

# Anwer Khan Modern Medical College Journal

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| Content   | Page |
|---|------|
| <b>Editorial</b>  |      |
| Vaccine of SARS-CoV-2: Is It Authorized Early?<br><i>SMM Kamal, S Sharmin</i>   | 03   |
| <b>Original Article</b>   |      |
| Mobile Phone Usage Pattern among Secondary School Children in Some Selected Rural Schools<br><i>FM Monika, M Rahman</i>   | 05   |
| Scope of Laparoscopic Cholecystectomy in Patients with Previous Upper Abdominal Surgery<br><i>MEU Bari, AS Arif, F Quader, MIMN Sobhani, AZMMH Tuhin</i>  | 10   |
| Relationship of Reduced Lung Function in Male Chronic Heart Failure Patients<br><i>R Mollika, S Begum, RMT Bakshi, F Hasanat</i>  | 15   |
| Determinants Affecting Student's Performance in Teaching Physiology: A retrospective analysis<br><i>K Alo, A Yasmin, L Yesmin, SK Liza</i>  | 21   |
| Prevalence of Irritable Bowel Syndrome (IBS) & It's Associated Risk Factors among the Adult Bangladeshi Population Attending in Outdoor of Selected Tertiary Level Hospital in Bangladesh<br><i>AK Sarker, MSAM Ahmed, K Omar</i> | 27   |
| Open Preperitoneal Mesh Repair of Inguinal Hernia- A Better Approach for the Novice Surgeons<br><i>ATM M Rahman, M Rahman</i>   | 32   |
| Variation of Chest Computed Tomographic Findings in Coronavirus Disease-19 (COVID-19) Positive Patients in a Tertiary Care Hospital, Bangladesh<br><i>N Ghaffoor, MS Showkat, B Bhowmik, M Siddiqui, AI Ahsan, KP Deepa</i>       | 37   |
| Characterization of COVID-19 infection in children: A 6 months experience in a tertiary care hospital in Dhaka, Bangladesh<br><i>S Haldar, G Tajkia, K Roy, ME Rahman, SK Amin</i>  | 44   |
| <b>Brief Communication</b>  |      |
| Kampung Sungai to Kerala: A deadly zoonotic trail encroaching diverse geography<br><i>S M R U Islam, M Jahan, M M R Siddiqui</i>  | 51   |
| <b>Case Report</b>  |      |
| Gossypiboma: A Cause of Iatrogenic Fecal Enterocutaneous Fistula<br><i>A. S. Arif, S. Alam, F. Anam, A. T. Tahmid, K. N. Maria</i>  | 57   |
| A case of Multisystem Inflammatory Syndrome in Children (MIS-C)<br><i>ME Rahman, SK Amin, G Tajkia, S Halder, K Roy</i>   | 61   |
| How Early, Reinfection of COVID-19 can Occurred- A Case Report<br><i>MMR Siddiqui, S Ahmed, N Mahmood, RS Giasuddin, WA Hoque</i>   | 65   |
| <b>Information to Authors</b>   |      |



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| <b>Information to Authors</b>   | 68   |

## Vaccine of SARS-CoV-2: Is It Authorized Early?

SMM Kamal<sup>1</sup>, S Sharmin<sup>2</sup>,

SARS-CoV-2 infection and the resulting coronavirus disease 2019 (Covid-19) have afflicted ten million of people in a worldwide pandemic with more than two million death. The pandemic is having a catastrophic impact on every sector of world economy and life. Present repurposive treatment and standard precaution could not stop the transmission of virus even after year rather emergence of new strain is intensifying the pandemic. As there is no specific treatment of COVID-19, researchers are working to orchestrate an unprecedented global effort to find safe and effective vaccine against SARS-CoV-2 in record time. Researchers are currently testing 68 vaccines in clinical trials on humans, 20 in final stages of testing and 90 preclinical vaccines are under active investigation in animals. Vaccines of SARS-CoV-2 are coming to market at a record pace, shaving years off the typical development time like more or less ten years. A total of seven vaccines are now available for public use, in limited quantities. The biggest vaccination campaign in history has begun. More than 44 million doses in 51 countries have been administered and average 2.27million doses in a day. Scientists are concerned that this kind of early deployment could compromise the ongoing clinical trials that seek to show conclusively how well the vaccines work.

The Pfizer-BioNTech and Moderna vaccine has now been approved for use across North America, Europe and the Middle East. Both these vaccines found to be 95% effective. A vaccine by Oxford- AstraZeneca also got its authorization. Other countries got a head start on vaccinations. China and Russia authorized their own shots in July and August, before they'd been fully tested. Nations have poured billions of dollars into developing new vaccine technologies, testing them in thousands of volunteers, scaling up manufacturing, and then bringing them to market in

record time. None of these shots, on its own, is enough to inoculate a global population of some 7.8 billion people to produce herd immunity. But together they represent humanity's best chance of ending a scourge that has claimed more than 2 million lives and triggered global economic calamity. Such competition between a clinical trial for a vaccine and emergency use of it is new for vaccine development.

All vaccines are designed to generate an immune response - albeit in different ways - to prepare memory T cell and memory B cell to fight the virus. The Pfizer-BioNTech and Moderna vaccine is based on mRNA technology, which is completely new in a human vaccine. The oxford vaccine is based on DNA technology using viral vector (adenovirus). Vaccines need to generate an immune response to work, and side effects are a by-product of our bodies mounting an immune response. Usually most of the people will experience no side effects from a vaccine, but the inflammation can manifest in different ways in different people and between different vaccines. It could be a reaction at the site of the injection or fatigue or feeling unwell. Beside this previously described adverse effects many more unwanted side effects are being reported from different countries where vaccination has started. In the recent history of vaccines, we haven't seen any trends showing deaths in elderly people following vaccination. The deaths in Norway were reportedly associated with fever, nausea and diarrhoea, which, while at the severe end of the spectrum of vaccine side effects, would be tolerable for the vast majority of people. Some other countries also reported about allergic reactions and death. How different people will respond to the mRNA is what we're starting to understand now. It's possible this vaccine will have more serious effects in older, vulnerable people where the initial inflammatory

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response could be overwhelming. But it's still too early to draw any conclusions as these vaccines got early emergency authorization. Ideally, the vaccine should be considered on a case-by-case basis for this group, carefully weighing up the risks and benefits in each situation, based on the best available data. Reported adverse reactions are creating myth and discouraging people for vaccination.

As the COVID-19 vaccine rolls out, some issues loom. Can vaccinated person still spread the disease? Scientists don't have the data yet to say that with confidence. That's why people who have been vaccinated are still supposed to wear a mask and take other precautions – until that gets sorted out. Will the vaccine remain effective as the virus mutates? or Whether person will express symptoms of COVID 19 if infected immediately after vaccination? or Whether the vaccine prevents reinfection? T cells of lungs and nasal passages are primed to react immediately to bridge the gap between the time one gets infected and the time that immune system can mount a full response with antibodies. But whether they perform as well in COVID-19, we don't really know enough yet. How long will the vaccine's protection last? Whether the vaccine could prevent new strain? What would be the long-term side effect of vaccine? Answers to these questions lie in our immune systems and the answers aren't straightforward because our immune systems are both remarkably adept and remarkably challenging to predict. Age of this pandemic and its vaccine is not enough to curate sufficient evidence to answer the above question. The

fatal side effects that have been reported at present probably not meticulously evaluated during clinical trial due to the urgency of emergency authorization. With the span of time scientist will be able to elicit this fatal side effects and accordingly upgrade the technologies for safer, efficient vaccines and will generate data to answer the unsolved question.

It's been very interesting to watch this unfold in real time because we're learning so much about SARS-CoV-2, its vaccine and the immune response to it in a way that we've never done previously.

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## Mobile Phone Usage Pattern among Secondary School Children in Some Selected Rural Schools.

\*FM Monika<sup>1</sup>, M Rahman<sup>2</sup>

### ABSTRACT

**Background:** Mobile phones are an integral part of our modern life. The use of mobile phone for various purposes (including educational) has increased in recent few years in Bangladesh. The aim of the study was to explore the mobile phone usage pattern among secondary school children in rural schools of Bangladesh.

**Materials and Methods:** This descriptive type cross sectional study was carried among 295 secondary school children by purposive sampling technique from 1<sup>st</sup> to 31<sup>st</sup> December, 2019 in different villages of Dhamrai Upazilla, Dhaka. Data were collected by duly pretested a semi-structured questionnaire through face to face interview.

**Results:** The study revealed that, most of the respondents were in class X (36.61%) with female predominance (56.94%). Among them, 63.72% were from nuclear family & majority 56.61% of the respondents had family monthly income BDT >20000 taka. 73% respondents were used smart phone. All respondents (100%) were used mobile phone for communicating with relatives & most of the cases (82.37%) reason was kill spare time. Frequently used social media sites was a Messenger (71.52%) followed by You Tube (68.13%) & Facebook (67.11%). 81.35% respondents were using mobile phones at home and 52.88% had no specific time for using a mobile phone. About 82.71% respondents were found monthly expenditure on mobile phone <200 taka.

**Conclusion:** The study findings demand an intensified effort should be made towards creating awareness about the use of mobile phone. The pattern of use revealed extensively on internet browsing. In fact, the usage of mobile phone for educational purpose is quite low and most of them used mobile phone for communicating with relatives. In spite of its various advantages it has some disadvantages also. Misusing of mobile phone increases the disadvantages of this device day by day.

**Keywords:** Mobile phone, Communication device, Misuse.

### Introduction

In the 21<sup>st</sup> century the Mobile phone is an integral part of everyone's regular life. The spread of mobile phones affects people's lives and relationships and affects how people interact when face to face or, rather and increasingly, face-to-face-to-mobile-phone-face, since people are ever more likely to incorporate the mobile phone as a participant in what would preferably be a face-to-face dyad<sup>1</sup>. During this era of globalization, a world of modern communications system is incredibly much important. Mobile phones are especially important given their standing as a tool

of communication. It promotes the availability, frequency and rapidness of our communication surrounding the globe. It facilitates fast, modern globalization. It becomes an inevitable part of our everyday lives<sup>2</sup>.

Mobile wireless, cellular phones, cell phones or hand phones, etc. are names of Mobile phones. It is a brief range, portable, electronic device. It is used for mobile voice or electronic communication over a network of specialized base station referred to as cell sites. It provides the standard voice function of a

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telephone. Current mobile phones may support many additional services and accessories like S.M.S. (Short messaging service) for text messaging, email, packet switching for access to internet and M.M.S (Multimedia messaging) for sending and receiving photos and videos. It is linked to music (MP3) playback, menu recording, instant messaging inbuilt camera and ring tones, games, radio, push to speak, infrared and Bluetooth connectivity, call registers. It's also helpful to look at streaming video or download video for later viewing video calling and serve as a wireless modem and serve as a console of sorts to online games and other prime quality games. It connects to a cellular network of base stations (cell sites) which successively interconnected to the general public switched telephone network (PSTN)<sup>3</sup>.

The mobile phone is a name of a silent revolution in Bangladesh. As the telecommunication industry in Bangladesh is growing fast, the amount of mobile phone users is additionally increasing rapidly. The younger generation, especially students, is that the prime customer of mobile phone. To the students, mobile phone could be a part of their way of life. They use it for various purposes along with for personal and private communication. The mobile phone is contributing active role in receiving and sending information. It makes communication easier in urban with rural people<sup>4</sup>. Bangladesh enters into the mobile world through the CityCell Company in 1993. Later GrameenPhone, Aktel, Banglalink, TeleTalk and Warid Telecom got license from the government<sup>5</sup>. The rapid growth and availability of network and technology have made mobile phone access to everyone<sup>6</sup>. The mobile phone is known to be very popular among students. Now it has to realize that there is horrible need for integrating mobile technology within the modern education. Mobile technology and therefore the concept of m-learning could be a growing trend in modern education. With the most recent improvement within the mobile technology, possibilities are emerging to produce educational services via mobile devices like Mobile phones. It embraces the thought of anytime, anywhere, and anybody learning<sup>7</sup>. Mobile phone increasing their social inclusion and connectedness

similarly as providing a way of security as they'll contact others in times of distress or emergency situation<sup>8</sup>. Although there are many benefits of employing a mobile phone, there may be negative effects on the users and education. Lectures and classes are disrupted when mobile phones are used at inappropriate times. Students showed signs of cognitive salience, whereby students consider their phones once they are not using them, similarly as behavioral salience, whereby the students constantly check their mobile phones for missed calls or messages<sup>9</sup>. Other negative consequences of mobile phone use include addiction, over dependency, which might cause problems like emotional stress, damaged relationships, and falling literacy<sup>8</sup>. That's why the purpose of study is to determine the usage pattern of mobile phone among secondary school children in rural schools of Bangladesh.

### **General Objective**

To describe the mobile phone usage pattern among secondary school children in rural schools of Bangladesh.

### **Specific Objectives**

1. To find out socio-demographic characteristics of the respondents.
2. To determine the reasons of mobile phone use among secondary school children
3. To explore usages pattern of mobile phone among respondents.

### **Methodology:**

This was a descriptive cross sectional study carried out among 295 students residing in different villages (Kumrail, Taltola, Islampur, Ambagan, Hazipur, Chobipara and Ponchas) of Dhamrai Upazilla during the period 1<sup>st</sup> to 31<sup>st</sup> December, 2019. Respondents were selected by a purposive sampling technique where data were collected in a pretested semi-structured questionnaire by a face to face interview with verbal consent. Then the data were entered into the Statistical Package for Social Sciences (SPSS) statistical software version 20 for the analysis and presented in the form of tables and graphs accordingly.

## Results

**Table I:** Distribution of respondents by socio-demographic characteristics n=295

| Variables         | Sub-variables | Number of respondents | Percentage (%) |
|-------------------|---------------|-----------------------|----------------|
| Age               | 11-12 year    | 92                    | 31.18          |
|                   | 13-14 year    | 95                    | 32.20          |
|                   | >14 year      | 108                   | 36.61          |
| Educational level | Class VIII    | 98                    | 33.22          |
|                   | Class IX      | 89                    | 30.16          |
|                   | Class X       | 108                   | 36.61          |
| Sex               | Male          | 127                   | 43.05          |
|                   | Female        | 168                   | 56.94          |
| Family type       | Nuclear       | 188                   | 63.72          |
|                   | Joint         | 107                   | 36.27          |

About 36.61% respondents were found in the age of >14 year. The majority (36.61%) were at Class X. About 56.94% were female and 63.72% were from nuclear families (Table I).

**Figure 01:** Bar Diagram showing distribution of respondents by Monthly income by family n=295

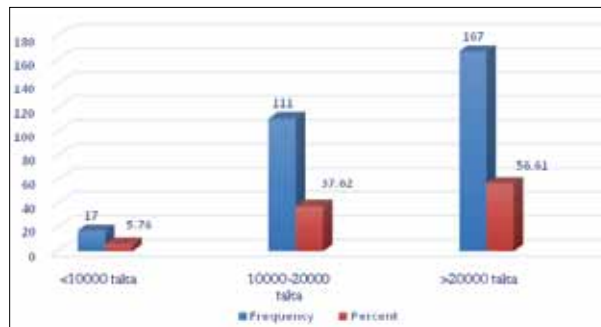


Figure 01 showing 56.61% respondents were found family monthly income >20000 taka whereas only 5.76% respondents were found <10000 taka.

**Figure 02:** Pie Diagram showing distribution of respondents by Type of device n=295

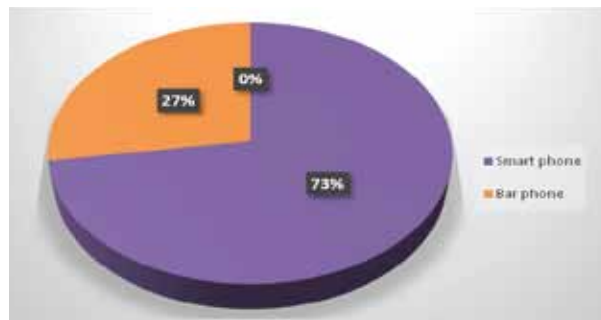


Figure 02 showing 73% were using smart phones and rest 27% were using bar phone.

**Table II:** Distribution of respondents by reasons of using mobile phone n=295

| Variables                    | Number of respondents | Percentage (%) |
|------------------------------|-----------------------|----------------|
| For knowledge and education  | 134                   | 45.42          |
| Study together in groups     | 03                    | 1.01           |
| News                         | 212                   | 71.86          |
| Communication with relatives | 295                   | 100            |
| Avoid stress and boring      | 46                    | 15.59          |
| Kill spare time              | 243                   | 82.37          |
| Fashion and styles           | 32                    | 10.84          |
| Sports                       | 26                    | 8.81           |
| Online shopping              | 06                    | 2.03           |
| Chatting                     | 207                   | 70.16          |

(NB: Multiple response)

All respondents (100%) were used mobile phone for communicating with relatives followed by 82.37% for killing spare time. About 71.86% and 70.16% respondents for news and chatting. Only 1.01% respondents were used for studying together in groups (Table II).

**Table III:** Distribution of respondents by usages pattern of mobile phone n=295

| Variables  | Sub-variables         | Number of respondents | Percentage (%) |
|--|-----------------------|-----------------------|----------------|
| Time spent on mobile phone per day                 | Less than 2 times/day | 93                    | 31.52          |
|  | 2 to 4 times/day      | 159                   | 53.89          |
|  | More than 4 times/day | 43                    | 14.57          |
| Number of times of use of mobile phone per day     | Less than 1 hour      | 182                   | 61.69          |
|  | 1 hour to 3 hour      | 72                    | 24.40          |
|  | More than 3 hour      | 41                    | 13.89          |
| Since when using mobile phone                      | Less than 3 year      | 176                   | 59.66          |
|  | 3 years to 5 years    | 46                    | 15.59          |
|  | More than 5 years     | 73                    | 24.74          |
| Frequently used social media sites on mobile phone | Facebook              | 198                   | 67.11          |
|  | Messenger             | 211                   | 71.52          |
|  | WhatsApp              | 43                    | 14.57          |
| (NB: Multiple response)                            | Viber                 | 21                    | 7.11           |
|  | You Tube              | 201                   | 68.13          |
|  | We Chat               | 02                    | 0.677          |
|  | Twitter               | 01                    | 0.338          |
|  | Instagram             | 203                   | 68.81          |
|  | Skype                 | 06                    | 2.033          |
|  | Others                | 107                   | 36.27          |
| Prepared place of online activity                  | Home                  | 240                   | 81.35          |
|  | Educational institute | 42                    | 14.23          |
|  | Others                | 13                    | 4.40           |
| Prepared time of online activity                   | No specific time      | 156                   | 52.88          |
|  | Leisure time          | 23                    | 7.79           |
|  | When feel bore        | 12                    | 4.06           |

About 53.89% respondents spent time on a mobile phone at 2 to 4 times/day, 61.69% respondents used mobile phone less than 1 hour per day and 59.66% respondents using mobile phone less than 3 years. Majority respondents (71.52%) used social media sites Messenger on mobile phone followed by 68% used YouTube and Instagram. However, 81.35% respondents were using mobile phones at home and 52.88% had no specific time for using a mobile phone. About 82.71% respondents were found monthly expenditure on mobile phone <200 taka (Table III).

### Discussion

The study reveals that about 36.61% respondents were found in the age of >14 year and they were at Class X. Majority of the respondents, about 56.94% were female which is almost similar to another study (73.7%)<sup>10</sup>. Regarding family type, 63.72% were from nuclear families. However, about 56.61% respondents had family monthly income >20000 BDT. About 73% respondents were used smart phone.

All respondents (100%) were used mobile phone for communicating with relatives which is similar to another study (99.5%)<sup>11</sup> followed by 82.37% for killing spare time. About 71.86% and 70.16% respondents for news and chatting. Only 1.01% respondents were used for studying together in groups which is similar to another study (1%)<sup>4</sup>.

About 53.89% respondents spent time on a mobile phone at 2 to 4 times/day, 61.69% respondents used mobile phone less than 1 hour per day, which is quite high in relation to another study (37%)<sup>7</sup> and 59.66% respondents using mobile phone less than 3 years. Majority respondents (71.52%) used social media sites Messenger on mobile phone followed by 68% used YouTube and Instagram which is almost similar to another study (75%)<sup>12</sup>. However, 81.35% respondents were using mobile phones at home and 52.88% had no specific time for using a mobile phone. About 82.71% respondents were found monthly expenditure on mobile phone <200 taka.

### Conclusion

The study findings revealed higher users of mobile phone were among female students than that of male students. In fact, the usage of mobile phone for educational purpose is quite low and most of them

used mobile phone for communicating with relatives. However, the pattern of use revealed extensively on internet browsing that needs to be addressed through motivational approach involving parents and teachers. The findings have the scope for intensified efforts on mass awareness among secondary students. In general, the mobile phone technology in the future is like a canal and its functions and application is like an ocean. The mobile phone has a significant influence on the young generation which leads to create a networked society. Among the developing countries mobile technologies are developing comparatively rapidly in Bangladesh, whereas, the country has lagged behind using other technologies.

### Recommendations

Considering the findings of present study, the recommendations are as follows:

1. Students' motivation involving parents and teachers are to be considered adequately.
2. Emphasis should be given to the impact of mobile phone abuses on health and education among female students in particular.
3. A large scale study of secondary school students can be conducted with due emphasis on the factors involved with extensive internet uses.

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**Conflict of Interest:** None.

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## Scope of Laparoscopic Cholecystectomy in Patients with Previous Upper Abdominal Surgery

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### ABSTRACT

**Background:** Laparoscopic cholecystectomy has become the treatment of choice for symptomatic gallstones. Previous upper abdominal surgery has been reported as a relative contraindication to laparoscopic cholecystectomy. This study specifically examined the effect of previous upper abdominal surgery on the feasibility and safety of laparoscopic cholecystectomy.

**Methods:** A number of 50 patients of adult age group (25 to 60 years) who were admitted suffering from gall bladder pathology and having history of previous upper abdominal surgery in the surgery units of a tertiary level hospital within the time period of September, 2013 to August, 2014 were included in this prospective observational study. With the consent of the patients, laparoscopic cholecystectomy was chosen as the surgical procedure. All these data were analyzed to find out the feasibility and safety of laparoscopic cholecystectomy in the patients with previous upper abdominal surgery.

**Results:** The patients were classified into 3 groups: group 1, patients with no adhesions, group 2, patients with minimum adhesions and group 3, patients with moderate dense adhesions. The 3 groups were similar with respect to age and sex ( $P > 0.05$ ). Conversion to laparotomy was required in 5 (10%) patients (1 in group 1, 2 in group 2, and 3 in group 3). No statically significant difference was noted among groups with respect to the conversion rate ( $P > 0.05$ ). No per-operative complications occurred in any of the groups. The post-operative complication rates among groups were not statistically different ( $P > 0.05$ ).

**Conclusion:** Previous upper abdominal surgery is not a contraindication to safe laparoscopic cholecystectomy. However, previous upper abdominal surgery is associated with an increased need for adhesiolysis, a chance for open conversion and a prolonged operation time.

**Key words:** Laparoscopic cholecystectomy, previous upper abdominal surgery, intra-abdominal adhesions.

### Introduction

Laparoscopic cholecystectomy is the most common laparoscopic procedure performed around the world. Laparoscopic cholecystectomy decreases postoperative pain, allows earlier oral intake, shortens hospital stay, enhances earlier return to normal activity, and improves cosmesis over open cholecystectomy. Laparoscopic Cholecystectomy is now accepted as the gold standard for the treatment of symptomatic gallbladder disease.<sup>1-3</sup>

When laparoscopic cholecystectomy began in the early 1990s, previous abdominal surgery, obesity, cirrhosis and acute cholecystitis were considered absolute contraindications for performance of the laparoscopic technique. As advances of laparoscopic skills and instruments have evolved, a range of increasingly complex procedures has been performed, making all of these traditional contraindications at best relatives.<sup>4</sup>

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Previous abdominal surgery particularly is associated with difficulty in placing the initial trocar and obtaining adequate exposure to the gall bladder. With increasing experience, however, many surgeons have felt that laparoscopic cholecystectomy is feasible for such patients. There have been limited reports on the impact of previous abdominal surgery on its safety. In this study it is also tried to find out the effect of previous abdominal surgery on laparoscopic cholecystectomy.

### Materials and Methods

This study is a prospective observational study to find out the scope of laparoscopic cholecystectomy in patient with previous history of upper abdominal surgery. A number of 50 patients of adult age group (25 to 60 years) who were admitted suffering from gall bladder pathology and having history of previous upper abdominal surgery in the surgery units of a tertiary level hospital within the time period of September, 2013 to August, 2014 were included in this study. With the consent of the patients, laparoscopic cholecystectomy was chosen as the surgical procedure. The relevant data were documented. All these data were analyzed and tried to find out the feasibility and safety of laparoscopic cholecystectomy in the patients with previous upper abdominal surgery. Strict selection criteria were applied. Patients with acute cholecystitis, current biliary pancreatitis, morbid obesity (BMI>35), or common bile duct stones were excluded in the study.

The types of previous abdominal surgeries were also recorded. Preoperative laboratory analysis of patients included white blood cell count, total serum bilirubin, alkaline phosphatase, aspartate transaminase, alanine transaminase and amylase.

The Hasson technique, which involves entering the abdominal cavity under direct vision through a larger incision in the navel skin, the fascia, and the peritoneum, was used for the patients with previous abdominal surgeries. A finger was introduced to remove adhesions and purse-string suture was placed in the fascia to close the orifice around the cannula, which allows preservation of the pneumoperitoneum. Once the peritoneal cavity was reached safely, only those adhesions that truly interfered with visualization of the area of interest were lysed. If, at any point

during the operation, the surgeon thought that the patient would be better served by an open cholecystectomy, conversion to the open technique was performed. After entering the abdominal cavity, adhesions attached to the midline incision line and to the associated intraperitoneal sites or organs were identified and graded for severity. Of the patients who had adhesions, the following 3-point grading system was used to define severity: grade 1, filmy thickness, avascular; grade 2, moderate thickness, limited vascularity; grade 3 dense thickness, well vascularized. The electro cautery (Monopolar) and the scissors were used to divide the adhesions.

The operative times of patients in each group were compared. These data were not only affected by the conversion rates, but also indirectly showed the difficulty of the operations. Because of this, we compared the operative times of patients who underwent successful LC (converted patients excluded).

Spss version 11.5 for windows was used in statistical analysis. Conversion to open, operative time, postoperative hospital stay, and any operative or postoperative complications were evaluated. In addition, the factors contributing to the conversion from a laparoscopic to an open procedure were evaluated to determine the impact of the prior surgery on conversion.

### Results

Among the 50 cases 30 patients were male and 20 patients were female. The patients were classified into 3 groups: group 1, patients with no adhesions, group 2, patients with minimum adhesions and group 3, patients with moderate dense adhesions. The 3 groups were similar with respect to age and sex ( $P>0.05$ ). Conversion to laparotomy was required in 5 (10%) patients (1 in group 1, 2 in group 2, and 3 in group 3). No statically significant difference was noted among groups with respect to the conversion rate ( $P>0.05$ ). The major causes of conversions were dense adhesions which causes bowel or other abdominal structures to adhere to the undersurface of the abdominal wall or an uncertain anatomy of the biliary tree. In the other patients (groups 2 and 3), conversion to an open procedure was performed because of failed pneumoperitoneum. No per-operative complications

occurred in any of the groups. However, 10 patients had postoperative complications including wound infections, retained common bile duct stone, trocar-site bleeding, sub phrenic abscess, urinary tract infection, urinary retention, postoperative nausea/vomiting, pulmonary embolism, prolonged ileus, urinary retention, atelectasis. The complication rates among groups were not statistically different ( $P>0.05$ ).

**Table-I:** Types of Surgery in Patients with Previous Upper Abdominal Surgery

| Types of Previous Surgery                                 | Number of Patients |
|---|--------------------|
| Gastrectomy (Total or Subtotal)                           | 15                 |
| Simple suture with Graham patch (Perforated Peptic Ulcer) | 9                  |
| Heller myotomy (Achalasia)                                | 2                  |
| Antireflux procedures                                     | 5                  |
| Partial cystectomy, pericystectomy (Hydatid liver cyst)   | 5                  |
| Liver resections (segmentectomy)                          | 2                  |
| Splenectomy   | 2                  |
| Epigastric hernia   | 5                  |
| Vagotomy and drainage procedures                          | 5                  |

**Table-II:** Distribution of patient according to grading of adhesions found during peroperative period, n=50

| Group   | Types of adhesions | Total no of patient | % of patient |
|---------|--------------------|---------------------|--------------|
| Group 1 | No adhesion        | 8                   | 16%          |
| Group 2 | Minimum adhesion   | 27                  | 54%          |
| Group 3 | Moderate adhesion  | 15                  | 30%          |

**Table-III:** Comparative operation time in selected 3 groups

| Group   | Mean operation time (Min) |
|---------|---------------------------|
| Group 1 | 50 ± 5                    |
| Group 2 | 60 ± 5                    |
| Group 3 | 68 ± 5                    |

■ Converted patients were not included in this table.

**Table-IV:** Causes of conversion to open cholecystectomy in each group

| Cause   | Group 1 | Group 2 | Group 3 |
|---|---------|---------|---------|
| Dense adhesion undersurface of abdominal wall | 1       | -       | 1       |
| Uncertain anatomy                             | -       | 1       | -       |
| Friable Gall bladder                          | -       | -       | 1       |
| Failed pneumoperitoneum                       | -       | 1       | -       |
| Thick cystic duct                             | -       | -       | 1       |

**Table-V:** Number and types of complication in each group

| Complications                   | Group 1 | Group 2 | Group 3 |
|---------------------------------|---------|---------|---------|
| Wound infection                 | -       | -       | 1       |
| Retained Common bile duct stone | -       | 1       | -       |
| Trocar-site bleeding            | 1       | -       | -       |
| Pulmonary embolism              | -       | 1       | -       |
| Sub phrenic abscess             | -       | -       | 1       |
| Urinary tract infection         | 1       | -       | -       |
| Prolonged ileus                 | -       | -       | 1       |
| Urinary retention               | 1       | -       | -       |
| Post-operative nausea/vomiting  | -       | -       | 1       |
| Atelectasis                     | -       | -       | 1       |

## Discussion

Clear benefits of laparoscopic cholecystectomy have rendered it the procedure of choice for symptomatic cholelithiasis.<sup>5</sup> A number of absolute or relative contraindications have been cited in regard to laparoscopic cholecystectomy. Previous upper abdominal surgery has been listed as a concern because of adhesion formation, which causes bowel or other abdominal structures to adhere to the undersurface of the abdominal wall.<sup>6</sup> The potential for bowel injury during trocar placement or difficulty in visualization of the hepatobiliary structures has dissuaded some surgeons from using the laparoscopic procedure in patients with previous abdominal surgery.<sup>7</sup> On the other hand, the chance of unwanted “surprises”, such as dense adhesions, awaiting the surgeon during laparoscopic cholecystectomy are the same as those encountered during open cholecystectomy. In our series, 50 patients had undergone previous abdominal surgery, listed in **Table I**. In this study, our conversion rate was 10% in patients with previous

upper abdominal surgery. The rate of conversion to open cholecystectomy and the complication rate were virtually identical to those found in the patients without prior surgery. This observation is consistent with reports in previous published works.

The chi-square test was used for comparison of proportions. One-way analysis of variance (ANOVA) was used for comparison of means. Statistically,  $P < 0.05$  was considered significant. SPSS version 11.5 for Windows was used in statistical analyses.

The patients were classified into 3 groups: group 1, patients with no adhesions, group 2, patients with minimum adhesions and group 3, patients with moderate dense adhesions, shown in **Table II**. The 3 groups were similar with respect to age and sex ( $P > 0.05$ ). Conversion to laparotomy was required in 5 (10%) patients (1 in group 1, 2 in group 2, and 3 in group 3). No statically significant difference was noted among groups with respect to the conversion rate ( $P > 0.05$ ). Comparative operation times in selected 3 groups were shown in **Table III**. The major causes of conversions were dense adhesions which causes bowel or other abdominal structures to adhere to the undersurface of the abdominal wall or an uncertain anatomy of the biliary tree. The causes of conversions are summarized in **Table IV**. Our study showed that one of the converted patients with upper abdominal surgery (supra-umbilical midline incision) had a previous total gastrectomy. The conversion was directly attributable to adhesions. In the other patients (groups 2 and 3), conversion to an open procedure was performed because of failed pneumoperitoneum and dense adhesions of abdominal structures undersurface of the abdominal wall respectively.

No per-operative complications occurred in any of the groups. However, 10 patients had postoperative complications including wound infections, retained common bile duct stone, trocar-site bleeding, subphrenic abscess, urinary tract infection, urinary retention, post-operative nausea/vomiting, pulmonary embolism, prolonged ileus, urinary retention, atelectasis]. The complication rates among groups were not statistically different ( $P > 0.05$ ). The number and type of complications in the groups are summarized in **Table V**.

We believe that open insertion of the umbilical ports minimizes the risk of organ injury and allows adhesiolysis in patients with previous abdominal surgery. Once the peritoneal cavity has been reached safely, the presence and extent of any adhesions will become apparent. The surgeon must resist the common tendency to excessively eliminate adhesions.<sup>8</sup> Only those adhesions that truly interfere with visualization of the area of interest or would prevent the placement of subsequent cannulas under vision should be lysed.<sup>9</sup> No complications were directly attributable to adhesiolysis. In our opinion, the majority of adhesions from prior abdominal surgery does not alter the anatomy of the abdominal right upper quadrant and do not negatively impact the performance of a successful laparoscopic cholecystectomy. Our overall laparoscopic success rate in patients with previous abdominal surgery was 90%. However, patients who had undergone abdominal surgery had increased difficulty during LC in terms of adhesions in the upper abdomen. We believe that with increased experience, surgeons will overcome this difficulty. In university hospitals, however, institutional experience is more important than the surgeon's experience because inexperienced surgeons perform operations under the supervision of more experienced surgeons, and these reflect the institutional experience. Active participation of faculty members in the operating theater may have enhanced the learning experience.

The number of complications was similar among groups. The cases of pulmonary embolism and subphrenic abscess are likely explained by the fact that patients with previous upper abdominal surgery had long operative times and were most likely to have bacterial contamination.<sup>10-11</sup> In this study, operative time was little longer in patients with previous upper abdominal surgery. Longer operative times are likely associated with an increased need for adhesiolysis.

Recent studies revealed that acute cholecystitis, pancreatitis, morbid obesity, and common bile duct (CBD) stones were the factors that might cause conversion to an open procedure and affect the hospital stay, operative time, and perioperative and post-operative complication rates.<sup>12-14</sup> We excluded such cases to determine the correct and objective probability of conversion to an open procedure in patients with

previous upper abdominal surgery. If we had included these patients, conditions like pancreatitis, acute cholecystitis, morbid obesity, and CBD stones would have affected the conversion rate, the operation time, the perioperative complications, and the hospital stay. We found that the operative time, conversion rate, perioperative complication rate, and postoperative hospital stays of these excluded patients were increased. When excluded patients were evaluated, combining previous upper abdominal surgery with any of these exclusions showed an increase in the perioperative complication rate, the mean operative time, and the mean postoperative hospital stay time ( $P < 0.05$ ).

### Conclusion

Laparoscopic Cholecystectomy can be performed safely in patients with previous upper abdominal surgery, if they do not have such conditions as acute cholecystitis, pancreatitis, CBD stones and morbid obesity. There are also some limitations and complications which were found during the study. During the operative procedure, almost all patients need adhesiolysis. There are also chance of conversion in extensive adherent cases and patients having uncertain anatomy, friable gall bladder, failed pneumoperitoneum and thick cystic duct. The post-operative complications noticed are almost as likely occurring to the patients underwent laparoscopic cholecystectomy without having history of upper abdominal surgery. The operation time was also little more and directly affected by the grade of adhesions present in patients due to previous abdominal surgery. Finally it is concluded that laparoscopic cholecystectomy can safely be done in patients with previous history of upper abdominal surgery with a minimum limitation and complication.

**Conflict of interest:** None.

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# Relationship of Reduced Lung Function in Male Chronic Heart Failure Patients

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## ABSTRACT

**Background:** Chronic heart failure (CHF) is a major cause of morbidity and mortality throughout the world affecting multiple organ systems of the body including lungs.

**Objective:** To observe and compare FVC, FEV<sub>1</sub> and FEV<sub>1</sub>/FVC% in CHF patients of different functional classification with healthy individual.

**Methods:** This Cross Sectional study was conducted in the Department of Physiology of Bangabandhu Sheikh Mujib Medical University (BSMMU), Shahbag, Dhaka, during 2016. For this, 60 stable male CHF patients were randomly selected, these study subjects based on staging of the disease (Stage C) and New York Heart Association (NYHA) functional classification were further divided into two groups, 30 patients of NYHA Class-I and 30 patients of NYHA class-II. Age, sex and BMI matched, 30 were apparently healthy subjects were taken as control. All the participants were aged 35-65 years. FVC, FEV<sub>1</sub> and FEV<sub>1</sub>/FVC% of all subjects were measured by a portable Digital Spirometer. For statistical analysis, One way ANOVA and Independent sample 't' test was performed by using SPSS for windows version-16 & p ≤ 0.05 was accepted as level of significance.

**Results:** The mean percentage of predicted values of FVC and FEV<sub>1</sub> were significantly lower (except FEV<sub>1</sub>/FVC%) in chronic heart failure patients in comparison to the healthy control. All the study variables were significantly lower in patients of NYHA class-II as compared to patients of NYHA class-I. In addition, 73.33% NYHA class-I patients and 63.33% NYHA class-II patients had restrictive feature.

**Conclusion:** This study concluded that some ventilatory variables decrease in CHF patients and to observe extent of lung damage by comparing NYHA class - I and II patients found mild and severe restriction respectively.

**Key words:** Lung function parameters, Chronic heart failure, NYHA functional classification

## Introduction

Heart failure (HF) is a chronic epidemic global health burden with increasing incidence and prevalence also a major cause of morbidity, mortality and decreased life expectancy.<sup>1</sup> In the USA, in every year 1.5 to 2% of the total population has been diagnosed as incidental cases of heart failure.<sup>2,3</sup> There is no study about exact prevalence of heart failure in Bangladesh but the accountability of South Asian countries prevalence has been estimated 5.2% & Bangladesh include in South

Asian countries.<sup>4</sup> Data shows, male aged 45 to 65 years or more detected as HF and 3 years survival rate about 50% in every year per thousand populations.<sup>5,6</sup> A survey report in Bangladesh found among 17% cardiovascular diseases, 80% death occur due to HF.<sup>7,8</sup>

Heart failure (HF) is a complex clinical syndrome that arises secondary to abnormalities of cardiac structure and/or function (inherited or acquired) that impair the ability of the left ventricle to fill or eject

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blood.<sup>9</sup> Chronic heart failure (CHF) is characterized by the symptoms that appear slowly over a period of times and become worst gradually.<sup>1,2</sup> The diagnosis of CHF was made as per the criteria set by American Heart Association (AHA), 2013: Stable HF symptoms (>3 months), Duration of HF symptoms (>1 year) and Ejection Fraction ( $\geq 35\%$  to  $\leq 50\%$ ) measured by Echocardiogram.<sup>1,10</sup>

Functionally symptoms of patients were graded according to New York Heart Association (NYHA) classification: NYHA class I, without any symptoms attributable to heart disease, NYHA classes II, III and IV, those patients who have mild, moderate and severe symptoms.<sup>11</sup> According to American Heart Association (AHA) staging system, the development of heart failure has been categorized into 4 stages of the disease, Stage A: high risk for developing HF; Stage B: asymptomatic LV dysfunction; Stage C: structural heart disease with past or current symptoms of HF; Stage D: refractory heart failure requiring specialized interventions.<sup>1,9</sup> As per guidelines most common causes of heart failure are coronary artery disease, respiratory diseases, diabetes, hypertension, dyslipidemia, valve disease, atrial fibrillation.<sup>11</sup>

Cardiac and respiratory systems are hemodynamically and mechanically co related due to heart and lungs both reside in a closed thoracic cavity. Several previous investigations found abnormal lung function in CHF related to pulmonary edema, increased bronchial conductance and obstruction.<sup>12-16</sup> Some other studies found that mild to moderate changes in lung function in CHF are mainly restrictive and some extent obstructive changes because of respiratory muscle weakness, pulmonary hypertension, reduction in lung diffusing capacity, changes in lung fluid balance and chronic neurohumoral changes.<sup>10,17,18</sup>

Different studies investigated and found that reduced lung function as measured by FVC, FEV<sub>1</sub> and FEV<sub>1</sub>/FVC% was associated with an increased risk of cardiovascular morbidity and mortality.<sup>19,20,21</sup> Another study observed that FVC is a predictor of respiratory muscle strength.<sup>22</sup> Framingham heart study, suggested that low FVC is the predictor of severity of heart failure.<sup>23</sup> Previous study found that risks for HF had significant association with low value of FEV<sub>1</sub> and FVC among older persons with reduced and

preserved ejection fraction without clinical lung disease.<sup>19</sup> Another researcher found that 20% population have reduced FEV<sub>1</sub> with low grade systemic inflammation that developed atherosclerosis which was responsible for cardiovascular morbidity and mortality independent of age, gender, height and cigarette smoking.<sup>24</sup>

So, this study has been designed to observe FVC, FEV<sub>1</sub> and FEV<sub>1</sub>/FVC% in Bangladeshi male chronic heart failure patients.

## Methods

This cross sectional study was carried out in the Department of Physiology, BSMMU, Dhaka from March 2015 to February 2016. Study protocol was approved by Institutional Review Board (IRB), BSMMU. For this, 90 male subjects were randomly selected, 60 were stable diagnosed aged 35-65 years CHF patients by the cardiologist were selected as study group from the Cardiology department of BSMMU. According to American Heart Association (AHA) guidelines, 2013 based on staging of the disease (Stage C) and New York Heart Association (NYHA) functional classification, study subjects were further divided into two groups, patients of NYHA Class- I and patients of NYHA class -II with 30 patients in each group. Age and BMI matched 30 apparently healthy males were taken as control group for comparison from different area of Dhaka city by personal contact.

All the subjects with history of acute or chronic lung & chest wall diseases e.g. pneumonia, COPD, pneumothorax, malignancy etc, angina, acute myocardial infarction, valvular surgery, alcohol users, smokers and for study group with NYHA class- III and IV patients were excluded from the study.

After selection, objectives and the study procedure were explained in details to the subjects and the accompanying relatives and encouraged for voluntary participation. If they agree to participate at their free will, informed written consent was obtained in a prescribed form. During the study period the patients were treated with standard optimized medications for heart failure and they were clinically stable as determined by clinicians.

A detail personal, medical, family, socioeconomic, occupational, dietary and drug history was taken. After thorough physical examinations all the information were recorded in a preformed standard questionnaire. For the assessment of lung function, all the subjects were measured for FVC, FEV<sub>1</sub> and FEV<sub>1</sub>/FVC% by a PONY FX portable Digital Spirometer. Data were expressed as mean  $\pm$  SE (Standard Error) of percentage of predicted value and also in percentage of frequency. Data analysis was done by One-way ANOVA and Independent sample 't' test by using SPSS for windows version 16. P value  $\leq 0.05$  was accepted as statistical significant.

## Results

General characteristics (Age and BMI) both the control and CHF patients were comparable as their differences were statistically non significant but Pulse rate and Blood pressure were statistically highly significant (Table I).

In this study, the mean percentages of predicted values of FVC and FEV<sub>1</sub> were significantly lower in study group than those of control. Again, the mean percentage of predicted value of FEV<sub>1</sub>/FVC% was significantly higher in study group in comparison to that of control (Table II).

Among the NYHA class-I CHF patients, 73.33% patients had restrictive, 10.00% small airway obstruction and 16.67% patients showed features of mixed type of lung dysfunction. Again, NYHA class-II CHF patients, 63.33% patients had restrictive, 13.33% small airway obstruction and 23.33% patients showed features of mixed type of lung dysfunction (Table III).

Among the NYHA class-I CHF patients, 60% were presented with mild restriction, 23.33% with moderate restriction and 16.66% with moderately severe restriction. Again, NYHA class-II CHF patients, 50% with severe restriction, 20% with very severe restriction, 16.66% with moderately severe restriction and 13.33% with moderate restriction (Table IV).

**Table I:** General characteristics of the subjects in different groups (n=90)

| Parameters               | Group A<br>(n=30) | Group B <sub>1</sub><br>(n=30) | Group B <sub>2</sub><br>(n=30) | P value              |
|--------------------------|-------------------|--------------------------------|--------------------------------|----------------------|
| Age (years)              | 50.03 $\pm$ 1.26  | 51.70 $\pm$ 1.62               | 50.33 $\pm$ 1.24               | 0.801 <sup>ns</sup>  |
| BMI (Kg/m <sup>2</sup> ) | 22.38 $\pm$ 0.26  | 22.21 $\pm$ 0.25               | 21.51 $\pm$ 0.25               | 0.951 <sup>ns</sup>  |
| Pulse rate (beats/min)   | 76.57 $\pm$ 0.98  | 91.90 $\pm$ 1.05               | 95.97 $\pm$ 0.76               | 0.000 <sup>***</sup> |
| SBP (mmHg)               | 121.0 $\pm$ 1.80  | 128.0 $\pm$ 1.06               | 129.0 $\pm$ 1.08               | 0.000 <sup>***</sup> |
| DBP (mmHg)               | 75.67 $\pm$ 0.92  | 81.67 $\pm$ 1.05               | 83.50 $\pm$ 1.20               | 0.000 <sup>***</sup> |

BMI= Body Mass Index, SBP= Systolic Blood Pressure, DBP= Diastolic Blood Pressure

Data were expressed as mean  $\pm$  SE (Standard Error).

Statistical analysis were done by Independent sample 't' test and One way ANOVA

Group A : Apparently healthy subjects (Control group)

Group B<sub>1</sub>: Diagnosed patients with CHF of NYHA Class- I (Study)

Group B<sub>2</sub>: Diagnosed patients with CHF of NYHA Class -II (Study)

\*\*\* : Significant (p $\leq$ 0.001)

ns: non significant (p>0.05)

n: number of subjects

**Table II:** Percentages of predicted values of FVC, FEV<sub>1</sub> and FEV<sub>1</sub>/FVC% in different groups (n=90)

| Parameters             | Group A<br>(n=30) | Group B <sub>1</sub><br>(n=30) | Group B <sub>2</sub><br>(n=30) | P value              |
|------------------------|-------------------|--------------------------------|--------------------------------|----------------------|
| FVC (L)                | 97.13 $\pm$ 1.32  | 73.07 $\pm$ 0.79               | 54.83 $\pm$ 1.92               | 0.000 <sup>***</sup> |
| FEV <sub>1</sub> (L)   | 93.90 $\pm$ 1.33  | 75.50 $\pm$ 1.41               | 49.10 $\pm$ 1.32               | 0.000 <sup>***</sup> |
| FEV <sub>1</sub> /FVC% | 94.17 $\pm$ 1.71  | 106.30 $\pm$ 1.65              | 99.00 $\pm$ 0.73               | 0.000 <sup>***</sup> |

Forced Vital Capacity (FVC), Forced Expiratory Volume in 1<sup>st</sup> second (FEV<sub>1</sub>), Forced Expiratory Ratio (FEV<sub>1</sub>/FVC %)

Data were expressed as mean  $\pm$  SE (Standard Error)

Statistical analysis were done by Independent sample 't' test and One way ANOVA

Group A: Apparently healthy subjects (Control group)

Group B<sub>1</sub>: Diagnosed patients with CHF of NYHA Class- I (Study)

Group B<sub>2</sub>: Diagnosed patients with CHF of NYHA Class -II (Study)

\*\*\* : Significant (p $\leq$ 0.001)

**Table III:** Frequency distribution of pulmonary disorders in CHF patients in different study groups (n=60)

| Type of pulmonary disorder     | Group B <sub>1</sub> | Group B <sub>2</sub> |
|--------------------------------|----------------------|----------------------|
| Restrictive disorder (RD)      | 22 (73.33%)          | 19 (63.33%)          |
| Large airway obstruction (LAO) | 0 (0%)               | 0 (0%)               |
| Small airway obstruction (SAO) | 3 (10.00%)           | 4 (13.33%)           |
| Combination of RD and SAO      | 5 (16.67%)           | 7 (23.33%)           |
| <b>Total</b>                   | <b>30 (100%)</b>     | <b>30 (100%)</b>     |

**Table IV:** Frequency percentage of CHF patients by the type of restrictive disorders in different study groups (n= 60)

| Type of restrictive abnormality | Group B <sup>1</sup> | Group B <sup>2</sup> |
|---------------------------------|----------------------|----------------------|
| Mild                            | 18 (60%)             | 0 (0%)               |
| Moderate                        | 7 (23.33%)           | 4 (13.33%)           |
| Moderately severe               | 5 (16.66%)           | 5 (16.66%)           |
| Severe                          | 0 (0%)               | 15 (50%)             |
| Very severe                     | 0 (0%)               | 6 (20%)              |
|                                 | <b>30 (100%)</b>     | <b>30 (100%)</b>     |

Group B<sub>1</sub>: Diagnosed NYHA Class- I CHF patients (Study)Group B<sub>2</sub>: Diagnosed NYHA Class- II CHF patients (Study)

n: number of subjects

## Discussion

In this study, the value of lung function variables in healthy control group were within normal limit and almost similar to that of different investigators from other countries. In this study, mean percentage of predicted values of FVC and FEV<sub>1</sub> in CHF patients were significantly lower than the control. Evidence from similar findings were also observed by various investigators.<sup>13,14</sup> Some researchers of other countries reported FEV<sub>1</sub>/FVC% was found significantly higher in CHF patients than healthy control.<sup>12</sup> Also, reported by other researcher FEV<sub>1</sub>/FVC% was found lower value and the differences among the different groups were statistically non significant.<sup>17,26</sup>

This result suggests the pattern of pulmonary disorder was found mainly restrictive also obstructive and both restrictive and obstructive of these CHF patients.

Several researchers of different countries have reported, similar types of findings in this group of patients, but the frequency distribution was not similar to the present study.<sup>16</sup> Among the CHF patients of NYHA class-I were presented with predominantly mild restriction also moderate and moderately severe restriction, respectively. Again, CHF patients of NYHA class-II were presented with mainly severe restriction also moderate, moderately severe and very severe restriction, respectively. These findings are similar with those of some other investigators.<sup>14,16</sup>

There are different postulated mechanisms suggested regarding these changes with lung abnormalities to chronic heart failure. Several investigators have suggested that energy deficit is a relevant contributor to the development of cardiac and skeletal myopathy.<sup>13</sup> In heart failure most of functions of muscle bioenergetics are altered such as oxygen availability, substrate oxidation, ATP production by the mitochondria and transfer to contractile apparatus.<sup>13,29</sup>

Also, it has been suggested that CHF is associated with increased venous capacitance with elevated pulmonary capillary pressure which adversely affects FVC and FEV<sub>1</sub>.<sup>27</sup> Researcher proposed that alterations of respiratory mechanics and gas exchange capacity are strictly related in CHF. This lung diffusion abnormality might be related to interstitial edema, alveolar-capillary membrane hydrostatic injury and altered alveolar fluid.<sup>25,28</sup> It has been supported by the evidence of high frequency distribution of restrictive pulmonary disorder due to reduced respiratory muscle perfusion, low cardiac output and respiratory muscle weakness which results in decrement of forcefully ventilatory variables.<sup>17,18</sup>

The physiological mechanism behind this phenomenon is still undefined but all of these above mentioned factors may cause overall lung dysfunction also changes in ventilatory variables in stable chronic heart failure patients of this study.

## Conclusion

From the results of the study, it is concluded that lung functions may be reduced and restrictive disorders are more prevalent in chronic heart failure patients.

**Conflict of interest:** None.

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## Determinants Affecting Student's Performance in Teaching Physiology: A retrospective analysis

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### ABSTRACT

**Background:** This was a descriptive cross-sectional study among the students in the department of physiology at Khwaja Yunus Ali Medical College (KYAMC) during the period of December 2019 – January 2020 using a structured questionnaire and a checklist for record review of 1<sup>st</sup> professional examination results.

**Objectives:** To find out number of determinants including socio-demographic characteristics affecting student's performance in teaching physiology course in addition to the perceived factors for better performance.

**Methods:** The data were generated from using a structured questionnaire and a checklist for retrospective record review of 1<sup>st</sup> professional examination results where the sampling technique was purposive / convenient in nature, the respondents willing to participate. It was analyzed manually & by computer program as appropriate.

**Results:** In this study among the total 52.57% respondents were male and 47.43% were female where 93.59% were within 20-22 years of age and 97.44% were Muslim by religion. The choice of respondent's profession was by 25.64% parents. Only 47% and 67% respondents had regular exercise & enough sleep habits. Choice of foods in daily diet as fruits & vegetables were found adequate to only 35-50% respondents, and as milk and yogurt to 35-40% only. Listening music, playing games, using internet, capture photos, sending mails & text including sending and receiving calls were the most pattern of cell phone use among 75-98% respondents. Unbiased behavior of teachers, physical environment of class room, library facilities, available books in the library, adequate opportunities for internet & photo copy, and consideration of student's opinion in teaching and learning were identified as perceived factors towards better performance to about 35-65% respondents.

**Conclusion:** Scope for regular exercise and dietary inclusion of fruits & vegetables needs emphasizing in addition to consumption of milk and yogurt. Opportunities for class room facilities, book in the library, internet & photocopy needs to be created further. Student's opinion in teaching learning process may also be considered towards better academic performance. Unbiased teacher's behavior can be an added input in this direction as well.

**Key words:** Diet, exercise, behavior, and habits

### Introduction

Academic performance of a medical student always attracts the attention of all those who involved in medical education. Stakeholders of medical education are concerned about students' performances as that reflects their various areas of interest. Those stakeholders are not only the faculty members but also medical school selection committees, curriculum planners,

and instructional designers as stated by Alfayez et al.<sup>1</sup> Moreover, the students' achievements has always been one of the major goals of education. Many studies are conducted to identify the factors that affect student achievement positively or negatively. Identifying those factors and its correlation is a very complex process. House found that the student characteristics, their

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lifestyle, learning environments as well as instructional activities that contributes to their learning achievement<sup>2</sup>. Crede and Kuncel also found that study skills, study habits, study attitudes, and motivation for study exhibit certain relationships with academic performance<sup>3</sup>. Many studies states that the most important predictor of performance in medical school is both the prior academic ability and English language proficiency.<sup>1-3</sup> In addition in another study the socioeconomic status is one of the factors that affects learning; the author states that the students learn better if they are from an above-average or average income family.<sup>2</sup> Medical school is known to be a stressful branch in higher education that requires a lot of effort to continue. Therefore there is an increase in the incidence of academic and extra-academic stress between medical students.<sup>4</sup> The large amount of information leaves a little time for the medical students to relax and refresh, because of that stress and depression have always been linked to mental and physical issues.<sup>5</sup> As the definition of stress is anything that can disturbs the normal individual's mental or physical wellbeing.<sup>6</sup> Therefore, stress could be beneficial or harmful. The beneficial stress will improve the individual performance, increase achievement and imagination however; the harmful stress will affect individual's general health.<sup>7</sup> "Providing and offering quality education is the priority of the most of the countries".<sup>8</sup> Therefore, it has been widely acknowledged that the educational environment is an important determining factor of an effective curriculum implementation process as there is a strong association between teaching and learning.<sup>9,10</sup> The UK Standing Committee on Postgraduate Education highlighted the importance of educational environment in their statement that reports, an environment that is conducive has a positive and significant impact on students' learning, academic progress, and well-being.<sup>11</sup> It is also accepted that a positive learning environment during undergraduate education can lead to increased satisfaction, achievement and brings success as a practitioner.<sup>12,13</sup> Therefore, educationalists are to provide the highest quality of teaching to their students, considering a prerequisite to create an environment favorable for learning. This improvement can be achieved by identifying the weaknesses in the environment.<sup>14</sup>

Students' perception of the educational environment is a useful basis for modifying and improving its quality. The goals of the medical education curriculum are to produce graduates who have adequate knowledge, sufficient problem solving, communicating, and manipulative skills with ethically sound professional attitudes. The educational environment endeavors to nurture simultaneously two different orientations: one as task-orientation where the emphasis is on complex and diverse scientific tasks and other is the social-emotional orientation where the emphasis is on the development of a caring person of sick people.<sup>15</sup>

Generally students' perception comprises that the most important ways to strengthen the medical education at content delivery level. It is also required for assortment of effective methodologies for improvement in teaching basic sciences related to clinical professions, such as Physiology in health education. Medical education in India is witnessing a paradigm shift from teacher-centric to student-centric mode since last decade.<sup>16</sup> This study is a modest attempt to explore the determinants affecting student's performance in teaching Physiology course in a private medical college of the country in addition to academic factors as perceived by the respondents towards better performance by taking appropriate actions by the department in deed.

### Objectives

To find out number of determinants affecting students performance in teaching physiology course, and also to explore socio-demographic characteristics, personal habits and life styles, type of food intake in daily diet, as well as the pattern & type of cell phone and computer use for academic purpose in addition to perceived factors of the respondents for better performance.

### Methodology:

This was a descriptive cross-sectional study for a period of three months among the students in the Department of Physiology at Khwaja Yunus Ali Medical College. The respondents were the students enrolled in 2<sup>nd</sup> phase on completion of 1<sup>st</sup> phase examination willing to participate. The period of data collection were from December 2019 – January 2020 using a structured questionnaire and a checklist for record review of 1<sup>st</sup> professional examination results where the sampling technique was purposive/ convenient in

nature. Data were generated using a structured questionnaire through interview and a checklist for record review. It was analyzed manually & by computer program as appropriate. The presentations of data weremade under section results in the form of tables & graphs as required. Ethical consideration was also covered using a consent form duly approved by the Ethical Review Committee (ERC) of KYAMC.

### Results:

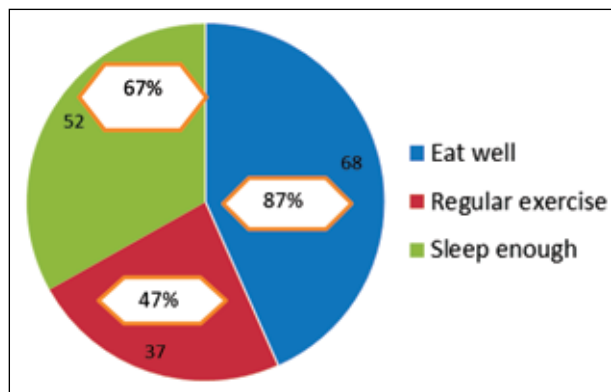
In this study among the total number of respondents (78), 52.57% were male and 47.43% were female where 93.59% were within 20-22 years of age. The parent's education level mostly 91.03% was above HSC level and most of them were service (64.10%) and business (26.92%) by occupation. 54% respondents family had 5 and above numbers of members. The respondents 97.44% were Muslim by religion. 33% parents had monthly income 80,000-1 lac BDT above. The choice of respondent's profession was by 25.64% parents and the 1<sup>st</sup> prof. result was regular to 76.92% respondents (Table-I).

**Table I:** Distribution of respondents by socio-demographic characteristics. (n = 78)

| Variables  | Sub-Variables | Number of respondents | Percentage |
|--|---------------|-----------------------|------------|
| Age in years   | 17-19         | 2                     | 2.56%      |
|  | 20-22         | 73                    | 93.59%     |
|  | 23+           | 3                     | 3.85%      |
| <i>Mostly 93.59% respondents were within 20-22 years of age</i>              |               |                       |            |
| Educational level of parents   | Illiterate    | 0                     | 0%         |
|  | Primary       | 0                     | 0%         |
|  | Secondary     | 7                     | 8.97%      |
|  | HSC+          | 71                    | 91.03%     |
| <i>91.03% parents of the respondents education were above HSC level</i>      |               |                       |            |
| Occupation of parents  | Service       | 50                    | 64.10%     |
|  | Business      | 21                    | 26.92%     |
|  | Agriculture   | 0                     | 0%         |
|  | House wife    | 2                     | 2.56%      |
|  | Labor         | 0                     | 0%         |
|  | Nothing       | 5                     | 6.41%      |
| <i>Parent's occupation was mostly service (64.10%) and business (26.92%)</i> |               |                       |            |
| No. of family members  | 3             | 8                     | 10.26%     |
|  | 4             | 28                    | 35.89%     |
|  | 5             | 29                    | 37.18%     |
|  | >5            | 13                    | 16.67%     |
| <i>Almost 54% respondents family had 5 and above members</i>                 |               |                       |            |
| Religion   | Muslim        | 76                    | 97.44%     |
|  | Hindu         | 2                     | 2.56%      |
|  | Christian     | 0                     | 0%         |
|  | Buddhist      | 0                     | 0%         |
| <i>Among the respondents 97.44% were Muslim by religion</i>                  |               |                       |            |
| Monthly income of parents  | 20-50,000     | 34                    | 43.59%     |
|  | 50+-80,000    | 18                    | 23.08%     |
|  | 80+-1 lac     | 13                    | 16.67%     |
|  | 1 lac +       | 13                    | 16.67%     |
|  |               |                       |            |
| <i>About 33% parents had monthly income from 80000-1 lac BDT above</i>       |               |                       |            |
| Who choose profession  | Self          | 58                    | 74.36%     |
|  | Parents       | 20                    | 25.64%     |
| <i>The choice of respondents profession was by 25.64% parents</i>            |               |                       |            |
| 1 <sup>st</sup> Prof. result GPA   | Regular       | 60                    | 76.92%     |
|  | Supplementary | 18                    | 23.08%     |

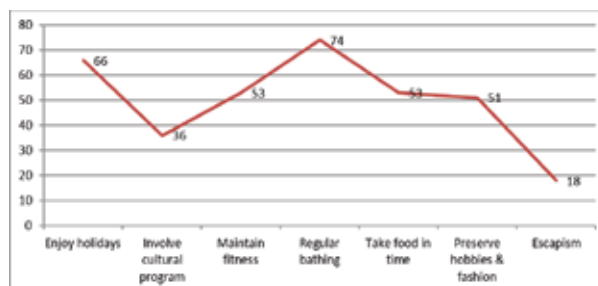
Only 47% and 67% respondent's had regular exercise & enough sleep habits respectively (Fig-1).

**Fig 1:** Pie chart showing distribution of respondents by positive personal habits n=78

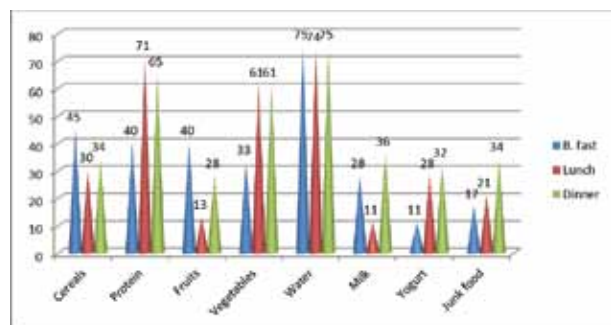


Life styles as involvement of cultural program, maintaining fitness, taking food in time, and escapism were positive to 46.15%, 67.95%, 67.95%, and 23.08% respondents (Fig-2).

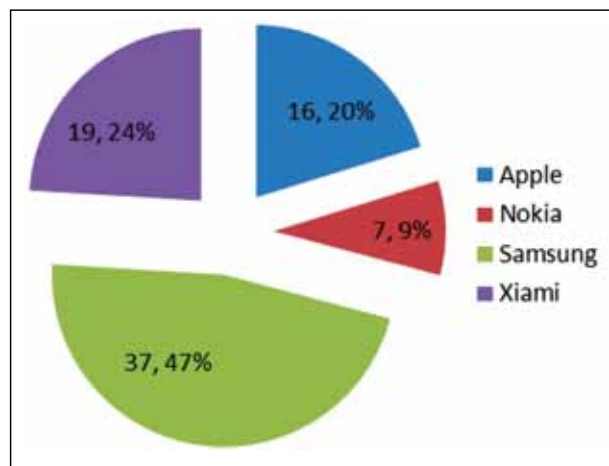
**Fig 2:** Line graph showing distribution of respondents by life styles perceived positive n= 78



**Fig 3:** Bar diagram showing distribution of respondents by choice of foods in daily diet n= 78



Choice of foods in daily diet as fruits & vegetables were found adequate to only 35-50% respondents, and as milk and yogurt to 35-40% However, junk foods were found adequate mostly in lunch and dinner to approximately 20-44% respondents (Fig-3)

**Fig 4:** Pie diagram showing distribution of respondents by type of cell phone use for academic purpose n=78

Respondents mostly 47% were in favor of using Samsung cell phone (Fig-4)

Listening music, playing games, using internet, capture photos, sending mails & text including sending and receiving calls were the most pattern of cell phone use among 75-98% respondents (Table-II).

**Table II: Distribution of respondents by pattern of cell phone use for academic purpose. (n=78)**

| Variables                 | Sub-Variables                   | Number of respondents |            |
|---------------------------|---------------------------------|-----------------------|------------|
|                           |                                 | Yes                   | No         |
| Pattern of cell phone use | To send & receive text          | 77 (98.72)            | 1 (1.28)   |
|                           | Allow to place & receive calls  | 76 (97.44)            | 2 (2.56)   |
|                           | Sending e. mail                 | 60 (76.92)            | 18 (23.08) |
|                           | Capture photos                  | 74 (94.87)            | 4 (5.13)   |
|                           | Enjoying & making videos        | 55 (70.51)            | 23 (29.49) |
|                           | Access to internet              | 76 (97.44)            | 2 (2.56)   |
|                           | Playing games                   | 58 (74.36)            | 20 (25.64) |
|                           | Listening music                 | 67 (85.89)            | 11 (14.10) |
|                           | GPS (Global Positioning System) | 51 (65.38)            | 27 (34.62) |

N:B: Figures in the parenthesis indicate percentage

Unbiased behavior of teachers, physical environment of class room, library facilities, available books in the library, adequate opportunities for internet & photo copy, and consideration of students opinion in teaching and learning were identified as perceived factors towards better performance to about 35-65% respondents (Table-III).

**Table –III:** Distribution of respondents by level of perceived factors for better performance

(5 points likter scale)

The following statements are on level of perception of the respondents about fertility control. It may Strongly Agree (SA), Agree (A), Undecided (UD), Disagree (D) and Strongly Disagree (SD).

| Statements   | SA         | A          | UD         | D          | SD         |
|--|------------|------------|------------|------------|------------|
| My teaching was according to syllabus  | 38 (48.72) | 36 (46.15) | 3 (3.85)   | 1 (1.28)   | 0 (0)      |
| My classes held according to class routine   | 51 (65.38) | 24 (30.77) | 0 (0)      | 3 (3.85)   | 0 (0)      |
| My teachers were knowledgeable on the subject  | 52 (66.67) | 20 (25.64) | 4 (5.13)   | 2 (2.56)   | 0 (0)      |
| Our teachers student ration were optimum   | 31 (39.74) | 40 (51.28) | 3 (3.85)   | 4 (5.13)   | 0 (0)      |
| Teachers skills in communication were excellent  | 31 (39.74) | 35 (44.87) | 9 (11.54)  | 3 (3.85)   | 0 (0)      |
| Teachers cooperation, advise, counseling were much helpful   | 39 (50)    | 30 (38.46) | 4 (5.13)   | 3 (3.85)   | 2 (2.56)   |
| Teachers were having unbiased behavior   | 35 (44.87) | 32 (41.03) | 15 (19.23) | 5 (6.41)   | 1 (1.28)   |
| Good teacher student relationship were sound enough  | 24 (30.77) | 46 (58.97) | 6 (7.69)   | 1 (1.28)   | 1 (1.28)   |
| There were opportunities for extra-curricular activities (sport, cultural, magazine, social welfare) | 33 (42.31) | 37 (47.44) | 3 (3.85)   | 3 (3.85)   | 2 (2.56)   |
| There were regular attendance of students in schedule classes  | 29 (37.18) | 35 (44.87) | 6 (7.69)   | 7 (8.97)   | 1 (1.28)   |
| There were regular attendance of students in formative assessment                                    | 23 (29.49) | 41 (52.56) | 6 (7.69)   | 8 (10.26)  | 0 (0)      |
| Physical environment of the class room were comfortable  | 10 (12.82) | 34 (43.59) | 9 (11.54)  | 11 (14.10) | 14 (17.89) |
| Library facilities were inadequate   | 6 (7.69)   | 23 (29.49) | 11 (14.10) | 32 (41.03) | 6 (7.69)   |
| Availability of books in the library were inadequate   | 7 (8.97)   | 22 (28.21) | 14 (17.95) | 30 (38.46) | 5 (6.41)   |
| There were inadequate opportunities for internet use   | 33 (42.31) | 18 (23.08) | 9 (11.54)  | 15 (19.23) | 3 (3.85)   |
| There were inadequate opportunities for photocopy use  | 12 (15.38) | 18 (23.08) | 10 (12.82) | 32 (41.03) | 6 (7.69)   |
| Use of teaching materials by the teachers were inappropriate   | 4 (5.13)   | 8 (10.26)  | 8 (10.26)  | 45 (57.69) | 13 (16.67) |
| Student's opinions in teaching & learning were considered at interval                                | 13 (16.67) | 29 (37.18) | 20 (25.64) | 13 (16.67) | 3 (3.85)   |

N:B: Figures in the parenthesis indicate percentage

### Discussion:

The students' achievements have always been one of the major goals of education. To identify those factors and its correlation is a very complex process. However, this study has considered exploring the determinants affecting student's performance in teaching physiology course in a private medical college at KYAMC, Sirajganj in the country including academic factors as perceived by the respondents. The findings will help taking measures to improve students' performance in the subject

physiology in deed. In a similar study House<sup>2</sup> found that the student characteristics, their lifestyle, learning environments, and well as instructional activities that contributes to their learning achievement. On the other hand, Credé and Kuncel<sup>3</sup> also found that the study skills, study habits, study attitudes, and motivation for learning exhibit certain relationships with academic performance.

This study has the limitations in identifying the load of stress factors affecting students however, study indicates that the beneficial stress will help improving the individual performance apart from the harmful stress that will affect individual's general health.<sup>7</sup> As "Providing and offering quality education is the priority of the most of the countries".<sup>8</sup>

In this study physical environment of class room, library facilities, available books in the library, adequate opportunities for internet & photocopy, and consideration of student's opinion in teaching and learning were identified as perceived factors towards better performance to about 35-65% respondents. It is also accepted that a positive learning environment during undergraduate education can lead to increased satisfaction, achievement and brings success as a practitioner.<sup>12,13</sup> Therefore, to provide the highest quality of teaching to their students, considering a prerequisite to create an environment favorable for learning and this improvement can be achieved by identifying the weaknesses in the environment.<sup>14</sup> Students' perception of the educational environment is a useful basis for modifying and improving its quality. It has also been widely acknowledged that the educational environment is an important determining factor of an effective curriculum implementation process as there is a strong association between teaching and learning.<sup>9,10</sup> An widely exploration of such similar facts in our undergraduate settings in teaching physiology can be a helpful basis towards taking actions in improving students academic performance in this discipline in particular.

### Conclusion:

This study identified some physical environmental factors and student's involvement in teaching learning process as the scope for improvement towards better academic performance. Some habits related to diet

and exercise can promote physical & mental abilities in improving academic performance as well. Moreover, unbiased teachers behavior can be improved by appointing better motivated and committed faculties in the department of physiology.

### Recommendations:

On the basis of this study finding the recommendations are as follows towards better academic performance:

1. There is a need of improvement in physical environment like; class room facilities, library & books, internet as well as photocopy facilities in the department as well.
2. Facilities for regular exercise as well diet containing adequate amount of fruits & vegetables including milk & yogurt to be ensured
3. More opportunities to be created in using computer for academic purpose by creating computer laboratory having 24 hours access for the students
4. Recruiting teachers having motivation & commitment to teaching with due background in the subject physiology
5. Opportunities for involvement of students in the teaching learning process in their respective phase group
6. A large scale such study can be considered in both public & private medical colleges

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# Prevalence of Irritable Bowel Syndrome (IBS) & It's Associated Risk Factors among the Adult Bangladeshi Population Attending in Outdoor of Selected Tertiary Level Hospital in Bangladesh

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## ABSTRACT

**Background:** Irritable Bowel Syndrome (IBS) is one of the most common functional gastrointestinal disorder in worldwide. Now-a-days its prevalence rate is also simultaneously increasing in Bangladesh as well. But most of the people are unaware about it as it has no significant complications. The aim of the study was to find out the Prevalence of Irritable Bowel Syndrome (IBS) & its associated risk factors among the adult Bangladeshi population in a selected Tertiary Level Hospital in Bangladesh.

**Materials & Methods:** A descriptive cross-sectional study was conducted among the adult Bangladeshi population in a selected Tertiary level Hospital in Bangladesh from February to May, 2017 and data was collected from the respondents by using semi-structured questionnaire using face to face interview and it was analyzed by using SPSS.

**Results:** The study revealed that mean age of the respondents was 30.7 years & almost half (49.3 %) of the respondents were educated up to HSC level. The average monthly income of the respondents was 9230.4 taka. The majority (76%) of the respondents had normal BMI. It has been seen that close to eight-tenth (77%) of the respondents were males and the rest of the respondents were females. more than half (58%) of the respondents were smokers. The findings of this study reveal that the prevalence of Irritable Bowel Syndrome (IBS) was 13.2%. More than half of the respondents had some changes in their bowel habit that is either Diarrhea/ Constipation. In this study the findings also revealed that close to three-tenth of the respondents had anxiety/stress.

**Conclusion:** Proportion of IBS among adult Bangladeshi Population is increasing day by day & it has been seen that IBS symptoms are associated with anxiety/stress, monthly income of the respondents. The study findings demand the strategic plan for surveillance & control of Irritable Bowel Syndrome (IBS) in Bangladesh.

**Keywords:** Irritable Bowel Syndrome (IBS), Adult Bangladeshi, Risk factor.

## Introduction

Irritable Bowel Syndrome (IBS) is the most common functional gastrointestinal disorder with an estimated prevalence in adults of 3-25% worldwide<sup>1</sup>. Irritable Bowel Syndrome (IBS) refers to the intestinal medical disorder, is actually a quite common disorder, yet many people are unaware that their symptoms indicate a medical problem and they go undiagnosed and without treatment even though

IBS can have a major impact on those living with the disease. Lack of awareness of IBS may affect medical treatment and care.

A positive diagnosis can be established using symptom-based criteria that include abdominal pain or discomfort combined with disordered bowel function such as diarrhea and/or constipation<sup>2</sup>. IBS is a chronic condition that may significantly impair a

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person's quality of life with many individuals reporting IBS as the cause for the avoidance of many day to day activities, e.g. eating specific foods, work, travel, sex, socializing, exercising or leisure activities<sup>3</sup>. Also, at least half of the patients are commonly diagnosed with psychiatric disorders such as depression, generalized anxiety or panic disorder<sup>4</sup>. Recently, several studies have highlighted the role of psychosocial factors in the aetiology and maintenance of IBS symptoms and in the impact this condition has on quality of life<sup>5</sup>. To support this model, several randomized controlled trials have also shown that psychological interventions (e.g. Cognitive Behavioural Therapy and Hypnosis) can be particularly effective in improving IBS outcomes such as symptoms, psychological distress or quality of life<sup>4</sup>. On the other hand, between 5% and 32% of IBS patients have the onset of their symptoms within 6 months after an acute episode of gastroenteritis<sup>4</sup>. The mechanisms underlying this form of Post-Infectious IBS (PIIBS) are still poorly understood, but it is believed that the experience of gastroenteritis might contribute to continuous sub-clinical inflammation due to changes in intestinal permeability. However inconsistent findings regarding mechanisms of action or of the long-term effectiveness of these psychological approaches have highlighted the need for further and more careful study. It is a very common gastrointestinal functional disorder may be misinterpreted with other gastrointestinal problems. Most of the patients live with this problem even without knowing the disease, its associated risk factors. Hence, the aim of the study was to find out the prevalence of Irritable Bowel Syndrome (IBS) & its associated risk factors among the adult Bangladeshi population attending in outdoor of selected tertiary level hospital in Bangladesh.

### Methodology:

This was a descriptive type of cross-sectional study carried out in Medicine outdoor at Dhaka Medical College Hospital (DMCH) & Anwer Khan Modern Medical College Hospital (AKMMC) during the period from 2<sup>nd</sup> March to 30<sup>th</sup> May for data collection. Adult patients aged 18 years & above who were willing to participate were the study population. According to this formula sample size was calculated

as 384. Due to feasibility concern 150 samples were selected purposively. Duly pre-tested semi-structured questionnaire was the data collection instrument & data collection method was face to face interview. Prior to data collection a consent form was signed by the respondent as part of ethical consideration. It was processed & analyzed by manually & using SPSS.

### Result:

**Table I:** Age distribution of the respondents by age (n=150)

| Age (years) | Frequency | Percent |
|-------------|-----------|---------|
| ≤20         | 13        | 09      |
| 21-30       | 48        | 32      |
| 31-40       | 49        | 33      |
| 41-50       | 18        | 12.     |
| 51-60       | 00        | 00      |
| >60         | 21        | 14      |
| Total       | 150       | 100.0   |
| Mean and SD | 30.7±16.2 |         |

About 33% respondents were found within age of 31-40 years. Mean age: 30.7years SD:± 16.2 (Table I).

**Table II:** Risk factors & Co-morbidities associated with irritable bowel syndrome (n=150)

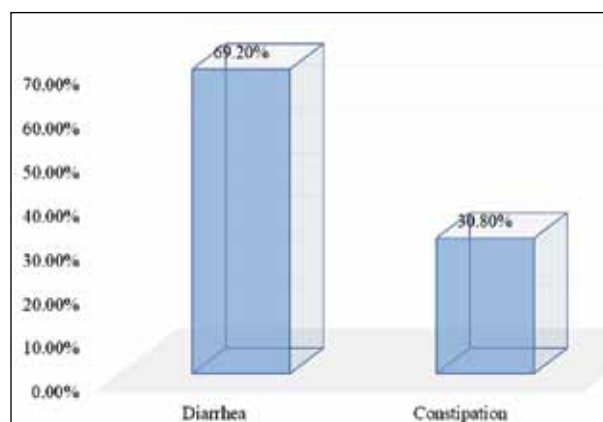
| Risk factors & co-morbidities | Frequency | Percentage |
|-------------------------------|-----------|------------|
| <b>Anxiety/ Stress</b>        | 41        | 27.3       |
| Yes                           |           |            |
| No                            | 109       | 72.7       |
| <b>Family history of IBS</b>  |           |            |
| Yes                           | 67        | 44.7       |
| No                            | 49        | 32.7       |
| Don't Know                    | 34        | 22.7       |
| <b>Obese/overweight</b>       |           |            |
| Yes                           | 33        | 22.0       |
| No                            | 117       | 78.0       |
| <b>Hypertension</b>           |           |            |
| Yes                           | 26        | 17.3       |
| No                            | 124       | 82.7       |
| <b>Digestive problem</b>      |           |            |
| Yes                           | 21        | 14.0       |
| No                            | 54        | 36.0       |
| don't know                    | 75        | 50.0       |

About close to three-tenth (27.3%) of the respondents had anxiety/stress, 16% & 67% of the respondents had diabetes & family history of IBS respectively (Table II).

**Table III:** Distribution of the respondents by level of education (n=150)

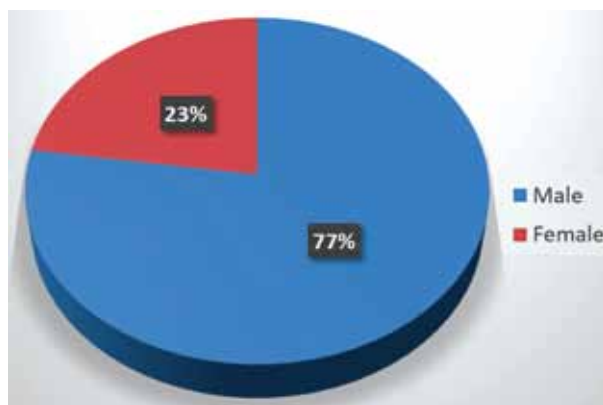
| Level of education | Frequency | Percent |
|--------------------|-----------|---------|
| Illiterate         | 16        | 10.7    |
| Primary            | 27        | 18.0    |
| Secondary          | 23        | 15.3    |
| HSC                | 74        | 49.3    |
| Graduate & above   | 10        | 6.7     |
| Total              | 150       | 100.0   |

Almost half (49.3%) of the respondents are educated up to HSC level & around 11% of the respondents are illiterate (Table III).



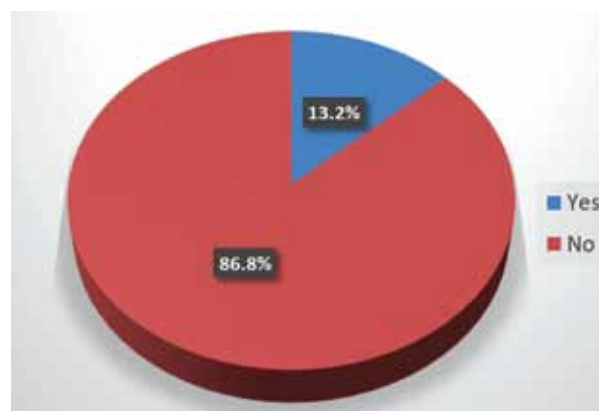
**Figure 1:** Distribution of respondents by Predominant symptom pattern

Figure 1 shows that close to seven-tenth (69.20%) of the respondents had diarrhea and the rest had constipation.



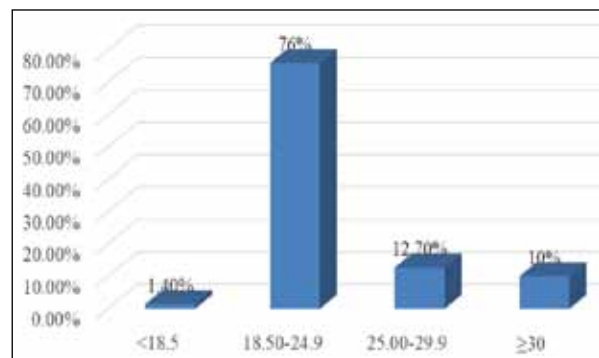
**Figure 2:** Distribution of respondents by sex (n=150)

figure 2 shows that close to eight-tenth (77%) of the respondents were males and the rest of the respondents were females.



**Figure 3:** Prevalence of IBS

figure 3 shows that the prevalence of IBS among the Outdoor patients was 13.2%.



**Figure 4:** Distribution of respondents by BMI (n=150)

figure 4 shows that the majority (76%) of the respondents had normal BMI, followed by overweight (12.70%), Obese (10%) and the rest were underweight respectively.

### Discussion:

This cross-sectional study was done in Medicine Outdoor of Dhaka Medical College (DMC) & Anwer Khan Modern Medical College (AKMMC) with an attempt to determine the proportion of Irritable Bowel Syndrome (IBS) & its associated risk factors among the attending patients.

In this study prevalence of Irritable Bowel Syndrome (IBS) among the patients attending at Medicine outdoor of selected tertiary level Hospital in Dhaka was found around 13.2%. A total 150 respondents

were interviewed by face to face through a semi-structured questionnaire. In the present study the mean age of the respondents was 30.7 years. The average family monthly income was 9230.4 taka. The majority (76%) of the respondents had normal BMI. It has been seen that close to eight-tenth (77%) of the respondents were males. More than half (58%) of the respondents were married. More than four-fifth (84%) of the respondents were Muslims. It has been found that three-fourth (75%) of the respondents were living in rural area. Slightly below half (49.3%) of the respondents had HSC. Close to half (44.7%) of the respondents had familial history of irritable bowel syndrome. Among them 38.8% had the history from their brothers/sisters. The prevalence of IBS was 13.2%. This is higher than prevalence of IBS in another study (8.4%) which was found by Norwegian study from 2006<sup>7</sup> and also higher than that of another study from Vietnam by Zuckerman *et al.* (2006) showed a prevalence of IBS of 7.2%, using Rome I criteria. More than half (56%) had some changes in the bowel habit. 72% of the respondents don't take any medicine on IBS. More than half (58%) of the respondents were smokers. 45.3% of the respondents were taking smokeless tobacco and the majority (48.5%) were taking sadapata. 3.3% of the respondents were drinking alcohol.

Close to three-tenth (27.3%) of the respondents had anxiety/stress. A recent qualitative study reveals that an anxiety reaction often is followed by an attack of illness both in patients with IBS and patients with inflammatory bowel disease (Schneider and Fletcher 2008). 16% of the respondents had diabetes. All of the diabetic patients were suffering the diabetes for 2 years. 22% of the participants were obese, due to lack of physical activity. One study of IBS in relation to exercise showed that physical activity may improve IBS symptoms in IBS patients<sup>8</sup>. One study showed significance for functional bowel symptoms among the obese (Breckan *et al.*, 2012). Being overweight is more associated with upper GI symptoms, such as gastro-oesophageal reflux disease (GORD)<sup>6</sup>.

Close to one-fifth (17.3%) of the respondents had hypertension, and 80.8% of the hypertensive patients were suffering the illness for 1-2 years. 14% of them

had digestive problem. Over the years, several studies have highlighted the importance of psychosocial factors in the aetiology, progression and management of IBS<sup>5</sup>. Acceptance and Commitment Therapy (ACT) should be tried as an alternative form of treatment for IBS to reduce psychosocial factors which is an important triggering factor of IBS<sup>9</sup>. We confirm the findings from previous reports; that female gender, psychological problems and young age (<50), are significant risk factors for IBS<sup>7</sup>.

### Conclusion:

The findings of this study reveals that the prevalence of Irritable Bowel Syndrome (IBS) was 13.2%. More than half of our respondents had some changes in their bowel habit. In this study the findings also revealed that close to three-tenth of the respondents had anxiety/stress and It has been seen that IBS symptoms were associated with anxiety/stress, occupation and family monthly income of the respondents.

### Recommendations:

Considering the findings of present study, there are following recommendations:

- Efforts needed to enhance knowledge & awareness regarding Irritable Bowel Syndrome (IBS) & its associated risk factors as it is a lifelong functional gastro-intestinal disorder.
- Family physicians & Primary Health care physicians can act as a role model towards developing positive health habits in order to limiting IBS symptoms
- An in depth large scale study on IBS is needed to explore the magnitude & extent of the disease situation as it is most often undiagnosed or even misdiagnosed with other gastrointestinal disorders.

**Conflict of interest:** None.

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# Open Preperitoneal Mesh Repair of Inguinal Hernia- A Better Approach for the Novice Surgeons

\*ATM M Rahman<sup>1</sup>, M Rahman<sup>2</sup>

## ABSTRACT

**Introduction:** Inguinal hernia is a common surgical problem in advanced age group, but repair of inguinal hernias after prosthetic mesh repair is usually difficult due to considerable surgical methods, experience and complications. The study is a clinical trial done on patient with any type of inguinal hernia, who were treated by open preperitoneal mesh repair and darning of overlying musculoaponeurotic layers with prolene sutures.

**Objectives:** To study the operating time, hospital stay, postoperative complications and recurrence rate associated with open preperitoneal mesh repair and darning of overlying musculoaponeurotic layers with prolene sutures by novice surgeons.

**Materials and methods:** This observational clinical study in 250 patients having any types of inguinal hernias in new and recurrent cases. The period October 2017 to October 2019 was conducted at department of surgery of Bashundhara Ad-din Medical College Hospital and other private hospitals. The age, gender, operating time, hospital stay, postoperative complications rate and recurrence rate of the patients were evaluated.

**Results:** There were no serious intraoperative complications, there were 230 men and 20 women in the study, whose average age 41.50 (30-72) years. The average operative time taken to complete the surgery and hospital stay were 45.30 (30-120) minutes and 1.5 (1-3) days respectively. Complications include urinary retention in 10%, seroma in 2% and superficial surgical site infection in 2% patients. No recurrence was encountered post-surgery in any of the case till the last follow-up.

**Conclusions:** We concluded that the open preperitoneal mesh repair and darning of overlying musculoaponeurotic layers with prolene sutures is a safe, easier, time consuming and effective methods in a novice surgeon with fewer complications as compared to other conventional open hernia mesh repairs and laparoscopic hernia repairs.

**Keywords:** Inguinal Hernia, Open preperitoneal mesh repair, Darning, Novice Surgeons.

## Introduction

Hernia (Latin, rupture; Greek, bud) defined as protrusion of any viscus or part of a viscus through an opening in the wall of the cavity in which it is contained<sup>1</sup>. Mesh repair of inguinal hernia is the most common operations performed on general surgical patients. Approximately 20 million groin hernioplasties are performed each year worldwide, over 17000 operations in Sweden, over 12000 in Finland, over

80000 in England and over 800,000 in USA<sup>2-5</sup>. Recurrence of inguinal hernia was initially a significant problem; however, with the advent of tension free mesh repair as described as Lichtenstein repair, recurrence rate has consistently been reported as slow as 1-4 % (6-10), a drop from up to 50-60%<sup>6</sup>. Surgeons continue to search for the optimum repair method with the least recurrence and least complications.

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Multiple tension-free techniques are available now, which include the open anterior approach, the open posterior approach and the closed posterior approach (laparoscopic)<sup>7</sup>. While numerous surgical approaches exist to treat inguinal hernia, we present a clinical trial of 250 patients of which open preperitoneal mesh repair of inguinal hernias with darning of musculoaponeurotic layers with prolene sutures<sup>8</sup>.

### Materials and Methods:

This is a prospective, randomized, clinical trial, conducted in 250 patients of any type of inguinal hernias, in new and recurrent cases, in the department of surgery of Bashundhara Ad-din Medical College Hospital and other private hospitals, from October 2017 to October 2019. The patients in the age group of 30-72 years were included in this trial. Most of the patients were admitted before operation for routine preoperative laboratory test. Single dose of a 1<sup>st</sup> generation cephalosporin was given for the prophylaxis of wound infection. The urinary bladder was emptied before the operation.

Under suitable anesthesia, an oblique incision was made 2 cm above and parallel to the medial 2/3<sup>rd</sup> of the inguinal ligament. The external oblique aponeurosis was cut up to the superficial inguinal ring, so as to expose the whole of inguinal canal. The ilio-inguinal and ilio-hypogastric nerves were identified and preserved. Spermatic cord was identified and pulled up from inguinal canal. In the cases of indirect hernias, the investing layers of internal spermatic fascia and cremasteric fascia surrounding the cord were split open, cremasteric branches supplying the cremasteric muscles and other covering the cord could bleed, when cremasteric layer was dissected off the spermatic cord. Bleeding points were picked up and coagulated with diathermy. Then the hernia sac was identified and opened, the contents were reduced and the sac was transfixed with vicryl suture.



**Figure 1:** Inguinal hernial incision



**Figure 2:** Opening through posterior wall



**Figure 3:** preperitoneal mesh placement



**Figure 4:** Darning of musculoaponeurotic layers



**Figure 5:** skin closure

The proximal part of the hernia sac was dissected up to its neck, where the inferior epigastric vessel was identified. About 2-3cm aperture was created in between the rings through the posterior wall of the inguinal canal up to fascia transversalis, about 2cm above the inguinal ligament by blunt dissection, then finger dissection medially up to the midline, laterally near to the anterior superior iliac spine and 4-6cm above the inguinal ligament. During dissection of preperitoneal space we encountered pubic branch of inferior epigastric artery in 20 cases which were injured in 6 cases unintentionally and in the other cases it were identified and secured safely. Prolene mesh 7.6cm X 15cm and 6.25cm X 11.25cm were

used and depending upon the patients build and posterior wall defect. Mesh was tailored and a slit was created in its lateral part, which encircle the spermatic cord snuggle at the level of the internal ring. Mesh was placed behind the fascia transversalis and inferior epigastric vessels in the preperitoneal fat space by finger or dissecting forceps. Then posterior wall of the inguinal canal aperture was closed by absorbable suture. Internal ring was narrowed whenever it was wide. For additional benefit darning between inguinal ligament and conjoint muscles and tendons were performed with continuous interrupted non absorbable sutures. Spermatic cord was placed over it and external oblique aponeurosis was closed with continuous absorbable sutures. The subcutaneous and subcuticular closure was done with absorbable sutures and the skin was interrupted nonabsorbable sutures.

**Table I:** Demographic data:

|                     |                     |
|---------------------|---------------------|
| Age (mean)          | : 41.50 (30-72)     |
| Sex (M/F)           | : 230/20            |
| Mean operation time | : 45.30 min(30-120) |
| Mean hospital stay  | : 1.5 days (1-3)    |
| Types of hernia     | :                   |
| Indirect            | : 200               |
| Direct              | : 30                |
| Recurrent           | : 20                |
| Types of anesthesia | :                   |
| General             | - 14                |
| Spinal              | - 235               |
| Local               | - 01                |

**Table II:** Postoperative Complications:

| <b>Early Postoperative Complications (%)</b> |      |
|--|------|
| Urinary Retention                            | - 10 |
| Wound infection (SSSI)                       | - 2  |
| Post-operative death                         | - 0  |
| <b>Late postoperative complications (%)</b>  |      |
| Mesh infection                               | - 0  |
| Hematoma                                     | -0   |
| Seroma                                       | - 2  |
| Testicular atrophy                           | - 0  |
| Recurrence`                                  | - 0  |

## Results:

Out of 250 patients, 200 had indirect hernia, 30 had direct hernia and 20 had recurrent hernias. The mean age of the patients were 41.50 years (range: 30-72 years). The average time taken to complete surgery was 45.30 minutes and average hospital stay was 1.5 days (Table-I). There were no serious adverse effects of the anesthesia in these 250 patients. At a median follow-up period of 1 year. Only 25 patients developed urinary retention, had needed indwell catheterization, only 5 patients had seroma formation, of which 3 resolves spontaneously and, in the other, it was large and was frequent aspirated and only 5 patients encountered superficial Surgical site infection (SSSI), had needed daily dressing and added additional antibiotic and changes of antibiotic. No other postoperative complications in the patients (Table-II). No recurrence was encountered in post-surgery in any of case till the last follow-up period.

## Discussion:

About 80% of hernias are inguinal and 92% are in men, 20% of which occurs below 35 years of age. The pathophysiology of an indirect inguinal hernia is a patent or partially patent processus vaginalis (through deep inguinal ring) lateral to the inferior epigastric vessels. Direct inguinal hernia begins medial to the inferior epigastric vessels, within Hesselbach's triangle; so they don't pass through the deep inguinal ring. They are occurring through weakness of posterior wall of inguinal canal<sup>8</sup>. There are many ways of repairing an inguinal hernia with over 80 operations techniques describe so far, the most been the mesh less repair (modified shouldice and Bassini's) and the mesh technique (modified Lichtenstein)<sup>9</sup>.

The open preperitoneal mesh repair of any type of inguinal hernia (in new & recurrent cases) with darning of overlying musculoaponeurotic layers by prolene sutures –reducing anatomical distortion in the inguinal canal and scar tissue, Markedly reducing the risk of damage to the testicular vessels and permits inspection of all potential groin hernia sites. Through an open incision the dissection is rapid and structures

are easily and widely visible and earlier to place a mesh by novice surgeons. Open preperitoneal mesh repair is associated with reduction in the risk of recurrence by 90% -99.99%. There is also some evidence of less pain, quicker recovery, less hospital stay, early return to normal work, cost effective, less chance of infection and recurrence as compared to other techniques of mesh repairs.

The advent of therapeutic laparoscopic surgery provided a means of entering the preperitoneal space without an open incision. The technique was adopted with widespread enthusiasm, followed by alarming reports of vessel and viscus injury, nerve damage and high recurrence rates when inadequately sized pieces of mesh were used by inexperienced surgeons<sup>10-11</sup>.

The UK Medical Research Council study concluded that laparoscopic hernia repair had a lengthy learning curve and should be performed only by individuals who have considerable experience with technique. Furthermore the laparoscopic approach cannot be used in patients with incarcerated or large inguinoscrotal hernias, where there is extensive tissue loss (absent inguinal ligament) or patients unfit for general anaesthesia<sup>12,13</sup>. The approach used in this study requires little experience to demonstrate the anatomy in inguinal canal and methodology of placing the mesh. Great care must be taken to precisely place the preperitoneal mesh particularly less recurrence rates. If surgeon has on experience in opening the posterior wall of inguinal canal and dissecting the preperitoneal space, then additional training is required before endeavor the repair.

## Conclusion:

The open preperitoneal mesh repair of any type of inguinal hernia in new and recurrence cases with darning of overlying musculoaponeurotic layers by prolene sutures is highly effective in achieving less complication and low recurrence rate. It is easier to learn and safer than laparoscopic repair, and should be the procedure of choice for all groin hernias, even by novice surgeons.

**Conflict of interest:** None.

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## Variation of Chest Computed Tomographic Findings in Coronavirus Disease-19 (COVID-19) Positive Patients in a Tertiary Care Hospital, Bangladesh

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### ABSTRACT

**Background:** We aimed to report different patterns of chest computed tomographic (CT) findings in coronavirus disease-19 (COVID-19) infected patients in Bangladesh.

**Methods:** This was a cross-sectional descriptive study of 200 consecutive reverse transcriptase polymerase chain reaction (RT-PCR) positive patients who underwent CT chest. Distribution, type of abnormal lung findings and Prevalence were recorded.

**Result:** Among the total study cohort of 200 patients, 148(74 %) were males and 52 (26 %) were females with mean age of  $53.9 \pm 16.7$  years (range 20–92 years). We observed lung parenchymal abnormalities in 125 (62.0 %) cases whereas 75 (37.5 %) RT-PCR positive cases had a normal chest CT. Common symptom was cough in 108 (54%), Only 18.0% of the patients were dyspneic. Among the patients with abnormal CT findings bilateral involvement was commonest 98/125 (78.4 %), multilobar (54.0 %) lung involvement with a predominant peripheral and posterior distribution was more commonly observed. With regards to the type of opacity, ground glass opacity (GGO) was the predominant abnormality found in 122/125 cases. Pure GGO was observed in 29 (23.2 %), most common pattern was GGO mixed with consolidation was noted in 52(41.6 %). GGO with crazy paving pattern was seen in 33 (26.4 %) and sub pleural linear and curvilinear lines were seen in 23(18.4%). Peri-lesional or intralesional segmental or subsegmental pulmonary vessel enlargement was observed in 36 (70.6 %) cases

**Conclusion:** In this study population, we found a high proportion of symptomatic laboratory-confirmed SARS-CoV-2 patients had positive chest CT findings. Patients with a positive CT showed typical findings of predominant GGOs in a bilateral and multilobar distribution with peripheral predilection.

**Key words:** chest computed tomographic (CT), coronavirus disease-19 (COVID-19), reverse transcriptase polymerase chain reaction (RT-PCR)

### Introduction

First case of pneumonia with unknown cause were reported to the World Health Organization (WHO) on 31st December 2019 from Wuhan city. By 7<sup>th</sup> January, 2020, a novel coronavirus was identified for this and termed '2019-nCoV'. Subsequently, the virus was officially named as Severe Acute Respiratory Syndrome coronavirus 2 (SARS CoV-2) and the illness caused is

termed COVID-19 (Corona Virus Disease 2019) by the WHO. On 30<sup>th</sup> January, COVID-19 was declared as a public health emergency of international concern and by 11th March, 2020 declared it as a global pandemic<sup>1,2</sup> Since then COVID-19 claiming many lives. According to WHO Coronavirus Disease (COVID-19) Dashboard by 7<sup>th</sup> January 2021, there have been 87619505

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confirmed of COVID-19, including 1889556 deaths. The first confirmed cases of COVID-19 Bangladesh were reported on 8 March, 2020<sup>3</sup>. In Bangladesh more than 518898 cases has detected with death toll 7687. These numbers are likely to further increase here as travel and lock-down restrictions are eased. The incubation period of the disease is generally 3-7 days, but no longer than 14 days.<sup>4</sup> Clinical presentations of COVID-19 ranges from asymptomatic, mild symptom to severe illness. This disease mainly affects the lower respiratory tract infection. Isolation of virus in the respiratory samples using real-time reverse transcriptase-polymerase chain reaction (RT-PCR) is the testing of choice for detection of COVID-19. RTPCR has variable sensitivity ranging from 37% to 91%<sup>5-6</sup>. Initially RT-PCR test result can be false negative and may require repeat test. Furthermore in low resources country RE-PCT test not easily available and there may be significant delay in getting test result. Chest Imaging findings of COVID-19 resemble to other viral pneumonias. So Computed Tomography (CT) can be useful in detecting and management of the patients with suspected of positive COVID-19 patients.

CT findings mainly include ground glass opacities (GGO) with a peripheral and basal predominance as the initial manifestation of the disease. GGOs are gradually transformed into consolidations during the intermediate stage of the disease. After 9–13 days of onset of symptoms the CT findings become peak. Along with clinical recovery the pulmonary opacities show a gradual resorption with development of sub pleural lines, reticulations, fibrous stripes and peribulbar opacities. In some patients the clinical course is complicated by acute respiratory distress syndrome (ARDS) or pulmonary embolism, the main causes of death<sup>7</sup>. Ground glass opacity (GOO) is defined as an area of increased attenuation in the lung on CT scan with preserved underlying bronchial and vascular markings.<sup>8</sup> In this study we analyzed the different pattern of HRCT findings of COVID-19 patients.

### Materials and methods:

This was a cross-sectional study was done from April 2020 to July 2020, conducted in Bangabondhu Sheikh

Mujib Medical University and Ibrahim Cardiac Hospital and Research Institute, Dhaka Bangladesh. Bangabondhu Sheikh Mujib Medical University is a designated COVID-19 care center with separate fever clinic, inpatient, intensive care unit (ICU) and quarantine facilities. Institutional Ethical Committee (IEC) has taken. This study includes 200 consecutive symptomatic RT-PCR positive patients who were referred to radiology and imaging department for High Resolution Computed Tomography (HRCT). RT-PCR positive patients with symptoms like fever cough fatigue, soar throat or dyspnea was included in this study. Asymptomatic RT-PCR positive patients are excluded from this study. Patients with severe illness, defined by the WHO interim guidelines for clinical management of COVID-19 as [a] respiratory rate  $\geq 30$  breaths/min, or [b] oxygen saturation (SpO<sub>2</sub>)  $\leq 90$  %, or [c] respiratory failure needing mechanical ventilation, or [d] ARDS, or [e] shock were admitted to intensive care unit (ICU).<sup>9</sup> Symptomatic patients with no signs of respiratory failure were admitted in routine ward. Asymptomatic patients were observed in the quarantine and chest CT was not done. HRCT was performed by two CT scanner. One is a 160 slice multi-detector CT unit (Toshiba Japan) with the following parameters: tube voltage 100–120 kVp, tube current 90–130 mA s, collimation of  $16 \times 0.6$  and a pitch of 1.5. Another is GE-Revolution Evo 128 Slice multidetector CT scanner with the following parameters: tube voltage 100–120 kVp, tube current 200-250 mAs, collimation of  $16 \times 0.6$  and a pitch of 0.98. The CT images were acquired in a inspiratory breath-hold phase. Images were reconstructed of 0.7 mm into 1 mm thick slices. The images were viewed in both lung window settings (width 1200–1500 HU; centering -500 to -600HU) and mediastinal window (width 300–400HU; centering 40HU). The CT suite was disinfected by using 70 % ethanol or 0.1 % sodium hypochlorite. After each CT examination, passive air exchange was allowed for 30 min. HRCT was reviewed by group of radiologist in a ADW workstation and Vitrea workstation and gave final report. The radiologists are assessed the presence or absence of pulmonary opacities, location, type of opacities and the extent of opacities. The location of

one lung (right, left) or both the lungs. The number of lobes involved was determined. Distribution of the opacities was described as central (defined as the inner two-third of the lung tissue) and peripheral (defined as outer one-third of the lung). Lung lesions were divided using Fleischner society glossary of terms for thoracic imaging <sup>10</sup> GGO (ground glass opacity) was defined as an increase in the density of lung with non-obscuration of bronchial and vascular structures, whereas consolidation was defined as increased density of lung tissue through which vascular and bronchial structures were not visible. Furthermore, the readers also evaluated presence of associated airway, vascular, pleural and mediastinal abnormalities. A semi-quantitative scoring system was used to quantitatively estimate the pulmonary involvement by visually calculating the percentage of the total lung involvement by dividing each lung into 3 zones, followed by averaging the 6 zones to obtain the percentage of the total lung involvement <sup>11</sup>. Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSSInc). Continuous variables were expressed as mean, ranges and standard deviation, whereas categorical variables were expressed as counts and percentages.

### Results:

Among the total study population of 200 patients, 148 (74 %) were males and 52(26 %) were females with mean age of 53.9±16.7 years (range 20–92 years). Fever was the commonest symptom seen in 145 (72.5 %) followed by malaise in 132 (66.0 %), cough in 108(54 %) and anosmia in 44 (22.0%). Dyspnea found in 36 (18.0 %). Only 13 (6.5 %) of the patients had chest pain (Table I). Lung parenchymal abnormalities were observed in 125 (62.0 %) cases, and normal HRCT in 75 (37.5 %) of RT-PCR positive cases. Among the patients with abnormal CT findings, bilateral lung involvement was the commonest, observed in 98/125 (78.4 %) unilateral involvement in 27 (21.6%). Multiple lobe involvement was seen more frequently. 68 (54.0 %) had involvement of all the 5 lobes whereas four lobes involvement was seen in 19(15.2%), three lobes in 11(8.0%), two lobes in 10 (8.0%) and single lobe involvement was seen in 17 (13.6 %) (Table II).

In terms of distribution, peripheral distribution was the commonest, seen in 84/125 (67.2 %) cases followed by peripheral and central lesions in 28/125(22.4%). Only 13/125(10.4%) patients had only central distribution.

**Table I:** Distribution of patients by their clinical symptoms (n=200)

| Clinical Symptoms    | Frequency | Percentage |
|----------------------|-----------|------------|
| Fever                | 145       | 72.5       |
| Cough                | 108       | 54.0       |
| Dyspnea              | 36        | 18.0       |
| Malaise              | 132       | 66.0       |
| Anosmia              | 44        | 22.0       |
| Chest pain           | 13        | 6.5        |
| Chest pain and cough | 8         | 4.0        |

**Table II.** Distribution of patients by their CT findings (n=200)

| Distribution of CT findings          | Frequency | Percentage |
|--------------------------------------|-----------|------------|
| Lung parenchymal involvement present | 125       | 62.0       |
| Lung parenchymal involvement Absent  | 75        | 37.5       |
| Bilateral Involvement                | 98        | 78.4       |
| Unilateral involvement               | 27        | 21.6       |
| Number of lobe involvement           | --        | --         |
| 5 lobes                              | 68        | 54.0       |
| 4 lobes                              | 19        | 15.2       |
| 3 lobes                              | 11        | 8.0        |
| 2 lobes                              | 10        | 8.0        |
| 1 lobe                               | 17        | 13.6       |

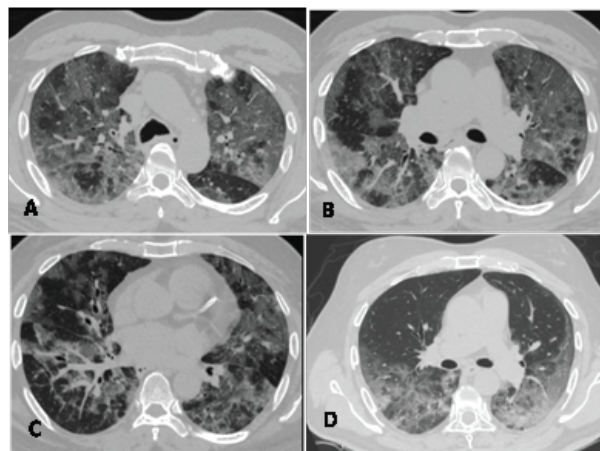
Considering the type of opacity, GGO was the dominant abnormality, found in 122/125 cases. Pure GGO was observed in 29 (23.2%), (Fig -1). Most common pattern was GGO with consolidation in 52 (41.6%), GGO with crazy paving that is interlobular septal thickening and intralobular lines pattern in 33 (26.4%) (Fig - 3). (Table III).

Small number 8 (6.4%) of patients showed GGO with air bronchogram. Only 3 (2.4%) patients show pure consolidation (Fig-3). Sub pleural linear and curvilinear lines were seen in 23 (18.4 %) (Fig - 4). Only 5 (4.0%) of patients showed reverse halo sign (Fig - 5).

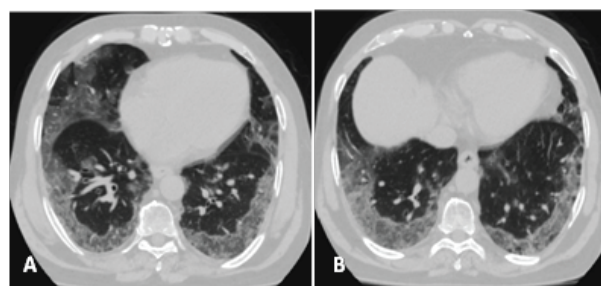
**Table III.** Distribution of patients by their CT findings of lung parenchymal involvement (n=125)

| CT findings of lung parenchymal involvement       | Frequency | Percentage |
|---|-----------|------------|
| Peripheral lesion                                 | 84        | 67.2       |
| Central lesion                                    | 13        | 10.4       |
| Peripheral and central lesions                    | 28        | 22.4       |
| Pure GOO  | 29        | 23.2       |
| Pure consolidation                                | 3         | 2.4        |
| GOO and consolidation                             | 52        | 41.6       |
| GOO and crazy paving                              | 33        | 26.4       |
| GOO and airbronchogram                            | 8         | 6.4        |
| Perilesional and Intralesional vessel enlargement | 88        | 70.6       |
| Sub pleural linear and curvilinear lines          | 23        | 18.4       |
| Halo sign   | 5         | 4.0        |
| Bronchial dilatation                              | 4         | 8.8        |
| Pleural effusion                                  | 16        | 12.8       |
| Mediastinal lymphadenopathy                       | 11        | 8.8        |

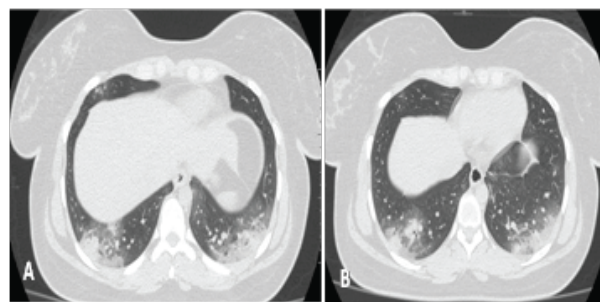
Bronchial dilatation was observed in 4(8.8%). Perilesional or intralesional segmental or subsegmental vessel enlargement was observed in 88 (70.6 %) of cases. Few severely ill patients with cardiac problem shows pleural effusion 16(12.8%). Mediastinal lymphadenopathy was found in 11(8.8) patients. (Table III).



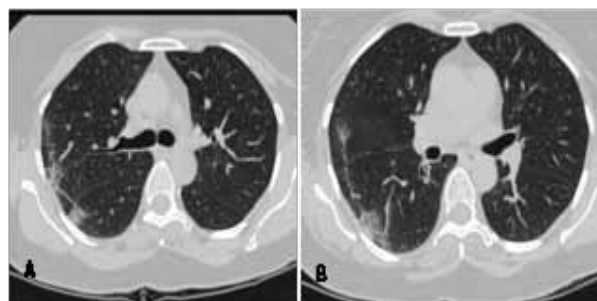
**Figure 1 (A,B,C and D):** Non-contrast axial chest CT images in the lung window setting of a 50-year old male and 68-year female COVID-19 positive patient, obtained 7 days after symptom onset, at the carinal (a), subcarinal (b,d), mid-basal (c) levels showing bilateral, confluent ground glass opacities with pronounced peripheral distribution with perilesional vessel enlargement (c,d).



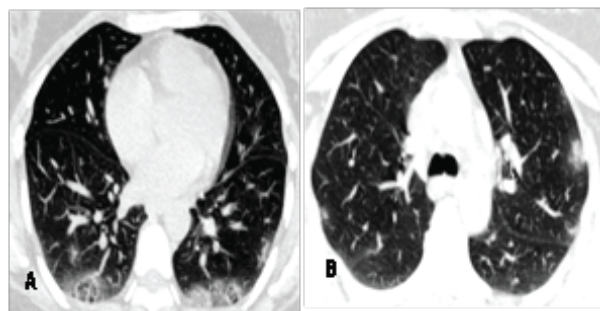
**Figure 2 (A and B):** Non-contrast axial chest CT images (A,B) in the lung window setting of a 62-year old male COVID-19 positive patient, obtained 9 days after symptom onset, showing bilateral diffuse confluent ground glass opacities with pronounced peripheral and posterior distribution with interlobular septal thickening producing crazy-paving pattern.



**Figure 3(A and B):** Non-contrast axial chest CT images (A,B) in lung window settings of a 28-year old female COVID-19 positive patient, obtained 8 days after symptom onset, showing multiple patchy peripheral predominantly posterior ground glass opacities with progression to consolidation in both lungs.



**Figure 4 (A and B):** Non-contrast chest CT axial image (A,B) in a 55-year old male COVID-19 positive patient, obtained 10 days after symptom onset, showing sub-pleural curvilinear lines with few reticulations in right lower lobe and associated mixed GGO-consolidation pattern.



**Figure 5 (A and B):** Non-contrast chest CT axial image (a) in a 42-year old female COVID-19 positive patient, obtained 7 days after symptom onset, showing multiple patchy peripheral ground glass opacities with progression to consolidation in both lungs. There is also evidence of reverse halo or atoll sign in posterior sub pleural location of both lung.

### Discussion:

We recorded a positive CT in a high proportion (96/147; 65.3 %) of patients with RT-PCR confirmed SARS-CoV-2. This data is in near similar to the studies from China, Korea and Europe which have reported lung parenchymal abnormalities in 61%–100% RT-PCR positive patients.<sup>12-14</sup>

Caruso D et.al<sup>13</sup> reported pulmonary findings in 96.6 % of symptomatic cases on CT. Fever (61 %) were the commonest symptom in their cohort followed by cough (56 %) and dyspnea (33 %).<sup>15</sup> Our study positive pulmonary findings on CT was 62% . fever 72.5% was the commonest symptoms followed by cough 56% and dyspnea 18%.

In an environmentally homogenous cohort (Diamond Princess Cruise ship), Inui S et.al (14) reported a normal chest CT in 21 % of symptomatic COVID-19 cases.<sup>16</sup> We also reported 37.5% normal chest findings of symptomatic COVID-19 cases. Ai T et.al [15] reported CT findings in 888 (88.7%) among the total study population of 1014 COVID-19 patients. They further observed that 3% RT-PCR positive cases with clinical symptoms had a normal CT scan.<sup>17</sup> In our study among the patients with lung parenchymal abnormalities on CT, bilateral lung involvement with multilobar distribution and a peripheral predilection was commonly observed. This finding fairly similar the distribution and type of pulmonary opacities reported in COVID-19 pneumonia. GGO was the dominant abnormality, found in all 122/125 (%) cases. Pure GGO was observed in 29 (23.2%), GGO with consolidation in

-52 (41.6%) and GOO with crazy paving that is interlobular septal thickening and intralobular lines pattern in 33 (26.4%). A Systematic review done by Salehi et al<sup>18</sup> from various countries wherein they found that GGO was present in 88 % cases across 22 studies reported. Our findings are also in similar with this study.

Segmental or subsegmental intra-lesional or perilesional pulmonary vessel enlargement was observed in 70.6 % patients. Our findings are in concordance with Yan Li et al.<sup>14</sup> who reported vascular enlargement in 82.4 %. The various putative etiologies that have been put forth to account for this unique finding of vascular enlargement include, vasodilatation induced by the release of proinflammatory cytokines, small vessel pulmonary embolism and infection induced pulmonary vasculitis.<sup>19</sup> Pulmonary vascular enlargement is an important sign/findings in COVID-19 pneumonia diagnosis as it has not been reported previously in any infectious disease settings. Bai et al.<sup>20</sup> reported vascular enlargement to be frequently associated with COVID-19 pneumonia compared to non-COVID-19 pneumonia with a significant p-value ( $< 0.001$ ). So enlarged vessel is an important diagnostic criteria to discriminate COVID-19 pneumonia from non-COVID-19 pneumonia. CT is not recommended for screening of COVID-19. However, in our understanding CT has a significant contribution to the clinical management of the COVID-19 pneumonia patients. According to the German Radiological Society, CT may aid in assessing the initial extent of the lung involvement, help in recognition of the complications and also help in monitoring the progression of the disease.<sup>21</sup> J. According to American College of Radiology (ACR) guidelines, CT should be reserved for hospitalized, symptomatic patients with specific clinical indications like worsening respiratory status.<sup>22</sup>

There are several limitations to our study. First, we include both in-patient and outpatient focused on initial CT findings and did not perform follow-up CT examinations. So disease progression could not be assessed. This may result in non-inclusion of symptomatic cases that may have developed lung changes late in the course of disease and hence a spurious high rate of negative CT in the study population. Second, imaging was performed in all symptomatic cases regardless of the severity of illness.

## Conclusion:

In conclusion, we found a high proportion (62%) of positive chest CT in symptomatic laboratory-confirmed SARS-CoV-2 patients. Patients with a positive CT showed the same CT features as reported in other series with a predominance of GGOs in a bilateral and multilobar distribution with peripheral predilection.

**Conflict of interest:** None.

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## Characterization of COVID-19 infection in children: A 6 months experience in a tertiary care hospital in Dhaka, Bangladesh.

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### ABSTRACT

**Background:** Corona virus disease is a global health crisis, a surprising feature of the disease reflects that children might be less affected in the initial stage. Previous studies suggest that COVID-19 more likely to infect adults, but paediatric patients are on the rise. In most of the cases children have mild or moderate symptom of COVID-19, but another new serious presentation emerged named Multisystem inflammatory syndrome in children (MIS-C) which includes features like Kawasaki disease or toxic shock syndrome. The past few months we have seen a lot of findings and variation regarding the COVID-19 illness. As childhood presentation are variable analyzing the pattern of disease in children helps the policy makers to make the better strategies and health care givers to serve better.

**Objectives:** This study was conducted to assess the age and sex distribution, clinical presentations, morbidity, mortality pattern in children with COVID-19 infection.

**Methods:** This descriptive study conducted in the Outpatient Department of Pediatrics and dedicated COVID-19 unit of Anwer Khan Modern Medical College Hospital, Dhaka, Bangladesh from May 2020 to November 2020. 24 children with RT-PCR positive for COVID-19 were included in this study. Medical records of these patients were reviewed and data were analyzed using SPSS software version 20.

**Results:** The total number of children with RT-PCR positive for COVID-19 during the study period was 24. The male female ratio was 1.4:1. Most of the patients were aged over 10 years 9(37.5%). Fever (92%), cough (75%) and headache (50%) were the most common clinical features. A total 10 (41.7%) patients presented with mild clinical symptoms, 6 (25%) were severe to critical state and 2(8.3%) patients found with features with MIS-C. No mortality was observed.

**Conclusion:** The paediatric patients with COVID-19 had mild illness and had good prognosis. The child with MIS-C need early intervention for better outcome.

### Introduction

Coronavirus disease 2019 (COVID-19) is a viral disease caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). Corona viruses are a large family of viruses that cause a variety of diseases, such as SARS, MERS and coronavirus disease 2019 (COVID-19)<sup>1</sup>. The most recent corona virus species, SARS-CoV-2, was reported in Wuhan, China in

December 2019<sup>2</sup>. Since then, COVID-19 has become a worldwide health problem threaten the life of people. On 11 March 2020, the World Health Organization (WHO) classified the outbreak as a pandemic<sup>3</sup>. Globally, as of 10 January 2021, there have been 88,383,771 confirmed cases of COVID-19, including 1,919,126 deaths. In Bangladesh between

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8 March and 10 January 2021, according to the DGHS Press Release there were 522,453 COVID-19 confirmed cases including 7,781 related deaths (CFR 1.49%). Bangladesh is the top 27<sup>th</sup> country in the world and accounts for 0.59% of the COVID-19 disease burden in the world<sup>4</sup>.

No age is immune against COVID-19 infection. Though adults represent the population with the highest infection rate; however, paediatric patients are on the rise and unfortunately occurred some casualties already. The clinical characteristics, disease progression and outcome in children so far appeared milder compared to old individuals although the scenario are evolving<sup>5</sup>. About 2% of total cases were detected in children under the age 18 years<sup>6</sup>. Data from China's analysis has shown that children aged less than 10 years account for only 1% of COVID-19 patients<sup>7</sup>. Italy has reported only 1.2%<sup>8</sup>, besides, the United States US has reported 5% of Pediatric patients with COVID-19<sup>9</sup>. In Bangladesh among the confirmed cases 3% belongs to age <10 years and 7% belongs to age 11-20 years and fatality by age 1-10 years 0.8% and 11-20 years 1.5% respectively<sup>10</sup>. Though majority of the cases were mild or moderate in nature but many of them required hospital admission and unfortunately 54 children with COVID-19 died (up to 10.09.2020)<sup>5</sup>.

The mode of transmission of the virus between humans is via respiratory droplets<sup>11</sup>. Direct contact is another source of virus transmission via touching the mouth, nose or conjunctiva with contaminated fingers<sup>12</sup>. Vertical transmission is still a matter of debate and yet to be established. A study has found that 3 out of 33 neonates born to COVID-19 positive mothers had positive nasopharyngeal and rectal swabs for COVID-19<sup>13</sup>. Fecal-oral transmission could be an alternative route of transmission as several studies have reported positive stool samples, even after nasopharyngeal/throat swabs were COVID-19 negative<sup>14,15</sup>.

The reason of the lowest percentage of COVID-19 in children despite of the immaturity of their immune system has been explained by numerous arguments<sup>16</sup>. Indeed the SARS-CoV-2 use the ACE2 receptor, the reduced number and the immaturity of ACE2 receptors in children comparing to adults is one of these

hypothesis<sup>17</sup>. Second, the innate immune response, the first line of defense, seems to be more active in children. The thymus is present and the CD8 T cells are more efficient participating in the virus lysis<sup>18</sup>. Finally, children have little co morbidity and are also less exposed to smoking comparing to adults<sup>19</sup>. The incubation period for the SARS-CoV-2 ranges between 2 – 14 Days<sup>20</sup>. Childhood COVID-19 disease usually runs a mild course. The children can be asymptomatic or present with cough, fever and fatigue. Some studies have reported low grade fever or even no fever at all<sup>21,22</sup>. This is usually accompanied by upper respiratory tract symptoms like nasal congestion and headache or with gastrointestinal manifestations (10%) such as diarrhoea, vomiting or abdominal discomfort<sup>5,22</sup>. In more severe cases ARDS, septic shock, refractory metabolic acidosis and coagulation dysfunction may occur. The disease has good prognosis in children with most of the cases are recovered after a mild disease course and it is very uncommon to progress to severe lower respiratory disease<sup>23</sup>. A new serious COVID-19 presentation emerged in late April in the form of Paediatric inflammatory multisystem syndrome temporally associated with COVID-19 (PIMS-TS). Since the first reports from London, UK, in late April, 2020, many countries including the USA, France, Italy reports such cases<sup>24-27</sup>. Parallels have been drawn between the presenting features of this syndrome and other known conditions, like Kawasaki disease, toxic shock syndrome, viral sepsis, and, less commonly, macrophage activation syndrome or haemophagocytic lymphohistiocytosis<sup>28</sup>. PMIS/MISC is a systemic inflammation, involving persistent fever and evidence of clinically severe illness requiring hospitalization with multisystem ( $\geq 2$ ) organs involvement (Cardiac, renal, respiratory, hematologic, gastrointestinal, dermatological or neurological), which is temporally associated with exposure to COVID-19<sup>5</sup>.

The gold standard test for SARS-CoV-2 is the real-time reverse transcriptase-polymerase chain reaction (RT-PCR) test. It is believed to be highly specific, and its sensitivity was reported to be 91% [95% CI: 83-97%] for initial RT-PCR<sup>30</sup>. Although less sensitive than chest computed tomography (CT), chest radiography is the

first-line imaging modality used to scan patients with suspected COVID-19. Its abnormalities include consolidation or ground-glass opacity (GGO), which in most cases are bilateral and peripheral, and have lower zone predominance<sup>31</sup>.

Available statistic data support the evidence that children are less infected elsewhere in the world but clinical characteristics details and countries' difference of paediatric COVID-19 aspects are rarely reported. Such ambiguity may present a dangerous situation that lead paradoxically to a less protection and a neglect of children from the part of their parents and countries. The aim of this manuscript is to focus on COVID-19 paediatric aspects explaining why parents and doctors should be more vigilant when dealing with children during the period of COVID-19.

**Objectives:** This study was conducted to assess the age and sex distribution, clinical features, morbidity, mortality pattern in children with COVID-19 infection.

### Materials and methods

**Study design:** This descriptive study was conducted both in the Outpatient Department of Pediatrics and dedicated COVID-19 unit of Anwer Khan Modern Medical College Hospital, Dhaka, Bangladesh from May 2020 to November 2020.

**Study Population:** A total of 24 Children aged less 18 years who had positive RT-PCR test for COVID-19, attend to outpatient department and admitted to dedicated COVID unit at Anwer Khan Modern Medical College Hospital, were included in this study.

**Data collection:** Data were collected from the outpatient register book for outdoor patients and admission, discharge and death registers for the admitted patients, using a pretested structured questionnaire. Data extracted included: The age and sex of the patient, clinical presentation, investigation, final diagnosis, treatment given and outcomes (discharge, death or left against medical advice) and cause of death.

**Data analysis:** The data were subjected to statistical analysis according to standard procedure. SPSS version 20 for Windows (SPSS Inc, Chicago, IL, USA) software was used for data recording and

analysis. Since it was a descriptive study, percentage and frequencies were determined.

**Ethical issues:** Approval for the study was obtained from the ethical committee of the college. Informed written consent was taken from the parents of the patients.

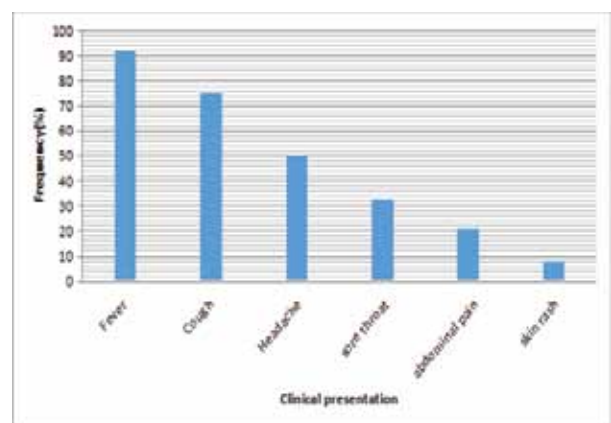
### Results:

Total twenty four patients who were RT-PCR positive for COVID-19 were included in the study over a period of six months.

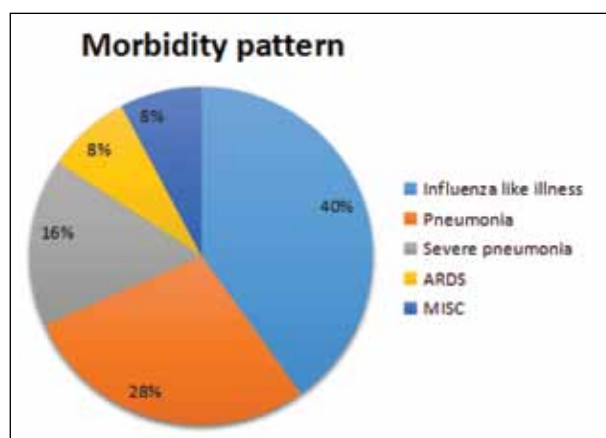
**Table I:** Demographic characteristics of the children with COVID-19 disease (n=24)

| Demography  | Male      | Female    |
|-------------|-----------|-----------|
| Age (years) |           |           |
| 0-5         | 2(8.33%)  | 1(4%)     |
| 5-10        | 4(16.7%)  | 3(12.5%)  |
| 10-15       | 6(25%)    | 3(12.5%)  |
| 15+         | 2(8.33%)  | 3(12.5%)  |
| Total       | 14(58.4%) | 10(41.6%) |

Among them male was 14 (58%) and female was 10(42%) and the male female ratio was 1.4:1. Majority of the patients were with in 10-15 years age group that were 9 (37.5%) then with in 5-10 years age group that were 7(29%) (Table I).



**Figure 1:** Clinical presentation of the patients (n=24). Twenty two( 92%) patients presented with fever, the next common symptoms were cough 18(75%), headache 12(50%), sore throat 8(33%), abdominal pain 5(21%), and skin rash 2(8%).



**Figure 2:** Morbidity Pattern of the patients (n=24).

Total ten (41.7%) patients were clinically classified as Influenza like illness- ILI, 6(25%) were pneumonia, 4(16.7%) were severe pneumonia, ARDS 2(8.3%), and 2(8.3%) patients presented with features like Multisystem inflammatory syndrome in children (MIS-C). Overall success rate was 100%, no mortality occurred in the present study.

**Table II:** Laboratory findings of the patients (n=24).

| Investigations   | Frequency | Percentage(%) |
|------------------|-----------|---------------|
| Leukocytosis     | 3         | 12.5          |
| Lymphopenia      | 6         | 25            |
| High ESR         | 10        | 41.7          |
| High CRP         | 12        | 50            |
| High S. Ferritin | 4         | 16.6          |

Twelve (50%) patients had no abnormal laboratory findings, 6(25%) patients had lymphopenia, 10(41.7%) had high ESR, 12(50%) had high CRP and 4(16.6) showed high ferritin level (Table II).

**Table III:** Treatment given (n=24)

| Name of drugs      | Frequency | Percentage |
|--------------------|-----------|------------|
| Antibiotics        | 11        | 45.8       |
| Remdesivir         | 6         | 25         |
| Steroid            | 6         | 25         |
| Thrombolytic agent | 4         | 16.66      |

Only 11 patients need to be hospitalized. Among them 11(45.8%) patients treated with antibiotics, 6 (25%) patients got Remdesivir and steroid and 4(16.7%) patients need thrombolytic agent (Table III).

## Discussion

COVID-19 infection has been reported in all age groups including infants, children and young adults. In this study two-third of the total children were male and children aged over 10 years were more affected. The age distribution and male predominance were similar to other studies<sup>30,31,32,33</sup>. But a study in china found that the median age was 7 year among the Chinese paediatric patients<sup>34</sup>. The teen age boys play outside and use mobile more frequently, so their chance of exposure is higher than others.

The clinical characteristics, disease progression and outcome in children and young adults so far appear milder compared to older individuals<sup>23</sup>. We found that more than three-fourth patients with positive RT-PCR for COVID 19 had fever, next common symptoms are dry cough, headache, abdominal symptoms and sore throat (Figure 1). A study in China and other countries reported that half of the patients had cough (48.5%) and fever (41.5%)<sup>35,36,37,38</sup>. A systemic review with 131 studies showed that the most frequent symptoms were fever (59.1%), cough (55.9%) and rhinorrhea (20.0%)<sup>39</sup>. A meta-analysis reported that 30% paediatric patients were asymptomatic<sup>40</sup>. A study done in Bangladesh showed that 19.7% patients were asymptomatic<sup>41</sup>. Asymptomatic children play an important role in human-to-human transmission and accelerate the pandemicity.

Most of the paediatric patients had mild illness and had good prognosis.<sup>21,23,38,41</sup> In the present study we also found that half of the patients had mild illness that is influenza like illness (ILI), and one-third had moderate illness (pneumonia). Only seven patients presented with severe to critical state (Figure 2). Among the critical patients two children had fever, rash, hypotension and diarrhea which was similar to the characteristic features of MIS-C according to WHO case definition<sup>42</sup>. We found that pediatric patients had fewer underlying co-morbid disease and complication. Some other studies also reported that symptomatic cases of COVID-19 is less and they experience milder disease.<sup>21,35,38,41</sup> The disease severity was categorized according to National Guidelines on Clinical Management of Coronavirus Disease 2019<sup>5,15</sup>.

Children with mild disease had few laboratory changes (Table-2). Some patients showed leukocytosis. In severe to critical state lymphopenia was common findings. Some study in China also found the similar abnormality<sup>43,44</sup>. The inflammatory markers like ESR, CRP, D-dimer, also increase in hospitalized patients and which is associated with greater illness similar to adults.<sup>43,44</sup> Regarding chest x-ray two patients with ARDS presents bilateral ground glass appearance and there were no abnormal x-ray findings in mild cases.

Most of the children were treated at home and nine patients required hospitalization. All the patients were treated according to Bangladesh Paediatric Association Management Guideline For Paediatric COVID-19.<sup>5</sup> Among the hospitalized patients only 2(8.5%) patients need PICU support. Patients with severe to critical stage were treated with antibiotics, remdesivir (25%), oral steroid (25%) and only four (16.7%) patients need thrombolytic agent. The patients with MIS-C like features were treated with IVIG at 2 gm/kg in infusion on Day1, 50 mg/kg aspirin initially for 5 days then 3 mg/kg/day for next 8 weeks and IV dexamethasone for 5 days then orally tapered over 2 weeks. No antiviral was given to this patients. Worldwide mortality rate is less in children in compare to adults<sup>19,23,45</sup>. Which is similar to present study. No mortality was observed in this study.

### Conclusion:

COVID-19 infection had milder symptoms in majority cases and more than two-third of the patients had fever and respiratory problems. The outcome is good in children. But the new serious presentation of COVID-19 that is MIS-C is not uncommon and which require early identification and intensive treatment to get better prognosis.

**Conflict of interest:** None.

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## Kampung Sungai to Kerala: A deadly zoonotic trail encroaching diverse geography

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### ABSTRACT

**Background:** Nipah virus is an emerging zoonotic virus which causes fatal encephalitis in South-East Asia region since 1999. Thereafter, it is prevalent almost every year in the different parts of Bangladesh and India. The aims of this analysis to describe the epidemiological patterns of the Nipah infection and also to highlight the factors for the recurrent outbreak in this region.

**Materials & methods:** Intensive web searching was done for documents and journals on Nipah Virus infection and Nipah outbreak from 1999 to 2018. A total of 279 research documents were found and about 40 papers, especially the PubMed indexed sources and newsletters distributed by different public health agencies were selected for the meta-analysis. Information gathered from the selected journals and documents were described in text and figures.

**Results:** The analysis revealed that fruit bats of the Pteropus genus are the natural hosts of the virus. After documentation of only outbreak in Malaysia in 1999, Nipah virus struck in Meherpur in 2001 for the first time and thereby, creating a public health issue every year. Very recently, this deadly zoonotic virus caused fatality in Kerala, India which is far away from its usual prevalent region. It starts with the ingestion of Nipah infected raw date palm sap and direct contact with the infected person. Early diagnosis and strict isolation is the mainstay to prevent an outbreak. Strong public health measures can able to reduce both the frequency and mortality of the disease.

**Conclusions:** Nipah virus infection is now one of the ten priority diseases listed by the World Health Organization considering its high fatality rate. However, effective health education and infection control practice is still considered as the mainstay of prevention of future Nipah outbreak.

**Keywords:** Nipah virus, Fruit bats, Human to human transmission, Encephalitis, Health education, Infection control.

### Introduction

Nipah virus is one of the two members of genus Henipa which belong to the family Paramyxoviridae. Flying fruit bats or flying fox harboring the Nipah virus is responsible for transmitting the virus to a wide host range causing illness and death of animals and humans.<sup>1</sup> It was first reported in 1998-1999 with 283 cases of febrile encephalitis including 109 deaths in Malaysia.<sup>2</sup> In it was detected from Meherpur in 2001. After that, the Nipah outbreak has occurred in every year mainly in the northern part of Bangladesh and also the adjoining parts of India.<sup>3</sup>

Recently, Nipah infection has struck the Kozhikode district, Kerala of India (Fig. 1) which is considered to be an outskirts from the usual Nipah prevalent regions<sup>4</sup> after hibernating for last 2-3 years. Considering a new outbreak in that part of India, early laboratory confirmation and infection containment has limited the spread and successfully contained the disease.<sup>4</sup> The aim of this article to elucidate the current situation analysis of the Nipah outbreaks of South East Asia regions and identifying the factors to combat such fatal infections.

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**Figure 1:** Trail of Nipah virus infection in South East Asia Region.

### Materials & methods:

A systematic review was conducted from various journals and articles from 1999 to 2018. Information was retrieved from documents available mainly in the electronic database and on the websites, using the terms Nipah Virus infection and Nipah outbreak etc. Results and comment from other researcher's work were also evaluated. Around 279 research papers were retrieved from several national and international publications and among them, about 40 research papers were reviewed for preparation of this article. Most of the selected articles were from PubMed indexed and various online collection on Nipah virus related issues, reports on quantitative and qualitative studies, estimates of Nipah cases, the source of infection, policy analysis, and government strategies. Data gleaned from the research papers were analyzed and results were presented in texts and chart/graph as per the requirements.

### Results:

#### National host and outbreak detection

Large fruit bats of the genus *Pteropus* appear to be the natural reservoir of Nipah virus.<sup>5</sup> In Bangladesh, the only *Pteropus* species "*Pteropus giganteus*" are the reservoirs of Nipah virus which are widely distributed across the country and also in India.<sup>6</sup>

Usually, Nipah virus infection has a short incubation period of 4 days to 2 weeks but may extend up to 45 to 60 days.<sup>2</sup> Clinical features range for asymptomatic influenza-like symptoms e.g. fever, vomiting, sore throat headaches and myalgia to fatal encephalitis. Nipah cases are confirmed by various laboratory tests like neutralization test, enzyme-linked immunosorbent assay (ELISA), polymerase chain reaction (PCR) assay, immune-fluorescence assay and virus isolation by cell culture technique.<sup>7</sup>

### The situation in Malaysia and Singapore

The majority of the Nipah Virus infection cases in Malaysia<sup>8</sup> and Singapore<sup>9</sup> were acquired from infected pigs. Clinical features of this new infection being similar to JEMSS led the investigator at that time. But later, it was confirmed to be a new zoonotic disease and was named as per the village "Sangai Nipah".<sup>10</sup> At that time, an association of this new infection with Pig were anticipated as many of the victims were from pig farm who had direct physical contact with sick Pig.<sup>11</sup> A retrospective study revealed that, during that outbreak, pigs were sick having a barking cough and dying from an unknown disease.<sup>12</sup> After the Nipah outbreak confirmation, all the infected pigs were culled within the area of the outbreak.<sup>13</sup> Subsequently, Nipah virus was internationally classified as Biosafety Level (BSL) – 4 agent.<sup>14</sup>

### Situation in Bangladesh

Nipah virus was first detected as a cause of an outbreak of encephalitis in 2001 in Meherpur district. Since then, outbreaks of Nipah virus encephalitis have been reported almost annually till 2015 in selected districts of Bangladesh causing high case fatality<sup>4</sup> (Fig. 2). So far, about 28 districts have been known for Nipah occurrence. Among them, outbreak from this virus has been reported 7 times in Rajbari, 5 times in Naogaon & Faridpur, 4 times in Nilphamari & Natore and 3 times in Kustia, Magura, Manikong & Rangpur.<sup>15, 16</sup>



**Figure 2:** Nipah virus affected region in Bangladesh 2001-2018.

Consumption of raw date palm juice contaminated with urine or saliva from Nipah infected fruit bats was the most likely source of infection in Bangladesh. But human to human transmission among the family members from close contact was also documented in the year of 2004 and 2007 where respiratory secretion was reported to be the most likely source of infection.<sup>17</sup>

### Situation in India

Apart from the recurrent outbreaks in Bangladesh, Nipah virus infections are also reported from the adjoining border area of India, namely Siliguri (2001) and Nadia (2007) of West Bengal.<sup>3</sup> The mode of transmission of these outbreaks was human to human source following nosocomial infection.<sup>18</sup> In the year of 2018, the outbreak in Kerala has cost 21 lives out of 23 laboratory-confirmed cases and all the cases except the index case were transmitted through human to human transmission. However, how the index case got infected is still unknown. 97% Nipah virus genome sequence were found similar to previous

Nipah-Bangladesh genetic lineage.<sup>4</sup> Currently, Nipah virus infection is now considered as one of the ten priority infection by World Health Organization in terms of its fatal nature.<sup>19</sup>

### Credible factors causing episodic outbreaks of Nipah Virus infection in South East Asia region

Since the first case in Bangladesh, almost every year mainly in the winter season, the virus flares up around cluster districts near the Padma River flowing through the western side of the country.<sup>20</sup> In this region, people are getting infection directly by consuming date palm sap contaminated by infected fruit bats. But in recent years, human to human transmissions are becoming prevalent which was not previously observed in Malaysian settings.<sup>8</sup>

Some common associations have been observed in the transmission of Nipah virus infection to human. It seems to occur only between December to April coinciding with the time of collecting palm sap and infected from drinking contaminated palm sap. Another hypothesis linked with the bat's breeding cycle's time. A large number of newborns pups carrying Nipah viruses are available, at that time might shed virus in urine and contaminating a large number of the date palm sap.<sup>21</sup>

Recurrent attacks of Nipah virus infection have been recognized since 2001 6, 22-23 and substantial heterogeneity of their nucleotide sequences were seen among the strains of Nipah isolates, causing the repeated introduction of Nipah virus from its reservoir to the human population. But all the Nipah virus strains from human cases were genetically similar to Malaysian outbreaks.<sup>24</sup> Nipah antibody was regularly found in both blood samples collected from *P. giganteus* bats in Bangladesh and neighboring India<sup>25</sup> but the condition which permits recurrent Nipah virus infection to a human in Bangladesh are yet to be identified.

Another important factor contributing to the high frequency of Nipah virus infection is person-to-person transmission.<sup>23</sup> In a densely populated country like Bangladesh, Nipah virus spread very rapidly through respiratory route before any kind of intervention or anticipation of outbreak can be made.

## Discussion:

Although Nipah virus infection causes smaller outbreaks in Bangladesh and India, the case fatality rate remains higher (>75%) over the years than the outbreaks from Malaysia and Singapore (>40%).<sup>23, 26</sup> This repeated outbreak from Bangladesh has demonstrated both foodborne transmission and also human to human transmission.<sup>22, 23</sup> Usually, date palm sap is collected and harvested from December to April when *P. giganteus* bats frequently visit and lick the sap.<sup>27</sup> Traditionally, people in this region are used to enjoy the delicious raw sap together in a family within a few hours of collection increasing their vulnerability to Nipah infection.<sup>28</sup>

Most of the patients who had presented with acute meningo-encephalitis had died by the time a diagnosis was made, which creates difficulty to isolating the case and build up strategies to prevent nosocomial transmission.<sup>29</sup> The physician and health caregiver in such settings are more vulnerable to Nipah infection as they are attending emergency outdoor patients without wearing personal protective equipment (PPE) because of their unawareness of impending outbreak.<sup>30</sup> But, these tendencies have been greatly reduced after mass awareness campaign and training program run by government.



**Figure 3:** Bamboo skirt method to block fruit bats contamination date palm sap.

Prevention strategies should focus on the people (Gachhis) along with their families who collect the date palm sap and also the health caregiver who will attend the Nipah cases. Various local approaches

been developed to prevent pests and bats from accessing the sap. But most efficient is the bamboo skirt method (Fig. 3) which covers both the shaved part of the tree and also the mouth of the pot, making it difficult for the bat to access the sap. Other methods like using mosquito net or cloth to cover the mouth of the containers should also be employed where necessary.<sup>31</sup> Gachhis should take bath after collection of palm sap as the surfaces of trees are often contaminated with bats urine harboring the Nipah virus. After collection, they should refrain themselves from drinking it raw; instead boiling at high temperature is the single most effective method of prevention. Family members complaining of fever or flu-like symptoms should be given special attention. Residence from Nipah belt<sup>32</sup> should be made aware prior to every winter season through a mass media campaign (Fig. 4). More emphasis should be put on person to person communication by health care worker through courtyard or group meetings with special emphasis on those families who live on date palm sap collection and selling trade.



**Figure 4:** Risk of Nipah virus as per global distribution of Pteropus bats.

Another important mode of Nipah virus infection from the dead body handling is often ignored. During transportation and grieving situation, close contact should be avoided with a deceased's face, especially respiratory secretion. Personal protection should be taken during washing/ritual bath of a deceased body. Reusable items like clothes, utensils etc. of the

identified individuals should be decontaminated with soap/detergent and beddings should be kept in sunlight for several consecutive days.<sup>33</sup>

### Conclusions:

The capacity of the emergency response to outbreaks should be strengthened before every Nipah season and gaps/drawbacks should be filled up after Nipah outbreaks. Strong efforts should be given to disseminate the guidelines for infection control and prevention strategies to battle further Nipah outbreak.

**Conflicts of Interest:** None

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# Gossypiboma: A Cause of Iatrogenic Fecal Enterocutaneous Fistula

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## ABSTRACT

The word 'gossypiboma' or 'textiloma' is used to describe a retained surgical sponge in the body after an operation. If it is left in the abdomen, it may cause serious morbidity and mortality of the patient as well as medico legal problems. It varies between 1 out of 1000-1500 intra-abdominal operations and 1 out of 300-1000 of all operations<sup>1</sup>. Herein, we report one case, the first presenting about 2 months after caesarean section with fever with chills and rigor and pain at the operative area. Imaging detected presence of foreign body in the abdomen. Then she went for exploration of the wound and a mop was removed. After that she came to us with pain and feculent discharge from the wound site.

**Keywords:** Gossypiboma, retained surgical sponge, textiloma, fistula.

## Introduction

Post-operative retained sponge (variously referred to as gossypiboma, textiloma, or gauzioma) has been estimated to occur once in 100-3000 surgeries and once in 1000-1500 laparotomies even though many cases are not reported to avoid medico legal consequences<sup>2-5</sup>. This misadventure continues to plague surgical practice because preventive measures which should be routine are either not taken lightly in many theatres or dispensed with altogether. Retained abdominal sponges not detected and removed immediately after surgery may present as a spectrum of manifestations<sup>2-3, 7-10</sup>, some of which are life threatening. In acute cases, abscesses and intestinal fistulae dominates while chronic forms are characterized by aseptic masses which may remain asymptomatic or present years later. The bowel often bears the brunt of attempt to expel the foreign body resulting in intestinal complications like paralytic ileus, perforation, fistula and intestinal obstruction. Clinical suspicion of post laparotomy retained sponge

may be relegated to the background where awareness is low because the manifestations are more likely to be confused with commoner post-operative complications. We present the case of a lady who had acute presentation with fistula after removal of sponge following Caesarean section.

## Patient and Observation

Mrs. X is a 27 year old married woman who got admitted in our hospital (AKMMCH) for foul smelling discharge through a wound which was located at the left side of a transverse /Pfannenstiel scar. She had a history of LUCS on 05.06.2020, 3 days later she developed fever which was continuous in nature and more raised at night. Chills and rigor were present. Highest recorded temperature was 103°F which was subsided by taking medications. She also had pain at the operative area. Then she was admitted in another hospital and on 30.07.2020, they explored the wound and removed foreign body

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(Mop). In the immediate post-operative period there was pain and feculent discharge from left side of the wound and she got admitted in this hospital for further management. She had her first menses at 14 years of age and her menstrual cycle was regular at 28 days. She is normotensive, non-diabetic, and non-asthmatic. All of her family members are in good health. She maintains good personal hygiene. She transfused 10 units of blood in this period. On physical examination, the general condition was good and vital parameters were as follows: a blood pressure of 100/60 millimeters of mercury, a respiratory rate of 20 cycles per minute, a pulse rate of 100 pulsations per minute and a temperature of 99°F. At the head, neck and chest, the physical findings were normal. There was a scar corresponding to Pfannenstiel's incision and an opening at the left side of the scar discharging fecal substance. Abdomen was slightly distended, no abdominal mass was present. Bowel sound was present. The working diagnosis was enterocutaneous fistula. The following work up was done: the full blood count showed a moderate hypochromic and normocytic anaemia and normal leucocytes and platelet count. CT scan showed remarkable air collection with air fluid level in anterior wall of lower abdomen, communicating with peritoneal cavity and skin surface. Herniation of small bowel loop in to the anterior and right lateral abdominal wall. Inflammatory changes were present in adjacent soft tissues. After counseling and informed consent, laparotomy was carried out through right paramedian incision and on laparotomy, ileum was found completely transected, eroding the neighbouring omentum and intestinal loop. There was some intraperitoneal collection. Two ends of the bowel loops were exteriorised. Thorough peritoneal wash was given and abdomen was closed by keeping two drains in situ (Fig.1). Her post-operative period was uneventful and she was discharged.

On 01.11.20, patient was re-admitted for restoration of gut. We performed stapled ileostomy closure for the first time in this hospital on 05.11.20. Post-operative period was uneventful and the patient was discharged on 09.11.20.



**Fig. 1:** Showing Right Paramedical Incision and Old incision

### Discussion

Risk factors of textiloma include: emergency surgery, unexpected change in surgical procedure, high body mass index, change in nursing staff during procedure, female sex, high volume of blood loss, high surgical risk, increased number of peri-operative personnel involved, increased number of specialty teams involved. The patient in the present report underwent a Caesarean section in a thana level clinic. The final count of surgical items was not done at the end of the surgery and no sign out form was filled. This denotes a very common surgical malpractice or mistake in our setting. Indeed there is no clear policy for instruments, sponges and needles counts. Moreover the operating room manager who also stands as quality coordinator is not always present during procedure<sup>10,11</sup>.

The laps of time between casual surgery and the discovery of the forgotten textile material (sponge/swab/towel/gauze) vary from few minutes to forty years. The most frequent locations of textiloma are: the abdomen (56%), the pelvis (18%) and thorax (11%)<sup>12,13,14</sup>. Retained surgical sponge consists of a cotton matrix that undergoes several changes in the body; the first day it triggers an exudative inflammatory reaction which can remain aseptic on one hand, leading to a granulation tissue after one

week and to a fibrous envelope two weeks later; calcification and encystment can occur. On the other hand, that initial exudative inflammatory site can get infected and form abscess<sup>10,15</sup>. Symptoms depend on the location and the possible migration of the retained gauze /mop and the type of the local tissue reaction (infectious or aseptic); infectious reaction leads to early manifestation and recognition of the condition whereas in case of aseptic reaction, the diagnosis can be made several decades later. Manifestations of abdominal and pelvic textiloma include fever, nausea, pain, mass, digestive fistulas, intestinal occlusion, abscess, peritonitis, foul smelling vaginal discharge<sup>14</sup>. Discrepancies in surgical counts can lead to early recognition of a retained sponge by radiography in the operation room in case the sponge has a radio-opaque marker<sup>16,17</sup>. In case we herein report no surgical count was reported in the post-operative note.

Our patient presented to us with a discharging wound in the left side of the abdominal scar with a history of removal of a mop 5 days before and before that she had a history of Caesarean section. She went to a doctor with abdominal pain, fever and discharge from her wound site. That doctor performed a laparotomy and removed the mop but symptoms did not subside and discharge became feculent and larger in amount. After 5 days of her removal of mop, she came to us with enterocutaneous fistula.

Surgical removal of the forgotten sponge is the cornerstone of textiloma case. This procedure can be done by laparotomy or by laparoscopy. Laparoscopic retrieval of textiloma is indicated in selected cases where there are no complications where the forgotten swab is small and encapsulated<sup>16</sup>.

Outcome after ablation of textiloma is often favourable. Morbidity is mainly due to complications. Mortality rate reported in literature is 18.9%. True mortality rate may be higher because fear of litigation prevents practitioners from reporting deaths due to this medical mistake<sup>17</sup>.

## Conclusion

Forgetting a textile surgical item (sponge, gauze or towel) on the surgical site is a rare but serious medical

mistake. Prevention can easily be achieved by adapting and implementing policies of systemic count of surgical items in operating rooms and by using only radio-opaque sponges. Textiloma is the differential diagnosis of all abdominal and pelvic masses and occlusive syndromes in patients with previous surgeries and those sites should always be considered. Hiding the diagnosis to a patient and her family is not ethically correct but the team did not want to leave space for claim. We must be more careful about the count of compresses and other instruments before, during and after surgery. This avoids the cost associated with morbidity and prosecution.

## Authors' contributions

Prof. Abdus Salam Arif was in charge of overall supervision and management of the patient and performed the surgery and edited the main script. Dr. Md. Sofiul Alam followed up the patient peri-operatively, prepared and wrote the main script. Dr. Fariha Anam collected the detailed history and documents and followed up the patient. Dr. A. T. Tahmid and Dr. K.N. Maria followed up the patient post operatively. All the authors have read and approved the final version of the main script.

**Conflict of interest:** None.

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# A case of Multisystem Inflammatory Syndrome in Children (MIS-C)

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## ABSTRACT

Multisystem inflammatory syndrome in children (MIS-C) is a systemic disorder involving persistent fever, extreme inflammation and organ dysfunction, which is temporally associated with exposure to COVID-19. onset may be delayed or contemporary with ongoing SARS-CoV-2 infection. Here we present a case of 4-year-old girl, who was presented with high grade fever, bilateral non-purulent conjunctivitis, generalized macular rash, dry and cracked lips with strawberry tongue, abdominal pain and diarrhoea, having contact with patient of COVID-19. She had neutrophilic leukocytosis with thrombocytosis and very high inflammatory markers, CXR demonstrated bilateral peripheral patchy opacities, RT-PCR for COVID-19 was negative. According to diagnostic criteria this patient was diagnosed as Multisystem inflammatory syndrome in children (MIS-C) which is temporally associated with COVID-19 and treated successfully.

**Key words:** Multisystem inflammatory syndrome in children (MIS-C), SARS-CoV-2, COVID-19.

## Introduction

Coronavirus disease 2019 (COVID-19) is defined as illness caused by a novel coronavirus named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which was first identified in Wuhan, Hubei province, China in December 2019<sup>1</sup>. Since then, COVID-19 has become a worldwide health problem threaten the life of people. On 11 March 2020, the World Health Organization (WHO) classified the outbreak as a pandemic<sup>2</sup>. COVID-19 infection has been reported in all age groups though the clinical characteristics, disease progression and outcome in children so far appeared milder. But a new serious of COVID-19 presentation emerged in late April in the form of Paediatric inflammatory multisystem syndrome temporally associated with COVID-19 (PIMS-TS). Since the first reports from London, UK, in late April, 2020, many countries including the USA, France, Italy reports such cases<sup>3-6</sup>

Multisystem inflammatory syndrome in children (MIS-C), or paediatric inflammatory multisystem syndrome (PIMS/PIMS-TS), is a rare systemic illness involving persistent fever and extreme inflammation following exposure to SARS-CoV-2, the virus responsible for COVID-19<sup>7</sup>. The case definition for MIS-C includes the children 0-19 years age, who have Fever and elevated inflammatory markers for 3 days or more and have any two of the following: (A) rash or bilateral non-purulent conjunctivitis or mucocutaneous inflammation signs (oral, hands, or feet); (B) hypotension or shock; (C) features of myocardial dysfunction, pericarditis, valvulitis, or coronary abnormalities; (D) evidence of coagulopathy (elevated prothrombin time, partial thromboplastin time, and elevated D-dimers); and (E) acute gastrointestinal problems (diarrhoea, vomiting or abdominal pain) and exclusion of other microbial cause of inflammation.

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The child should have evidence of SARS-CoV-2 positive RT-PCR, antigen test, or serology; or any contact with patients with COVID-19<sup>8</sup>. Knowledge of this newly described syndrome is evolving rapidly<sup>9</sup>. Its clinical features may appear somewhat similar to Kawasaki disease, a rare disease of unknown origin that typically affects young children, in which blood vessels become inflamed throughout the body. It can also show features of other serious inflammatory conditions of childhood, including toxic shock syndrome and macrophage activation syndrome<sup>10</sup>. Here we have reported such a case of MIS-C in this pandemic situation of COVID-19 who had clinical presentation similar to Kawasaki disease.

### Case report

A 4-year-old girl with no significant past medical history presented with fever for 5 days which was continued and highest recorded temperature was 104°F. Along with fever she developed generalized macular rash, abdominal pain and diarrhoea. With these complaints the child was admitted in pediatric department of Anwer Khan Modern Medical College hospital. There was no family history of vasculitis, autoimmune disorders. However her one of family member had a brief febrile upper respiratory infection 3 weeks back, who was diagnosed as a case of COVID-19. On examination she was lethargic, febrile with temperature 104° F. She had bilateral non-purulent conjunctivitis, dry and cracked lip with strawberry tongue, macular rash in the back, legs including buttock which was non palpable not blanch on pressure, peeling of skin in both palms and soles including nails. Her respiratory rate was 30 breaths per minute, heart rate was 120 beats per minutes, Blood pressure was 80/50 mm of Hg and SpO2 was 97% in room air and there was no sign of meningeal irritation. The laboratory findings showed neutrophilic (85%) leukocytosis with thrombocytosis and very high ESR (102 mm in 1<sup>st</sup> hr), CRP (123 mg/dl), S. Feritin (523ng/dl) and D-dimer (0.95 mg/dl). Her CXR demonstrated bilateral peripheral patchy opacities with no focal consolidation, effusion. Though she had tachycardia, her color doppler echocardiography was normal, no coronary aneurysm noted, blood culture had no growth and RT-PCR for COVID-19 was negative. The baby was treated with

antibiotic Inj. Meropenam intravenous 500mg 8 hourly, intravenous immunoglobulin (IVIG) 28 gm (2 gm/kg) IV infusion over 10 hours single dose and aspirin initially 700mg (50 mg/kg/day) plus inj. Dexamethasone 6mg/day up to the defervesce. No anti-viral therapy was given. After 6<sup>th</sup> day of treatment all the inflammatory markers were normalized and the patient was improved remarkably and discharged with aspirin 75mg (5mg/kg/day) for 8 weeks and advised an echocardiogram after 1 month.



**Figure 1:** Cracked lip and Strawberry tongue



**Figure 2:** Peeling of skin of fingers

## Discussion

In the current COVID-19 pandemic, there have been increasing observations of an inflammatory illness occurring in children; most reports were 4–6 weeks after the peak of COVID-19 infections in the affected population<sup>11,12</sup>. On April 2020, first reported case of a 6-month-old infant, presenting with persistent fever and minor respiratory symptoms, who was diagnosed as Kawasaki disease and had a positive RT-PCR result for SARS-CoV-2<sup>13</sup>. On April 24, 2020, the UK National Health Service had issued an alert on an emerging paediatric inflammatory multisystem disorder.

Though clinical features vary in Children with MIS-C but all affected children have persistent fever, □ other clinical features vary<sup>7,14</sup>. Most common symptoms are abdominal pain, diarrhea and vomiting<sup>7</sup>. This rare syndrome shares some common features with other paediatric inflammatory conditions like Kawasaki disease(KD) and streptococcal toxic shock syndrome<sup>10</sup>. The differential diagnosis for a previously healthy 4-year-old child with prolonged fever, mucocutaneous findings, multisystem involvement, and markedly elevated inflammatory biomarkers is broad, including a wide range of infectious, post infectious, and autoimmune inflammatory diseases. During this pandemic situation, there has been a remarkable increase in the number of reported cases similar to our patient, which at best overlap with the findings previously diagnosed as KD. One center in Italy reported a 30-fold increase of KD cases during the COVID-19 outbreak as compared to the previous years<sup>5</sup>. Reports from Europe and the USA describe numerous children with MIS-C similar to KD<sup>15,16</sup>. In compare MIS-C to KD our patient shared several manifestations of both the diseases. However gastrointestinal symptoms, very high inflammatory markers are unusual for KD<sup>5</sup>. Though this patient had thrombocytosis which is common in KD, but thrombocytopenia is more common in MIS-C<sup>17</sup>.

Our patient met the diagnostic criteria for MIS-C (according to WHO definition) with negative SARS-CoV-2 RT-PCR. Because MIS-C usually manifests 3-4 weeks after SARS CoV-2 infection this is why many children were negative RT-PCR at the time of MIS-C evaluation<sup>5</sup>. In U.K. only a third of the patients were RT PCR positive for COVID-19, however a very high number of kids tested positive for coronavirus antibodies<sup>6</sup>. There is a recommendation

that RT-PCR negative patient should have serological test done, but facilities for doing serological test is not available here. Various clinical complications can occur like heart failure, acute respiratory failure, acute kidney injury and increased blood coagulation, shock may take place. Coronary artery abnormalities can develop, ranging from dilatation to aneurysms<sup>17</sup>.

All children with MIS-C should be managed with multidisciplinary approach (paediatric intensive care, paediatric infectious disease, cardiology, rheumatology/immunology)<sup>18</sup>. In a study in Italy all patients were administered intravenous immunoglobulin at 2 g/kg<sup>19</sup>. Based on risk stratification, patients were also treated with aspirin at 30-50 mg/kg per day for 5 days followed by 3-5 mg/kg/day for 8 weeks. Corticosteroids Inj. methylprednisolone at 10-30 mg/kg per day for 3 days, followed by a tapering of oral steroid 1-2 mg/kg over 2 weeks may also considered in MIS-C patients presents like KD<sup>20</sup>. Our case is one of a few MIS-C cases diagnosed in Bangladesh. The patient improved dramatically on sixth day after treatment because of early identification and intervention. This life-threatening disease has proved fatal in under 2% of reported cases. Early recognition and prompt specialist attention are essential<sup>7</sup>.

## Conclusion:

COVID-19 children have milder symptoms in majority cases. But this new serious complication (MIS-C) needs intensive care and treatment especially with IVIG and corticosteroids.

**Conflict of interest:** None.

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# How Early, Reinfection of COVID-19 can Occurred- A Case Report

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## ABSTRACT

The efficacy and duration of protective immunity made by infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is unknown. In studies of immunity to other corona viruses, loss of immunity can occur within 1–3 years. But how long this SARS-CoV-2 gives immunity to reinfection is not well understood. In this case report, we describe a 40-year-old male patient presented with two different episodes of SARS-CoV-2 infection (COVID-19 illnesses) within two months period.

**Key words:** severe acute respiratory syndrome coronavirus 2, SARS-CoV-2, reinfection, immunity.

## Introduction

Coronavirus disease 2019 (COVID-19), caused by the severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2), now has become a global severe public health problem.<sup>1</sup> Since the beginning of the pandemic, it spread across the world, and many unanswered questions about COVID-19 remain.

Infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) leads to an immune response and formation of neutralizing antibody, but immunity of previously infected individuals to reinfection with SARS-CoV-2 is not well understood. Usually antibodies have been detected a few days after the onsets of infection.<sup>1,2</sup> However, if previous infection gave immunity to subsequent infection with SARS-CoV-2 then how long period it will protect us is questionable. It is unknown whether all infected patients produced adequate protective immunity or how long this effect remains.<sup>1,2</sup> We present a case report of SARS-CoV-2 infection who had two different episode of COVID-19 illnesses within 2 months of period.

## Case Report:

A 40-year-old known hypertensive, diabetic, obese male presented with low grade fever, body aches for 3 days followed by irritating dry cough. He gave history of contact with COVID patients among his family members. On clinical examination, his blood pressure was 130/80 mmHg, and his pulse was 96 beats/minute and regular. The rest of his examination findings were unremarkable. On Laboratory investigation, CBC, SGPT, S. Creatinine, D-dimer, S. Ferritin, Procalcitonin, Chest X-ray all were normal. Only CRP was raised (table-I). High-Resolution Computed Tomography (HRCT Scan) of the chest revealed normal findings. Nasopharyngeal and oropharyngeal swab test for COVID-19 was positive on quantitative reverse-transcriptase-polymerase-chain reaction (qRT-PCR) assay on 15 September, 2020. He was categorized as a Mild case of COVID-19 infection and improved within 10 days with conservative treatment (Azithromycin, Ivermectin, Fexofenadine, Paracetamol).

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On 25<sup>th</sup> September 2020 he was retested for COVID-19 by RT-PCR from nasopharyngeal and oropharyngeal swab and test report came negative. After 15 days of isolation, he again join to his professional life.

Unfortunately on 20<sup>th</sup> November 2020, he again developed high grade fever, severe body ache and severe irritating dry cough with occasional chest tightness at night. He attended a family program 3 days back. This time he again positive for COVID-19 on RT-PCR from nasopharyngeal and oropharyngeal swab sample on 25<sup>th</sup> November 2020. HRCT Scan of chest showed featured of early stage pulmonary inflammation along with multifocal ground glass opacities with random distribution in periphery of right lung. Laboratory investigations findings are compared in Table-I. This time he was categorized as a case of COVID-19 associated pneumonia. He was treated with C-amoxiclav, Ivermectin, Fexofenadine, Montelukast, Paracetamol, Rivaroxaban and Favipiravir. He was quarantined for 3 weeks and repeated RT-PCR for SARS-CoV-2 was negative. On follow up visit after one month, he was in good health with occasional generalized weakness.

**Table-I:** Comparison of investigations findings during two episodes of COVID-19.

| Investigations             | 15 <sup>th</sup> September 2020 | 25 <sup>th</sup> November 2020      |
|----------------------------|---------------------------------|-------------------------------------|
| HB%                        | 15 g/dl                         | 16 g/dl                             |
| ESR                        | 15mm                            | 12mm                                |
| Total WBC count            | 5,320/Cmm                       | 6150/Cmm                            |
| Lymphocytes (differential) | 29%                             | 24%                                 |
| Neutrophil (differential)  | 65%                             | 72%                                 |
| Platelet count             | 1,93,000/Cmm                    | 1,89,000/Cmm                        |
| S. Creatinine              | 1.00 mg/L                       | 0.96 mg/dl                          |
| SGPT                       | 30 U/L                          | 17 U/L                              |
| CRP                        | 15.9 mg/L                       | 8.1 mg/L                            |
| D-dimer                    | 0.10 mg/L                       | 0.08 mg/L                           |
| S. Ferritin                | 111.70 ng/ml                    | 114.6 ng/ml                         |
| Procalcitonin              | <0.01 ng/ml                     | 0.05 ng/ml                          |
| S. LDH                     | 108 U/L                         | 122 U/L                             |
| Chest X-ray P/A view       | Normal                          | Normal                              |
| HRCT Chest                 | Normal                          | Ground glass opacity in right lung. |

Note: HB- Hemoglobin, ESR- erythrocyte sedimentation rate, WBC- white blood cells, SGPT- Serum glutamic pyruvic transaminase, CRP- C Reactive protein, LDH- lactate dehydrogenase, HRCT- High-Resolution Computed Tomography.

### Discussion:

The COVID-19 pandemic in Bangladesh is part of the worldwide pandemic of coronavirus disease 2019 (COVID-19). Since its first detection in Bangladesh on March 2020, the pandemic has spread day by day over the whole nation with increasing numbers of affected people. Between 8 March 2020 and 24 January 2021, according to the DGHS, Bangladesh, Press Release <<https://corona.gov.bd/press-release>> there were five hundred thirty-one thousand seven hundred ninety-nine(531,799) COVID-19 confirmed by rRT-PCR, Gene Xpert and Rapid Antigen tests including eight thousand twenty-three(8,023) related deaths (CFR1.51%). Bangladesh is the top 30<sup>th</sup> country in the world and accounts for 0.55% of the COVID-19 disease burden of the world.<sup>3</sup>

Reinfection with COVID-19 is rare, with only a few of cases reported among the 42 million cases worldwide. The susceptibility of previouslyinfected patients to reinfection is not clear. COVID-19 reinfection have been reported in Hong Kong, Netherlands, Belgium, Ecuador, Israel, Bangladesh and Australia.<sup>4,5</sup>We have innate and adaptive immunity. When any viral infection occurs, IgM antibodies typically appear within one to two weeks. These antibodies act against the virus and then it begin to disappearwithin 2 to 3 months. A few weeks after an infection has cleared, IgG antibodies appear. Typically, IgG levels persist for many years and give immunity to that virus.<sup>4</sup>

Most of the SARS-CoV-2 infected patients developed detectable antibodies after 10–14 daysof symptom appears, though antibody levels in patients with mild disease may be very low or undetectable.<sup>6</sup>Studies have shown that, long-term immunity to coronaviruses is not that effective. Previous studies of MERS and SARS-CoV infections have shown that total binding and neutralizing antibodies to these

infections decrease over 1 to 3 years.<sup>7,8</sup> Previously infected person shows limited to protect themselves from reinfection. Studies have also shown that patients with more severe illness and prolonged viral shedding had higher antibody titers with longer protection.<sup>9</sup>

Our patient showed increased symptom severity and more lung involvement during his re-infection. Prior case reports showed that patients with mild or asymptomatic disease appear more likely to get re-infected.<sup>4</sup>

### Conclusion:

A major limitation of our case study is that we were unable to undertake any assessment of the immune response like; antibody test because antibody test still not approved by our government. We also could not assess the effectiveness of the immune responses (eg, neutralizing antibody titers) against SARS-CoV-2 during his infective episodes. Neutralizing antibody assessment is a mandatory component to understand the immune response to both natural infection and vaccination. Previous exposure to SARS-CoV-2 might not guarantee total immunity to reinfection. All individuals, whether previously diagnosed with COVID-19 or not, should take proper precautions to avoid infection with SARS-CoV-2. More multi centered study should carry out to understand its immunogenicity.

**Conflict of interest:** Authors have no conflict of interest.

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- b. Authors names, name of the department and institutional affiliations.
- c. The source of a work or study (if any).
- d. Contact information for corresponding author (The name, mailing address, telephone and e-mail address).
- e. The number of figures and tables. Total words count.

**2. Abstract**

A structured abstract of not more than 250 words are essential for original research article. It should be organized with the headings of Background (includes aims, hypothesis or objectives), Methods (includes patient population, procedures and data analysis), Results & Conclusions. This should be self explanatory without reference to the text. The first time an abbreviated term is used, spell it out in full and follow with the abbreviation. At the end of the abstract, there should be 2-3 key words.

**3. Main Text**

Main text should be divided into following pattern according to the type of article

- a. Original Article:** Introduction, Materials and Methods, Results, Discussion, Conclusion & References.
- b. Review Article:** Introduction, Discussion, Conclusion & References.
- c. Case Report:** Introduction, Case Report, Discussion, Conclusion & References.

**Introduction:** Provide a background of the study (what is, the nature of the problem, its significance). It should be very specific, reasoning and what the study aim to answer. Stat the specific purpose, both the aims and objective should be clear. Provide only directly pertinent primary references and do not include data or conclusion from the work being reported.

**Materials & Methods:** Provide technical information about the study. Do not describe methodological details. Describe your selection of the subjects (patients or laboratory animals) clearly. Identify the methods, apparatus and procedures in sufficient details to allow other worker to reproduce the results. Identify precisely all drugs and chemicals used including generic names, dose & route of administration.

**Results:** Present your results in logical sequence in the text, tables, and illustrations. Do not repeat in the text all the data in the tables or illustrations; emphasized or summarize only important observations.

**Discussion:** Emphasize the new and important aspects of the study and the conclusions that follow from them. Do not repeat in detail data or other material given in the introduction or the results section. Describe the implications of the findings and their limitations, including implications for future research. Correlate the findings to the other relevant studies.

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**Conclusion:** Link the conclusions with the goals of the study but avoid unqualified statements and conclusions not completely supported by your data. Recommendation when appropriate may be included.

#### **4. Acknowledgement**

**At an appendix to the one or more statements should specify**

- a. Contributions that need acknowledgement but do not justify authorship, such as general support by a department or departmental chairman;
- b. Acknowledgement of technical help;
- c. Acknowledgement of financial and material support;
- d. Author should obtain written permission for everyone acknowledged by name; etc.

#### **5. Conflict of interest**

All authors should disclose in their manuscript any financial or other substantive conflict of interest that might be construed to influence the results or interpretation of their manuscript.

#### **6. Reference**

Reference should be written in modified Vancouver style, follow the ICMJE guidelines (<http://www.icmje.org>). Reference citations in the text should be identified by numbers. (e.g.4). Number the references in order of their first appearance in the text (not alphabetically). Once a reference is cited, all subsequent citations should be to the original number.

##### **a. Standard journal article**

Siddiqui MR, Mondol BA. Ischaemic Stroke as a Presenting Feature of Polycythemia Rubra Vera- A Case Report. AKMMC J 2013; 4(1): 45-7.

##### **For more than six authors**

Rose ME, Huerbin MB, Melick J, Marion DW, Palmer AM, Schiding JK, et al. Regulation of interstitial excitatory amino acid concentrations after cortical contusion injury. Brain Res. 2002; 935(1): 40-6.

Optional addition: PubMed PMID: 19329464 or doi.....etc.

##### **b. Organization as author**

Diabetes Prevention Program Research Group. Hypertension, insulin and proinsulin in participants with impaired glucose tolerance. Hypertension 2002;40(5):679-86.

##### **c. Volume with supplement**

QT Islam, MR Siddiqui, A Hossain, E Mustafa, MY Rahman, H Sina. Legg-Clave-Perthes Disease: A Rare Cause of Bilateral Avascular Necrosis of the Hip Joints. AKMMC J 2013; 4 Suppl 2: S40-1.

##### **d. Issue with supplement**

Glauser TA. Integrating clinical trial data into clinical practice. Neurology. 2002;58(12 Suppl 7):S6-12.

##### **e. Article published electronically ahead of print version**

Yu WM, Hawley TS, Qu CK. Immortalization of yolk sac-derived precursor cells. Blood. 2002 Nov 15;100(10):3828-31. Epub 2002 Jul 5.

##### **Book and other monographs**

**f. Personal author(s)**

Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA. Medical microbiology. 4th ed. St. Louis: Mosby;2002.

**g. Editor(s), compiler(s) as author**

Gilstrap LC 3rd, Cunningham FG, VanDorsten JP, editors. Operative obstetrics. 2nd ed. New York: McGraw-Hill; 2002.

**h. Author(s) and editor(s)**

Breedlove GK, Schorfheide AM. Adolescent pregnancy. 2nd ed. Wiecezorek RR, editor. White Plains (NY): March of Dimes Education Services; 2001.

**i. Chapter in a book**

Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. In: Vogelstein B, Kinzler KW, editors. The genetic basis of human cancer. New York: McGraw-Hill; 2002. p. 93-113.

**j. Article on the internet**

World Health Organization. The world health report 2002 - Reducing risks, promoting healthy life [homepage on the Internet]. 2008 [cited 2008 Oct 10]. Available from: [http://www.who.int/ whr/ 2002/en/](http://www.who.int/whr/2002/en/)  
National Institute for Health and Clinical Excellence. Type 2 13 diabetes-newer agents (partial update of CG66). (Clinical guideline 87.) 2009. <http://guidance.nice.org.uk/CG87>.

**7. Illustrations:** Illustrations submitted (line drawings, halftones, photos, photomicrographs, etc.) should be clean originals or digital files. Digital files are recommended for highest quality reproduction and should follow these guidelines:

- 300 dpi or higher
- sized to fit on journal page
- EPS, TIFF, and PDF formats are preferred. JPG and GIF formats are acceptable
- submit as separate files, not embedded in text files
- Colour photographs, tables, illustration can be published on payment (Per colour figure Tk 1000/- with maximum of 3 figures for one article)

**8. Tables and Figures:** Tables should be embedded in the text. All figures should be included as one separate sheet or file. A short descriptive title should appear above each table with a clear legend and any footnotes suitably identified below. All units must be included. Figures should be completely labeled, taking into account necessary size reduction. Captions should be typed, double-spaced, on a separate sheet. All original figures should be clearly marked in pencil on the reverse side with the number, author's name, and top edge indicated.

**9. Footnotes:** For uniformity of style, authors should use symbols for footnotes such as \*, §†,‡.

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