

Original Article

THE IMPACT OF COVID-19 PANDEMIC ON VARIOUS STRESS FACTORS AND ITS CORRELATION WITH HAIR FALL: AN ONLINE-BASED SURVEY AMONG BANGLADESHI RESIDENTS

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ABSTRACT

Objective: The COVID-19 pandemic has triggered several stress factors throughout the entire world. Some stress factors, such as mental, economical, educational etc., have created consequences like hair fall, as seen in individuals in many countries, including Bangladesh. The present study was designed to investigate the covid-19-induced stress factors and their relation with hair loss in the people of Bangladesh.

Methods: An online-based survey study was carried out using a self-made questionnaire, and quantitative data were analyzed by a cross-sectional analysis over the period of two months from November 25, 2020, to January 24, 2021. Participants who were willing to participate into this survey were considered as study individuals. This survey was conducted among participants with age's ≥ 18 y. The participants were selected by snowball sampling technique, and the final collected sample size was 808.

Results: Among 808 participants, males and females were 50.3% (406) and 49.7% (402), respectively. We found that 5% (37) participants were infected with Covid-19, 89% (715) were not infected, and 7% (56) were unknown. It is found that COVID-19-induced stress conditions including educational 28%, mental 25%, and economical 20% were found in 81% (655) participants and rendered 68% (550) people facing the hair fall problem due to COVID-19-related stress. Female individuals who were more stressed were 74.6% (300) and had hair fall, whereas males were 38.7% (157). In addition, the increased rate of hair fall in COVID-19 is associated with other factors, such as eating disorders and scalp infections, as reported by some respondents.

Conclusion: In pandemic situations, most of the people (81%) passed through the stressful condition, and the females experienced more hair fall problems than male one. High blood pressure, eating disorder and irregular sleep pattern are considered stress-induced factors that were responsible for increased hair loss.

Keywords: COVID-19 pandemic, Stress factors, Hair-fall, Sleep pattern

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INTRODUCTION

COVID-19 (coronavirus disease 2019) appeared from Wuhan city of China, in late December 2019. According to the world health organization (WHO), COVID-19 was considered a pandemic on 11 March 2020 [1, 2]. COVID-19 is caused by the coronavirus-novel RNA virus because it is a new strain that has not been previously identified in humans. The alluded novel RNA virus was formerly known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [3]. Initially, COVID-19 causes viral pneumonia, which may readily progress to acute respiratory distress syndrome (ARDS) and to death, simply transmitted through direct contact with respiratory droplets, touching surfaces of any body parts from the infected person (e. g. eye, nose, hand, mouth) [4]. According to current epidemiological studies, the incubation period of coronavirus varies from one to fourteen days. Fever, dry cough, chills, sore throat, and shortness of breath are the most common symptoms in COVID-19 patients. People having diseases such as diabetes, cardiovascular disease, asthma, kidney failure, obesity, and immunodeficiency are considered at high risk of affecting by COVID-19 [1]. As the situation became worse and millions of people got infected and died of COVID-19, governments around the world imposed travel bans, restrictions for social gatherings, the transition to an online education system, using face masks and a sanitizer, frequent hand washing with soaps and maintain social distancing in public areas [5, 6].

Bangladesh, a densely populated country, the COVID-19 cases were first identified and registered on March 8, 2020 [7]. On this day, the first three COVID-19 positive patient were found and confirmed by the Institute of Epidemiology Disease Control and Research IEDCR

(IEDCR, 2020) at a press conference and the first death were registered on March 18 [8]. On March 18, schools and colleges were shut, and one week later, on March 26, all offices, industries, and vehicles were closed, resulting in a lockdown nationwide. Bangladesh has been in a critical situation since April 7, 2020, as the number of infected patients has increased dramatically in the following days. COVID-19 infections had already spread through 38 of 64 districts as of April 14, 2020 [9]. From the government Corona information site (www.corona.gov.bd), till 1 October 2021, a total of 15, 56, 758 people were infected, and 27,531 died due to COVID-19.

As the world has undeniably failed to tackle Covid-19's physical therapies, the mental health factor has been ignored or overlooked, especially in the 3rd world countries like Bangladesh. Natural or manmade disasters can increase the risk of many psychological and emotional problems like stress, anxiety, and depression. In this pandemic situation, people experienced several conditions, including fear of infection, fear of losing beloved ones, insufficient medical treatment, losing their jobs and financial crisis, the uncertainty of their plans etc. This global turmoil is causing a huge mental stress, health stress, family stress, educational stress etc., in people throughout the nation, especially among the young generation, as schools, colleges and universities were shut down for a long time [10].

Hair is a protein filament growing out of the epidermis and is originated from hair follicles of the dermis. It is important to understand how stress factors can hamper the healthy growth of hair. The constant hair growth cycle involves hair growth (anagen phase), regression or end of hair growth (catagen phase), and

resting (telogen phase) [11-13]. In the anagen phase, a period of 2 to 6 y, and consists of about 85% of hairs. After receiving a signal, the anagenic follicle ends the growth phase, which is the transition or catagen phase that lasts for 1 to 2 w. And then, the telogen or resting phase starts and lasts for 3 to 5 w until the anagen phase is restarted. Now when the catagen phase of hair growth enters the telogen phase early, it promotes the hair loss condition. Some stress factors induce this event of early entering of the catagen phase to telogen and disrupt healthy hair growth, thus promoting hair fall more [11]. Stress has long been suggested as one of the determining factors involved in hair loss. Studies have demonstrated the long-held popular belief that stress can exert inhibitory effects on hair growth [14, 15].

We assume that this pandemic situation is overly stressful for most people. Thus, the present study was designed to investigate the impact of COVID-19 on various stress factors associated with hair loss in the young population of Bangladesh.

MATERIALS AND METHODS

Study design and data collection

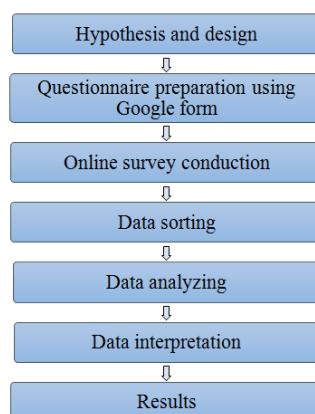
A cross-sectional method was used to collect data over a period of two months, from 25th Nov 2020 to 24th Jan 2021. The questionnaire was prepared using Google form, and the link was distributed through social networks, including Facebook and Whatsapp. Each participant took an estimated mean time of 6 min to complete the questionnaire. The data was obtained using a snowball sampling technique. The survey was conducted by using a self-made questionnaire comprised of 28 close-ended questions that contained two parts:

Socio-demographic information: Such as gender, age, marital status, division, educational status, living area and family status.

Possible human stress and hair fall conditions during the COVID-19 pandemic situation. Some of the major questions included in this part are as follows:

- Is this pandemic period stressful to you?
- What kind of stress are you facing in this pandemic situation most?
- Do you think your hair loss problem is increased in this pandemic situation?
- Do you have any of the diseases mentioned below?
- How is your sleep pattern?

The flowchart of the research methodology is given below:



Participants who were willing to participate into this survey were considered as study individuals. This survey was conducted among participants with the age's ≥ 18 y. The total collected sample size was 810; from this we have excluded two samples because of the incompleteness of the questionnaire. Thus, the final collected sample size became 808. All the data analysis was carried out using Microsoft Excel.

RESULTS AND DISCUSSION

Participants

A total of 808 individuals participated in this study, among which male and female participants were 406 (50.25%) and 402 (49.75%), respectively (fig. 1). Most of the responses were from young participants aged between 18 to 25 y (654; 81%), and the other age groups were 26-35 y (95; 11.76%), 36-45 y (30; 3.71%), 46-55 y (23; 2.85%), >55 y (6; 0.74%) old. All participants were from Bangladesh, where 447 (55.32%) were from urban areas, 135 (16.71%) were from suburbs and 226 (28%) from rural areas.

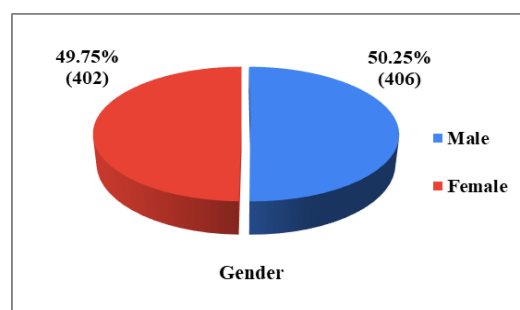


Fig. 1: Total male and female participants

Coronavirus contamination and stress

In terms of coronavirus contamination, males were 44% (356) and females were 44% (359) of the total participants (fig. 2). We found that only 5% (37) of participants were infected with Covid-19, 89% (715) participants were not infected, 7% (56) participants were unaware of their contamination (fig. 2).

In the present study, 81% (n=655) of the total respondents (n=808) reported being in stress due to the outbreak of Covid-19 (fig. 3). Though only a few of the participants were contaminated by coronavirus, most of them are stressed in this Covid-19 pandemic situation. It has been suggested that the infected and/or uninfected both types of people are stressed due to the pandemic situation of covid-19.

We investigated the various stress condition on individuals of different age groups and gender due to the pandemic situation. We found that respondents from the 18 to 25 age group, 82% (n=248) male and 83% (n=294) female, were stressed. And among the age group of 26 to 35, stressed male and female participants were 74% (n=52) and 80% (n=20), respectively. The rest of the respondents from different age groups showed similar response patterns (fig. 4). It has clearly indicated that irrespective of the age groups, female respondents were more stressed than males. Similar findings were observed in other studies conducted in Asian countries, and results showed that women in Iran, Iraq and China suffered a higher level of stress, anxiety and depression during this period of the covid-19 pandemic [1, 16, 17]. We know that familial responsibilities are more associated with females. So, it is possible that women who were working from home or unemployed suffered the most in the absence of their support staff like cook or maid, as all of their household chores rested on their fragile shoulder during this lockdown period. So, it was an extra burden or stress factor for females compared to males.

COVID-19-induced stress factors in individuals, possibly due to the panic of getting infected by the coronavirus, tension of family members or relatives being infected anytime, aroused financial difficulties, interruption in education and future plans, losing their jobs, the possible food crisis in coming days, difficulties in taking medical treatment in hospitals and so on [10].

Among the respondents, 28% were stressed educationally, 25% mentally and 20% economically (fig. 5). As the majority of the respondents were between 18 to 25 y old, it justifies the educational

stress being more evident. Students are frustrated and depressed thinking about the uncertainty of their future studies as the government has imposed long-term social isolation in the pandemic

situation worldwide. Many people are losing their jobs due to this pandemic situation and consequently facing financial and mental stress severely [10].

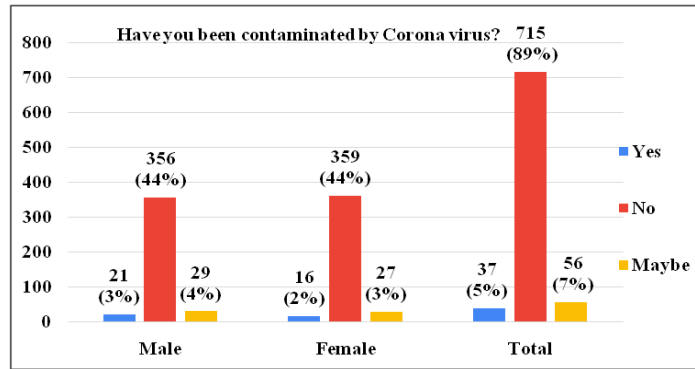


Fig. 2: Corona virus contamination based on gender

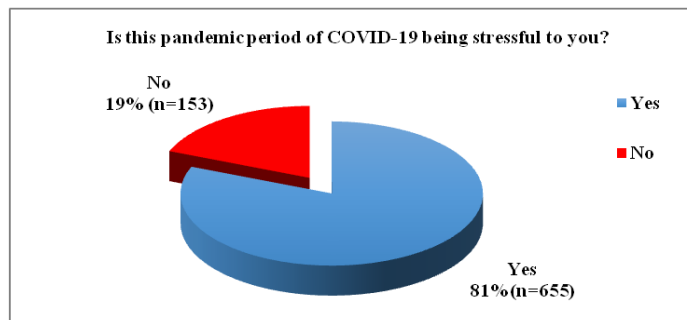


Fig. 3: Stressed individuals during lockdown due to COVID-19 pandemic

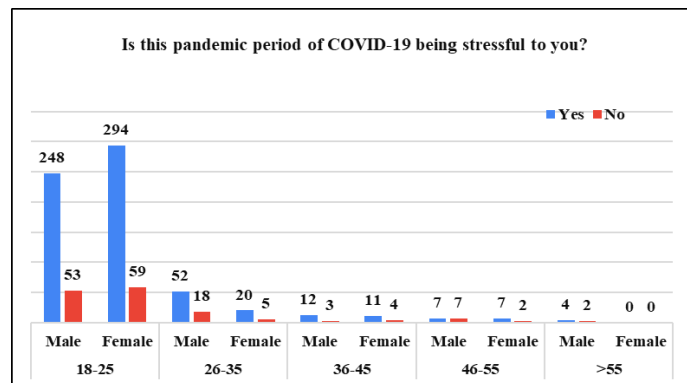


Fig. 4: Stressful corona period in relation to gender and age

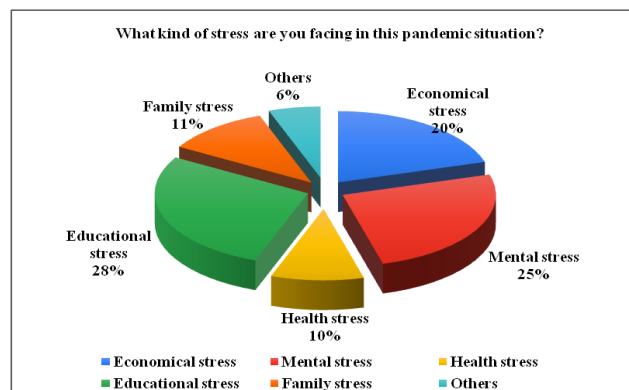


Fig. 5: Different stress factors in pandemic

Most stressed people in our study were the graduates (19%) and undergraduates (19%), and out of all education classes and

participants with post-graduate education had remarkably lower levels of stress (11%) because of having their permanent job (fig. 6).

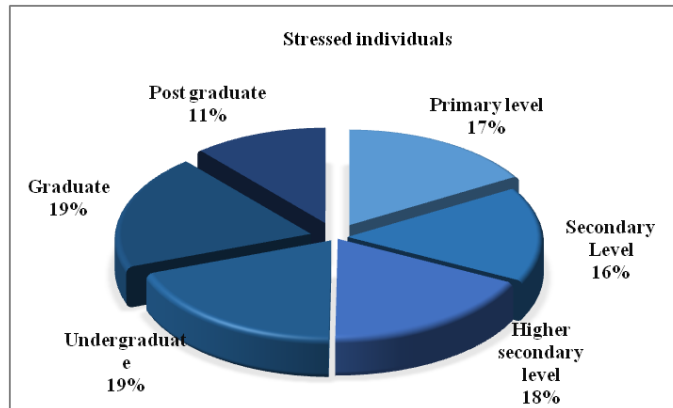


Fig. 6: Level of stress in different education group

Fresh graduates, who are young job seekers, are passing their time with great anxiety thinking about the post-covid job market condition. This pandemic situation is not only hampering their access to the job market but also limiting the opportunities required for a professional workplace [18]. And in the case of undergraduates, the prominent stress factors were academic disruption or delay, financial hardship due to the sudden loss of pocket money earned by tutoring or doing part-time jobs, exposure to news and social media, strict isolation etc. [19]. Therefore,

government and institutes should support undergraduate students economically and create working areas for job seekers.

Stress and hair fall

We found that a total of 550 (68%) participants had hair fall problems, of which 355 (88%) were female respondents and 195 (48%) were male respondents (fig. 7). This information shows that female individuals were more vulnerable to the hair fall problem than male individuals.

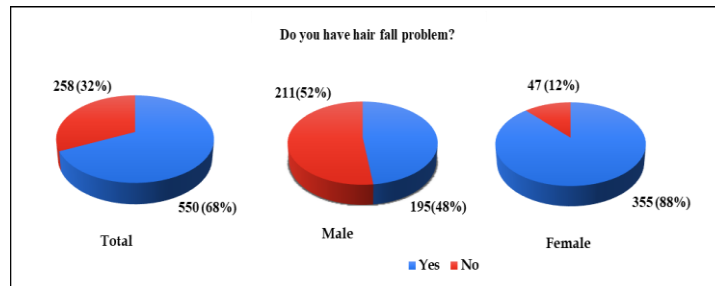


Fig. 7: Gender-based hair fall situation

In cases of the frequency of hair fall conditions, a significant percentage of the female reported moderate 184 (52%) and extreme 112 (32%) hair fall conditions than the male respondents of moderate 72 (37%) extreme: 24 (12%) (fig. 8). This result depicts that the female individual had worse hair fall condition than male individuals. Further data revealed that in this pandemic situation, 158 (45%)

females were facing increased hair fall problems, whereas only 56 (27%) males responded the same (fig. 9). We observed in the previous section [3.2] that the female participants were more exposed to pandemic stress than male individuals. This ascertains our assumption of the correlation between pandemic stress and hair fall, where women are more prone to be affected by hair fall conditions than men.

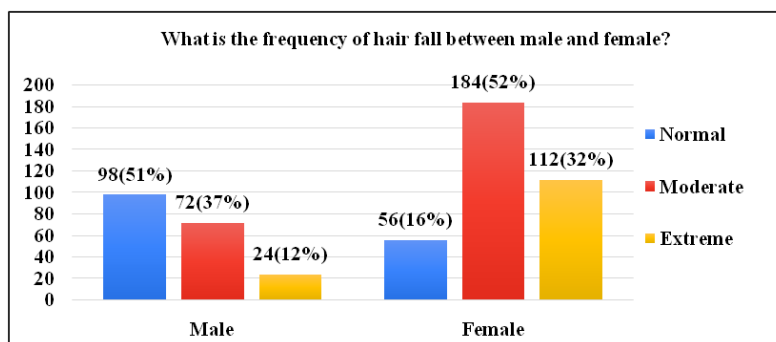


Fig. 8: Frequency of hair fall condition between male and female

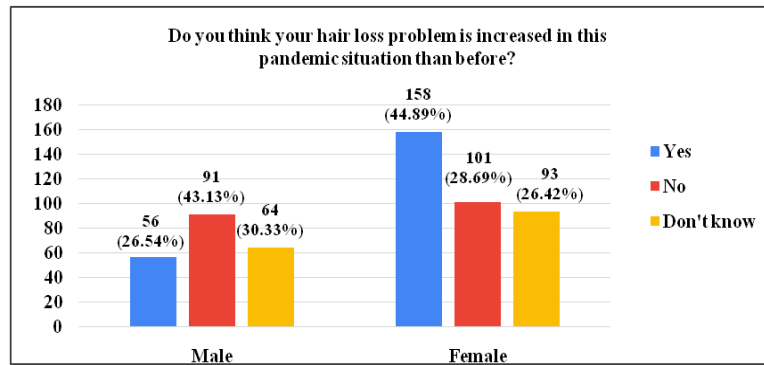


Fig. 9: Increased hair fall problem in a pandemic situation based on gender

One of the main determining factors of stress is an irregular sleep pattern [20]. Due to this pandemic lockdown situation, people’s daily work routine had become unusual, increased digital screen time and their physical activity also significantly decreased; consequently, their sleep patterns became irregular [21]. Among the

participants who sleep very late at night, stressed individuals were 188 (29%) and 227 (41%) were facing the hair fall problem. From the analyzed data, we got that people who sleep very late at night were the most stressed people in the pandemic situations and had a higher hair fall problem than the rest (fig. 10).

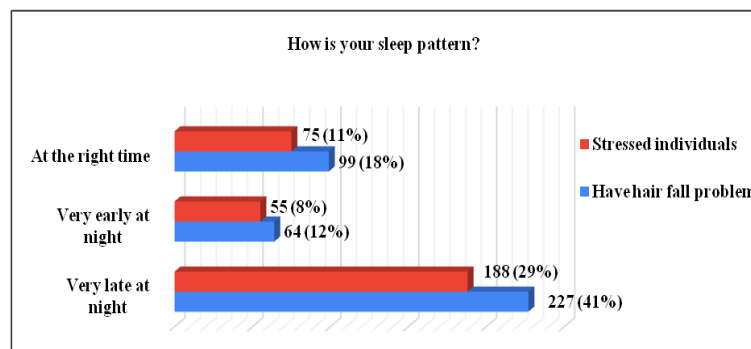


Fig. 10: Stressed and hair fall participants based on sleep pattern

The most prevalent diseases among the people who have covid-19 induced hair fall problems were eating disorders 44 (31%), scalp

infection 36 (25%), and high blood pressure 18 (13%) (fig. 11), which in turn dependent upon stress factors [22, 23].

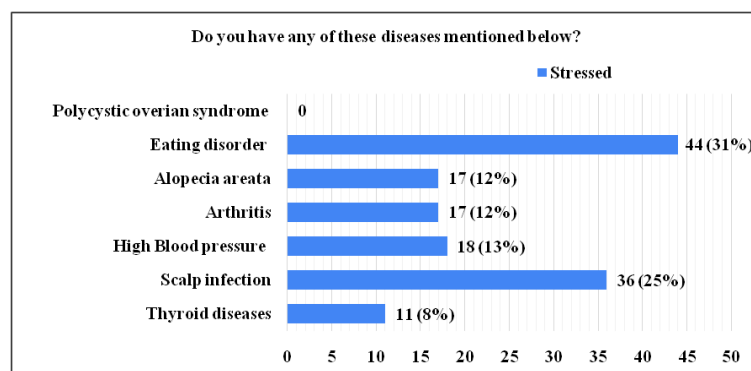


Fig. 11: Sufferings of some diseases of hair fall participants

Most of the participants were stressed due to this covid-19 pandemic situation, even though only a few of them were contaminated. The predominant stress factors among men and women were educational, financial and mental stresses. The majority of the participants experienced educational stress as most of our respondents were from the young population. We also noticed that graduate and undergraduate peoples were more stressed than postgraduates about their academic year loss and also the loss of

getting a chance to enter the new job market. As many people lost their job in this pandemic period, it was so much stressful for them and for their families. We also found that women were more stressed than men. For women, it was possibly an extra burden to manage most of their household chores all by themselves in the absence of their support staff like cook or maid in this pandemic situation. We know stress has long been suggested as one of the determining factors involved in hair loss. We also found that hair fall

problems and stress both are related to sleep patterns. People who go to sleep very late at night were more stressed by the pandemic situation and had a higher hair fall problem than the rest. Leading diseases like eating disorders and high blood pressure were mostly related to stress factors that are seen in many participants. Therefore, the government should pay attention to improving pandemic stress in young people and thereby take appropriate policies to mitigate the people's concerns in Bangladesh.

LIMITATIONS OF STUDY

The present study has a few limitations, such as having participants from the younger generation at a higher frequency. Despite the limitation, the current study delivers novel outcomes on human stress and its impact on hair fall during covid-19 pandemic situation.

CONCLUSION

In our study, we observed a clear pattern that female individuals are facing more stress; consequently, they are having more hair fall problems. We have found strong evidence that people having stressful diseases like high blood pressure and eating disorder tends to have more hair fall problem. Also, stress-related factor like an irregular sleep pattern caused by pandemic stress plays an impact on hair fall. Overall, the findings of the study evidently prove that the covid-19 pandemic-induced stress and hair fall problem has an interrelation with each other. Therefore, we should introduce a time-oriented policy to manage the situation of the covid-19 pandemic and implement it with care and proper monitoring that lead to a happy socio-emotional life for Bangladeshi residents.

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AUTHORS CONTRIBUTIONS

All authors have read and approved the manuscript.

CONFLICT OF INTERESTS

MH Shahed: Participated in design, data collection and analyses, ST: Participated in data collection, data interpretation and draft manuscript, MHS: Compiled the data and draft the manuscript, MIIW: Participated in design and edited the manuscript, NKK: Participated in research plan, MAA: Design, prepared the study protocol and revised final manuscript. All authors have read and approved the manuscript.

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