An Analytical Study On Reduction Of Transmission Risk Of Covid-19 Among Distance Learners

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ABSTRACT
This study was aimed to analyze the measures adopted by distance learners to reduce the transmission risk of Coronavirus disease. To carry out the study, distance learners of Allama Iqbal Open University (BS level) were selected by using random sampling technique. Total number of 340 students were included in the sample. Self-developed research scale on “Reduction of Transmission Risk of Coronavirus Disease” was used. This scale was comprised on three subscales; a) social distancing strategies; b) self-hygiene strategies; c) cleaning strategies. Data was collected through email. Data analysis revealed that distance learners use appropriate preventive measures against Coronavirus disease. This research recommends that the importance of reduction strategies adopted by distance learners indicate significant importance of this issue, so AIOU official page may be updated by displaying some of the important reduction strategies against COVID-19 pandemic.

Keywords: gender; reduction of transmission risk; coronavirus; distance learners

INTRODUCTION
Coronavirus is caused by “severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It is named as novel Coronavirus or COVID-19. This is a single-stranded (ss) RNA virus consisting of 26–36 kb positive sense RNA genome. The complete virus particle is made up of four major structural proteins, namely spikes (S), nucleocapsid (N), membrane (M), and envelope (E) encoded...
by virus genome”. This is a type of virus which spreads through lack of social distancing, coughing and sneezing of infected person. The droplets of that person remain in air and the other person(s) may caught the disease if he/she is not wearing mask or standing near to the infected person. There should be at least 1.5-meter distance between two persons (Chu et.al, 2020). Centers for Disease Control and Prevention (2020) also indicated the same that close contact from person-to-person is the primary and perhaps an important factor to transmit COVID-19 in clinical and non-clinical settings. Moreover, COVID-19 is also transmitted through surfaces which contain this virus and sharing of utensils of infected person. Care is needed in disinfecting house/workplace entrances, door handles, surfaces etc. social distancing and disinfecting physical things doesn’t mean that we have got control over COVID-19 to catch us. This virus has spread in 188 countries and everyone is at risk of catching this virus. This virus also varies in terms of its severity for different age groups also. Persons with chronic illnesses are much likely to get more infections/hospitalizations or deadly infections i.e. older people with 60 above age group. In adults, coronavirus is reported not so serious (Capritto, 2020). According to Adhikari et al. (2020, para2)

The coronavirus belongs to a family of viruses that may cause various symptoms such as pneumonia, fever, breathing difficulty, and lung infection. These viruses are common in animals worldwide, but very few cases have been known to affect humans. The World Health Organization (WHO) used the term 2019 novel coronavirus to refer to a coronavirus that affected the lower respiratory tract of patients with pneumonia in Wuhan, China on 29 December 2019.

Coronavirus has some common symptoms i.e. dry coughing, flue, body pain, fever, tiredness etc. Many patients are also reported with other symptoms i.e. diarrhea, throat infection, runny nose, and body aches. Basically, COVID-19 spreads from an infected persons’ little droplets which comes out from his/her mouth/nose in case of sneezing or coughing. Breathing problem is severe among seriously ill patients; approximately one out of six patients (Centers for Disease Control and Prevention, 2020). Since no vaccine has yet been developed against COVID-19, however, the best solution to avoid from this virus is adoption of precautionary measures against it. Some of important general precautions include the following:

1. Physical contact is alarming to coronavirus. That’s why one of the main precaution is physical distancing. People should not sit in unnecessary gatherings i.e. group meetings, social gatherings etc. If it is unavoidable to go for grocery or to meet people, then face should be covered during sneezing or coughing.

2. Hand washing after half an hour/frequently for 20 seconds with soap in a way that no part between fingers, nails and hand is left. Use of hand sanitizer is also good precaution. Hand sanitizer which contains 60 % alcohol is more effective.

3. It is also necessary to not touch eyes, face, nose and mouth without washing hands with soap or using sanitizer. Because from the contaminated surfaces, coronavirus may stick to hands and when nose, eyes or face are rubbed with hands, virus is transferred inside body.

4. Disinfecting frequently used things and surfaces i.e. buttons, gadgets, door knobs etc.
5. Don’t spit in open area i.e. public places.
6. Dispose-off masks after 8 hours.
7. Discard used tissues properly and immediately.
8. Sharing of utensils, food is also one cause of spread of COVID-19. So, sharing of these should be stopped.
9. Consultation with a doctor is also necessary if there is prolonged flue, fever and breathing difficulty.
10. Staying at home is best strategy to avoid from coronavirus, but if a member in family got corona positive, then rest of all members should also have their blood tests. In case of having minor infections which relate to symptoms of COVID-19, self-isolation is best to not infect others if someone is having this disease.
11. Maintaining physical distance of approximately 3 feet while interacting with others i.e. during grocery/shopping, travel, meeting etc. is useful because if someone is carrier of coronavirus and it is not yet exposed to him/her, then the sneezing or coughing of that person may infect other persons.
12. Over-crowded places should be avoided to go in. because there are high risks of catching with coronavirus as we don’t know who is infected with this virus. In such crowded places, maintaining physical distance of 3 feet is also impossible. (Embassy of the Islamic Republic of Pakistan, 2020; Harvard Health Publishing, 2020; Centers for Disease Control and Prevention, 2020)

It reflects that in the absence of any vaccine against COVID-19, precautionary measures are important to avoid from this disease. Efforts are also needed to strengthen and inculcate health promoting behaviors. This can be done with the help of sound research findings. In this regard, Chu et.al (2020) did a systematic review and meta-analysis on role of social distancing, use of facial masks, and eye protection to minimize the raise of COVID-19. Data was obtained from 21 sources (WHO-specific and COVID-19-specific). From these sources, they identified 172 observational studies across 16 countries and six continents and found that social distancing, wearing of face masks and eye protection techniques resulted as better vehicles to limit the spread of coronavirus. They recommended the use of facial masks by everyone and social distance of one metre. In another study, similar results are reported by Arista et al (2020). They conducted a literature review of 24 published and 20 unpublished articles on prevention models of COVID-19. Thematic synthesis of the articles revealed lockdown the most commonly prevention strategy to control spread of this disease. Social distancing also appeared most effective strategy in different articles. They emphasized the need to increase testing and intervention models to be adopted after lock down. The need for conducting more research on Coronavirus is also recommended by Adhikari et al. (2020) to minimize the impact of this pandemic on general public. They further recommended that scholarly community should explore COVID-19 and its suggest the ways to manage its long-term and short-term effects at micro and macro levels.

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STATEMENT OF THE PROBLEM
Apart from these preventive measures against coronavirus, education system is also disturbed. Then there is a need also to look into the preventive measures which students adopted during this pandemic. COVID-19 disturbed the overall education system in Pakistan and around the world. Coronavirus has disturbed all the forms of education and students of all ages in all grades (CEDEFOP, 2020). According to United Nations (2020) about 40 million pre-primary children affected due to COVID-19 around the world. Learners in technical and vocational education affected as recorded online classes had association of low digitization and structural weaknesses. Distance learning at higher education also affected badly although recorded lectures were provided to distance learners but in many countries of the world poor IT structure led to add in discontinuity of educational facilities for students. Keeping in view the recent scenario of COVID-19, present study analyzed the measures adopted by distance learners to reduce the transmission risk of Coronavirus disease.

OBJECTIVES
The objectives were based to explore the difference in the anti-COVID-19 measures adopted by following to reduce the transmission risk of Coronavirus disease:

1. Male versus female distance learners.
2. Married versus unmarried distance learners.
3. Married versus unmarried male distance learners.
4. Married versus unmarried female distance learners.

HYPOTHESES

\( H^01 \): There is no difference between measures adopted by male and female distance learners to reduce the transmission risk of Coronavirus disease.

\( H^02 \): There is no difference between measures adopted by married and unmarried distance learners to reduce the transmission risk of Coronavirus disease.

\( H^03 \): There is no difference between measures adopted by married and unmarried male distance learners to reduce the transmission risk of Coronavirus disease.

\( H^04 \): There is no difference between measures adopted by married and unmarried female distance learners to reduce the transmission risk of Coronavirus disease.

RESEARCH METHODOLOGY
Following research procedures were adopted in terms of proper execution of this study:
Population, Sample and Sampling Technique: In this study population was comprised on graduate level students of AIOU of semester Autumn 2020. Total number of sample was comprised on 352 students. Sample was selected by using purposive sampling technique.

Instrument: A scale on COVID-19 was developed which contained items on preventive measures adopted by students to avoid from coronavirus disease. It contained two parts. In part A respondents were asked about their gender, area, age, socio-economic and marital status. Part B of the scale was comprised on 17 items and two subscales (Knowledge about COVID-19 preventive measures, Practice of COVID-19 preventive measures). Items included in the scale which were about social distancing, wearing of masks, hand sanitizing measures, travelling, social gatherings, covering of face while sneezing or coughing, hoteling, sharing of utensils, disinfection of surfaces, and contact with COVID patients. Response categories ranged in yes/no format for subscale 1 (Knowledge about COVID-19 preventive measures). For subscale 2 (Practice of COVID-19 preventive measures) response categories ranged from always, most of the times, sometimes, occasionally, and never. Minimum score of the scale was 17 and maximum score was 76. Respondents who scored more than 50% (38 and above score) were regarded as those who were in good practice in following COVID-19 preventive measures. Scale was content validated by 5 experts and their opinions were endorsed in the final version of the scale. Scale was sent to participants in English language.

Independent Variables: In this study, age, gender, socio-economic status, and area were independent variables. age was operationalized in terms of age categories ranging from 19-20, 21-25, 26-30, 31-35 and 36-40 years and above. Marital status was categorized as single and married. Monthly income was divided into four categories (0-10000 PKR, 10000-30000PKR, 30000-100000 PKR and 100000 PKR and above). Area was categorized into Rural and Urban.

Dependent Variable: In this study, measures adopted by distance learners to reduce the transmission risk of Coronavirus disease was dependent variable. This was operationalized in terms of items included in the scale.

Data Collection and Analysis: Data was collected through e-mail due to lock down situation around the country. Participants were told about the aim of the study prior to data collection process. Inferential statistics were applied to analyze data mainly by applying t-test and chi-square.

DATA ANALYSIS AND RESULTS
Data is analyzed as per objectives of the study. Following is the tabular description of results:

Table 1. Difference between Male and Female Distance Learners’ measures adopted to reduce the transmission Risk of Coronavirus Disease. (Overall analysis of COVID-19 scale)
Table 1 describes data that there is no difference between preventive measures adopted by male and female distance learners (p = .849 > 0.05). It indicates that male and female students equally use precautionary measures to protect themselves from COVID-19.

**Table 2. Difference between Male and Female Distance Learners’ measures adopted to reduce the transmission Risk of Coronavirus Disease. (Analysis of subscales of COVID-19 scale)**

<table>
<thead>
<tr>
<th>Subscales of COVID-19 Scale</th>
<th>Gender</th>
<th>f</th>
<th>Mean</th>
<th>S.D</th>
<th>t-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge about COVID-19 preventive measures</td>
<td>Male</td>
<td>71</td>
<td>3.94</td>
<td>1.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>281</td>
<td>3.98</td>
<td>1.15</td>
<td>-.250</td>
<td>.950</td>
</tr>
<tr>
<td>Practice of COVID-19 preventive measures</td>
<td>Male</td>
<td>71</td>
<td>24.11</td>
<td>8.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>281</td>
<td>23.69</td>
<td>8.35</td>
<td>.385</td>
<td>.701</td>
</tr>
</tbody>
</table>

Table 2 tells that there is no difference between preventive measures adopted by male and female distance learners in both subscales of COVID-19 scale. In first subscale (Knowledge about COVID-19 preventive measures) male and female distance learners had same level of knowledge regarding preventive measures to be adopted to keep secure from the disease as p = .950 > 0.05. In subscale 2 (Practice of COVID-19 preventive measures) no gender difference is seen as p = .701 > 0.05. It indicates that male and female students equally use precautionary measures to protect themselves from COVID-19.

**Table 3. Difference between Marital Status of Distance Learners’ and measures adopted to reduce the transmission Risk of Coronavirus Disease. (Analysis of subscales of COVID-19 scale)**

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>f</th>
<th>Mean</th>
<th>S.D</th>
<th>t-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>304</td>
<td>36.50</td>
<td>7.24</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3 shows no difference between marital status of distance learners. Married and unmarried students equally follow preventive for COVID-19 as $p = .214 > 0.05$.

Table 4. Difference between Marital Status of Distance Learners’ and measures adopted to reduce the transmission Risk of Coronavirus Disease. (Analysis of subscales of COVID-19 scale)

<table>
<thead>
<tr>
<th>Subscales of COVID-19 Scale</th>
<th>Gender</th>
<th>f</th>
<th>Mean</th>
<th>S.D</th>
<th>t-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge about COVID-19 preventive measures</td>
<td>Married</td>
<td>304</td>
<td>4.04</td>
<td>.960</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practice of COVID-19 preventive measures</td>
<td>Unmarried</td>
<td>31</td>
<td>4.39</td>
<td>1.054</td>
<td>-1.902</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>304</td>
<td>24.09</td>
<td>7.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unmarried</td>
<td>31</td>
<td>25.52</td>
<td>8.46</td>
<td>-1.041</td>
<td>.29</td>
</tr>
</tbody>
</table>

Table 4 indicates that there is difference between married and unmarried students’ knowledge about preventive measures for COVID-19. Mean difference of unmarried students indicates that they have more knowledge to avoid from COVID-19 disease than married students. However, there is no difference between practice of COVID-19 preventive measures by both groups. In subscale 2 (Practice of COVID-19 preventive measures) no marital difference is seen as $p = .29 > 0.05$. It indicates that married and unmarried students equally practice precautionary measures against COVID-19.

Table 5. Difference between Marital Status of male students and measures adopted to reduce the transmission Risk of Coronavirus Disease.

<table>
<thead>
<tr>
<th>Measures adopted to reduce the Transmission Risk of Coronavirus Disease</th>
<th>Marital Status</th>
<th>f</th>
<th>Mean</th>
<th>S.D</th>
<th>t-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married males</td>
<td>6</td>
<td>35.97</td>
<td>6.99</td>
<td></td>
<td>-2.34</td>
<td>.022</td>
</tr>
<tr>
<td>Unmarried males</td>
<td>59</td>
<td>43.17</td>
<td>8.79</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5 shows difference between marital status of male learners (as \( p = .022 < 0.05 \)). Mean score (43.17) indicates that married male students more follow preventive for COVID-19 than unmarried male students.

### Table 6. Difference between Marital Status of female students and measures adopted to reduce the transmission Risk of Coronavirus Disease.

<table>
<thead>
<tr>
<th>Measures adopted to reduce the Transmission Risk of Coronavirus Disease</th>
<th>Marital Status</th>
<th>f</th>
<th>Mean</th>
<th>S.D</th>
<th>t-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married Females</td>
<td>25</td>
<td>36.63</td>
<td>7.31</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unmarried Females</td>
<td>245</td>
<td>37.08</td>
<td>9.58</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6 indicates no difference between marital status of female learners (as \( p = .77 > 0.05 \)).

**DISCUSSION**

The world is undergoing serious outbreak of coronavirus. It going to be deadly disease as killing millions of people around the world. Developed countries even couldn’t gain control over this disease as compared with developing countries. In the start of this disease, when it hit Pakistan, it was a world level prediction that this country would be the biggest hub of COVID-19 patients. But the people over here not only got control on this disease but also rejected the predications of World Health Organizations. So, it was necessary to examine that which segment of the Pakistani people followed SOPs and prevention measures more. Keeping in view this, this study explored precautionary measures against COVID-19 among male versus females, and married versus unmarried students. The results of this study indicated that no there is no difference between preventive measures adopted by male and female distance learners. Similar findings are reported by Mohammadpour et al. (2020). They found no significant relationship between gender and hand washing to avoid from COVID-19. Contrary findings are shown by Galasso, Pons and Profeta (2020) in a survey in eight OED that women take COVID-19 pandemic more seriously and there should be some public campaigns initiated to educate males also. It was interesting to find out that in the present study, more or less all the variables under investigation exhibited ample amount of knowledge against COVID-19 preventive strategies and they also had good practice of those measures. That’s why Pakistan succeeded to overcome this disease in the first phase with a shorter time span.

Results of the study also indicated no difference between marital status of distance learners. A similar result is shown by Mohammadpour et al. (2020) regarding marital status variable and hand washing behavior. However, in first subscale of the tool (knowledge about preventive measures for COVID-19) unmarried students had more knowledge than married students. It indicated that more participants had knowledge about overcoming COVID-19 i.e. wearing mask, washing hands, using hand sanitizers, avoiding from social gatherings, avoiding from travelling, social distancing
etc. similar findings are reported by Banik et al (2020) in which they reported that Bangladeshi people had good knowledge and positive attitude towards preventive measures against COVID-19 outbreak.

Present study showed variations between male students who were married. It indicated that married male students more follow preventive for COVID-19 than unmarried male students. Regarding difference between measures adopted by married and unmarried female distance learners to reduce the transmission risk of Coronavirus disease, there was no difference found. Pakistan government also played great role in frequent smart lock downs to strict lock downs in the country. This study results may be attributed towards the efforts of government of Pakistan which took timely steps and started media awareness campaigns in combination with lockdowns. This may have inculcated the value and knowledge of adopting preventive measures to keep the country in control from COVID-19 outbreak. So, the study generally indicated that Pakistani students in all the variables under investigation had good level of knowledge and practical measures to combat with coronavirus disease.

CONCLUSIONS AND RECOMMENDATIONS
As a conclusion in the light of the findings of this study, it is evident that this study revealed important information regarding Pakistani students against COVID-19 fight. The results of this study indicated that no there is no difference between preventive measures adopted by male and female distance learners. So, $H_0^1$ was accepted. It means that a considerable amount of male and female students not only have the knowledge but they practice preventive measures of COVID-19 also. Second result of the study indicated no difference between marital status of distance learners so, $H_0^2$ was accepted. This was a cumulative result of COVID-19 scale used for male and female married students. However, another very interesting thing emerged out from this study was that married male students more follow preventive for COVID-19 than unmarried male students. That’s why $H_0^3$ was rejected. Regarding difference between measures adopted by married and unmarried female distance learners to reduce the transmission risk of Coronavirus disease, there was no difference found, so $H_0^4$ was accepted. Overall, it is concluded that students of Pakistan not only have ample amount of knowledge against coronavirus disease but also follow SOPs in their practical life.

REFERENCES


