

# The impact of COVID-19 Pandemic on General Health and Hygiene Awareness of the Students

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## Abstract:

*India, like other countries in the world, is now in the grip of COVID-19 Pandemic. The World Health Organization has recommended adherence to certain general hygiene rules to protect against corona virus infection. The aim of this study is to investigate the effects of COVID-19 Pandemic on students' Health and Hygiene Awareness. The study explores whether there is a possibility of maintaining the changing Awareness even after the Pandemic. Since this study is in a lockdown situation, the online survey method has been chosen for data collection. Data has been collected from 414 students from different districts of West Bengal through Google Forms. With the help of a self-constructed questionnaire, students are asked questions related to the practice of hygiene in Pre-Pandemic, Pandemic, and Post-Pandemic period. The collected data has been analyzed and the results of the research have been found.*

*The results of the study showed that the Health and Hygiene Awareness of students has increased due to the COVID-19 Pandemic. The changed Awareness of students about Health and Hygiene is likely to be maintained even after the Pandemic. The results further show that the Health and Hygiene Awareness of Female students in the three periods is always higher than that of Male students. Thus, this study concludes that COVID-19 Pandemic has an impact on students' Health and Hygiene Awareness. The Awareness among students has increased during the Pandemic and is likely to remain unchanged in the future after the Pandemic.*

**Key words:** COVID-19, General Health and Hygiene practices, Health and Hygiene Awareness of Students

## 1. Introduction:

Releasing from Covid-19 is a big challenge for the whole world. Every person in the world is scared and worried about the virus which is the cause of this disease. On March 11, 2020, the World Health Organization (WHO)<sup>1</sup> identified COVID-19 as a Pandemic. According to the World Health Organization, "Corona virus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness"<sup>2</sup>.

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<sup>1</sup>WHO. (2020). Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020. Retrieved from-<https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>

<sup>2</sup>WHO. (2020). Coronavirus Symptoms. Retrieved from-[https://www.who.int/health-topics/coronavirus#tab=tab\\_1](https://www.who.int/health-topics/coronavirus#tab=tab_1)

The World Health Organization (WHO)<sup>3</sup> has issued a number of health advice to protect ourselves and others from the spread of COVID-19. These includesome basic good hygiene practices such as frequent hand washing with an alcohol-based hand rub or wash them with soap and water, avoid touching the eyes, nose, and mouth, and covering the nose and mouth with a bent elbow and tissue when sneezing or coughing. India, like many other countries, has been following health advice and taking various measures to prevent the spread of the disease. According to the Centers for Disease Control and Prevention (CDC) “Keeping hands clean is one of the most important steps we can take to avoid getting sick and spreading germs to others. Many diseases and conditions are spread by not washing hands with soap and clean, running water”<sup>4</sup>. Indrani Gupta, Pradeep Guin(2010)<sup>5</sup> conducted a study on the topic entitled “Communicable diseases in the South-East Asia Region of the World Health Organization: towards a more effective response”. This study mentioned that “communicable diseases remain the leading cause of mortality and morbidity in least and less developed countries” and also mentioned that “WHO estimates that the region contributes 27% of the global burden of infectious and parasitic diseases, 30% of respiratory infections.”

## 2. Literature Review:

Several of the studies mentioned below have shown that there is a lack of Hygiene Awareness among people. Ajay Kumar Rajbhandari, Ranju Dhaubanjari, Krishna Bahadur GC and MaginshDahal(2018)<sup>6</sup>conducted a study on the topic entitled “Knowledge and practice of personal hygiene among secondary school students of grade nine and ten”. The aim of the study was the investigation of personal hygiene knowledge and practices of secondary level school children of Bhaktapur district, Kathmandu valley, Nepal. One of the findings of that study was that Female students have higher levels of knowledge about Personal hygiene than Male students. Ruby Khatoon, Beena Sachan, Mohsin Ali Khan, J. P. Srivastava(2017)<sup>7</sup> conducted a study entitled “Impact of school health education program on personal hygiene among school children of Lucknow district”. In this study, a pretest result showed that 75% of students thought that there was no need to wash hands if there was no visible dirt on the hands. Priyanka P.

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<sup>3</sup>WHO | Coronavirus disease (COVID-19) advice for the public. Retrieved from-<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>

<sup>4</sup>CDC. (2020). Handwashing: Clean Hands Save Lives. Retrieved from-<https://www.cdc.gov/handwashing/show-me-the-science-handwashing.html>

<sup>5</sup>WHO. (2010). Bulletin of the World Health Organization 2010. Retrieved from-<https://www.who.int/bulletin/volumes/88/3/09-065540/en/>

<sup>6</sup>Rajbhandari, A. K., Dhaubanjari, R., GC, K. B., &Dahal, M. (2018). Knowledge and practice of personal hygiene among secondary school students of grade nine and ten. Retrieved from-<https://doi.org/10.3126/jpahs.v5i2.24030>

<sup>7</sup>Khatoon, R., Sachan, B., Khan, M., & Srivastava, J. (2017). Impact of school health education program on personal hygiene among school children of Lucknow district. Retrieved from-<https://doi.org/10.4103/2249-4863.214973>

Gawai, Sachin A. Taware, Ameeta S. Chatterjee, Harshad P. Thakur(2016)<sup>8</sup> conducted a study on topic entitled “A cross sectional descriptive study of hand washing knowledge and practices among primary school children in Mumbai, Maharashtra, India”. The study found that about 34.2 percent of children were unaware that hand washing was related to health and was linked to germs and illness. The study further found that only 59% of children in Mumbai used to wash their hands regularly before eating. M.Sarkar(2013)<sup>9</sup> conducted a study on the topic entitled “Personal hygiene among primary school children living in a slum of Kolkata, India” to find out the knowledge and practice of personal hygiene and the morbidity pattern of the primary school children living in a slum area. The study found that there were misconceptions among students about certain indicators related to personal hygiene. About three-quarters of school children suffered from one or more diseases related to poor personal hygiene. Valerie A. Curtis, Lisa O. Danquah and Robert V. Aunger(2009)<sup>10</sup> in their study on “Planned, motivated and habitual hygiene behaviour: an eleven country review” mentioned that “Handwashing with soap (HWWS) may be one of the most cost-effective means of preventing infection in developing countries”. They reviewed the results of formative research studies from 11 countries and classified people's explanations of the causes of handwashing behaviour as habitual, motivated and planned.

The following two literature reviews show how the epidemic situation affected hygiene Awareness-

Gerald Meilicke, Klaus Riedmann, Walter Biederbick, Ute Müller, Traugott Wierer and Cornelius Bartels(2013)<sup>11</sup> conducted a study on the topic entitled “Hygiene perception changes during the influenza A H1N1 Pandemic in Germany: incorporating the results of two cross-sectional telephone surveys 2008–2009”. The purpose of this study was to find out whether there was any change in Hygiene perception among the people over time during the influenza Pandemic in Germany. Two telephone surveys were conducted to collect data. The first telephone survey was conducted before the Pandemic in 2008 and the second survey was conducted after the peak of the Pandemic in 2009. The questionnaire contained four main questions. Out of which two questions are related to my current research. The first one is regarding the effect of hand washing to reduce catching cold and the second one was asked about the best way of coughing. In this Research it was revealed that the acceptance of usefulness of hand washing has been increased by 10.6 % ( 50.9% in 2008 and 61.5% in 2009) after the Pandemic. In this research it

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<sup>8</sup>Gawai, P., Taware, S., Chatterjee, A., & Thakur, H. (2016). A cross sectional descriptive study of hand washing knowledge and practices among primary school children in Mumbai, Maharashtra, India.. Retrieved from-<https://doi.org/10.18203/2394-6040.ijcmph20163391>

<sup>9</sup>Sarkar, M. (2013). Personal hygiene among primary school children living in a slum of Kolkata, India. Retrieved from-<https://doi.org/10.15167/2421-4248/ijpmh2013.54.3.401>

<sup>10</sup>Curtis, V. A., Danquah, L. O., &Aunger, R. V. (2009). Planned, motivated and habitual hygiene behaviour: Retrieved from-<https://doi.org/10.1093/her/cyp002>

<sup>11</sup>Meilicke, G., Riedmann, K., Biederbick, W., Müller, U., Wierer, T., & Bartels, C. (2013). Hygiene perception changes during the influenza A H1N1 pandemic in Germany: Retrieved from-<https://doi.org/10.1186/1471-2458-13-959>

was also found that only 3.8 % of the respondents used to cough into the sleeve before the Pandemic but the figure dramatically changed after the Pandemic and it became 43.8%. Hyun Su Kim, Ho Chun Choi, Belong Cho, Joon Yong Lee, Min Jeong Kwon(2011)<sup>12</sup> conducted a study on the topic entitled “Effect of the H1N1 Influenza Pandemic on the Incidence of Epidemic Kerato-conjunctivitis and on Hygiene Behavior: A Cross-Sectional Study”. The purpose of that study was to investigate the effects of H1N1 Influenza Pandemic on hygiene behaviour. Influenza is a contagious disease. The conjunctivitis associated with direct hand contact was therefore taken as an indicator of hygiene measurement. In this study the data of Korean National Infectious Disease Surveillance System were used. The data from 2004 to 2010 were divided into three categories: Pre-Pandemic, Pandemic and Post-Pandemic. A comparison of EKC data before and during the Pandemic using the T- test shows that the number of EKC patients during the Pandemic was decreased by 44.9%. As the number of EKC patients decreases, it can be concluded that people follow adequate hygiene during Pandemic.

After reviewing all the above-mentioned literature, the researchers felt that not every student was aware enough about hygiene. At present the whole world is going through a turbulent situation. In such a situation, researchers want to find out how much the students are aware of Health and Hygiene. In this current study, researchers are also interested to find out whether the COVID-19 Pandemic has any effect on students' hygiene Awareness.

### 3. Objectives:

- (1) To find out the difference between General Health and Hygiene Awareness among students before, during and after the Pandemic.
- (2) To find out the differences between Male and Female students in General Health and Hygiene Awareness.

### 4. Hypothesis:

- Ho<sub>1</sub>:** There is no significant difference in the score of General Health and Hygiene practices of the students between the Pre-Pandemic and Pandemic period.
- Ho<sub>2</sub>:** There is no significant difference in the score of General Health and Hygiene practices of the students between Pre-Pandemic and Post Pandemic period.
- Ho<sub>3</sub>:** There is no significant difference in the score of General Health and Hygiene practices of the students between Pandemic and Post Pandemic period.
- Ho<sub>4</sub>:** There is no significant difference in the score of General Health and Hygiene practices between Male and Female students before Pandemic.
- Ho<sub>5</sub>:** There is no significant difference in the score of General Health and Hygiene practices between Male and Female students during Pandemic.

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<sup>12</sup>Kim, H. S., Choi, H. C., Cho, B., Lee, J. Y., & Kwon, M. J. (2011). Effect of the H1N1 influenza pandemic on the incidence of epidemic Keratoconjunctivitis and on hygiene behavior: Retrieved from <https://doi.org/10.1371/journal.pone.0023444>

**Ho<sub>6</sub>:** There is no significant difference in the score of General Health and Hygiene practices between Male and Female students after Pandemic.

## 5. Methodology:

The researchers conducted this study through survey type of descriptive research. Data was collected from April to May 2020 during the COVID-19 Pandemic. As the study was conducted in the lockdown period, researchers decided to collect the data by online survey method using Google Forms. A self-constructed questionnaire was framed by the researchers after determining the objectives of the study. The questionnaire was pretested and sent to the respondents for collecting data. For testing hypothesis researchers used various statistical measurements. The researchers found the research outcomes of the study by analyzing the data with the help of Microsoft Excel and IBM SPSS software.

### 5.1 Method of the study:

The method of the present study was the survey type of descriptive research. Here the online survey technique was adopted to collect data. The study was quantitative in nature.

### 5.2 Variable:

**Main Variable:** General Health and Hygiene Awareness.

**Attributes Variable:** In this study the circumstances (Pre-Pandemic, Pandemic and Post-Pandemic period) is the Attribute Variables.

### 5.3 Population of the study:

Students of all levels starting from upper primary level in West Bengal, India are taken as the population of the present study.

### 5.4 Sample:

In this study the purposive sampling method was used as a sampling technique. Data was collected by using Google Forms in an online survey method. Researchers sent the Google Forms to the respondents of every corner of West Bengal via WhatsApp and Email. Not only students but also people of different professions took part in this survey. A total of 587 responses were received from different regions of the State. Out of 587 responses, 414 responses were from students. The researchers took the responses sent by 414 students for data analysis. So, 414 samples were taken as a sample in this study.

Total Data Collected		Data taken as sample	Number of Male Students	Number of Female Students	Total Sample
Students	Other than Students				
414	173	Students(414)	127	287	414

### 5.5 Data Collection Tools:

The researchers constructed a questionnaire where the questions were formed based on the objectives of the study. So all questions in the questionnaire were based on the General Awareness in Health and Hygiene related with COVID-19 Pandemic. The questionnaire contained two sections. The questions of the first section were about the demographic characteristics such as Gender, Occupation, Age and Address. The second section of the questionnaire consisted of 36 questions related with General Awareness in Health and Hygiene. Out of 36 questions 12 questions were prepared for each Circumstances like Pre-Pandemic, Pandemic and Post-Pandemic.

### 5.6 Health and Hygiene Awareness Scale:

A five-point scale was applied for rating the response options. If respondents choose any one of the five options for a question, their score will be as- *Always-5, Sometimes-4, Indifferent -3, Not too much-2, Not at all-1*. By answering 36 questions, a respondent can score a maximum of  $12 \times 5 = 60$  for each Circumstance (Before, during and After the Pandemic) and a minimum of  $12 \times 1 = 12$  for each. This scale was used to measure the score of General Health and Hygiene Practice.

### 5.7 Statistical Techniques used:

The responses of the questionnaires collected through Google Forms were exported to Microsoft Excel 2007 and collated. Then this data was imported in IBM SPSS Statistical software Version 22 for data analysis. Descriptive statistics and inferential non-parametric tests were used for data analysis. For the hypothesis test, two statistical tests called the Mann-Whitney U Test and the Wilcoxon-Signed Rank Test were applied.

## 6. Result:

### 6.1 Demographic information of the Study:

Demographic details of the 414 students related to the present study are presented in Table-1. Students are categorized according to Gender and Age.

**Table 1: Demographic Details**

Category	Parameters	Frequency	Percent
Gender	Male	127	30.68%
	Female	287	69.32%
	Total	414	
Age	10 to 18	89	21.50%
	19 to 23	223	53.86%
	24 and above	102	24.64%
	Total	414	

In the questionnaire there were 36 questions. Out of 36 questions, questions number 1, 4,7,10,13,16,19,22,25,28, 31 &34 were asked to know about the General Health and Hygiene Practices during Pandemic. Questions number 2,5,8,11,14,17,20,23,26,29,32 &35 were asked to know about the General Health and Hygiene Practices before Pandemic. Questions number 3,6,9,12,15,18,21,24,27,30,33 &36 were asked to know about the possible Practices of General Health and Hygiene after Pandemic.

Table 2 shows the distribution of respondents according to their responses in a particular question. In the Table each row consists of three consecutive questions regarding three situations i.e. Pre-Pandemic, Pandemic, and Post-Pandemic Period.

**Table 2: Summarization of Responses**

Sl. No.	Before					During					After				
	Always	Sometimes	Indifferent	Not too much	Not at all	Always	Sometimes	Indifferent	Not too much	Not at all	Always	Sometimes	Indifferent	Not too much	Not at all
1	281	118	3	12	0	378	35	0	1	0	401	10	2	1	0
2	67	157	54	100	36	247	137	5	20	5	302	90	9	12	1
3	240	131	8	27	8	379	24	2	8	1	361	40	8	5	0
4	162	204	32	10	6	280	118	7	8	1	297	88	27	1	1
5	237	149	22	4	2	366	40	6	2	0	366	39	7	1	1
6	195	152	23	35	9	396	12	4	1	1	367	30	13	3	1
7	353	50	6	4	1	402	9	2	1	0	400	12	2	0	0
8	213	47	7	9	2	264	14	6	2	0	258	13	6	2	0
9	194	169	5	42	4	376	33	1	4	0	327	69	10	6	2
10	234	140	6	27	7	388	18	4	4	0	376	27	6	4	1
11	203	99	78	21	13	402	3	7	1	1	388	16	8	1	1
12	201	130	37	39	7	394	13	4	3	0	369	35	6	4	0

Sl. No. 1 to 12 indicates the following responses against the questions about-

- 1) washing hands properly before eating;
- 2) washing hands properly before touching their Eyes, Nose or Mouth;
- 3) changing their clothes and washing their hands and feet properly after returning home;
- 4) taking healthy foods to boost their immunity;
- 5) taking care of their home and surroundings to keep them clean;
- 6) banning a person if the person sneezes, coughs and spits in the open without covering the face;
- 7) proper washing of fruits and vegetables brought from the market before being used in their home;
- 8) washing their hands after touching a pet in the period of Pre-Pandemic, Pandemic, and Post-Pandemic.

[Note that-It was not mandatory to answer these questions. So 278 responses were received for before Pandemic, 286 responses were received for during Pandemic and 279 responses were received for after Pandemic situations. After calculating the percentage, it is observed that 77% of students used to always

maintain hygiene before the Pandemic, but this figure increased to 92% during the Pandemic and also 92% after the Pandemic.

- 9) consulting a doctor in case of common cold, cough and fever;
- 10) cleaning their hands when eating dried foods like biscuits, snacks;
- 11) proper hand washing of servant or maid servant before starting their work;
- 12) special care of cleanliness when travelling by public transport.

Figure1: Comparison of Health & Hygiene Practice Score (Always) of Three Periods

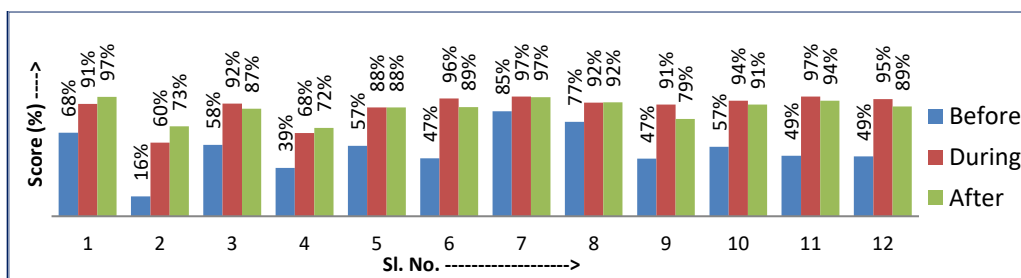


Table 3: Ho<sub>1</sub> Hypothesis Testing

Wilcoxon Signed Rank Test at 5% level of significant							
Group	No. of students	Mean	Standard Deviation	Wilcoxon (z) Test	p-Value	Decision	Interpretation
Before	414	46.83	5.83	16.59	0.00	Rejected Ho <sub>1</sub>	Significant
During	414	53.26	2.57				

Table-3 shows the result of Wilcoxon Signed Rank Test at 5% level of significance. The result revealed that Z value is -16.59 and p-value is 0.00. So, the p-value is less than 0.05, so, the null hypothesis is rejected. Therefore the General Health and Hygiene practice score of the students before the Pandemic and during the Pandemic has a significant difference.

Table 4: Ho<sub>2</sub> Hypothesis Testing

Wilcoxon Signed Rank Test at 5% level of significant							
Group	No. of students	Mean	Standard Deviation	Wilcoxon (z) Test	p-Value	Decision	Interpretation
Before	414	46.831	5.826	-16.681	0.000	Rejected Ho <sub>2</sub>	Significant
After	414	53.072	3.022				

Table-4 shows the result of Wilcoxon Signed Rank Test at 5% level of significance. The result revealed that Z value is -16.681 and p-value is 0.000. So, the p-value is less than 0.05; and the null hypothesis is rejected. Therefore, the General Health and Hygiene practice score of the students before the Pandemic and after the Pandemic has a significant difference.



Table 5: Ho<sub>3</sub> Hypothesis Testing

Wilcoxon Signed Rank Test at 5% level of significant							
Group	No. of students	Mean	Standard Deviation	Wilcoxon (z) Test	p-Value	Decision	Interpretation
During	414	53.258	2.574	-0.972	0.331	Accepted Ho <sub>3</sub>	Not Significant
After	414	53.072	3.022				

Table-5 shows the result of Wilcoxon Signed Rank Test at 5% level of significance. The result revealed that Z value is -0.972 and p-value is 0.331. As the p-value is greater than 0.05, so the null hypothesis is accepted. Therefore, the General Health and Hygiene practice score of the students during the Pandemic and after the Pandemic has no significant difference.

Table 6: Ho<sub>4</sub>, Ho<sub>5</sub>, Ho<sub>6</sub> Hypothesis Testing

Mann-Whitney U Test at 5% level of significant							
Group	Gender	No. of students	Mean Rank	Mann-Whitney U (z) Test	p-Value	Decision	Interpretation
Before	Male	127	186.54	-2.375	0.018	Rejected Ho <sub>4</sub>	Significant
	Female	287	216.77				
During	Male	127	157.72	-5.866	0.00	Rejected Ho <sub>5</sub>	Significant
	Female	287	229.53				
After	Male	127	172.67	-4.234	0.00	Rejected Ho <sub>6</sub>	Significant
	Female	287	222.91				

Table-6 shows the result of Mann-Whitney U Test at 5% level of significance. The results revealed that the P value of all the three cases that is Pre-Pandemic, Pandemic and Post-Pandemic situation are less than 0.05. This implies that the Hypothesis Ho<sub>4</sub>, Ho<sub>5</sub>, Ho<sub>6</sub> are rejected. This means that there must be a significant difference in Health and Hygiene Awareness between Male and Female students. The mean rank of Health and Hygiene practice score of Female students is always higher than the Male students.

## 7. Discussion:

In Table-2 Sl. No. 1, 2, and 4 revealed that the General Health and Hygiene Awareness of students has increased during the Pandemic situation in respect to the Pre-Pandemic situation. It also predicts that this Awareness will likely to be increased in the Post-Pandemic period than the Pre-Pandemic and Pandemic periods.

In Table-2 Sl. No. 3, and 6 to 12 revealed that the General Health and Hygiene Awareness of students has increased during the Pandemic situation in respect to the Pre-Pandemic situation. But it also predicts that this Awareness will be decreased in a little bit in the Post-Pandemic period than the Pandemic periods.

In Table-2 Sl. No. 5 revealed that the General Health and Hygiene Awareness of students has increased during the Pandemic situation in respect to the Pre-Pandemic situation. It remains the same in the Post-Pandemic period compared with the Pandemic periods.

These results show that for all the cases always maintaining the hygiene practice has been increased from Pre-Pandemic to during Pandemic and Post-Pandemic period.

After testing hypotheses, the present study explores that the null hypothesis  $H_{01}$ ,  $H_{02}$ ,  $H_{04}$ ,  $H_{05}$  and  $H_{06}$  are rejected and  $H_{03}$  is accepted.

So, the findings of the study are as follows-

- (1) There is a significant difference in the score of General Health and Hygiene practices of the students between the Pre-Pandemic and Pandemic period. It can also be said that the General Health and Hygiene Awareness of the students has increased during the Pandemic period as compared to the Pre-Pandemic period.
- (2) There is a significant difference in the score of General Health and Hygiene practices of the students between the Pre-Pandemic and Post-Pandemic period. It can also be observed that the General Health and Hygiene Awareness of the students has increased in the Post-Pandemic period as compared to the Pre-Pandemic period.
- (3) There is no significant difference in the score of General Health and Hygiene practices of the students between the Pandemic and Post-Pandemic period. It is also found that the General Health and Hygiene Awareness of the students will remain likely to be the same in the Post-Pandemic period as compared to the Pandemic period.
- (4) There is a significant difference in the score of General Health and Hygiene practices between Male and Female students before the Pandemic. It is also noticed that the Awareness of General Health and Hygiene of Female students was greater than Male students before the Pandemic.
- (5) There is a significant difference in the score of General Health and Hygiene practices between Male and Female students during a Pandemic. It is also found that the Awareness of General Health and Hygiene of Female students is greater than Male students during a Pandemic
- (6) There is a significant difference in the score of General Health and Hygiene practices between Male and Female students after the Pandemic. It is also noticed that the Awareness of General Health and Hygiene of Female students will likely be greater than Male students after the Pandemic.

So it is clear that in all three situations Female students' Awareness in General Health and Hygiene is always greater than Male students.

## 8. Conclusion:

This study shows that the COVID-19 Pandemic has greatly increased Health and Hygiene Awareness among students. Various literature reviews show that there is not enough Awareness

among the students about General health and hygiene. The current study also found that health Awareness was not adequate among all students prior to the Pandemic. The horrors of the COVID-19 Pandemic have raised Awareness among students. Looking at the scores obtained from the participants' feedback, it is clear that health Awareness has increased significantly. It is also observed that there is a good chance that this Awareness will be maintained in the future. Since the severity of the Pandemic has increased Awareness among the students, it can be said that the students should be trained and acquire knowledge about various infectious diseases from childhood. Proper knowledge can make them more aware to avoid such diseases. Finally, it can be said that the COVID-19 Pandemic has had a significant positive impact on students' Health and Hygiene Awareness.

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