh Mental Well-being Scale (WEMWBS): validated for teenage school students in England and Scotland. A mixed methods assessment. *BMC public health*, 11(1), 487.

Creamer M., Bell R. & Failla S. 2003. Psychometric properties of the impact of event scale-revised. *Behaviour research and therapy*, 41(12), 1489-1496.

Dawel A., Shou Y., Smithson M., Cherbuin N., Banfield M., Caelear A.L. & McCallum S.M. 2020. The effect of COVID-19 on mental health and wellbeing in a representative sample of Australian adults. *Frontiers in psychiatry*, 11, 1026.

Donthu N. & Gustafsson A. 2020. Effects of COVID-19 on business and research. *Journal of Business Research*. 117: 284-289.

Druss B.G., Hwang I., Petukhova M., Sampson N.A., Wang P.S. & Kessler R.C. 2009. Impairment in role functioning in mental and chronic medical disorders in the United States: results from the National Comorbidity Survey Replication. *Mol. Psychiatry*. 14: 728-737.

DSKP. 2017. Development Statistics of Khyber Pakhtunkhwa, Bureau of Statistics, Planning & Development Department, Government of Khyber Pakhtunkhwa. www.kpbos.gov.pk

Gathergood J. 2012. Debt and depression: Causal links and social norm effects. *The Economic Journal*. 122(563): 1094-1114. <https://doi.org/10.1111/j.1468-0297.2012.02519.x>.

Giorgi G., Arcangeli G., Mucci N. & Cupelli V. 2015. Economic stress in the workplace: the impact of fear of the crisis on mental health. *Work*. 51(1): 135-142.

- Grover S., Sahoo S., Mehra A., Avasthi A., Tripathi A., Subramanyan A. & Chakraborty K. 2020. Psychological impact of COVID-19 lockdown: An online survey from India. *Indian J. Psych.* 62(4), 354.
- Haushofer J. & Shapiro J. 2016. The short-term impact of unconditional cash transfers to the poor: Experimental evidence from Kenya. *The Quarterly Journal of Economics*, 131(4): 1973–2042. <https://doi.org/10.1093/qje/qjw025>.
- Hawryluck L., Gold W.L., Robinson S., Pogorski S., Galea S. & Styra R. 2004. SARS control and psychological effects of quarantine, Toronto, Canada. *Emerging infectious diseases*, 10(7), 1206.
- Holshue M. L., DeBolt C., Lindquist S., Lofy K.H., Wiesman J., Bruce H. & Diaz G. 2020. First case of 2019 novel coronavirus in the United States. *New England J. Med.*
- Huang C., Wang Y., Li X., Ren L., Zhao J., Hu Y. & Cheng Z. 2020. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet*, 395(10223), 497-506.
- Hussain A., Weisaeth L. & Heir T. 2011. Psychiatric disorders and functional impairment among disaster victims after exposure to a natural disaster: a population based study. *Journal of Affective Disorders*, 128(1-2), 135-141.
- Johar G. Meng R. & Wilcox K. 2015. Thinking about financial deprivation: Rumination and decision making among the poor. Retrieved from *Advances in Consumer Research*. 43: 208-211.
- Li Q., Guan X., Wu P., Wang X., Zhou L., Tong Y. & Xing X. 2020. Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. *New England J. Med.*
- Li S., Wang Y., Xue J., Zhao N. & Zhu T. 2020. The impact of COVID-19 epidemic declaration on psychological consequences: a study on active Weibo users. *Int. j. env. Res. pub. Health*. 17(6), 2032.
- Lovibond S.H. & Lovibond P.F. 1995. *Manual for the Depression Anxiety Stress Scales* (2nd ed.). Sydney: DASS Publications.
- Luo M., Guo L., Yu M. & Wang H. 2020. The Psychological and Mental Impact of Coronavirus Disease 2019 (COVID-19) on Medical Staff and General Public—A Systematic Review and Meta-analysis. *Psychiatry Research*, 113190.
- Mani A., Mullainathan S., Shafir E. & Zhao J. 2013. Poverty impedes cognitive function. *Science*, 341(6149), 976–980. <https://doi.org/10.1126/science.1238041>.
- Marjanovic Z., Greenglass E.R., Fiksenbaum L., De Witte H., Garcia-Santos F., Buchwald P. & Manas M.A. 2015. Evaluation of the Financial Threat Scale (FTS) in four European, non-student samples. *J. Behavioral and Exp. Eco.* 55: 72-80. <https://doi.org/10.1016/j.socec.2014.12.001>.
- Maunder R., Hunter J., Vincent L, Bennett J., Peladeau N. & Leszcz M. 2003. The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. *CMAJ* 168 (10), 1245-1251.
- Netemeyer R.G., Warmath D., Fernandes D. & Lynch J.G. 2018. How am I doing? Perceived financial well-being, its potential antecedents, and its relation to overall well-being. *J. Consumer Res.* 45(1), 68-89. <https://doi.org/10.1093/jcr/ucx109>.
- Nishiura H., Kobayashi T., Yang Y., Hayashi K., Miyama T., Kinoshita R. & Akhmetzhanov A.R. 2020. The rate of underascertainment of novel coronavirus (2019-nCoV) infection: estimation using Japanese passengers data on evacuation flights.
- Nolen-Hoeksema S. & Davis R.N. 2000. Cognitive inflexibility among ruminators and non-ruminators. *Cognitive Therapy and Research*. 24(6): 699-711. <https://doi.org/10.1023/A:1005591412406>.
- Pan A., Liu L., Wang C., Guo H., Hao X. & Wang Q. 2020. Association of Public Health Interventions with the Epidemiology of the COVID-19 Outbreak in Wuhan. *JAMA* 323, 1915-1923.
- Pappa S., Ntella V., Giannakas T., Giannakoulis VG., Papoutsis E., Katsaounou P. 2020. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: a systematic review and meta-analysis. *Brain Behav. Immun* (20). <https://doi.org/10.1016/j.bbi.2020.05.026>. S08 89-1591(20)30845-X.
- Paules C.I., Marston H.D. & Fauci A.S. 2020. Coronavirus infections—more than just the common cold. *Jama*, 323(8), 707-708.
- Qiu J., Shen B., Zhao M., Wang Z., Xie B. & Xu Y. 2020. A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations. *Gen. psych.* 33(2)

- Reichert A.R. & Tauchmann H. 2011. The causal impact of fear of unemployment on psychological health. *Ruhr Economic Paper*. 266.
- Responding to mental health needs after terror attacks. *BMJ* 366, 14828. <https://doi.org/10.1136/bmj.14828>.
- Rothe C., Schunk M., Sothmann P., Bretzel G., Froeschl G., Wallrauch C. & Seilmaier M. 2020. Transmission of 2019-nCoV infection from an asymptomatic contact in Germany. *New England Journal of Medicine*, 382(10), 970-971.
- Sanauallah & Pervaiz U. 2019. An effectiveness of extension trainings on boosting agriculture in Federally Administered Tribal Areas (FATA) of Pakistan: An evidence from Bajaur Agency. *Sarhad J. Agric.* 35(3): 890-895.
- Sanauallah, Basit A. & Ullah I. 2021. Challenges and prospects of farm mechanization in Pakistan: A case study of rural farmers in District Peshawar Khyber Pakhtunkhwa. *Sarhad J. Agri.* 37.
- Senz K. 2020. Small businesses are worse off than we thought. Harvard Business School Working Knowledge Available. <https://hbswk.hbs.edu/item/small-businesses-are-worse-off-than-we-thought>
- Shafi M., Liu J. & Ren W. 2020. Impact of COVID-19 pandemic on micro, small, and medium-sized Enterprises operating in Pakistan. *Research in Globalization* 2 (2020) 100018.
- Shuaib M., Shah A.A., Tariq M., Hussain F., Azam N., Rauf A., Ahmad S., Jan F., Romman M. & Bahadur S. 2020. Pakistani perspective, preparation and response to COVID-19: A review. *Biosci Res.*, 17(4): 3029-3039.
- Tennant R., Hiller L., Fishwick R., Platt S., Joseph S., Weich S. & Stewart-Brown S. 2007. The Warwick-Edinburgh mental well-being scale (WEMWBS): development and UK validation. *Health and Quality of life Outcomes*, 5(1), 63.
- Wang C., Pan R., Wan X., Tan Y., Xu L., Ho C.S. & Ho R.C. 2020. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int. j. env. Res. pub. Health*. 17(5), 1729.
- Wang C., Pan R., Wan X., Tan Y., Xu L. & Ho C. 2020. Immediate psychological responses and associated factors during the initial stage of the 2019 Coronavirus Disease (COVID-19) epidemic among the general population in China. *Int. j. env. Res. pub. Health*. 17(5). 1729. <https://doi.org/10.3390/ijerph17051729>.
- Wingenbach G.J., Boyd B.L., Lindner J.R., Dick S., Arispe S. & Haba S. 2003. Students' knowledge and attitudes about international agricultural issues. *J. Int. Agric. Ext. Educ.*, 10(3): 25-35.
- World Health Organization. Coronavirus disease (COVID-19) outbreak. 2020. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>. June 2020.
- Wu P., Fang Y., Guan Z., Fan B., Kong J. & Yao Z. 2009. The psychological impact of the SARS epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance of risk. *Can. J. Psychiat.* 54 (5), 302–311. <https://doi.org/10.1177/0008473809347663>.
- Xiang Y.T., Yang Y., Li W., Zhang L., Zhang Q. & Cheung T. 2020. Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. *Lancet Psychiatry* 7 (3), 228–229. [https://doi.org/10.1016/S2215-0366\(20\)30046-8](https://doi.org/10.1016/S2215-0366(20)30046-8).
- Xu J., Xu H., Wang C.M. & Wang, J. (2020). Psychological status of surgical staff during the COVID-19 outbreak. *Psychiatry research*, 112955.. Psychological status of surgical staff during the COVID-19 outbreak. *Psych. Res.*112955.
- Zhao S., Musa S., Lin Q., Ran J., Yang G., Wang W. & Wang M.H. 2020. Estimating the unreported number of novel coronavirus (2019-nCoV) cases in China in the first half of January 2020: a data-driven modelling analysis of the early outbreak. *J. clinical Med.* 9(2), 388.