

Assessment of Precautionary Measures Medical Students & Doctors Practiced at Eid-ul-Adha during COVID-19



Usama Saeed¹

Javaria Saeed²

Nabiha Farasat Khan³

Muhammad Saeed⁴

BSc, M.Phil, MHPE, CME

BDS

OBJECTIVE: To analyze the precautionary measures that medical students and clinicians practiced during Eid-ul-Adha' 2020."

METHODOLOGY: An online cross-sectional survey was conducted on medical students and doctors/clinicians/faculty in Balochistan, where the questionnaire (10 items) was posted on google platforms after Eid-ul-Adha between 10th to 31st December 2020. Inclusion criteria consisted of first to third year medical students and clinicians whereas fourth and final year, house officers and postgraduate students were excluded. Pilot study demonstrated reliability of questionnaire Cronbach's alpha 0.624. SPSS version 23 was used for analysis.

RESULTS: In current study majority (n=82/126) of the study participants were males, more than half of them were medical students (n=73/126). Eighty percent (80%) participants (n=66/82) offered Eid's congregational prayer in masjids, 11/82 prayed at home only five (n=5/82) of them didn't perform prayer at all; majority (64%) of them practiced SOPs at the time of prayer in Masjid. In family gatherings, 73% followed all precautionary measures whereas 10% avoided SOP's. At the time of ritual livestock sacrifice, 62% participants followed whereas only 10% didn't follow to any precautions. During meat distribution, 68.5% study participants practiced all precautionary measures and just 2.7% did not follow SOP's during meat distribution. No significant difference was found between medical students and doctors in practicing precautionary measures, except during meat distribution (p=0.009).

CONCLUSION: Medical students and doctors practiced precautionary measures well. However, statistically significant relation was found between medical students and doctors praying in masjids and maintaining a safe distance in Eid gatherings during this pandemic.

KEYWORDS: COVID-19, Eid-ul-Adha, Precautionary Measures, Medical Students, Doctors.

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INTRODUCTION

Eid-ul-Adha, one out of the two Islamic festivals, is celebrated with great zeal and enthusiasm annually on 10th of Dul-Al-Hajj, the last month of Islamic Calendar. Muslims gather with their families and friends to pray, sacrifice animals and distribute meat to the needy and destitute in order to please Allah Almighty. This Islamic celebration holds a symbolic value as well; it honors the willingness of Ibrahim (AS) to sacrifice his son, Ismael (AS), as an act of obedience to Allah's command.¹ However,

amid COVID-19 pandemic having already affected around 16 million individuals worldwide in the month of July'2020 and a further risk of its spread, social gatherings.² This Eid-ul-Adha in August'2020 was considered problematic due to the overcrowding of people amongst the hustle and bustle of the great event; animal transportation from rural to urban areas for sale, Eid Congregational Prayer, sacrifice in public areas and/or during social gatherings in amusement parks, restaurants, picnic points or homes.³ All Muslims including Pakistanis celebrated Eid-UI-Adha during the first week of August'2020 in this pandemic. Muslims sacrificed animals including goats, cows, sheep and camels. Eid celebration and sacrifices made it quite challenging for the Ministry of Health not only in Pakistan but also in the entire Muslim world to control the situation, as the chances of a drastic rise of COVID-19 infection were very high.^{3,4} COVID-19 is a viral infection, primarily affecting the

1. Students, 4th year MBBS, Dow Medical College, Saddar, Karachi.

2. Students, 3rd year MBBS, Dow Medical College, Saddar, Karachi.

3. Associate Professor & HOD, Department of Oral Pathology, Bolan Medical College, Quetta.

4. Senior Demonstrator, Department of Oral Pathology, Bolan Medical College, Quetta.

Corresponding author: "Dr. Nabiha Farasat Khan" < nabihasaheed@hotmail.com >

respiratory system, transmitted directly or indirectly when a healthy person contacts the saliva, respiratory secretions or respiratory droplets of an infected individual.⁵ The index case was first recognized in China's Wuhan city in December'2019⁵, and was declared a Global Health Emergency in January'2020 by WHO due to its worldwide spread and regulations were asked to be administered.⁶ The SOPs advised by health care workers included wearing face mask and gloves, physical and social isolation, washing hands for 20sec with soap, monitoring and controlling religious and social gatherings. During Eid-ul-Adha, animal sacrifice was also confined to specific areas with strict regulations to contain the disease transmission.^{2,3,7}

Pakistan is a low-middle income country with a population of 207.⁸ million, predominantly Muslim population of over 95% residing in five different provinces i.e. Gilgit-Baltistan, Punjab, Sindh, Khyber Pakhtunkhwa (KPK), and Baluchistan.⁸ To overcome the consequences of COVID-19, the government had opted smart lockdown to arrest risk of infection spread towards individuals, families and communities. To promote and encourage adoption of key measures to prevent and minimize the spread of the infection, government officials directed the observation of SOPs. The commitment of Pakistanis to these control measures was a key factor in deciding the fate of battle against COVID-19.⁹ The purpose of this survey was to analyze precautionary measures adopted during social and religious practices by medical students and doctors during COVID-19 pandemic during Eid al Adha'2020.

METHODOLOGY

After taking IRB from Bolan University of Medical and Health Sciences Quetta (No.00009/BUMHS/IRB/2020), quantitative survey was designed and conducted on previous research reports and WHO guidelines for COVID-19.² Due to pandemic, it was difficult to conduct a community-based survey and collect data so we opted for online Google platform survey. On-line questionnaire included gender, qualification, occupation and designation for background information of the participants and to analyze practice of precautionary measures among 126 medical students of four medical colleges (Makran Medical College in Turbat, Jhalawan Medical College in Khuzdar, Loralai Medical College in Loralai and Bolan Medical College in Quetta) and doctors of Balochistan during Eid-ul-Adha in this pandemic. As the newly inaugurated medical colleges of Makran, Jhalawan and Loralai comprise only three batches each, with neither house job nor post-graduation started so far, we included just first to third year medical students

from Bolan Medical College to correspond data with that of the other three medical colleges. Data was collected during 10th to 20th December 2020.

After completing conceptualization of this survey, two medical educationists tested the face and content validity of the instrument. The approved version of the instrument had 10 items only and had two parts. The first part contained questions related to the demographic information of the participants such as gender, occupation, designation and qualification (in case of clinicians/physicians) while the second part consisted of questions affiliated to precautionary measures including wearing face masks and gloves, keeping a distance of 6-feet, washing hands with soap for 20 sec and avoid touching the face with unwashed hands to prevent virus entry into mouth or nose. Participants were asked to answer in yes and no.

Prior to its official release, pilot testing was done on a small group of people having same characteristics as the study group through a messaging and voice-over service, WhatsApp to check if the questions were clear and unambiguous. Questionnaire was acceptable as its reliability was Cronbach's alpha 6.24%. After this pilot survey, the questionnaire was distributed to participants through internet into WhatsApp groups of author. We used purposive and snowball sampling to recruit participants. The valid response rate was 90% after excluding invalid responses. Informed consent was obtained from all respondents. A brief introduction to the study was provided in the questionnaire on study objectives, questionnaire filling duration, as well as the names and contact information of the investigators. Participation in the survey was voluntary. All respondents were informed that they were free to continue or quit at any time, and the submission of the questionnaire would be regarded as consent to participate.

Second part of the questionnaire consists of six questions that assisted in assessing precautionary measures medical students and doctors were practicing during this pandemic in Eid-ul-Adha. One of these questions have two options: "yes", and "no". Whereas others have practiced-based questions focused on the attitude toward COVID-19 and Eid prayers, which precautionary measures did participants practice during family gatherings questions related to precautionary measures participants practice during sacrifice and during meat distribution including wear facemask and gloves, wash hands before and after sacrifice, make a distance of 6-feet, didn't touch face with unwashed hands.

ANALYSIS

The data was analyzed by using SPSS version 23. Frequency and percentage were given for gender, occupation

Table 1: Presenting demographic details of study participants

Categories	Frequency	Percentage %
Gender		
Male	82	65
Female	44	35
Occupation		
Medical Students	73	58
Male medical students	52	63.4
Doctors	53	42
Male doctors	30	37
Medical students from		
Bolan Medical College, Quetta	37	29.4
Makran Medical College, Turbat	16	13
Jhalawan Medical College, Khuzdar	13	10.3
Loralai Medical College, Loralai	7	5.6
Designation		
Medical Officer / SR	9	19
Assistant Professor	16	28
Associate Professor	8	15
Professor	9	17
Others	18	21

Table 2: Exhibiting patient's response about performing prayer, at social gathering, during sacrifice and meat distribution

Participants response about performing prayer during Eid-ul-Adha in COVID-19 N=82 males		
Categories	Frequency	Percentage
Masjid	66	80.5
Home	11	13.4
Not performed prayer	5	6.1
Practiced on SOPs advised by local health authorities		
Practiced SOPs during prayer in Masjid	62	76
Did not practiced SOP's during prayer	20	24.4
Precautionary measures participants perform during prayers in Masjid		
Wore face mask and gloves	13	18
There was sufficient gap between namazis in masjid	6	8
Participants follow all precautionary measures	47	64
Participants not practice any precautions	7	10
Participants response during Social gathering in pandemic		
Wore facemask and gloves	7	9.6
Maintained a distance of 6feet	2	2.7
Washed hands for 20sec with soap	3	4
Did not touch face with unwashed hands	1	1.4
Follow all precautions	53	73
Did follow any precautionary measures	7	10
Practice of precautionary measures during observing sacrifice of the animal/s		
Wore facemask and gloves	8	11
Avoided touching face with unwashed hands	12	16.4
Maintained a distance of 6feet	1	1.4
Follow all instructions	45	62
Did not follow any precautionary measures	7	10
Practice of precautionary measures during meat distribution to neighbors and family members		
Wore face mask and gloves	4	5.5
Maintained a distance of 6 feet	1	1.4
Washed hands before and after meat distribution	9	12.3
Did not touch face with unwashed hands	7	10
Follow all precautionary measures	50	68.5
Did not follow any precautions	2	2.7

Table 3: Demonstrating significant correlation between occupations with precautionary measures practiced while meat distribution to family and friends

Occupation	Wore facemask	Did not touch face	Washed hands	Follow instructions	None	p-value 0.009
Doctor	0	1	6	16	7	
Medical student	6	13	12	15	6	
Total	6	14	18	31	13	

and responses pertaining to precautionary measures practices overall during Eid-ul-Adha. Chi-square was used to determine the association of occupation and precautionary measures practiced overall during Eid-ul-Adha. A p-value ≤ 0.05 was taken as significant.

RESULTS

One hundred and fifty participants from Makran Medical College, Jhalawan Medical College, Loralai Medical College and Bolan Medical College across Balochistan responded to our research questionnaire. After scrutiny, completed questionnaires (n = 126) were included in the study.

Out of 126 participants, majority (65.1%, n=82/126) were males whereas 58% (n=73/126) were medical students. Table 1 demonstrates demographic details. Table 2 presents details about the male participant's response about precautionary measures during performing prayer, family gathering, practiced on SOP's advised by local health authorities, observing sacrifice of the animal/s and meat distribution to neighbors and family members. Correlation between occupations and precautionary measures practiced while meat distribution to family and friends is displayed in Table 3.

DISCUSSION

Overall results of participants following precautionary measures in COVID-19 pandemic were satisfactory. Almost half of them followed all the precautionary measures in all items; giving an average of 73% during social gatherings, 64% during Eid-ul-Adha Prayers at Masjid, 62% during sacrifice while 68% during meat distribution. In comparison with the results of other studies in which medical students and doctors demonstrated an overall better response towards SOPs, Hayat I from Punjab detected 81.22%⁶ while 92% students from Soltan's study in Egypt practiced precautionary measures to avoid COVID-19 infection.¹⁰ The highest ratio (95%) was observed among study participants of Noreen et al research paper.¹¹ In case of washing hands time and again, illiterate background and lack of childhood training serve as contributing factors to its low score.¹² Basically majority of the population in Balochistan faces poverty¹³ which may be a cause of why participants (especially medical students) did not follow the precaution of wearing face masks and gloves attentively (average result 18%); whereas ignorance adds to this point as well. The result of participants maintaining a distance of 6 feet is poor as well; this may be due to the fact that this region of Pakistan has a tradition of shaking hands as well embracing each other especially on

Eid Festivals; the younger ones even have to kiss the hands of the elderly as a sign of respect. These cultural norms not observed by any member create social stigma in society.

Medical students demonstrated interest to participate in the current study. More than half (58%) population of our research work (n=73/126) were medical students, remaining 42.1% (n=53/82) were doctors, 18/126 were Assistant Professors, eight Associate Professors and nine Professors. Remaining 18 participants were also doctors but they were serving on administrative posts (MS, DHO, and registrar). We observed very low percentage of professors who participated in the study, which authenticates their busy schedule and short time for extra clinical activities. On the other hand only 49.7% Lebanese Physicians practiced precautionary measures.

During sacrifice, 42.7% (n=35/82) participants seems to have practiced precautionary measures, 23.2% (n=19/82) avoided touching their face with unwashed hands, 21% (n=17/82) wore facemasks, whereas 12.2% (n=10/82) maintained a distance of 6feet. During meat distribution, 37.8% (n=31/82) practiced all precautionary measures, 22% (n=18/82) washed their hands with soap for 20sec before and after meat distribution, 17.1% (n=14/82) did not touch their face with unwashed hands, whereas only 7.3% (n=6/82) wore masks, whereas 9.8% participants (n=8/82) did not follow precautionary measures. Although not on Eid-ul-Adha but other studies carried out on COVID-19 discuss percentage of participants on the basis of gender who wash their hands regularly. A study consisted of 1257 study samples out of which 632 (90.3%) females washed their hands in comparison 85.6% males for 20sec with soap.⁶

Only 8.2% of our study participants washed their hands for 20 sec during social gathering, however 31% (n=16/52) medical students washed their hands before and after meat distribution. When comparing practices of precautionary measures among undergraduates, majority of the study participants of Hayat K, Khasawneh et al, Soltan and Noreen K washed their hands regularly for 20 sec with resulting percentages of 87%, 88.1%, 90% and 91% respectively.^{9-11,15} This observation points towards the lazy nature, lack of time and/or non-serious attitude of medical students of Balochistan towards COVID-19.

Possibly the reasons responsible in maintaining low mortality in doctors and medical students would be performing prayers in home. As we found a statistically significant association when we compared Eid-ul-Adha prayer in masjid and /or in home among medical students and doctors (p=0.003). Medical students exhibited lack of time and extra burden of their studies that hinder all sorts of physical activities, and deficit social interactions that in-turn impeded them for performing prayers.¹⁶ When comparing responses

there was no significant difference between medical students and doctors in wearing facemask, gloves, washing hands for 20 seconds and touching the face, statistically significant difference was observed between occupation of study participants and meat distribution after sacrifice (p=0.09). It may also be worth mentioning that despite of being blamed of fundamentalism, majority of the population in this region willingly reduced the religious rituals to a bare minimum level.^{17,18,19,20,21}

Strict adherence to local, cultural and religious practices which include ablution almost five times in a day, use of face covering by the adult females and maintaining social distances as between genders at gatherings and educational institutions may have been the major contributory factors.^{22-24,25,26,27}

Majority (80.5%, n=66/82) participants of current study offered Eid prayers in masjids; 39% wore facemasks (n=32/66), 22% (n=18/66) observed sufficient gap between namazis in masjid whereas 21% (n=17/66) follow all precautionary measures. As they all were educated, they were aware of the severity and complications associated with COVID-19, so majority of the medical students and doctors practiced precautionary measures.

Balochistan is primarily a male predominating society and this aspect is confirmed in our study as 65% (n=82/126) study participants were males.²⁸ Though various components work as contributing factors in low female literacy rate in Balochistan as compared to the other parts of the country including remote educational institutes, financial constraints, social problems and cultural barriers.^{28,29} However, in the current research work, the percentage of females was low as they offer prayers at home, and/or sacrifice ritual and meat distribution during Eid-ul-Adha is related to men. In contrast, studies conducted by Hayat I, Hayat K, Soltan , Dhahri et al and Noreen K during this pandemic related to the adaptation of hygienic and precautionary measures demonstrated female predominance (73.77%, 55. 7%, 61.1%, 65.9%, 71.4% respectively)^{6,9,11,30} and were not linked to a specific event.

This type of study had not been conducted before so the author was unable to discuss and compare results of current study with others research work.

STRENGTH OF STUDY

Medical students were keener to participate in online surveys and knew about their practices during this pandemic. Doctors, being more mature, practice precautionary measures carefully and strictly to avoid any infection. This is the first ever study to analyze medical students and doctors about the precautionary measures they practice.

LIMITATIONS

It was a small-scale study. To assess the perceptions, attitude and knowledge it should be done on a larger scale among medical students and doctors. As it was an online survey, there is a chance of questionnaire bias. There may be sampling bias, as survey may be restricted to those participants who were more active on social media. However to reduce sampling bias, questionnaire was distributed to different online channels to improve its visibility among respondents. There may also be response bias, which the respondents consciously or subconsciously did. As still, no work was done on this forum to check and analyze which precautionary measures medical students and doctors were practicing, so it was impossible to compare our results with any other survey or study.

CONCLUSION

Doctors demonstrate more responsible behavior towards precautionary measures advised by healthcare workers as compared to medical students.

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AUTHOR CONTRIBUTION

Usama Saeed and Javaria Saeed: data collection (students), literature search

Muhammad Saeed: data collection (doctors), analysis

Nabiha Farasat Khan: manuscript writing, methodology

Attia Bari: review and final approval of manuscript

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CONFLICT OF INTEREST

None

REFERENCES

1. Khan MS, Mohyuddin A. Symbolic Importance of Ritual of Sacrifice on Eid Ul Adha (Research Based Study on Satellite Town Rawalpindi). Impact Int J Res Applied, Nat Soc Sci. 2013;1:59-62. Available from: https://www.academia.edu/4873580/Symbolic_importance_of_ritual_of_sacrifice_on_eid_ul_adha_research_based_study_on_satellite_town_rawalpindi_
2. World Health Organisation. Safe Eid al Adha practices in the context of COVID-19 Interim guidance. 2020. Available from: <https://www.who.int/publications/i/item/clinical-management-of-COVID-19>
3. Mallhi TH, Khan YH, Alotaibi NH, Alzarea AI, Tanveer N, Khan A. Celebrating Eid-ul-Adha in the era of the COVID-19 pandemic in Pakistan: potential threats and precautionary measures. Clin Microbiol Infect. 2020;(xxxx):7-8. <https://doi.org/10.1016/j.cmi.2020.07.019>
4. Butt MH, Ahmad A, Misbah S, Mallhi TH, Khan YH. Crimean-Congo hemorrhagic fever and Eid-Ul-Adha: A potential threat during the COVID-19 pandemic. J Medi Virol. 2020. <https://doi.org/10.1002/jmv.26388>
5. Shereen MA, Khan S, Kazmi A, Bashir N, Siddique R. COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. J Adv Res [Internet]. 2020;24:91-8. <https://doi.org/10.1016/j.jare.2020.03.005>
6. Hayat I, Waseem M, Usman F, Asghar M. Are Pakistani Medical Students Ready and To What Extend?: Knowledge , Attitude and Practice During the Covid-19 Pandemic: a Cross-Sectional Study on Medical. IAJPS. 2020;7:597-605.
7. Govt of Pakistan, Ministry of National Health Services R and C. Guidelines for Eid ul Adha for Prevention of Corona Virus. 2020 p. 1-5.
8. Wazir MA, Goujon A. Assessing the 2017 Census of Pakistan Using Demographic Analysis: A Sub-National Perspective. Vienna Inst Demogr Austrian Acad Sci. 2019;(April):0-43. Available from: www.oaew.ac.at/vid
9. Hayat K, Rosenthal M, Xu S, Arshed M, Li P, Zhai P, et al. View of Pakistani residents toward coronavirus disease (COVID-19) during a rapid outbreak: A rapid online survey. Int J Environ Res Public Health. 2020;17:1-10. <https://doi.org/10.3390/ijerph17103347>
10. Soltan EM, El-Zoghby SM, Salama HM. Knowledge, Risk Perception, and Preventive Behaviors Related to COVID-19 Pandemic Among Undergraduate Medical Students in Egypt. SN Compr Clin Med. 2020;2568-75. <https://doi.org/10.1007/s42399-020-00640-2>
11. Noreen K, Zil-E- Rubab, Umar M, Rehman R, Baig M, Baig F. Knowledge, attitudes, and practices against the growing threat of COVID-19 among medical students of Pakistan. PLoS One. 2020;15: 1-12. <https://doi.org/10.1371/journal.pone.0243696>
12. Noreen N, Dil S, Ullah S, Niazi K, Naveed I, Khan NU, et al. Coronavirus disease (COVID-19) Pandemic and Pakistan; Limitations and Gaps. Limitations Gaps Glob Biosecurity 2020;1. Available from: <https://jglobalbiosecurity.com/articles/63/gallery/170/download/> <https://doi.org/10.31646/gbio.63>

13. Bashir S. Poverty Eradication in Balochistan: A Study of Community Development Programs. *Annu Res J Hanken*. 2019;10(August): 1-89. Available from: <https://www.researchgate.net/publication/335401493>
14. Abou-Abbas L, Nasser Z, Fares Y, Chahrour M, El Haidari R, Atoui R. Knowledge and practice of physicians during COVID-19 pandemic: A cross-sectional study in Lebanon. *BMC Public Health*. 2020;20:1-9. <https://doi.org/10.1186/s12889-020-09585-6>
15. Khasawneh AI, Humeidan AA, Alsulaiman JW, Bloukh S, Ramadan M, Al-Shatanawi TN, et al. Medical Students and COVID-19: Knowledge, Attitudes, and Precautionary Measures. A Descriptive Study From Jordan. *Front Public Heal*. 2020;8:1-9. <https://doi.org/10.3389/fpubh.2020.00253>
16. P. T, P.L. B, H.B. P, S.C. E, M.A. M, L.B. S. What do medical students think about their quality of life? A qualitative study. *BMC Med Educ*. 2012;12:106. Available from: <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=23126332> <https://doi.org/10.1186/1472-6920-12-106>
17. Algahtani FD, Alzain MA, Haouas N, Angawi K, Alsaif B, Kadri A, et al. Coping during COVID-19 Pandemic in Saudi Community?: Religious Attitudes, Practices and Associated Factors. *IJERPH* 2021;1-13. <https://doi.org/10.3390/ijerph18168651>
18. Erdem H, Lucey DR. Healthcare worker infections and deaths due to COVID-19: A survey from 37 nations and a call for WHO to post national data on their website. *Int J Infect Dis*. 2021;102: 239-41. <https://doi.org/10.1016/j.ijid.2020.10.064>
19. Atif M, Malik I. Why is Pakistan vulnerable to COVID-19 associated morbidity and mortality? A scoping review. *Int J Health Plann Manage*. 2020;35:1041-54. <https://doi.org/10.1002/hpm.3016>
20. Hafeez E, Fasih T. Growing Population of Pakistani Youth: A Ticking Time Bomb or a Demographic Dividend. *J Educ Educ Dev*. 2018;5:211. <https://doi.org/10.22555/joed.v5i2.2022>
21. Simon AK, Hollander GA, McMichael A, McMichael A. Evolution of the immune system in humans from infancy to old age. *Proc Biol Sci*. 2015;282(1821):1-12. <https://doi.org/10.1098/rspb.2014.3085>
22. Ahmad EF, Mohammed M, Al Rayes A, Al Qahtani A, Elzubier A, Suliman F. The effect of wearing the veil by Saudi ladies on the occurrence of respiratory diseases. *J Asthma*. 2001;38:423-6. <https://doi.org/10.1081/JAS-100001497>
23. Sibli SA. Cleanliness in Islam: Exploring Through COVID-19 Pandemic Precautions and Concerns. *SSRN Electron J*. 2020;preprint a:15. <https://doi.org/10.2139/ssrn.3688410>
24. Ashraf H, Faraz A, Raihan M, Kalra S. Fighting pandemics: Inspiration from Islam. *J Pak Med Assoc*. 2020;70(5):S153-6. <https://doi.org/10.5455/JPMA.34>
25. Jia R, Ayling K, Chalder T, Massey A, Broadbent E, Coupland C, et al. Mental health in the UK during the COVID-19 pandemic: cross-sectional analyses from a community cohort study. *BMJ Open*. 2020;10:e040620. <https://doi.org/10.1136/bmjopen-2020-040620>
26. Aiyer A, Surani S, Ratnani I, Surani S. Mental Health Impact of COVID-19 on Healthcare Workers in the USA?: A Cross-Sectional Web-Based Survey. 2020;1-8.
27. Arshad MS, Hussain I, Nafees M, Majeed A, Imran I, Saeed H, et al. Assessing the Impact of COVID-19 on the Mental Health of Healthcare Workers in Three Metropolitan Cities of Pakistan. *Psychol Res Behav Manag [Internet]*. 2020 Nov 20 [cited 2021 Feb 10]; Volume 13:1047-55. Available from: <https://www.dovepress.com/assessing-the-impact-of-covid-19-on-the-mental-health-of-healthcare-workers-peer-reviewed-article-PRBM> <https://doi.org/10.2147/PRBM.S282069>
28. Bashir K, Tobwal, Usman KUBSS. Social and Cultural Barrier to female Education in Balochistan?: an Assessment study with focus on district Pishin. *Balochistan Rev*. 2019;XXXIV:163-72.
29. Fauzia Maqsood SM, HammadRaza. Getting higher education?: is it really a challenge for females in Pakistan? *Acad Res Int*. 2012;2:352-60.
30. Dhahri AA, Arain SY, Memon AM, Rao A, Mian MA. "The psychological impact of COVID-19 on medical education of final year students in Pakistan: A cross-sectional study." *Ann Med Surg*. 2020;60:445-50. <https://doi.org/10.1016/j.amsu.2020.11.025>