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The Impact of Covid-19 Lockdown on Metamemory among Medical Students: An Experimental Study.

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ABSTRACT

Background: The lockdown due to Covid-19 has impacted certain aspects of cognition among medical students.
Aim: To explore the impact of the Covid-19 lockdown on metamemory among medical students studying in a private medical college in Pakistan.
Study design: Experimental study.
Methodology: This study with enrolled students (n=233) was carried out after ethical review committee's (ERC) approval at CMH Kharian Medical College (CKMC), Physiology Department, Kharian-Pakistan. Both male and female medical students were enrolled. In phase 1, the students reported to the Physiology laboratory where age and gender were recorded. Metamemory was measured using the Multi-factorial Memory Questionnaire (MMQ)-Satisfaction scale using the Baycrest Centre protocols for its administration and scoring. Data was analyzed by SPSS software, version 21. MMQ-Satisfaction score was presented as mean±SD. Statistical significance was taken at p value <0.05.
Results: Among males mean±SD for Pre Covid-19 MMQ was 43.24±9.58 while mean±SD for Post Covid-19 MMQ males was 55.32±6.01. Significant difference was seen between Pre & Post Covid-19 MMQ scores with p-value of <0.000. **Conclusion:** We concluded that significant difference was seen between Pre & Post Covid-19 MMQ scores with p-value of <0.000. However, means among all age groups were significantly equal with the others in Pre & Post COVID-19 MMQ. Similarly, means were significantly equal among both genders for Pre & Post COVID-19 MMQ.
Keywords: Covid-19 lockdown, Medical students, Metamemory, Age and Gender.

INTRODUCTION

Covid-19, caused by severe acute respiratory syndrome corona virus 2 or SARS CoV-2, has claimed 3.1 million lives throughout the world.[1] In Pakistan, over 800 thousand cases and almost 17000 deaths have been reported since March, 2020.[2] The six month long "smart lockdown", from mid-March to mid-September, 2020, imposed by the government of Pakistan, although effective in curbing the first wave of the infection, dealt a heavy blow to the country's economic, commerce and education sectors[3]. Students in general and medical students in particular were amongst the key demographic groups that were affected as either a direct or indirect result of the lockdown. Even without the added stress of a global pandemic, medical studies are one of the most challenging courses in the world. Add to that, the burden of a widely spread, deadly infectious disease and unprecedented circumstances in the form of online/remote learning; the cognitive and psychological faculties of the students are bound to suffer certain untoward consequences[4].

One such parameter that has been recognized as a reliable means of quantifying cognition is metamemory. It is defined as the knowledge of one's own memory process and is known to play an important role in the organization and choice of stratagem, apportionment of cognitive reservoirs, observation of intellectual capacity and performance appraisal.[5,6] Metamemory is measured using self-report Likert scales like the Multi-factorial Memory Questionnaire (MMQ)[7,8].

While there have been several studies focused on the impact of the Covid-19 pandemic and lockdown on students' mental health in general, the influence of such an unprecedented global phenomenon on cognitive faculties such as metamemory, within the young adult demographic, remains to be explored further. The aim of this research was to study the impact of the Covid-19 lockdown on metamemory among medical students studying in a private medical college in Pakistan.

The objective of the study was to explore the impact of the Covid-19 lockdown on metamemory among medical students studying in a private medical college in Pakistan

METHODOLOGY

This study with enrolled students (n=233) was carried out after ethical review committee's (ERC) approval at CMH Kharian Medical College (CKMC), Physiology Department, Kharian-Pakistan. Both male and female medical students were enrolled. A written survey was taken to determine the inclusion and exclusion criteria. The participants were included on the basis of being medical students, aged between 17 to 25 years and in otherwise normal physical health while the exclusion criteria were; age below 17 or above 25 years, previously diagnosed cognitive or psychological disorders, co-morbidities such as hypertension, diabetes mellitus, cardiovascular disease and a history of smoking/ drug use. The study was divided into two phases; phase 1: the pre-lockdown phase and phase 2: the post-lockdown phase. In phase 1, the students reported to the Physiology laboratory where age and gender were recorded. Metamemory was measured using the Multi-factorial Memory Questionnaire (MMQ)-Satisfaction scale using the Baycrest Centre protocols for its administration and scoring[9].

Statistical Analysis: Data was analyzed by SPSS software, version 21. The subjects were then divided into three age (years) groups i.e. 17-19, 20-21, 22-24 and were presented as frequency along with mean±SD. MMQ-Satisfaction score was presented as mean±SD. Statistical significance was taken at p value <0.05.

RESULTS

The subjects were then divided into three age (years) groups. Out of 233 subjects, majority of students (n=141) were in age group 20-21.

Insignificant result for the Pre COVID MMQ & Post COVID MMQ in table-2 as F-value was 1.320 & 1.696, which showed insignificance with p-values of 0.269 & 0.186. Hence, we concluded that all of the age group means were significantly equal with the others in Pre & Post COVID MMQ.

The distribution of Multi-factorial Memory Questionnaire- Satisfaction scale Score with respect to gender was presented as mean ± SD among both pre & post Covid-19 groups in table-3.

Insignificant results in table-4 for the Pre Covid-lockdown MMQ & Post Covid-lockdown MMQ-Satisfaction as F-value is 0.003 & 0.817, which showed insignificance with p-values of 0.954 & 0.367 respectively. Means were significantly equal in males & females for Pre & Post Covid-19 lockdown MMQ.

Table-1: Age Groups Distributed as Mean ±SD (n=233)

	Age group	N	Mean	SD	
Pre-Covid-19 MMQ	17-19	44	40.98	10.743	
	20-21	141	43.99	10.232	
	22-24	48	43.06	11.207	
	Total	233	43.19	10.549	0.000*
Post-Covid-19 MMQ	17-19	42	56.33	4.525	
	20-21	141	54.50	5.843	
	22-24	50	54.67	6.244	
	Total	233	54.87	5.734	

*Statistically Significant

Table-2: Pre & Post-COVID MMQ Comparison Among Age Groups

		Sum of square	df	Mean square	F	Sig
Pre-Covid-19 MMQ	Between groups	292.949	2	146.47	1.320	.269
	Within groups	25523.235	230	110.971		
	Total	25816.184	232			
Post-Covid-19 MMQ	Between groups	110.856	2	55.428	1.696	.186
	Within groups	7451.248	228	32.681		
	Total	7562.104	230			

Table-3: Distribution Of Multi-Factorial Memory Questionnaire-Satisfaction Scale Score Among Gender

Gender		Pre-Covid-19 MMQ	Post-Covid-19 MMQ
Male	Mean	43.24	55.32
	N	86	86
	St. Deviation	9.587	6.016
Female	Mean	43.16	54.61
	N	147	147
	St. Deviation	11.105	5.571
Total	Mean	43.19	54.87
	N	233	233
	St. Deviation	10.549	5.734

Table-4: Pre & Post Covid-19 Lockdown MMQ-Satisfaction Comparison Among Genders

		Sum of square	df	Mean square	F	Sig
Pre Covid-19 MMQ Gender	Between group combined	.367	1	.367	.003	0.954
	Within group	25815.818	231	111.577		
	Total	25816.184	232			
Post Covid-19 MMQ Gender	Between group combined	26.885	1	26.885	.817	0.367
	Within group	7535.219	229	32.905		
	Total	7562.104	230			

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DISCUSSION

Reliable and valid metamemory analysis is required to assess subjective memory complaints of victims of serious illnesses that can differentiate from objective memory performance. The Multi-factorial Memory Questionnaire (MMQ) evaluates dimensions of subjective memory functioning such as Ability, Contentment and strategy use in everyday life. Due to limited use of Multi-factorial Memory Questionnaire among our clinical setups so we carried out this experimental study for medical students who experienced the six month long Covid-19 lockdown at CMH Kharian Medical College (CKMC), Physiology Department, Kharian -Pakistan. Present study contributed to growing literature regarding the impact of the Covid-19 lockdown on metamemory among medical students.

In the present study, both genders were enrolled (n=233) including male and females. In one previous study, number of enrolled subjects was 600 including both genders[10]. Paradoxically, in another study enrolled subjects were just 30. Hence, our work was different to that study in terms enrolled subjects[11].

In present study among all enrolled subjects, there were 86(36.9%) males and 147(63.1%) females in each compared group were present. In one previous study, among subjects (n=600), there were 277(46.1%) males and 323(53.9%) females in each compared group were present. Hence, our work was similar to that study in terms of gender distribution showing females as major participants[10].

In current project, results in table-1 showed that there is significant difference between Pre & Post-Covid-19 lockdown groups p-value is 0.000. Similar results were shown in previous researches carried at South Africa in 2020 that showed that Covid-19-lockdown affected memory of their enrolled elderly subjects. Hence, our work was similar to that study in terms of effect of Covid-19-lockdown on memory among subjects.[12]

In the current project, results in table-4 showed that gender is not associated with change in memory as p-value was insignificant. Paradoxical to current study, one study showed moderate correlation between contentment and gender having p-value of <0.0001. Hence, our work contradicted with their findings[10].

In many previous studies, enrolled subjects had age ranging from 20-90 years and were grouped into 7 groups[10]. Paradoxically, in present study young adults were enrolled having age from 17-24 years and were grouped into 3 categories.

Limitations: Our study had limitations like financial constraints, lack of resources and lacked the evaluation of ability and strategy formation in everyday life.

CONCLUSION

We concluded that significant difference was seen between Pre & Post Covid-19 lockdown MMQ-Satisfaction scores with p-value of <0.000. However, means among all age groups were significantly equal with the others in Pre & Post Covid-19 lockdown MMQ-Satisfaction scale. Similarly, means were significantly equal among both genders for Pre & Post Covid-19 lockdown MMQ-satisfaction scale scores.

Authors' Contribution: AFA & GJ: Conception and design of work, IN & RM: Collecting and analyzing the data, AK & HA: Drafting the manuscript, YA & MR: Collecting and analyzing the data, MAH & MR: Drafting the manuscript, SNH & TL: Drafting and revising the manuscript for intellectual content.

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