European Journal of Education Studies
ISSN: 2501 - 1111
ISSN-L: 2501 - 1111
Available on-line at: www.oapub.org/edu

DOI: 10.46827/ejes.v8i3.3634 Volume 8 | Issue 3 | 2021

DEVELOPMENT OF THE PSYCHOSOCIAL EFFECTS OF PANDEMIC SCALE (PEPS)

Demirali Yaşar Ergin[i]
Trakya University, Faculty of Education,
Department of Educational Sciences (retired),
Edirne, Turkey
orcid.org/0000-0002-1670-4083

Abstract:
The aim of this study is to develop a scale to determine the psychosocial effects of pandemic outbreaks such as covid-19. The study was conducted with 1546 (EFA) and 909 (CFA) participants. Internet-based method was used to collect data. "Psychosocial Effects of Pandemic Scale (PEPS)", prepared by the researcher, has been used as a means of data collection. The scale consists of 7 subscales and 30 Likert style items.
Study 1: Varimax rotated EFA was used as scale development statistics to ascertain sub-dimensions. Item-total correlation coefficient and item-remainder correlation coefficient, Cronbach and Rulon coefficient were calculated to determine the reliability.
Study 2: After the scale was structured with EFA and item analysis, the construct validity was tested with CFA. CFI and RMSEA fit indices were used to test the CFA model's suitability. Considering these criteria, CFA models were created for scale. The scale was found to be valid, reliable and available as a result of statistical procedures.

Keywords: Covid-19, 2019-nCoV, epidemic, pandemic, coronavirus, developing scale

1. Introduction

Since the end of 2019, a coronavirus type has started to threaten the human life in Wuhan (China). Due to the scale of the threat, it is labeled as a "pandemic" by World Health Organization (WHO) in 11th of March. It is the first pandemic announcement by WHO which is caused by a type of coronavirus and WHO warns all local authorities to raise their health emergencies to maximum level (Özer, 2020). Epidemic diseases that spread widely over multiple countries or continents around the world are called pandemics. (Demirbilek *et al*. 2020)

The clinical presentation of 2019-nCoV infection ranges from asymptomatic to very severe pneumonia with acute respiratory distress syndrome, septic shock and multi-organ failure, which may result in death (Güner *et al*. 2020). As a zoonotic pathogens kind

[i] Correspondence: email demiraliergin@gmail.com, demiraliergin@hotmail.com

of Virus which means that its able to transmit between animals and people and that it can also be transmitted through as an airborne infection, the effective way of combating it has been demonstrated that it's to isolate people using different social distancing measures (Munthali and Xuelian, 2020).

We need to rely on classical public health measures to curb the epidemic of this respiratory disease. The primary goal of such public health measures is to prevent person-to-person spread of disease by separating people to interrupt transmission. The tools we have at hand are isolation and quarantine, social distancing and community containment (Wilder-Smith and Freedman, 2020). The non-specific symptoms at early stages of COVID-19 and absence of clear transmission links have defied conventional containment strategy by case isolation and contact quarantine (Wang *et al*., 2020).

Currently, no ejective pharmacological interventions or vaccines are available to treat or prevent COVID-19. For this reason, nonpharmacological public health measures such as isolation, social distancing, and quarantine are the only ejective ways to respond to the outbreak. Isolation refers to the separation of symptomatic patients whereas quarantine is the restriction of asymptomatic healthy people who have had contact with confirmed or suspected cases. (Nussbaumer-Streit *et al*., 2020)

'Social distancing' is designed to reduce interactions between people in a broader community, in which individuals may be infectious but have not yet been identified hence not yet isolated. Examples for social distancing include closure of schools or office buildings and suspension of public markets, and cancellation of gatherings. Community containment is intervention applied to an entire community, city or region, designed to reduce personal interactions and movements. Such interventions range from social distancing among to community-use of face masks to locking down entire cities or areas. (Wilder-Smith and Freedman, 2020)

Empirical research on the effects of quarantine on individuals living in the community is scant. Emotional difficulties and lost income topped the list of problems for individuals who were quarantined in Toronto, according to one quantitative study. Hawryluck *et al*. (2004) found that approximately one third of respondents to a web survey about quarantine reported symptoms of depression or posttraumatic stress disorder. While these studies indicate potential emotional and economic challenges, they provide limited insight into variations in the experience of quarantine due to individual factors and social situations (Cava *et al.,* 2005).

Studies (Brooks *et al*., 2020; Sorokin *et al.,* 2020) show pandemic, such as COVID-19 increases psychological stress; and, the consequences of quarantine lead to emotional disturbance, depression, irritability, insomnia, anger, and emotional exhaustion among other health and mental health conditions (Gritsenko *et al.,* 2020).

Some researcher review reported that quarantine can have negative psychological effects such as post- traumatic stress symptoms, confusion and anger, which can lead to adverse long-term psychological effects (Nussbaumer-Streit *et al*., 2020).

In the 21st century, the world is being challenged not only by new infectious diseases such as SARS and avian influenza but also by bioterrorism. No country is immune to an outbreak of a highly infectious disease. There is an urgent need to

understand the possible psychosocial impacts of an outbreak of an easily transmitted, rapidly spreading infectious disease (Wu *et al*., 2009).

There are many research studies evaluating mental health in survivors of natural disasters or infectious diseases. However, no studies have evaluated mental health in individuals isolated due to risk of infection. During the MERS epidemic, more than 80% of the population feared MERS infection (Jeong *et al*., 2016).

Stress factors in quarantine are as follows: duration of quarantine, fears of infection, frustration and boredom, inadequate supplies, inadequate information, finances, stigma (Brooks *et al*., 2020).

Quarantine was considered archaic at the end of the 20th century when antibiotics and antivirals were believed to eradicate infectious diseases, until its widespread use during the recent emerging epidemics with a global pandemic threat: SARS (2003), H1N1 (2009), and MERS (2013) (Desclaux *et al*., 2017).

The main consequence of quarantine is a change in lifestyle and nutritional habits. Nutritional habits will change due to reduced availability of goods, limited access to food caused by restricted store opening hours, and to a switch to unhealthy food. A recent review on the psychological impact of quarantine reported negative psychological effects including post-traumatic stress symptoms, confusion, and anger. Having inadequate basic supplies (e.g., food, water) during quarantine was a source of frustration and continued to be associated with anxiety and anger for 4–6 months following release. Due to anxiety of future food shortage, it is plausible that people will purchase packaged and long-life food rather than fresh food. This leads to weight gain and to a reduced intake of antioxidants (Mattioli *et al*., 2020).

In line with previous research during viral epidemics COVID-19-related research (Knipe *et al.,* 2020) found evidence of increasing levels of fear worldwide (Alyami *et al.,* 2020). Present study results, based on multiple psychological, mental health, and substance use factors evidence the impact of quarantine. Overall, university students from Belarus where there is less quarantine/self-isolation restrictions report more positive psycho-emotional conditions and less substance use than those from Russia (Gritsenko *et al.,* 2020).

The panic buying (PB) episodes have been observed during this pandemic in many parts of the world. Some psychological explanations have been discussed attributing the PB behavior such as the perceived scarcity effect, perceived sense of losing control over the environment, perceived insecurity, social learning, instinctual behavior, infidelity toward the ruling government, and influences of media (Arafat *et al.,* 2020a). Although it covers the multiple disciplines of life such as behavioral science, marketing, supply chain, social science, economics, and disaster management, there is a dearth of empirical studies exploring the issue (Arafat *et al.,* 2020b).

During the lockdown period, the policy is clear that people are ordered to stay at home, most social and economic activities are temporarily prohibited, and travels are only allowed for few limited purposes, e.g., providing essential services, obtaining daily necessities, and other possible emergencies. Despite actions, such as warnings, roadblocks, arrest, and fines, taken by authorities, non-compliance cases still occur and

increase; some irresponsible and selfish individuals do not strictly adhere to the order by going out, wandering, and gathering unnecessarily. Also, some non-essential sectors are found operating illegally; it is indeed understandable that, owing to the pandemic, the economy and financial conditions are adversely affected where many businesses closed down and some have gone bankrupt (Ling and Ho, 2020).

Pandemic-related restraints is impacting on economic sustainability and well-being, which may induce psychological mediators, such as sadness, worry, fear, anger, annoyance, frustration, guilt, helplessness, loneliness, and nervousness (Bhuiyan *et al.*, 2020).

Given the possibility of a future flu pandemic, more systematic research is needed to improve understanding of the psychological impacts of infectious disease outbreaks, and related risk and protective factors. (Wu; Fang; Guan *et al.,* 2009: 303).

2. Materials and Method

The aim of this study is to develop a scale to determine the psychosocial effects of pandemic outbreaks such as covid-19. The study aimed to develop a self-report scale to describe the impact of the pandemic on individuals during the quarantine period.

2.1. Materials

The study was conducted with 1546 (EFA) and 909 (CFA) participants. Internet-based method was used to collect data. "Psychosocial Effects of Pandemic Scale (PEPS)", prepared by the researcher, has been used as a means of data collection. The scale consists of 7 subscales and 30 Likert style items. How are you affected by the following during these epidemic days? directive, items can be answered with the following 3 options and the scoring is between -1 and 1: negatively affected (-1), It did not affect (0), positively affected (+1). Subscales score was calculated by taking the mean of the items. Scale score was calculated by taking the mean of the subscales score. Negative scores in items, subscales and scale indicate negative effects, positive scores indicate positive effects.

2.2. Method

Study 1: Varimax rotated EFA (exploratory factor analysis) was used as scale development statistics to determine sub-dimensions (n=1546). To determine reliability, item-total correlation coefficient and item-remaining correlation coefficient, Cronbach and Rulon coefficient were calculated. Similarly, t-test was performed between the upper and lower quarters to determine the strength of discrimination. As a result of statistical operations, the scale consisting of 7 factors proved to be valid, reliable and usable.

Study 2: After the scale was structured with EFA (exploratory factor analysis) and item analysis, the construct validity was tested (n=909) with CFA (Confirmatory Factor Analysis). CFI (Comparative Fit Index) and RMSEA (Root Mean Square Error of Approximation) fit indices were used to test the CFA model's suitability. Considering these criteria, CFA models were created. The scale was found to be valid, reliable and usable as a result of statistical procedures.

2.3. Limitations

Primary and secondary school students, and people over 65 years of age were not sufficiently represented in this study. Due to social isolation, methods other than collecting data from the internet could not be used.

3. Results

3.1. Study 1

The sample of the first study used for EFA consists of 1546 people. 46.5% of the participants are 20-39 years old, 73.0% are women. 30,7% of the participants live in places with a population of more than 4 million (Table 1).

Exploratory factor analysis was used to determine the construct validation of the scale. The suitability of the data for factor analysis was assessed with KMO (0,851) and Barlett (Chi-Square= 10823,822 df=435 sig. 0.000) tests and it was detected that they are statistically appropriate. In the analysis performed in such a way that the components with an Eigen value of 1 and above were selected, 7 factors occurred. Principal component analysis was used as extraction method. 7 factors explain 50,906 percent of the total variance.

Table 1: Sample frequencies distribution for study 1

		Frequency	Percent
Your age?	Younger than 20	642	41,5
	20-39	719	46,5
	40-65	117	7,6
	Over 65	68	4,4
Your gender?	Female	1128	73,0
	Male	418	27,0
The approximate population of the place where you live?	Less than 10.000	158	10,2
	10.000 – 50.000	159	10,3
	51.000 – 250.000	336	21,7
	251.000 - 1 million	244	15,8
	1 million - 4 million	166	10,7
	More than 4 million	475	30,7
	Total	1538	99,5
	Missing	8	0,5
Total		1546	100,0

Factors and the items they contain were identified according to varimax rotated factor analysis. It has been ascertained that scale has 7 factors. (Table 1). The factors determined by factor analysis are as follows; F-1 Social relations / free environment, F-2 House environment, F-3 Health / job status, F-4 Hobbies and special interests, F-5 Leisure activities, F-6 Family relations, F-7 Artistic / sporting events and total scale F-T Psychosocial Effects of Pandemic.

Table 2: Rotated component matrix

		Component						
		1	**2**	**3**	**4**	**5**	**6**	**7**
i01	Not walking around outside	0,580						
i02	Not meeting family/boyfriend / girlfriend	0,494						
i03	Not meeting your friends	0,718						
i04	Not seeing family members / relatives who live in different places / cities	0,434						
i10	Getting bored	0,516						
i11	Not eating out	0,479						
i16	Not hanging out – having fun	0,719						
i24	Not travelling freely	0,582						
i26	Not chatting / meeting friends	0,688						
i13	Having snacks all the time		0,825					
i15	Not getting / giving education / training		0,360					
i28	Having meals and drinks all the time		0,855					
i29	Getting used to laziness		0,525					
i30	Watching films on TV		0,365					
i05	Experiencing health problems due to other reasons			0,646				
i09	Experiencing depression, anxiety			0,495				
i17	Having difficulties in business life			0,663				
i22	Not earning money			0,561				
i25	Becoming nervous, aggressive			0,586				
i19	Reading books				0,793			
i20	Listening to music				0,807			
i21	Spending a lot of time with interests and hobbies				0,648			
i06	Spending time with making scientific/ artistic studies					0,690		
i08	Having free time					0,698		
i18	Relaxing at home					0,534		
i07	Chatting a lot / making friends						0,319	
i12	Being together with spouses and children						0,743	
i14	Feeling safe at home						0,565	
i23	Not making/ attending artistic / cultural activities							0,653
i27	Not doing sports / joining sportive activities							0,725

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 8 iterations.

Item-total correlation and item remainder coefficients were calculated in order to the relations between factors with the sum of scale. Cronbach α (0.64) and Rulon (0.57) coefficients were also calculated to determine the internal consistency between the factors. According to these analyzes, all factors included in scale were found to have internal consistency.

Item-total correlation and item remainder coefficients were calculated in order to the relations between items with the sum of the factor. Cronbach α and Rulon coefficients were also calculated to determine the internal consistency between the items. According to these statistical analyzes, which are repeated separately for each factor, it was found that all items in all factors had internal consistency (Table 3).

Table 3: The analysis of internal consistency

		Item-total correlation coefficient			Item-remainder correlation coefficient				
		r	**df**	**sig.**	**r**	**df**	**sig.**	**Rulon**	**Cronbach**
F1	Social relations /free environment	0,68	1544	p<.01	0,40	1544	p<.01	0,72	0,76
F2	House environment	0,68	1544	p<.01	0,44	1544	p<.01	0,48	0,66
F3	Health / job status	0,64	1544	p<.01	0,45	1544	p<.01	0,65	0,65
F4	Hobbies and special interests	0,40	1544	p<.01	0,22	1544	p<.05	0,68	0,75
F5	Leisure activities	0,60	1544	p<.01	0,41	1544	p<.01	0,86	0,57
F6	Family relations	0,48	1544	p<.01	0,30	1544	p<.01	0,45	0,44
F7	Artistic / sporting events	0,42	1544	p<.01	0,30	1544	p<.01	0,58	0,58
FT	Psychosocial Effects of Pandemic (Total)							0,57	0,64

The scale sum is calculated according to the average of the 7 factors it contains. According to the total of the scale, the participants were ranked in descending order and the participants contained by the upper and lower quartiles were identified. t- test was used to analyze the difference among upper and lower quartiles. According to these results, it was observed that all factors were found to be distinctive among high and low level affected participants. (Table 4).

Table 4: Discriminant coefficients for factors

		Upper Quadrille			**Lower Quadrille**					
		n	**Mean**	**Std.dev.**	**n**	**Mean**	**Std.dev.**	**t**	**df**	**sig.**
F1	Social relations / free environment	417	-4,56	2,92	417	-8,35	1,00	25,03	832	0,00
F2	House environment	417	-0,16	2,07	417	-3,58	1,32	28,41	832	0,00
F3	Health / job status	417	-0,99	1,31	417	-3,74	1,19	31,80	832	0,00
F4	Hobbies and special interests	417	2,37	1,00	417	1,19	1,44	13,80	832	0,00
F5	Leisure activities	417	2,08	0,99	417	-0,28	1,46	27,20	832	0,00
F6	Family relations	417	1,63	1,09	417	0,03	1,30	19,34	832	0,00
F7	Artistic / sporting events	417	3,34	0,86	417	2,45	0,69	16,46	832	0,00

The factor sum is calculated according to the average of the items it contains. According to the total of the factor, the participants were ranked in descending order and the participants contained by the upper and lower quartiles were identified. t- test was used to analyze the difference among upper and lower quartiles. The same process was repeated for all 7 factors. According to these results, it was observed that all items were distinctive among high and low level affected participants in all factors.

3.2. Study 2

The sample of the second study used for CFA consists of 909 people. 39.9% of the participants are younger than 20 years, 72.8% are women. 28.8% of the participants live in places with a population of more than 4 million (Table 5).

Table 5: Sample frequencies distribution for study 2

		Frequency	Percent
Your age?	Younger than 20	363	39,9
	20-39	361	39,7
	40-65	117	12,9
	Over 65	68	7,5
Your gender?	Female	662	72,8
	Male	247	27,2
The approximate population of the place where you live?	Less than 10.000	156	17,2
	10.000 – 50.000	157	17,3
	51.000 – 250.000	148	16,3
	251.000 - 1 million	101	11,1
	1 million - 4 million	82	9,0
	More than 4 million	262	28,8
	Total	906	99,7
	Missing	3	0,3
Total		909	100,0

As a result of CFA (Confirmatory Factor Analysis), scale 7 sub-dimensional structure has been confirmed. The model was verified when (χ2(376)= 1229,799 p<.001 χ2/df=3,271 CFI=0,862 RMSEA=0,050 GFI = 0,918 AGFI = ,898) indexes compared with criteria. All items were significantly loaded on 5 factors of scale. Covariance has occurred between some items (eg between item 20 and item 21). Figure 1 shows all factors, items and values of scale.

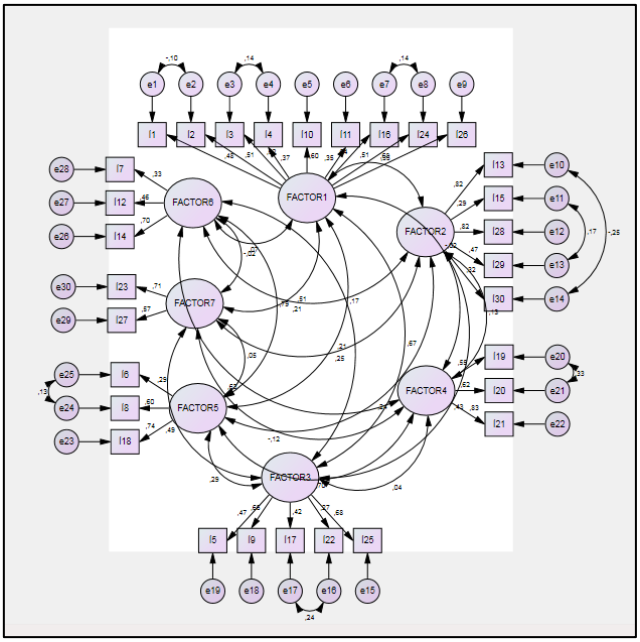

Figure 1: CFA results

Correlation coefficients between scale total and all subscales are significant. There is no relationship between the social relations / free environment subscale and the Hobbies / special interests subscale, between the Hobbies and special interests subscale and the Health / work status subscale, between the social relations / free environment subscale and the Hobbies and special interests subscale. All other relationships between subscales are significant (Table 6).

Table 6: Pearson correlation coefficient matrix of factors

	Social relations / free environment	House environment	Health / job status	Hobbies and special interests	Leisure activities	Family relations	Artistic / sporting events	Psychosocial Effects of Pandemic (FX)
Social relations / free environment	1	,332**	,416**	-0,020	,171**	0,057	,349**	,512**
House environment	,332**	1	,357**	,078*	,189**	,178**	,211**	,589**
Health / job status	,416**	,357**	1	-0,019	,158**	,090**	,330**	,542**
Hobbies and special interests	-0,020	,078*	-0,019	1	,408**	,388**	-,104**	,492**
Leisure activities	,171**	,189**	,158**	,408**	1	,365**	,079*	,675**
Family relations	0,057	,178**	,090**	,388**	,365**	1	-0,019	,579**
Artistic / sporting events	,349**	,211**	,330**	-,104**	,079*	-0,019	1	,452**
Psychosocial Effects of Pandemic (FX)	,512**	,589**	,542**	,492**	,675**	,579**	,452**	1

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).
N=909

Tests of normality suggested that kurtosis and skewness coefficients ranged within the threshold values of ±}3, and therefore, the data was normally distributed. The most negative impact from the pandemic is in Social relations / free environment subscale (-0,758), while the most positive effect is in the Hobbies and special interests (0,675) subscale (Table 7).

Table 7: Descriptive statistics of factors

	N	Mean	Std. Deviation	Skewness	Kurtosis
Social relations / free environment	909	-0,758	0,275	1,475	1,960
House environment	909	-0,402	0,421	0,749	0,245
Health / job status	909	-0,503	0,338	0,140	-0,924
Hobbies and special interests	909	0,675	0,417	-1,141	0,480
Leisure activities	909	0,373	0,524	-0,615	-0,365
Family relations	909	0,365	0,456	-0,452	-0,153
Artistic / sporting events	909	-0,593	0,434	0,723	-0,118
Psychosocial Effects of Pandemic (FT)	909	-0,120	0,227	-0,130	0,467

4. Recommendations

The scale can be adapted to different cultures, its validity can be tested with studies for younger age groups and the elderly, and its consistency can be measured with scales with similar purposes.

5. Conclusion

The aim of this study is to develop a self-report scale to determine the psychosocial effects of pandemic outbreaks such as covid-19. The 7-factor structure found in study 1 with EFA was then confirmed by CFA in study 2. Statistical results show that the scale demonstrate construct validity, discriminant validity and internal consistency. As a result of all the statistical analyses it has been decided that the Psychosocial Effects of Pandemic scale (PEPS) consisting 7 factors and 30 items is valid, reliable, and useable. All items should be valued straight.

It is hoped that this scale will help us better understand the psychosocial impact of exposure to an epidemic. In this way, it may be possible to strengthen preparations to mitigate the effects of the current outbreak and to respond to possible future outbreaks.

Conflict of Interest Statement
The author declares no conflicts of interests.

About the Author
Demirali Yaşar Ergin is a retired associate professor from Trakya University (Edirne-Turkey), Faculty of Education, Department of Educational Measurement and Evaluation. His areas of interest are research methodology, statistics and scale development.

References

Alyami, M., Henning, M., Krägeloh, C.U. *et al.* (2020). Psychometric Evaluation of the Arabic Version of the Fear of COVID-19 Scale. *Int J Ment Health Addiction* (2020). https://doi.org/10.1007/s11469-020-00316-x

Arafat, S. M. Y., Kar, S. K., Marthoenis, M., Sharma, P., Hoque Apu, E., & Kabir, R. (2020a). Psychological underpinning of panic buying during pandemic (COVID-19). *Psychiatry Research, 289*, e103061.

Arafat, S. M. Y., Kar, S. K. & Kabir, R. (2020b). Possible Controlling Measures of Panic Buying During COVID-19. *Int J Ment Health Addiction* (2020). https://doi.org/10.1007/s11469-020-00320-1

Bhuiyan, A. K. M. I., Sakib, N., Pakpour, A. H. *et al.* (2020). COVID-19-Related Suicides in Bangladesh Due to Lockdown and Economic Factors: Case Study Evidence from Media Reports. *Int J Ment Health Addiction* (2020). https://doi.org/10.1007/s11469-020-00307-y

Brooks, S. K.; Webster, R. K.; Smith, L. E.; Woodland, L.; Wessely, S.; Greenberg, N.; Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. Lancet 2020; 395: 912–20. Published Online February 26, 2020 https://doi.org/10.1016/S0140-6736(20)30460-8

Cava, Maureen A.; Fay, Krissa E.; Beanlands, Heather J. *et al.* (2020). The Experience of Quarantine for Individuals Affected by SARS in Toronto. Public Health Nursing Vol. 22 No. 5, September 2005, pp. 398—406 0737-1209/05 https://doi.org/10.1111/j.0737-1209.2005.220504.x

Demirbilek, Yasemin; Pehlivantürk, Gülen; Özgüler, Zeynep Özge; Alp Meşe, Emine (2020). COVID-19 outbreak control, example of ministry of health of Turkey. Turkish Journal of Medical Sciences Turk J Med Sci (2020) 50: 489-494 doi:10.3906/sag-2004-187

Desclaux, Alice; Badji, Dioumel; Ndione, Albert Gautier; Sow, Khoudia (2017). Accepted monitoring or endured quarantine? Ebola contacts' perceptions in Senegal. Social Science & Medicine. Volume 178, April 2017, Pages 38-45

Gritsenko, V., Skugarevsky, O., Konstantinov, V. *et al.* (2020). COVID 19 Fear, Stress, Anxiety, and Substance Use Among Russian and Belarusian University Students. *Int J Ment Health Addiction* (2020). https://doi.org/10.1007/s11469-020-00330-z

Güner, Rahmet; Hasanoğlu, İmran; Aktaş, Firdevs (2020). COVID-19: Prevention and control measures in community. Turkish Journal of Medical Sciences Turk J Med Sci (2020) 50: 571-577. doi:10.3906/sag-2004-146 (2020) 50: 571-577 http://journals.tubitak.gov.tr/ medical/

Jeong, Hyunsuk; Yim, Hyeon Woo; Song, Yeong-Jun; *et al.* (2016). Mental health status of people isolated due to Middle East Respiratory Syndrome. Epidemiology and Health. Nov 2016 Volume: 38, https://doi.org/10.4178/epih.e2016048

Kline, T. (2005). Psychological Testing: A Practical Approach to Design and Evaluation. California: Sage Publications Ltd.

Knipe, D.; Evans, H.; Marchant, A.; Gunnell, D.; John, A. (2020). Mapping population mental health concerns related to COVID-19 and the consequences of physical distancing: a Google trends analysis. *Welcome Open Research, 5*, 82–92. https://doi.org/10.12688/wellcomeopenres.15870.1.

Ling, Gabriel Hoh Teck and Ho, Christina Mee Chyong (2020). Effects of the Coronavirus (COVID-19) Pandemic on Social Behaviours: From a Social Dilemma Perspective. Technium Social Sciences Journal Vol. 7, 312-320, May 2020 ISSN: 2668-7798 www.techniumscience.com

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. Psychological Methods, 1, 130–149.

Mattioli, Anna Vittoria; Puviani, Matteo Ballerini; Nasi, Milena; Farinetti, Alberto. (2020). COVID-19 pandemic: the effects of quarantine on cardiovascular risk. European Journal of Clinical Nutrition. May 2020 https://doi.org/10.1038/s41430-020-0646-z

Munthali, George N. Chidimbah and Xuelian, Wu. (2020). COVID-19 Lockdown Measures on Least Developing Economies in Africa-a case of Malawi Economy. Technium Social Sciences Journal Vol. 7, 295-301, May 2020 ISSN: 2668-7798 www.techniumscience.com

Nussbaumer-Streit B., Mayr V., Dobrescu A. I., Chapman A., *et al.* (2020). Quarantine alone or in combination with other public health measures to control COVID-19: a rapid review. Cochrane Database of Systematic Reviews. 2020, Issue 4. Art. No.: CD013574. DOI: 10.1002/14651858.CD013574.

Özer, Mahmut (2020). Educational Policy Actions by the Ministry of National Education in the times of COVID-19. Kastamonu Education Journal, 2020, Vol. 28, No:3, 1124-1129 doi: 10.24106/kefdergi.722280

Sorokin, M. Y., Kasyanov, E. D., Rukavishnikov, G. V., Makarevich, O. V., Neznanov, N. G., Lutova, N. B., & Mazo, G. E. (2020). Structure of anxiety associated with the COVID-19 pandemic in the Russian-speaking sample: results from on-line survey. *medRxiv*. Retrieved from. https://doi.org/10.1101/2020.04.28.20074302.

Wang, Guanghai; Zhang, Yunting; Zhao, Jin *et al.* (2020). Mitigate the effects of home confinement on children during the COVID-19 outbreak. Lancet. Published Online March 2, 2020 https://doi.org/10.1016/S0140-6736(20)30520-1

Wilder-Smith, A. and Freedman, D.O. (2020). Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. Journal of Travel Medicine, 2020, 1–4 doi: 10.1093/jtm/taaa020

Wu, Ping; Fang, Yunyun; Guan, Zhiqiang *et al.* (2009). The Psychological Impact of the SARS Epidemic on Hospital Employees in China: Exposure, Risk Perception, and Altruistic Acceptance of Risk. La Revue Canadienne de psychiatrie, vol 54, no 5, mai 2009.