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Editorial

E-learning in Medical Education: A Novel Challenge in the COVID-19 Pandemic

The onset of the COVID-19 pandemic resulted in the closure of all educational institutions, including medical institutions globally. As the sustained closure of medical colleges progressed it became imperative to the institutions to set up e-learning facilities for the continual of the academic year. As a result different e-learning platforms like Cisco WebEx, Adobe Connect, Wimba, and video conferencing tools like Google Meet, Microsoft Teams and Zoom were highly popularized.[1,2] These tools and technology were generally very efficacious in facilitating teaching of essential course con- tent. In fact, these remote lecture classes often had better attendance than many of their 'in-person' counterparts, perhaps owing to the ease and convenience of being able to access them from home. Medical education in many parts of the world is divided into pre-clinical and clinical years. With the evolution of e-learning it was found that the pre-clinical years remained comparatively less affected by the closure of medical colleges, while all institutions came to a standstill as regards to providing a suitable alternative for clinical exposure.

E-learning is not a new concept; however, for many of us physicians—particularly academic physicians—it is a shift away from our traditional classroom teaching model for students and trainees. It is our hope that this pandemic, despite its many costs, has provided an avenue of rapid growth in e-learning and as a result the engaging and interactive online learning environments will supplant the banal slide presentation. Moving forward even after the COVID-19 pandemic, in addition to online teaching, telemedicine, remote observation, virtual cases, and simulation can be incorporated in the curriculum of medical education. Trainees and students can participate in telehealth visits by collect- ing histories, reviewing records, and charting their findings. History-taking and physical examination skills can be developed by having fellow students act as simulated patients. E-learning is a viable solution for promoting self-directed learning, providing flexible learning opportunities that would offer continuous availability for learners, and engaging learners to augment continuous professional development. Within a clinical context, the effect of internet-based continuing medical education (CME) programs is comparable to traditional approaches of CME.[3] With all the new found technology at hand students can have a more robust education which was unforeseen before the pandemic.

An evolving emphasis within medical education on lifelong learning and competency-based education has forced educators to reevaluate their traditional roles. In this changing paradigm, educators no longer serve as the sole distributors of content, but are becoming facilitators of learning and as- sessors of competency. E-learning offers the opportunity for educators to evolve into this new role by providing the students with a set of online resources to facilitate the learning process. Thus devel- opments in e-learning is revolutionizing the medical education, allowing adaptive and collaborative learning, and transforming the role of the teacher (from disseminator to facilitator).[4]

Overall, the coronavirus crisis has unequivocally had a marked influence on medical education, particularly in terms of the delivery of teaching and assessment. However, as the world begins to emerge from this challenging period, it seems possible that this pandemic will leave lasting changes on these basic elements of medical education. Using these new methods of teaching medical institutes can be highly beneficial in the long run.

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Original Article

Postnatal Development of Intrauterine Growth Restricted Newborns - a Prognostic cohort Study in a tertiary care hospital in Bangladesh

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Abstract

Background: Intrauterine growth restriction plays a significant role in short and long term adverse outcome. It is reflected in the relatively high incidence of neurodevelopmental impairment and somatic growth failure. Neurodevelopmental indices (cognition, language and motor) of the intrauterine growth restricted infants at 1 year are lower as compared to the normal birth weight infants. A newborn with asymmetric IUGR has better neurocognitive outcome compared to a newborn with symmetric IUGR.

Objective of the study: To assess the postnatal development of intrauterine growth restricted newborns at 3, 6 and 9 months of age.

Methodology: A Prognostic cohort study was conducted at Department of Neonatology and Department of Pediatric Neurology, BSMMU, from 1st April 2017 to 20th September 2018. It involved monitoring of 31 intrauterine growth restricted newborns and 39 normal birth weight neonates over a period of 9 months. Follow up were done at 3, 6 and 9 month of age. At each visit cognition, both receptive and expressive language; and fine and gross motor development were assessed by Bayley scale of infant and toddler development , third edition (BSID-III).

Results: Mean birth weight were 1748 ±437.09 g and 2893.54±467.07g , birth length 44 ±4.2439 cm and 49.26±1.634cm, birth occipitofrontal circumference 30.76 ±2.380 cm and 34.35±1.083cm, birth chest circumference 24.39 ±1.940 cm and 29.15±2.933cm in IUGR and control group respectively which was statistically significant. The Bayley score for cognition of IUGR infants and control group were at 3 month 5.70±1.393 and 7.26±2.413 which was significant(P =0.015) at 3 month and after multiple regression analysis it was not significant. Mean score for cognition (BSID-III) at 6 and 9 month were not significant. Mean score of both receptive and expressive language (BSID iii) at 3 , 6 and 9 month were not significant. The bayley score for both fine and gross motor development at 3,6 and 9 month were not statistically significant. It indicates that both fine and gross motor development, catch up of development achieved in the first 9 months of age but the lebel was below compared to normal birth weight babies.

Conclusion: During the follow up period, cognition, both receptive and expressive language; and, both fine and gross motor development were achieved at 9 month. The development parameters (cognition, language and motor) were lower than the appropriate for gestational age birth weight newborns.

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INTRODUCTION:

Intrauterine growth retardation, the terminology for infants whose birth weight is below 10th percentile for gestational age[1,2], occurs in 3% to 10% of all pregnancies.[3] Newborns whose head circumference (HC), length and weight (Wt) are all proportionately reduced < 10 percentile for gestational age are considered to be symmetrical IUGR.[2] When newborns weight is reduced out of proportion to length and head circumference are considered as asymmetrical IUGR.[2]

IUGR is associated with lower cognitive scores in school-age children[4]. Preterm small for gestaional age(SGA) infants are at increased risk of impairment in neuromotor, cognitive, behavioural and scholastic attainments compared with preterm non-SGA infants. On the other hand, term SGA infants had problems in scholastic/vocational attainments compared with term non-SGA infants, while adverse neuromotor, cognitive and behavioural outcomes were not consistently observed at higher rates.[5]

Growth in the first year of life is crucial not just for the time being but it has a lifelong implication for IUGR infant because it gets an opportunity to recover its growth deficit of intra uterine life in this period and to catch up with its normal birth weight siblings. These children with poor growth have high rate of mortality and morbidity and they suffer from motor and developmental delay.[6,7]

Neurodevelopmental indices of the IUGR infants at 1 year are lower as compared to the normal birth weight infants. This clinical consequences may not be apparent until later in development; therefore, it is crucial to follow-up these infants. There is paucity of studies regarding growth and development of IUGR babies in Bangladesh.

So the objective of this study was to assess the postnatal development of intrauterine growth restricted newborns.

METHODS

This Prognostic cohort study was conducted from 1st April 2017 to 20th September 2018 in the department of neonatology and Department of Paediatric Neurology,, Bangabandhu Sheikh Mujib Medical University (BSMMU). Prior approval from Institutional Review Board (IRB) for this research work was taken. All IUGR (weight <10th percentile) infants (both term and preterm) admitted in this NICU during study period were included in this study. Appropriate for gestational age neonates were included as control group. Neonates with multiple gestation, congenital malformation and TORCH infection were excluded. After taking informed written consent from the parents / guardians, meticulous history of the newborn were taken, physical examination were done and required information were recorded in a data collection form. Newborn gestational age was calculated on the basis of 1st day of last menstrual period, antenatal ultrasonogram and by modified New Ballard scoring. Gestational age and sex of both groups were matched. Developmental assessment was done at 3, 6 and 9 month of postnatal age by clinical psychologist, using Bailey scale of infant development third edition (BSID iii). Fine and gross motor index, cognitive index and language index (receptive and expressive) were assessed and recorded. Follow up were ensured by time to time communication with the parents/ legal guardian.

After collection, data were entered into a personal computer and were edited, analyzed, and plotted in tables and graphs. Categorical and continuous variables were expressed as number (percentage) and mean± standard deviation (SD) respectively. Comparisons were performed by chi-square test for categorical variables, independent t-test for quantitative variables. Multiple regression analysis was done for confounder of growth and development when data was statistically significant. In this follow up study, losses of follow up were adjusted by simple mean imputation method. $P < 0.05$ was considered statistically significant. Data was analyzed using the IBM SPSS (statistical package for social sciences) Statistics version 20.0 (IBM Corp., Armonk, NY, USA)

RESULTS:

Among total eligible 49 IUGR infants 31 were finally analysed and they were compared with 39 appropriate for gestational age infants.

There was no statistically significant difference between IUGR and control group in baseline characteristics except birth weight (Table -I).

When the Bayley score for cognition of IUGR and control group were done, it was significant at 3 month (table-2) but when multiple regression analysis was done it was not significant (table-3). At 6 and 9 month it was not significant (Table-II).

Mean score of both receptive and expressive language (BSID iii) at 3, 6 and 9 month, it was not significant (table-II).

The Bayley score for both fine and gross motor development at 3, 6 and 9 month, it was not significant (table-II).

Table-I: *Baseline characteristics of enrolled newborn*			
Birth parameter	No. of patients (n) (%) IUGR	No of patients (n) (%) AGA	P value
Mode of delivery			
NVD	6 (19.3)	5 (12.8)	
LUCS	25 (80.7)	34(87.2)	0.337 NS
Place of delivery			
BSMMU	26(83.9)	29(74.4)	
Home	1(3.2)	2(5.1)	0.629 NS
Others	4(12.9)	8(20.5)	
Sex distribution			
Male	18 (58.1)	22(56.4)	0.538NS
Female	13 (41.9)	17(43.6)	
Birth weight (cat.)			
(1000- 1499)	9(29.0)	0	0.0001S
(1500– 2499)	22(71.0)	5(12.8)	0.0001S
≥2500	0	34(87.2)	0.0001S
Gestational age(weeks) Â34	5(16.1)	5(12.8)	
34 — <37	11((35.5)	11(28.2)	0.677NS
≥37	15(48.4)	23(58.9)	
Socioeconomic status			
Low	1(3.2)	1(2.6)	
Middle	27(87.1)	34(87.2)	0.528 NS
High	3(7.7)	4(10.2)	

Table-II : The Bayley scores of development of infants of both IUGR and AGA group at 3, 6 and 9 months of age									
	3 month			6 month			9 month		
	Mean	SD	P value	Mean	SD	P value	Mean	SD	P value
Cognition IUGR AGA	5.77.3	1.42.4	0.015	17.018.6	4.24.6	0.578	24.827.8	4.34.3	0.675
Language(Receptive) IUGR AGA	1.92.2	0.40.9	0.111	4.76.0	1.40.9	0.081	5.87.3	1.30.9	0.065
Language(Expressive) IUGR AGA	1.92.1	0.50.4	0.288	2.83.3	0.90.8	0.544	4.35.7	1.51.1	0.649
Fine motor IUGR AGA	3.43.8	1.00.8	0.106	13.914.3	0.91.1	0.103	19.321.4	2.91.4	0.081
Gross motor IUGR AGA	6.17.5	1.52.3	0.198	13.615.4	3.53.4	0.718	22.428.0	5.25.9	0.152

Independent t test for continuos data. P < 0.05 were considered as significant. NS- not significant, S- significant, AGA- appropriate for gestational age.
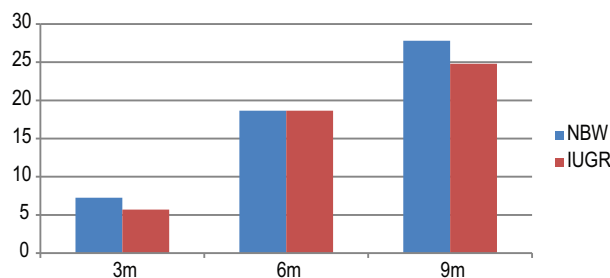

Fig.-1: *Mean values for cognitive score at 3, 6 and 9 months of age for two groups. P < .05 considered as significant*
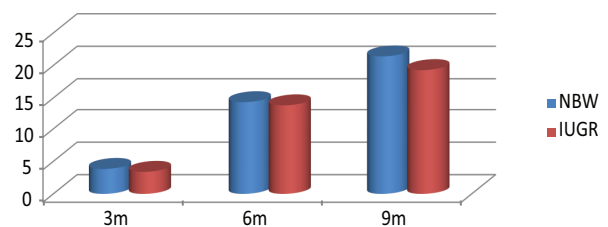

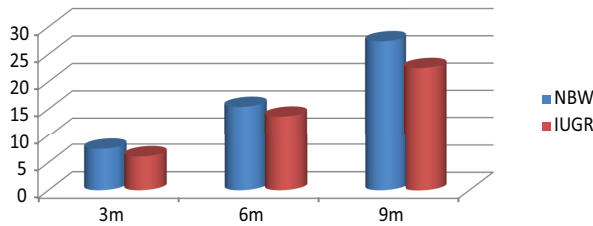**Fig.-2:** *Mean values for fine motor at 3, 6 and 9 months of age for two groups.*

Fig.-3: *Mean values for gross motor at 3, 6 and 9 months of age for two groups.*

Table III: *Multiple regression analysis for cognition at 3 month*

Model	Unstandardized coefficient		Standardized coefficient	P value
	b	Std. error	β	
Constant	8.127	5.074		0.114
Birth weight	0.001	0.001	0.403	0.069
Birth length	0.043	0.116	0.081	0.709

DISCUSSION:

The outcome of IUGR babies depends on whether it was symmetrical or asymmetrical, cause of IUGR and duration of exposure and severity of IUGR.

In this study cognition level of IUGR infants at 3 month were significantly lower but after multiple regression analysis it demonstrated that birth weight and length did not influence on cognition. At 6 and 9 month, cognition level achieved but it was lower than normal birth weight infants. This study also correlated with other studies.[8, 9, 10, 11] Fancourt et al [11] observed that the children who were IUGR had a lower developmental quotient at 4 years of age. Ruys-Dudok et al[12] concluded that small for gestational age infants did worse in many aspects compared to their appropriate for gestational age controls.

The Bayley score of receptive and expressive language showed that there were no difference in language development between two groups but the development were lower than the appropriate for gestational age group. Jose Viller et al[9] concluded that infants who suffered growth retardation in utero could recuperate early in the first month of pregnancy which was similar to our study. Fancourt et al [11] showed that there was a lower developmental quotient in IUGR infants at follow up using Griffith extended scales. Prolonged slow growth in utero

therefore seemed to be followed by slow growth and development after birth which is similar to our study. Fitzhardinge et al[13] showed that speech (reception and expression) was present in small for dates babies which is similar to our study. In other studies, IUGR children have lower nonverbal and verbal intelligent quotient than controls[14]. According to data from the National Collaborative Perinatal Project (1959–1976) the intelligent quotient scores of 2719 IUGR children tested at age 7 were 6 points lower than appropriate for gestational age children.

Both fine and gross motor development achievement of growth occurred in the first 9 months of age but the lebel was below compared to normal birth weight babies. Low et al[10] concluded that there were lower mental and physical development indices at 12 months of age which were due to IUGR babies which was similar to our study. Evidence had been presented of differences in motor follow up of IUGR infants.[15] Fitzhardinge[13] showed that in IUGR infants had minimal cerebral dysfunction identified by poor fine motor coordination. This result was similar to our results.

CONCLUSION :

So this study concluded that all domains of development like cognition, receptive and expressive language; and fine and gross motor development were achieved at 9 months like appropriate for gestational age babies. However cognition was found delayed among intrauterine growth restricted babies when studied at 3 months of age.

RECOMMENDATION:

• Large sample size and follow up for a extended period is required.

• Comparison between IUGR and appropriate for gestational age babies need to be gestational age specific.

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Original Article

Prescribing Pattern of Glucocorticoids in Patients with Rheumatologic Disorders in Outpatient Department of a Tertiary Care Hospital

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ABSTRACT

Background: *Rheumatologic disorder is a major public health problem in Bangladesh. Glucocorticoids are most frequently prescribed drug in the treatment of rheumatic diseases. There is high practice variation regarding the frequency of glucocorticoid use among the rheumatologically facilities which demonstrates the lack of good evidence.*

Objective: *This hospital based cross-sectional descriptive study was done to evaluate glucocorticoids utilization pattern in rheumatology outpatient Department of a tertiary care hospital.*

Materials and methods: *This study was carried out among six hundred purposively selected attending patients of rheumatology clinic of Dhaka Medical College and Hospital (DMCH) during the study period of July, 2018 to June, 2019. All relevant information was recorded on the data collection form. To find out the common glucocorticoids and diseases where glucocorticoids were used, to observe proper indication of glucocorticoid and to evaluate the adherence of the therapy to European League Against Rheumatism guideline.*

Result: *Among attended patients of rheumatology clinic of Dhaka Medical college and Hospital about 83.3% patients received glucocorticoid, among them 70.8% female and 29.2% male. The most common age group of glucocorticoid consumers was 20-40 year (50.8%). The average number of glucocorticoid per prescription was 4.56 and 87.8% encounters were prescribed in trade name and 84.7% were administrated by oral route. The most common prescribed glucocorticoid was prednisolone (47.3%). The most common rheumatic disease where glucocorticoids were used was rheumatoid arthritis (44.2%). Approximately 88.3% therapy was adhered to European League Against Rheumatism guideline. Only 11.7% therapy was not followed European League Against Rheumatism guideline. Among them 9.2% prescriptions were lack of tapering information, and 2.5% was no mention duration.*

Conclusion: *This current study reveals that most of the prescriptions are followed European League Against Rheumatism guideline. Most of the prescriptions are prescribed with trade name. Rheumatoid arthritis is the most common rheumatic disorder for glucocorticoid use. Prednisolone is the commonly prescribed glucocorticoid.*

Key words: glucocorticoids, rheumatic disease, prescribing pattern, tapering, guidelines

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INTRODUCTION

In the world in both developed and developing countries rheumatic disorders are one of the biggest health problem. They are associated with substantial long term morbidity and healthcare cost. About a quarter of adult population in Bangladesh suffers from rheumatic disorders. Among them women are affected more frequently than man.[1]

Rheumatic disorders are characterized by painful disorder of bones, ligaments and tendons or muscles that is not caused by infection or injury. More than 100 different type of rheumatic disorders and some of

them are degenerative arthritis, inflammatory arthritis, infectious arthritis.[2]

In Bangladesh, based on WHO-ILAR-COPCORD (International League of Association for Rheumatology-Community Oriented Program for the Control the Rheumatic Diseases) prevalence of musculoskeletal complaints were 33.7%.[3]

In the treatment of rheumatic disorders glucocorticoid play a pivotal role for many decades. They are widely used agent because of they have potent anti-inflammatory properties that rapidly relieve joint pain, swelling and stiffness and also prevent structure damage[4]. In developing countries about two-thirds of rheumatologic patients had taken glucocorticoids which in most cases resulted from inappropriate prescription or recommendations by general physicians, non-rheumatologist specialists, and lay people.[5] The EULAR (European League Against Rheumatism) glucocorticoid task force has already published several recommendations over the last years such as those on the standardized nomenclature for glucocorticoids dosages and treatment regimens, on the management of systemic glucocorticoids therapy in rheumatic diseases and on monitoring adverse events of low-dose to highdose glucocorticoids therapy.[6]

These recommendations also include patient education and use of concomitant therapy to reduce unwanted side effects and special safety advice. Adherence to these guidelines might reduce the adverse effects in patients on glucocorticoid therapy.[7] The current guidelines suggest that use of these drugs should not be stopped abruptly, but rather they should be stopped gradually.[8]

Study from Europe indicate that low dose glucocorticoids below 7.5mg prednisolone equivalent/day are balance between efficacy and adverse events is a favorable one at and below this dose.[9]

According to EULAR re-commendation, several measures have been implicated to reduce glucocorticoid toxicity, such as prescribing it for a clear indication at minimum dose and duration. Patients receiving glucocorticoid should be thoroughly investigated to assess for any possible contraindications. Preventive vitamin D supplements and careful withdrawal over several months should always be mandated with long-term glucocorticoid administration.[6]

In recent study, some patients are taking glucocorticoids for longer than recommendation and increase risk of side effect.[10] The adverse events are associated with glucocorticoids especially when used at high doses for prolong period such as osteoporosis, diabetes mellitus, cardiovascular diseases, infection, weight gain and myopathy.[11] Administration of needless medication could root adverse effects and pharmacological interactions and develop to poly-pharmacy.[12]

Drug utilization study is a process of medical audit that involves monitoring and evaluation of the prescribing patterns of drug and also helps to modify the prescribing practices to achieve rational therapeutic use as well as to prevent the economic load which will improve health care system.[13]

Therefore, monitoring and evaluation prescribing patterns of glucocorticoids are one of the recommended technique to improve the prescribing practices.[14] There is no such study being performed previously in Bangladesh that revealed the utilization pattern of glucocorticoids in rheumatic disease. There is an urgent need to ensure that the patients are always given evidence based, cost effective and safe treatment. For this reason, research on glucocorticoids utilization pattern was done in patient with rheumatologic disorder in out-patients department of a tertiary care hospital.

MATERIALS AND METHODS

This cross-sectional descriptive study was carried out in Rheumatology outpatient department of Dhaka Medical College and Hospital. This study was carried out among six hundred purposively selected attending patients of rheumatology clinic of Dhaka Medical College and Hospital (DMCH) during the study period of July, 2018 to June, 2019. Ethical clearance was taken from ethical review committee of Dhaka Medical College and Hospital authority. This place was selected for convenient of communication and data collection. Patients were selected according to the inclusion and exclusion criteria. Inclusion criteria were patients of both sex and aged (18-80) years and patients diagnosed with rheumatologic disorder and prescribed with glucocorticoid and were attending in rheumatology out-patient department of Dhaka Medical College and Hospital. Exclusion

criteria were pregnant woman and lactating mother, patients who were not willing to give consent, patient were other than rheumatologic disorder and patient got admitted during out-patient-visit.

Procedure of data collection:

Data was collected from Rheumatology outpatient department of Dhaka Medical College and hospital. All relevant information was recorded on the data collection form. Data were evaluated manually. Signature in the informed written consent was taken from the patients after complete explanation of purpose of the study and the picture of those prescriptions were captured by a photo capturing device. If prescription had no glucocorticoid, then it was recorded in data collection form as an entry only to be utilize to calculate the proportion of glucocorticoid. To find out the common glucocorticoids and diseases where glucocorticoids were used, to observe proper indication of glucocorticoid and to evaluate the adherence of the therapy to EULAR guideline. At first compared the prescribed condition with the mentioned diseases of EULAR guideline. When the condition was matched then the selection and dose, duration, and tapering of glucocorticoids mentioned in guideline for the conditioned were compared. Qualitative data were expressed as frequency distribution percentage and quantitative data were expressed as mean ± SD (Standard deviation). Analysis was performed by using a computer based statistical program SPSS version 22.

RESULTS

In this study glucocorticoids were mostly used in the age group 20-40 years 50.8% and mean age of the patients were 54.38 ± 11.42 years. Out of 600 cases female patients were predominant 70.8%. Most of the responded were housewife 38.5%. The most commonly used glucocorticoid was prednisolone 284 (47.3%) followed by deflazacort 224 (37.3%) and triamcinolone 92 (15.4%) (figure-I). The rheumatic condition where glucocorticoids were mostly prescribed for rheumatoid arthritis 265 (44.2%) then Systemic lupus erythematosus 198 (33.0%) (table-I). Most of the prescriptions contained oral glucocorticoid 508 (84.7%) and 92 (15.3%) prescriptions contained by intra-articular route. Triamcinolone was the drug preferred through intra-articular route. Only 12.2% prescriptions were prescribed by generic name. A total of 2735 drugs

were prescribed in 600 prescriptions. Average number of drugs per prescription was 4.56. The mean duration of glucocorticoid therapy of this study was 65.21±11.87 months and no duration mention were 15 (2.51%) (table-II) prescriptions. Maximum dosing of glucocorticoid therapy was low dose (<7.5mg/day) 360 (60.0%) and the mean dosing of glucocorticoid therapy of this study was 12.31 ± 7.69 mg/day. 410 prescriptions were needed to dose tapering of glucocorticoid among them 355 (86.6%) were tapered and 55 (13.4%) were not tapered. In this study 530 (88.3%) prescriptions were followed to EULAR guideline and 70 (11.7%) prescriptions were not followed to EULAR guideline (figure-II). About 55 (9.2%) prescriptions were no tapering formation and 15 (2.5%) prescriptions were no duration mention (figure-III).
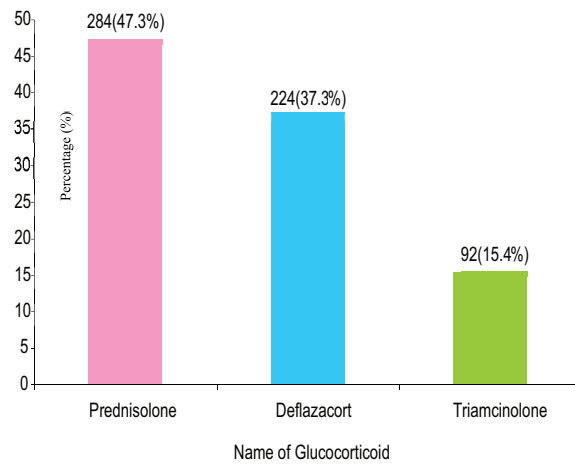
Fig.-1: *Distribution of commonly prescribed glucocorticoid usage pattern.*

Table-I: *Distribution of rheumatologic condition where Glucocorticoid were used. (n=600)*

Name of disease	Frequency (n)	Percentage (%)
Rheumatoid arthritis	265	44.2
Systemic lupus erythematosus	198	33.0
Spondyloarthritis (SpA)	38	6.3
Psoriatic arthritis	36	6.0
Reactive arthritis	23	3.8
Flexortenosynovitis	18	3.0
Dermatomyositis	8	1.4
Polymyositis	6	1.0
Adult onset still disease	6	1.0
Osteoarthritis	2	0.3
Total	600	100.0

Table-II : *Distribution of the respondents according to duration of glucocorticoid*

Duration of Glucocorticoid therapy in month	Frequency (n)	Percentage (%)
< 3	182	30.33
3-6	380	63.33
>6	23	3.83
No duration mention	15	2.51
Total	600	100.0
Mean ± SD	65.21±11.87	

Fig.-2: *Distribution of glucocorticoid prescribed according to EULAR guideline.*

70(11.7%)
530(88.3%)
Prescriptions according to guideline
Prescriptions not stated in guideline

Fig.-3: *Distribution of glucocorticoid prescriptions not stated in guideline.*

15(2.5%)
55(9.2%)
No tapering information
No duration mention

DISCUSSION

This study was carried out to observe the pattern of utilization of glucocorticoid in rheumatologic disorders. In rheumatic diseases, inappropriate glucocorticoid therapy is strongly associated with an increased risk of serious adverse effects with increased risk associated with increased doses.

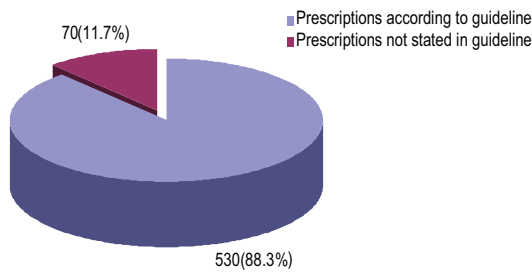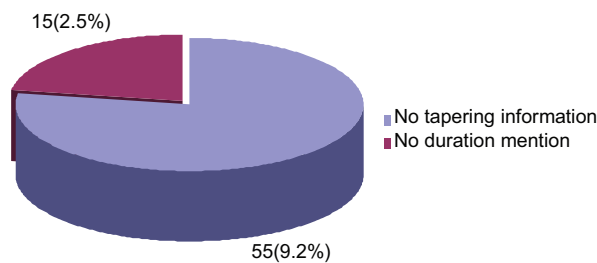In this study the demographic profile showed that female (70.8%) patients were higher than male (29.2%). Similar findings were found to the study conducted at Karuna Medical College, India where female 81.39% and male 18.6%.[2] Another study was

carried out over 6 months at General hospital in Mexico where female 78.95% and male was 21.05% [5]. Female predominance may be due to reasons like the influence of hormonal factors and X linked genes involved in pathogenesis of rheumatic diseases[15]. The predominant age group of this study was 20-40 years (50.8%) similar studies done in France and India where finding were 20-40 years' group 58.8% and 55.18% respectively[2,16].

According to Venkateswaran, Dhanasekaran and Rajavelu, 2019, the most common age group was 51-60 years (36%) which is not comparable to the present study [17]. The mean patient age was 54.38 with standard deviation was 11.42 years of this study, similar finding was found to study conducted in USA where mean age was 53.55 years and standard deviation was 14.61 years.[18] Average number of drugs per prescription is an important parameter of a prescription. In this study the average number of drug per prescription was 4.56 similar to the study conducted in India, where average number of drug per prescription was 4.97[15]. The higher value 10.56 was found in a study done in India by Venkateswaran, Dhanasekaran and Rajavelu, 2019.[17] But all the results are deviated from the WHO recommended value for the average number of drugs per prescription which is less than 2.

This variation might be due to difference in socio-demographic features of the patients, pattern of health care delivery system and pattern of disease morbidity and mortality profile to the specific geographical area. Rheumatic disorder is a chronic in nature, for this reason many patients require more than one medication to keep the disorder in control.[19] Prescribing drug by generic name can promote the rational use of drug with regard to safety, efficacy and cost by identifying the product with its scientific name. In this study, 12.2% glucocorticoids are prescribed in generic name which was very lower than the WHO standard value of 100%. In a study conducted in India where prescribed in generic name was 23.07%.[14] In contrast to the result of present study higher percentage of drugs prescribed by generic name found in India (100%) by Prabha et al., 2016 which was similar to the standard derived by WHO[15]. In our country, practice of not prescribing by generic name may be due to aggressive medicine promotion, tendency of drug seller to dispense drugs of such companies that do not maintains the quality and

efficiency of drugs, faith of prescribers on branded product. In this current study 84.7% encounters were prescribed orally which was similar to the study conducted by Sarju et al., 2016.[2] A study done in India by Deshmukh, Dabhade and Ghongane, 2019 found that most of the encounters were prescribed orally which was 100%.[19] In current study, the most common prescribed glucocorticoid was prednisolone (47.3%), second commonly prescribed glucocorticoid in this study was deflazacort (37.3%) followed by triamcinolone (15.4%) which is similar finding to the study conducted in India by Dabral and Joshi, 2018 where common prescribed glucocorticoid was prednisolone [20]. Others studies had done by Laugesen et al., 2017 and Hernandez et al., 2008 where commonly prescribed glucocorticoid was prednisolone 76.6% and 36% respectively.[11,5] The most common disease in the current study for which glucocorticoids prescribed were predominantly was rheumatoid arthritis (44.2%) followed by systemic lupus erythematosus 33% which was similar to the study by Hernandez et al., 2008 presented rheumatoid arthritis as the most common disease followed by systemic lupus erythematosus.[5] In this study most of the encounters were mentioned duration of glucocorticoid 3-6 months (63.33%) which was similar to the finding observed by Spivey et al., 2018 and also contradictory to the report by Hernandez et al., 2008 where most of the encounters were prescribed duration of glucocorticoid >6month (63%).[18,5] Majority of encounters were mentioned doses of glucocorticoid <7.5mg (60%) which was similar to the study done by Spivey et al., 2018 where doses of glucocorticoid were <7.5mg (90.22%) [18]. The results were not in coherence with study conducted in UK where doses of prescribed glucocorticoid were 7.5-30mg (50%).[10] In this current study majority of encounters were prescribed tapering dose of glucocorticoid 86.6% which was similar to the study in India where encounters were prescribed tapering dose of glucocorticoid was 78%.15%[14]. On the other hand, the study by Sarju et al., 2016 where was lack of tapering information, the prescribed tapering dose of glucocorticoid was 4.65%.[2]

The appropriateness of the use of glucocorticoids in rheumatologic disorder was based on EULAR guideline. Depending on the results shown, the percentage of glucocorticoids used according to guideline in rheumatic disorder was approximately 88.3% of the total prescriptions. Only 11.7% therapy was not followed guideline. Among them 9.2% prescription was lack of tapering information, and 2.5% prescriptions were no duration mention. In a study done by Sarju et al., 2016 where most of the prescriptions were rational but those not mention the guideline based percentage.[2] The result of this study was not found similar to a study done by Hernandez et al., 2008 in Mexico where 86% of prescription were not followed guideline.[5] It is reported in the study that 88.3% of the outpatients were prescribed with glucocorticoids appropriately, which were accepted by EULAR guideline. This rational usage of glucocorticoids decreases the adverse drug reaction, drug interaction and health care cost proportionately. Furthermore, time to time drug utilization studies should be conducted in hospital, which can provide a proper feedback to the prescribers as a success rate of awareness program.

CONCLUSION

On the basis of this study finding it can be concluded that, 88.3% prescriptions were followed EULAR guideline. Most of the prescriptions were prescribed with trade name. Rheumatoid arthritis is the most common rheumatic disorder for glucocorticoid use. Prednisolone is the commonly prescribed glucocorticoid.

Conflict of interest Not declared.

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Original Article

Virus-Associated Olfactory Loss among Covid-19 Patients at a Covid-19 Dedicated Hospital in Dhaka City

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ABSTRACT

Background: COVID 19 is a newly emerged pandemic affecting entire world. Early case detection is crucial for isolating affected individuals from spreading deadly virus. Various symptoms & some atypical presentation has been reported. Anosmia is reported in some affected patients.

Objectives: The purpose of the present study was to find out percentage of COVID 19 positive patients presenting with loss of smell.

Methodology: After obtaining clearance and approval from Institutional Review Board, all patients of COVID 19 who were admitted in Mugda medical college & hospital, Dhaka from April 2020 to March 2021 and had fulfilled the inclusion and exclusion criteria were selected as study population. Each patient was asked about loss of smell as presenting symptom.

Results: In this study mean age of the respondents was 55 years. Loss of smell was presenting feature in 68% of population. Most of the respondent belongs to urban area & were of elderly people (50-59 years of age)

Conclusion: Anosmia is a presenting feature in COVID 19 affected patients.

Keywords: Anosmia, COVID 19

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INTRODUCTION

The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) started in Wuhan in China at December 2019[1]. On 12 January 2020, the World Health Organization (WHO) confirmed that a novel coronavirus was the cause of a respiratory illness in a cluster of people in Wuhan City, Hubei Province, China. Rapidly it has been spread throughout the world with a high contagion & high mortality rate. World Health Organization (WHO) confirmed it as a pandemic disease on March 11, 2020[2]. In Bangladesh, the first three known cases were reported on 8 March 2020 by the country's epidemiology institute, IEDCR.[4]

The COVID-19 is part of the species of the SARS-related coronaviruses that have led to previous epidemics over the last two decades as SARS-CoV in 2002–2003 in China and the Middle East Respiratory Syndrome (MERS-CoV) in 2012–2013 in Saudi Arabia[5].

The COVID-19 is presented mainly by Fever or chills, Cough, Shortness of breath or difficulty breathing, Fatigue, Muscle or body aches, Headache, New loss of taste, Sore throat, Congestion or runny nose, Nausea or vomiting & Diarrhea[6]. In different parts of world there is case report claiming SARS-CoV2 is presenting with loss of smell. Recovery period from olfactory dysfunction, in various case series is usually 1 to 2 weeks[7-9]. But there is a case report where recovery from olfactory dysfunction took 2 years[10]. Mechanism of olfactory dysfunction is yet not clearly understood. But there is some hypothesis of possible pathogenesis. One of them is neuronal death due to a storm of cytokines, in particular IL-6, produced by neurons under the stimulation of the viral N-spike[11]. Brann et al. speculated that the loss of smell reported by COVID-19 patients is due to the infection of the supporting cells and vascular pericytes of the olfactory epithelium and bulb which, consequently, alters the function of the olfactory neurons[12]. The purpose of the present study was to find out percentage of COVID 19 positive patients presenting with loss of smell.

METHODOLOGY

The cross-sectional study was conducted in the Department of ENT at Mugda Medical College & Hospital, Dhaka, Bangladesh from April 2020 to March 2021 for a period of one year. All consecutive cases of COVID 19 patients admitted in Mugda Medical College & Hospital, Dhaka were selected as study population. Purposive sampling technique was applied to collect the sample. RT-PCR for COVID 19 positive Patients with the age group of 10 to 70 years of both genders were included in this study. Patients with already diagnosed case of anosmia due to a cause other than COVID 19 were excluded from this study. Structured questionnaire was prepared by reviewing previous studies on the problem of interest. This was performed on patients after obtaining clearance and approval from Institutional Review Board. Diagnosis of COVID 19 was done by clinical history and rRT-PCR for COVID 19. Data were collected by interview and by laboratory investigation using structured data collection sheet. Residence area of respondent was included in data collection sheet. Data were processed and analyzed using Microsoft Excel 2016 (Microsoft office professional plus 2016). Qualitative data were expressed as frequency and percent; however, the quantitative data were expressed as mean with standard deviation.

RESULTS

A total number of 1378 RT-PCR Covid-19 positive patients were recruited for this study. The mean age of the respondents was 55 years. Most of them were male(61%). 938 (68%) patient was present with reduced smell or complete anosmia.
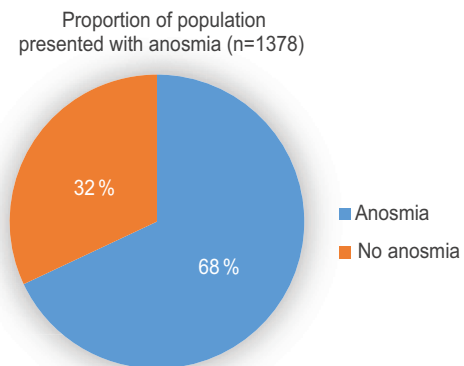
Fig.-1: *Pie chart showing proportion of population who had presented with anosmia*

Of 1378 patients, 938(68.0%) patients were presented with reduced smell or complete anosmia. (Figure 1)
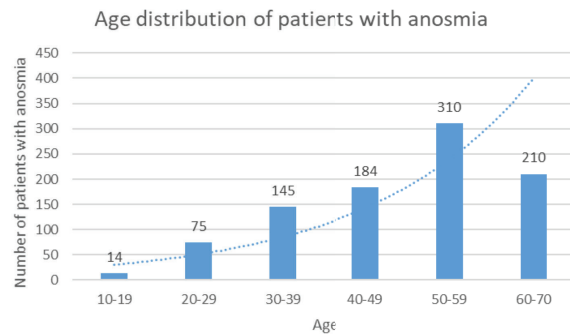
Fig.-2: *Cluster column showing age distribution of patients presenting with anosmia*

Most of the patients complaining anosmia were belonging to 50-59 years of age groups (Figure 2)
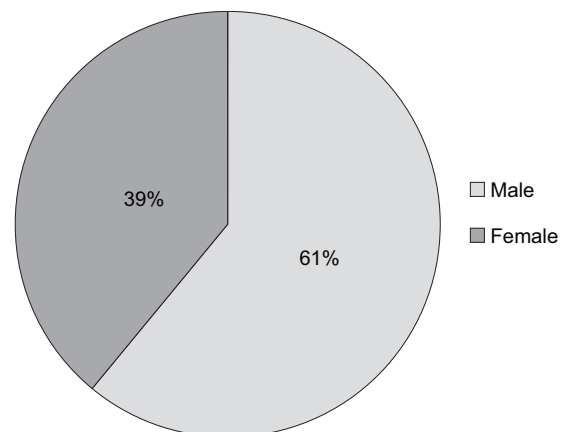
Fig.-3: *Pie chart showing sex distribution of patients*

Most of the respondents were male (61%). (Figure 3)

Living area of patients
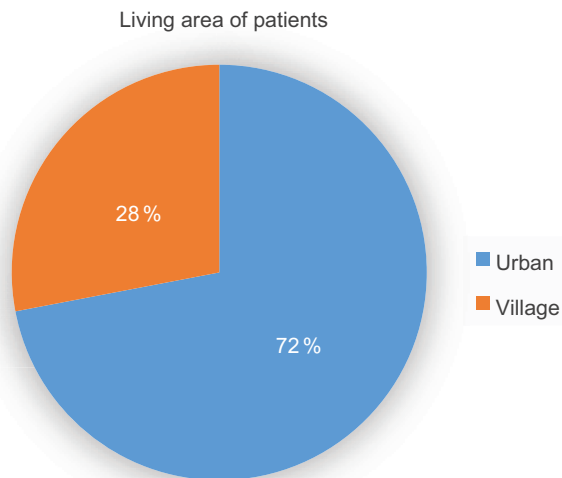
Fig.-4: *Pie chart showing living areas of patients*

Most of the patients suffering from anosmia (72.0%) were came from urban area. (Figure 4)

DISCUSSION

Covid-19 is evolving its clinical presentations since its first appearance in Wuhan province, China. Initial presentation was conjunctivitis following atypical pneumonia. In recent cases, as of April 2021 patients are presenting with more aggressive features. Rapid deterioration, diarrhea, vomiting, agusia are now common along with features of pneumonia. Most of the patient has a common symptom of anosmia throughout the period of pandemic. In our study we found 938 patients (68%) out of 1378 Covid positive patients had anosmia during their course of illness.

Jerome et al.20 studied on 417 mild-to-moderate COVID-19 patients. The most prevalent general symptoms consisted of cough, myalgia, and loss of appetite. Face pain and nasal obstruction were the most disease-related otolaryngological symptoms. 85.6% and 88.0% of patients reported olfactory and gustatory dysfunctions, respectively. The early olfactory recovery rate was 44.0%. Females were significantly more affected by olfactory and gustatory dysfunctions than males[13].

Tong et al.20 analyzed ten studies for olfactory dysfunction (n = 1627), demonstrating 52.73% prevalence among patients with COVID-19 [4]. Lee et al. 20 prospectively collected data of cases of anosmia and ageusia from March 8, 2020, via telephone interview among 3,191 patients in Daegu, Korea. Acute anosmia or ageusia was observed in 15.3%

(488/3,191) patients in the early stage of COVID-19 and in 15.7% (367/2,342) patients with asymptomatic-to-mild disease severity. Their prevalence was significantly more common among females and younger individuals. Most patients with anosmia or ageusia recovered within 3 weeks. The median time to recovery was 7 days for both symptoms.[14]

Mean age of patients in our study was 55 years. Moderate to severe COVID is predominant in elderly patients with multiple comorbidities[15]. In our study 72% of respondents came from urban area. (Figure 4) Urban areas are densely populated and maintaining prescribed social distancing is quite difficult in urban settings[16] -this factor may predispose of urban dominance of our respondents.

This study was conducted on small number of population who were hospitalized with moderate to severe symptoms. Patients with mild symptoms were not included in the study.

CONCLUSION

Anosmia can be regarded as a presenting symptom of COVID 19 infection. Patient with newly onset of anosmia without other nasal symptom is more likely affected by COVID 19.

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Relationship between ABO blood group and COVID-19 susceptibility among the healthcare provider in dedicated COVID-19 hospital

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ABSTRACT:

Background: *The novel coronavirus diseases-2019 (COVID-19) has been spreading around the world rapidly and declared as a pandemic by WHO.*

Objective: *To find out relationship between the ABO blood group distribution and infection rate of COVID-19 among healthcare providers in dedicated COVID-19 hospital.*

Materials and methods: *This observational study was conducted in Mugda Medical College and Hospital, Dhaka and Shaheed Suhrawardy Medical College and Hospital, Dhaka from April 2020 to October 2020. 2618 healthcare providers both sexes, age range from 20 to 59 years were studied. They all gave inform consent virtually due COVID-19 situation.*

Result: *In our study age range was 20 to 59 years, mean age was 38±13.33. The results are tested statistically by CHI-square test. We compare infected healthcare providers of blood group O with A, B and AB blood group. When compared blood group O with blood group A, testing P value was 34.86. In 95% CI when df is 1, P value is 3.841. As our testing p value was more than 3.841 so p<0.05. Null hypothesis rejected and alternative hypothesis accepted. Then we compared blood group O with B and AB blood group the results were 17.38 and 21.35. Both times testing P value was more than 3.841. As p<.05 so Null hypothesis rejected and alternative hypothesis accepted.*

Conclusion: *On the basis of this study we can conclude that blood group O population are more protective against covid-19 than other blood group Population.*

Keywords: *ABO blood group, COVID-19, Healthcare providers*

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INTRODUCTION:

In the past two decades, the world has faced several infectious diseases outbreaks. Ebola, Influenza A (H1N1), SARS, MERS, and Zika virus have had a massive global impact in terms of economic disruption, the strain on local and global public health. Most recently, the global outbreak of novel corona virus 2019 (SARS-CoV-2) that causes COVID-19 is a newly discover virus from coronavirus family in Wuhan city, China, known to be a great threat to the public health system.

Recent clinical studies and observation suggest that patients age, male sex, blood group and certain medical conditions (like cardiovascular diseases, diabetes, COPD, CKD etc.) seems to represent a risk for the infection of SARS-Cov-2 and higher diseases severity.[1]

ABO blood group may play a role in case this virus infection, morbidity and mortality. Susceptibility of viral infection has been previously found to be related to ABO blood group. For example, Norwalk virus and Hepatitis B have clear blood group susceptibility.[2,6] It was also reported that blood group O individuals are less likely to become infected by SARS coronavirus.[3]

Landsteiners ABO blood types are carbohydrate epitopes that are present on the surface of human cells. The antigenic determinants of A and B blood groups are trisaccharide moieties GalNAcá1-3-(Fucá1,2)-Galâ- and Galá1-3-(Fucá1,2)- Galâ-, while O blood group antigen is Fucá1,2-Galâ-. While blood types are genetically inherited, the environment factors can potentially influence which blood types in a population will be passed on more frequently to the next generation.[4,5] Patrice et al found that Anti-A antibodies specifically inhibited the adhesion of SARS-Cov S protein-expressing cells to ACE2-expressing cell lines.[6,7] Given the nucleic acid sequence similarity and receptor angiotensin-converting enzyme 2 (ACE2) binding similarity between SARS-Cov and SARS-Cov-2[7], the lower susceptibility of blood group O and higher susceptibility of blood group A for COVID-19 could be linked to the presence of natural anti-blood group antibodies, particularly anti-A antibody, in the blood.

MATERIAL AND METHODS

This descriptive type observational study was conducted over healthcare providers at Mugda Medical College and Hospital and Shaheed Suhrwardy Medical College and Hospital Dhaka. The study was carried out over a period of April 20, 2020 to October 31, 2020. Ethical clearance was taken from ethical review committee of both Medical College Hospital. Total 2618 healthcare providers of both sexes age ranges from 20 to 59 years were studied. They all gave consent virtually due COVID-19 situation.

All relevant informations were collected, completed and compiled. Chi-square test were done. The p value

$\leq$0.05 was considered as statistically significant at 95% CI (confidence interval).

RESULTS

In Mugda medical college and hospital stuied 1270 healthcare providers displayed a percentage of distribution 32.16%, 24.90%, 9.10% and 33.84% for A, B, AB and O, respectively. Out of them 328 infected with COVID-19 during provide health services to COVID-19 patients from April 20, 2020 to October 31,2020. The infection rate were 37.75%, 24.35%, 12.10% and 25.80% for A, B, AB and O, respectively.

At Mugda Medical College and Hospital infection rate of COVID-19 was higher in blood group A healthcare providers, because 37.75% were infected but percentage of A blood group population were 32.16% in our study. Infection rate of COVID-19 were lower in blood group O healthcare providers, because 25.80% were infected but percentage of O blood group population were 33.84% in our study. These results showed that increase risk of infection incase blood group A population for COVID-19 and decrease risk of infection incase blood group O population for COVID-19.

We next examined 1348 healthcare providers at Shaheed Suhrawardy Medical College and Hospital, Dhaka. We found nearly similar risk distribution trend of ABO blood groups for the infection.

The results are tested statistically by CHI-square test. We compared infected healthcare Providers of blood group O with A, B and AB Blood group population. When compared blood group O with blood group A, P value was 34.86. In 95% CI when df is 1, P value is 3.841. As our testing p value is more than 3.841 so p<0.05. Null hypothesis rejected and alternatIve hypothesis accepted. Then we compared blood group O with B and AB blood group the results were 17.38 and 21.35. Both times testing P value is more than 3.841. As p<.05 so Null hypothesis rejected and alternative hypothesis accepted.

Table -I: *The ABO blood group distribution in healthcare providers at Mugda Medical College and Hospital*

The ABO blood group distribution at Mugda Medical College and Hospital

	A	B	AB	O	Total
Number	407	316	116	431	1270
Percentage	32.16	24.90	9.1	33.84	100

Above table show out of 1270 healthcare provider 32.16% blood group A, 24.90% B, 09.1% AB and 33.84% blood group O. AB blood group is less and O group is more distributed.

Table II: *Total number and percentage of healthcare providers infected by COVID-19 at Mugda Medical College and Hospital.*

Total number and percentage of health care provider infected by COVID-19 at Mugda Medical College and Hospital

	Blood group				
	A	B	AB	O	Total
Number	124/407	80/316	39/116	85/431	328/1270
Percentage	37.75	24.35	12.1	25.80	100

Above table show out of 1270 healthcare provider 328 infected by COVID-19. Out of 431 healthcare 85 (25.80%) infected incase blood group O. On the other hand, incase A blood group 124 (37.75%) infected out of 407 healthcare providers.

Table III: *The ABO blood group distribution in healthcare providers Shaheed Suhrawardy medical college hospital, Dhaka*

The ABO blood group distribution in healthcare provider at Shaheed Suhrawardy Medical College Hospital, Dhaka

	Blood group				
	A	B	AB	O	Total
Number	288	437	191	432	1348
Percentage	21.39	32.43	14.1	32.08	100

Above table show out of 1348 healthcare provider 21.39% blood group A, 32.43% B, 14.1% AB and 32.08% blood group O. AB blood group is less and O group is more distributed.

Table IV: *Total number of infected by COVID-19 at Shaheed Suhrawardy Medical College and Hospital, Dhaka*

Total number and percentage of health care provider infected by COVID-19 at Mugda Medical college and hospital according to percentage at Shaheed Suhrawardy Medical College Hospital, Dhaka

	Blood group				
	A	B	AB	O	Total
Number	115/288	79/437	36/191	68/432	298
Percentage	38.59	26.51	12.08	22.82	100

Above table show out of 1348 healthcare provider 298 infected by COVID-19. Out of 432 only 68 (22.82%) infected incase blood group O on the other hand 115 infected out of 288 incase A blood group that is 38.59% healthcare provider.

Table V: *Total number of positive and negative cases at both Medical College and Hospital, Dhaka*

Blood Group	COVID-19 Infected status		
	Positive cases	Negative cases	
A	239	456	695
B	159	594	753
AB	75	232	307
O	153	710	431
Total	626	1992	2618

Among the total study subjects (626) or 23.91% developed COVID-19 diseases

Table VI : X^2 *(Chi-square) test Blood group O and Blood group A*

0	E	(0-E)	$(0-E)^2$	$(0-E)^2/E$
153	204.3	-51	2601	12.73
710	658.96	51	2601	3.95
239	187.96	51	2601	13.9
556	607.03	-51	2601	4.28

Chi-square test X^2 =34.86
df= (row-1)×(coloum-1) = (2-1)×(2-1) =1

In X^2 table at 5% level of significance against df=1, the table value is 3.841 which is the critical value. Test statistic (34.86) is more than critical value 3.841, so P<0.05, H_o rejected and H_A accepted. So there is difference between O & A blood group with infected by COVID-19 diseases.

Table VII : X^2 *(Chi-square) test Blood Group O and Blood Group B*

0	E	(0-E)	$(0-E)^2$	$(0-E)^2/E$
153	204.3	-51	2601	12.73
710	658.96	51	2601	3.95
159	166.61	+8	64	.38
594	607.61	-14	196	.32

Chi-square test X^2 =17.38
df= (row-1) × (coloum-1) = (2-1)×(2-1) =1

In X^2 table at 5% level of significance against df=1, the table value is 3.841 which is the critical value. Test statistic (17.38) is more than critical value 3.841, so P<0.05, H_o rejected and H_A accepted. So there is difference between O & B blood group with infected by COVID-19 diseases.

Table VIII : X^2 *(Chi-square) test Blood group O and Blood group AB*

0	E	(0-E)	$(0-E)^2$	$(0-E)^2/E$
153	204.3	-51	2601	12.73
710	658.96	51	2601	3.95
75	59.82	15	225	3.76
232	247.17	-15	225	0.91

Chi-square test X^2 =21.35
df= (row-1) × (coloum-1) = (2-1)×(2-1) =1

In X^2 table at 5% level of significance against df =1, the table value is 3.841 which is the critical value. Test statistic (21.35) is more than critical value 3.841, so P<0.05, H_o rejected and H_A accepted. So there is difference between O & AB blood group with infected by COVID-19 diseases.

DISCUSSION

Among the total (2618) study subject 23.91% that is 626 healthcare providers developed COVID-19 diseases. In this study we found that ABO blood groups displayed association risks for the infection with SARS-CoV-2 resulting COVID-19. Specifically, blood group A was associated with an increased risk whereas blood group O was associated with a decreased risk, thus demonstrating that the ABO blood type is a biomarker for differential susceptibility of COVID-19. These findings are consistent with similar risk patterns of ABO blood groups for other coronavirus infection found in previous studies. For example, Cheng et al. reported that the SARS-CoV infection susceptibility in Hong Kong was differentiated by the ABO blood group systems[3]. The authors found that compared with non-O blood group hospital staff, blood group O hospital staff had a lower chance of getting infected. Patrice et al. found that anti-A antibody specifically inhibited the adhesion of SARS-CoV S protein-expressing cells to ACE2-expressing cell lines[7].

CONCLUSIONS

From this study it can be concluded that there is relationship between blood group and COVID-19 infection especially people of blood group A are more susceptible to COVID-19 infection.

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Socio-economic and psychological impact of COVID 19: In Bangladesh context

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ABSTRACT

Background: The magnitude of the COVID 19 pandemic has an enormous impact on the social life, economic activities as well as mental health in almost every country in the world including Bangladesh.

Objective: The aim of this study is to summarize the literature about pandemic and it's socio-economic on Bangladesh economy and psychological impact on Bangladeshi population.

Methods: The study is based on secondary information. The total number of the confirmed cases is increasing following geometric pattern in Bangladesh.

Results: The COVID 19 outbreak affects all segments of the population and is particularly detrimental to members of those social groups in the most vulnerable situations. It impacts on poor group of population, sports and religion and also cause panic surged in the society. Also, the pandemic has seriously affected country's economy including ready-made garments industry, remittances, joblessness, tourism, aviation industry, print and electronic media. Rural economy like dairy firms, vegetables products & poultry farmers are in deep crisis due to lower prices. Service sector is also impacted by COVID 19. Mental health problems significantly increased worldwide during the coronavirus (COVID-19) pandemic. Bangladeshi people also affected by this current COVID-19 pandemic psychologically.

Conclusion: Finally, it is not possible to mitigate the situation alone by the government. Integrated efforts from the state authority, individual efforts from the citizens, direct involvement of the nation's public health experts, and international help are urgently needed.

Key words: COVID 19, Socio-economic, Mental health. Impact, Bangladesh.

INTRODUCTION

Bangladesh is not new to disasters or major humanitarian crises. Sitting astride a river delta at the bottom of the Himalayan range, the country is fighting a longstanding battle against the impact of climate change and currently hosts the world's largest refugee camp along its southern border. In its 49-year existence, Bangladesh and its people have shown tremendous resilience in fending off not only natural disasters such as floods and cyclones but also manmade ones, like the 1997 Asian financial crisis and 2008 global financial crisis.[1]The emergence of

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the current global pandemic, Covid-19, has so far been a threat to the worldwide community. COVID-19 or novel coronavirus is a variant of the corona family of viruses which causes SARS on the people they infect. The virus is chiefly transmitted through coughing or sneezing on people. [2] The coronavirus pandemic began as a simple outbreak in December 2019 in Wuhan, China. The World Health Organization (WHO) announced COVID-19 as a global pandemic on March 11, 2020. The disease has advanced into a pandemic, started with small chains of spreading, further culminating into larger chains of spread in many countries resulting in the widespread transmission consequently across the globe affecting all the continents.[4] The pandemic has affected all the countries especially China, France, Italy, Germany, US, UK, Iran, Egypt and third world countries i.e. Pakistan, India, Bangladesh, Sri Lanka and Afghanistan and some African countries.[5] According to Worldometers (2021), On July 15, 2021,

about 177,174,133 coronavirus infected people have been identified in more than 220 countries including Bangladesh where almost 161,451,228 people have recovered and 3, 829, 573 deaths have been reported.[6]

Institute of Epidemiology, Disease Control and Research (IEDCR) is the research institute under the Ministry of Health responsible for COVID-19 surveillance in Bangladesh, first confirmed the COVID-19 case on 8 March 2020 and followed by a nationwide lockdown of all educational institutes, government and private offices, and industries from 26 March.[3] Considering the population density, environmental factors, social structure, cultural norms, healthcare capacity, and poverty in Bangladesh, it is certainly hard to lockdown millions of people. Besides, Bangladesh hosts the largest refugee camps in Cox's Bazar which is also about to embrace the COVID-19 pandemic, where, it will have catastrophic outcomes.[7] With terrific modernization and development of technology such as artificial intelligence, we could not yet find out a solid tool to fight against this deadly nature-caused virus and has to only depend on symptomatic treatment till now. Moreover, an incredible economic depression seems to be arriving immediately with next few weeks.[8] Worldwide, billions of people are staying at home to minimize the transmission of the virus. Many countries are adopting preventive measures, e.g., remote office activities, international travel bans, mandatory lockdowns, and social distancing. Bangladesh, a lower-middle-income country and one of the world's most densely populated areas, is struggling to combat the spread of the disease.[9] To stop the spread of this virus, there are lots of actions taken by the government of the affected countries like regional or national quarantine throughout the country and the world, travel restriction, Hazard control in workplace, cancellation and postponements of events, curfews, boarder enclosure and screening at airports and train station etc. These kinds of preventive measures like lockdown the borders may hinder the normal flow of raw materials, products and services, capitals, humans which resulting in business and production shutdowns at least temporarily.[10]

It now appears that Bangladesh is facing a major economic crisis in the making caused by the Covid-19 pandemic. Lockdowns are not feasible for a country like Bangladesh if people cannot be provided with the basic necessities of life. More importantly, it would bring the economy to an almost grinding halt which will cause a significant blow to the economy having crippling effects on the lives of the people, especially working people and bushiness enterprises across the country. In fact, the economy is now almost coming to a grinding halt with debilitating effects on all sectors of the economy thus threating millions of livelihood in Bangladesh.[11] In particular, as of the time of this writing, As of 15 July 2021, the Government of Bangladesh has confirmed testing 6218979 samples among which there are a total of 833291 confirmed cases, 771073 recoveries, and 13222 deaths in the country.[12] As doing so, the economy of Bangladesh is under threat. There are so many papers have been published among most of them studied epidemiological, demographic, and clinical issues of the virus and its outbreak. Very few studied about the world economy but it is essential to identify the economic impact of coronavirus pandemic. Mental health problems significantly increased worldwide during the coronavirus (COVID-19) pandemic. At the early stage of the outbreak, the government of Bangladesh imposed lockdown and quarantine approaches to prevent the spread of the virus, which impacted people's daily life and health.[31] The mental health of many individuals is potentially affected by COVID-19 in many ways. Family members and friends of patients with COVID-19, their close contacts, isolated or suspected population, healthcare providers, and the general population experience extra mental health burden during the COVID-19 pandemic.[31] This paper attempts to identify the current socio-economic and mental health problem among population of the coronavirus pandemic in Bangladesh.

METHOD AND MATERIALS
The study is designed on the basis of secondary information. As we are in the initial stage of coronavirus outbreak the available information is limited and it is difficult to find publications that only show how the coronavirus outbreak impacts the economy of Bangladesh. To have a better understanding, we collected the information from materials published so far by different media outlets, online published article, policy experts and newspapers. Besides this, the internet has been used as another source of information. Literature about mental health problems faced by university students, general population & health care workers (HCW)

during the COVID-19 pandemic is also included. Available articles retrieved from Google Scholar using a non-systematic approach. A total of 09 studies were included. Out of these, 4 on students, 2 on general population and 3 on medical health care workers. The epidemiological burden of mental health problems is primarily discussed as the prevalence, proportion, or rate of mental health problems from studies that focused on individuals or populations affected by COVID-19. The main attempt of this study is to summarize the literature about pandemic and its socio-economic impact on Bangladesh economy and psychological impact on population of Bangladesh.

RESULTS AND DISCUSSION:

A. Social impact

The coronavirus disease (COVID-19), which has been characterized as a pandemic by the World Health Organization (WHO), is attacking societies at their core. The COVID-19 outbreak affects all segments of the population and is particularly detrimental to members of those social groups in the most vulnerable situations, continues to affect populations, including people living in poverty situations, older persons, persons with disabilities, youth, and indigenous peoples. People without access to running water, refugees, migrants, or displaced persons also stand to suffer disproportionately both from the pandemic and its aftermath – whether due to limited movement, fewer employment opportunities, increased xenophobia etc.[13]

A. (a) Impact on poverty:

Robust economic growth during the last decade helped Bangladesh to win her fight against poverty — mainly through employment generation channels. According to Bangladesh Bureau of Statistics (BBS), 20.5 percent of the population live below the poverty line that is about 34 million people.[11] A reduction in economic growth, along with a rise in joblessness, will inevitably lead to a sharp increase in the poverty rate and push more people into poverty. The number of vulnerable persons who will need assistance may rise exponentially in 2020, although perhaps for a temporary period, especially since vulnerable groups in Bangladesh lack the savings and resources required to fend off the impacts of Covid-19.[19]

A. (b) Panic surged among general population:

Covid-19 also caused a very severe impact on society, particularly in Bangladesh. During the early period of the Covid-19 outbreak, panic surged in the society. Since lack trustful and official information about the case affected and death, people started to believe the rumors which are spread through social media, mobile phone, word of mouth and many other ways. Experts criticized that not enough tests were conducted in the country that has a population of over 160 million.[14-15]

A. (c) Impact on religion:

On the other hand this pandemic also impact on religion by cancellation of the prayers in mosque, temple and churches of many affected countries. Worship through live stream is offered by many churches and temples.[16] Similarly in Bangladesh religious mass gathering are discouraged by the government. Most of the people of Bangladesh are Muslim and the rural religious scholars protest against this government declaration and people started to gather in mosque and pray for recovery from this virus. This large togetherness of religious people pose a threat for Bangladesh.[17]

A. (d) Increased price of preventive materials:

The price of prevention measures of Covid-19 like mask, washing materials - soap or sanitizer become high by the unethical businessman. Not only that the price level also increased dramatically. Since people were panicking about this outbreak and the government of Bangladesh has taken initiatives of lockdown people started to purchase daily necessary abnormally which is the main reason for raising the price of the essential commodities. Prices of hand sanitizers and face masks have increased abnormally. Without giving any explanation retailers hiked the price of masks up to 400%. Though masks were available at high prices on footpaths, most of the drug store was found to be out of stock of masks and sanitizer after the announcement of detecting coronavirus in three persons in the country.[18]

A. (e) IMPACT ON SPORTS:

Sport is a major contributor to economic and social development. Since its onset, the COVID-19 pandemic has spread to almost all countries of the world. Social and physical distancing measures, lockdowns of businesses, schools and overall social life, which have become commonplace to curtail the spread of the disease, have also disrupted many regular aspects of life, including sport and physical activity.[13] To safeguard the health of athletes and others involved,

most major sporting events at international, regional and national levels have been cancelled or postponed. All the sporting events have been suspended, series and Leagues have been rescheduled and big events such as PSL, IPL, FIFA World Cup, Olympics Games and others have been completely cancelled raising concerns among the players.[5]

B. Economic impact:

The COVID-19 outbreak has already started to affect different sectors of economy. Firstly the immediate impact of the pandemic is temporary shutdown of factories and businesses in an affected country; as a result production is declined [10]. In Bangladesh, Major undertakings like Padma Bridge, Padma Rail Link, Karnaphuli Road Tunnel and the Greater Dhaka Sustainable Urban Transport Project include monetary and specialized contribution from China, the two of which are required to be antagonistically influenced. Beside these, the three prominent sectors of the economy of Bangladesh that are Agriculture, Industry and service sectors which contributed 18%, 29% and 53% to the GDP of the country respectively are adversely affected by the coronavirus pandemic.[20]

B. (a) Impact on Ready-Made Garments (RMG) industry:

The ready-made garments (RMG) sector is on the verge of an unprecedented humanitarian and business catastrophe. The Covid-19 pandemic has caused disruptions to global trade, business, and education. Bangladesh is equally affected by this contagion. According to Bangladesh Garment Manufacturers and Exporters Association (BGMEA), international buyers have either cancelled or suspended $3.16 billion worth of shipments involving 1,142 factories affecting 2.26 million workers as of 18 April 2020. [21] According to a survey conducted by the BRAC University, 47% RMG workers reported not receiving their wages and felt uncertain about their current job status with their respective employers.[22] The economic consequences of the Covid -19 outbreak are worsen due to interruption of global supply chain due to worldwide transportation shutdown. The import-export-oriented companies are also at risk. The forging remittance will come down and thus it will be the foreign reserves of the country.[23] Economic slowdown in Europe and North America is of particular concern for Bangladesh as there are the principal markets for Bangladesh's principal export

product-readymade garments (RMG). These two regions are also expected to continue to slow down at least for next six month or more and that has implications for 4 million workers in the RMG industry in Bangladesh.[11] Also, RMG generates close to 30 billion in exports accounting for 83 percent of total exports and 14 percent of GDP. Now the industry is in deep crisis as exports plummet due to the cancellations of purchase orders from Europe and North America.[11]

B. (b) Impending economic derailment:

The nationwide shut down has led to shocks for both the formal and informal sectors. According to the International Monetary Fund, the real GDP growth of Bangladesh is projected to decelerate to 2.0% in FY 2019-2020 driven by falling readymade garments exports, lower private investments growth and wider disruptions due to COVID-19.[24] (Figure 1)
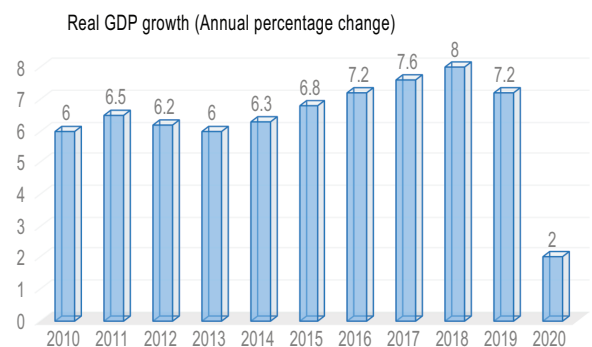

Fig.-1: *Real GDP growth (percentage)/ Source: International Monetary Fund*

B. (c) Impact on remittance:

Labour Market and Migrants is currently one of the most affected sectors due to outbreak of COVID-19 pandemic. The impending economic recession hitting the Gulf and Western countries places a big threat to the wage earners' remittance inflows, one of the main pillars of economic growth. The economic shutdown in these countries has been already affecting the remittance of expatriates, showing a downward trend in the first quarter. Many of the migrants have already lost their jobs which will further affect the rural economy of the country owing to the dependence on remittance. [24] The International Labor Organization (ILO) predicts that Corona will lose about 190 million jobs worldwide. It is reported that more than 5 lakh migrants have returned to Bangladesh in the last couple of months (February-May 2020) .[25] Nearly 10

million Bangladeshis are working in foreign countries, mostly in the Gulf countries. Remittances from Bangladeshi workers accounted for USD 15.5 billion to the national economy in 2018. Now the depressed oil prices affecting the Gulf States and lockdowns imposed in Europe since April are already causing serious economic slowdown in these countries having a negative impact on expatriate Bangladeshi workers abroad.[11] (Figure 2)
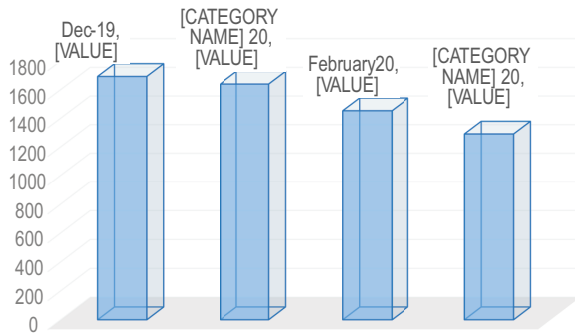

Fig.-3: *Worker at risk of losing employment by sector (In million)/ Source: The Business Standard*

Fig.-2: *The remittance inflows (in million USD)/ Source: Bangladesh Bank*

B. (d) Impact on unemployment number:

Over the last decade, the economy has been growing at around 7 percent per annum, yet 20% of the population earn less than USD 5.00 a day, 9.2 % of employed in the country earn less than USD 1.90 a day and only 15 % of Bangladeshi workers earn over USD 6.00 a day. This is the pre-pandemic employment and wages situation in the country. Now the situation has worsened significantly.[11] Due to the economic halt in place, millions of people are at unprecedented risk of losing jobs in several economic sectors such as readymade garments, dairy, poultry, transportation, tourism, etc. Readymade garments industry has already been projected to lose USD 1.6 billion due to the cancellations of orders. Low mobility in the cities has resulted in a loss of jobs in the transportation sector employing more than 5 million people.[24] The livelihood of workers in the formal economy will be significantly affected but more worryingly, more than 50 million workers in the informal sector will face even direr consequences of the lockdown amidst the pandemic.[1] The private sector employees, totaling around 5.1 million is under the threat of loss of jobs and salary and they need to be protected.[8] (Figure 3)
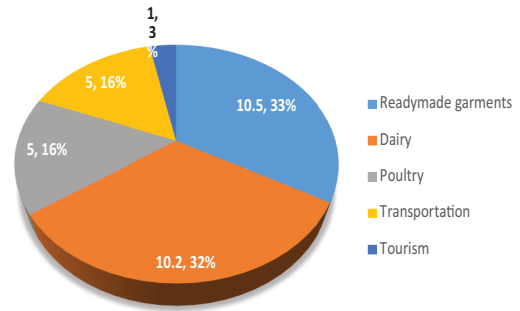
B. (e) Impact on local festive:

This year our economy will miss 'Pohela Boisakh' celebration as the government already stopped all sorts of gathering and public celebration of the Bengali New Year, which is a great part of our culture. Surrounding this celebration, many seasonal businesses are conducted while many small and medium enterprises make huge investments like the thousands of boutique houses of Bangladesh. According to experts, around 15 to 20 thousand crores taka worth of transactions are carried out due to this occasion. But these businesses who already mostly made their investment will incur a great loss.[8]

B. (f) Impact on print media, roadside business & entertainment industry:

The Print Media has been hit hard as people consider it risky to read a Print copy of newspapers over covid-19 fears and prefer paper or online edition of the newspapers. Hence, such a trend has impacted the Newspaper Sales badly.[5] The media houses are working relentlessly to serve us with the news in this crisis period. And there is no advertisement income especially for the print media for the last few weeks.[5] The services industry especially the skilled and non-skilled have been subjected to starvation as all the roadside small business such as Hair Cutting Salons, Cobblers, Gold and blacksmith shops, Electricians, Booksellers, daily wages workers and Masons have lost their living owing to lockdowns globally. The Entertainment industry has been heavily impacted as all the dramas, Films and comedy shooting and recording has been postponed till indefinite period and all the events including concerts have cancelled due to covid-19 and actors have lost the source of living.[5]

B. (g) Impact on banking:

We all know the banking industry is in back gear due to mounting non- performing loans. If the RMG industry and its backward linkage industries fail, then the entire banking system will collapse. Today, fifty-nine commercial banks and general insurance companies are heavily relying on garments and related industries for their business.[23]

B. (h) Impact on aviation industry:

The worldwide travel bans amid the COVID-29 outbreak has had severe adverse effects on the global aviation industry. It put the airlines in Bangladesh under extreme financial pressure as well. In a chain reaction, other sectors dependent on airlines such as readymade garments, labor market tourism and hospitality, etc. have been affected. The number of flights has drastically dropped after the lockdown as almost all the flights were suspended.[24] Despite the presence of a large Bangladeshi diaspora in Europe, the government also took the bold step of suspending all flights from Europe.[1]

B. (i) Impact on service sector:

Among the Economic Sectors in Bangladesh, Service segment is generally significant. The commitment of administration division to the GDP is about 53% (Bangladesh Economic Review-2019) .[20] In this way, Service divisions impact the improvement of national economy. There is an idle interest for administrations in Bangladesh. To indicate the need of administrations for gigantic populace of Bangladesh, such areas are to be opened for private business people with required control. The gigantic commitment of administration part and an expanding pattern in that have assumed a significant job in high development of GDP. Due to Covid-19 pandemic, service sector might be hampered badly.

B. (j) Impact on tourism & hospitality industry:

Tourism and hospitality industry is adversely affected by the pandemic. According to the Tour Operators Association of Bangladesh, the tourism sector in Bangladesh is projected to lose BDT 57 billion, putting the jobs of around 40 million people directly or indirectly engaged in the sector at risk. As the economy of Cox's Bazar is dependent on tourism, the district is on course to lose BDT 20 billion revenue till Eid-ul-Fitr. As aviation, tourism and the hotel industry are interlinked, with the downfall of the prior two, prominent hotels have been facing the chain reaction. Travel restrictions and flight cancellations have led the occupancy rates of luxury hotels to decline by staggering amounts.[24]

B.K Rural economy approaching economic fallout

Decreased demands in poultry, dairy, fisheries have led to a drastic price drop in the respective sectors. On top of that, due to industrial shutdowns, garments workers and urban day labourers lost their jobs. Consequently, a large number of people with no income source moved from cities to villages which pushed the rural economy at a vulnerable stance. Egg price fell 45%, milk price dropped around 35%, production of dry fish reduced by 40% and vegetable price decreased significantly. Sizable and real-time support from the Government is needed to forestall the upcoming social and economic crisis in the rural sector.[24] (Figure 4)
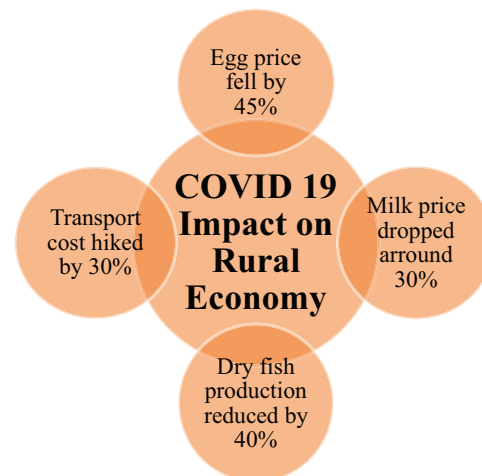
Fig.-4: *COVID - 19 impact on rural economy// Source: The Business Standard*

C. Psychological impact

Prevalence of mental health problems during COVID-19 in different populations:

University students

Several studies have reported the burden of mental health problems among the college, university and medical students during COVID-19. [mh, 4,5,7] For example, a study by Khan and colleagues used DASS 21 to evaluate mental health status among 505 Bangladeshi College and University students. In this study, the prevalence of depression, anxiety and stress was 46.92%, 33.3%, and 28.5%, respectively.[26] Another study was conducted during the month of

April 2020, involving 3,122 Bangladeshi university students aged 18 to 29 years. They assessed the prevalence of depression, anxiety, and stress (DAS) with the DASS-21. Prevalence estimates of depression, anxiety and stress were, respectively, 76.1%, 71.5% and 70.1% for at least mild symptoms, 62.9%, 63.6% and 58.6% for at least moderate symptoms, 35.2%, 40.3%, and 37.7% for at least severe symptoms and 19.7%, 27.5% and 16.5% for at least very severe symptoms.[27] Compared to previous study assessing DAS among university students using the same instrument in the same country, the prevalence estimates of DAS among the university students found tended to be higher. Among Bangladeshi university students, a study by Faisal and colleague used the Generalized Anxiety Disorder-7, Center for Epidemiological Studies Depression Revised Scale, and Mental Health Inventory-5 to evaluate the anxiety and depression level. tn this study, in total, 40% of the participants had moderate to severe anxiety, 72% had depressive symptoms and 53% had moderate to poor mental health status.[28] Among Bangladeshi Medical students, a study by Safa and her team used the Hospital Anxiety and Depression Scale (HADS) to find out the anxiety and depression level. The HADS anxiety subscale revealed that 65.9% of the medical students had different levels of anxiety, ranging from mild (27.3%), moderate (26.8%), and severe (11.8%). As per HADS depression subscale, 49.9% of the medical students had varying degrees of depressive symptoms, with 3.3% of the participants had suffered from severe depressive symptoms.[29] Comparing these two study, we concluded that medical students more sufferings from anxiety and depression than university students.

General population

A nationwide online cross-sectional survey study recruited 10,067 individuals covering all 64 districts in Bangladesh via social media (April 1-10, 2020). The survey evaluate depression, and suicidal ideation. The prevalence rate of depression and suicidal ideation related to COVID-19 was 33% and 5% respectively. [30] Another study was conducted among 672 Bangladeshi people aged between 15 and 65 years all over the country from 15 April to 10 May 2020. In this study, to assess mental health problem used The University of California, Los Angeles (UCLA) Loneliness Scale-8, Patient Health Questionnaire-9, Generalized Anxiety Disorder 7-

Item Scale and Pittsburgh Sleep Quality Index to assess loneliness, depression, anxiety and sleep disturbance, respectively. The prevalence of loneliness, depression, anxiety and sleep disturbance was estimated at 71% (mild: 32%, moderate: 29%, severe: 10%), 38% (mild: 24%, moderate: 11%, severe: 3%), 64% (mild: 30%, moderate: 17%, severe: 17%) and 73% (mild: 50%, moderate: 18%, severe: 5%), respectively.[31]

Health care workers

Healthcare workers (HCWs) who are in the frontline during the COVID-19 pandemic are often under significant pressures that may predispose them to symptoms of poor mental health. A study aimed to investigate the prevalence of anxiety and depression among HCWs during July and August, 2020 using the Hospital Anxiety and Depression Scale (HADS). [mh11'] Data from 803 HCWs, Prevalence estimates of anxiety and depression were 69.5%, and 39.5%, respectively, for less severe symptomology (at least borderline abnormal), and 41.2% and 15.7% for more severe (at least abnormal) symptomology.[32] Another study examined physicians' mental health outcomes by evaluating the prevalence of anxiety and depression. Using a web-based cross-sectional survey, they collected data from 114 physicians. Seven-item Generalized Anxiety Disorder (GAD-7) scale and Nine-item Patient Health Questionnaire (PHQ-9) were used to measure the anxiety and depression. Findings revealed the prevalence of anxiety and depression were 32.5 and 34.2%, respectively.[33] Among registered nurses in Bangladesh, study was conducted to find out mental health problem. This study used the Depression, Anxiety and Stress Scale-21 (DASS-21) and the Impact of Event Scale-Revised (IES-R) to assess mental health symptoms. Among the 547 nurses included in the study, the prevalence of mild to extremely severe depression, anxiety, and stress was 50.5%, 51.8%, and 41.7% respectively, and 61.9% of the respondents reported mild to severe psychological impact for COVID-19. [34] One of the major causes of stress and depression among individuals at the current time is the unpredictability of the COVID-19 situation and when the disease will be under control. It is apparent in the present study that the depression levels of the frontline healthcare professionals are similar to the general public but there may be different underlying proximal reasons for the depression. Among the

general population, levels of depression may get worse due to the lack of social interaction and feeling isolated in their own homes during quarantine. For HCPs, the working situation they find themselves in may be a much bigger contributor to poor mental health. A substantial proportion of medical students are experiencing pandemic induced adverse psychological impact. University students are an especially vulnerable population since the experience has been shown to be stressful in non-pandemic times. Bangladeshi university students experienced high levels of psychological distress during COVID-19 pandemic.

CONCLUSION:

As pandemic just spread in Bangladesh the end of this pandemic is uncertain. In this situation recovery from disease is the main concern rather than considering the economic impact. The Government will not be able to mitigate the situation alone, individual efforts from the citizens, direct involvement of the nation's public health experts, and international help are urgently needed. Support is also being provided by the private sector, NGOs and other development partners. Overall, the current economic situation may seriously undermine the livelihood of the underprivileged group of the population. Bangladesh has already initiated fiscal responses to mitigate the emerging crisis but the stimulus packages do not look robust enough to meet the currents needs. However, the national budget of 2020-2021 has allocated TK 386.88 million stimulus package.[11] Our findings of this paper reflect the gravity of mental health problems during the COVID-19 pandemic. A large portion of the population in Bangladesh were affected mentally with different levels of severity. We suggest intensive mental healthcare services for the Bangladeshi people. Therefore, integrated government, non-government and community activities can ensure individual and collective mental health. Mental health support, social security and economic stability should also be top priorities to grow confidence among the general population. Bangladesh is well known for its resilience, and we have many times in the past, surpassed expectations and overcome all obstacles in the end. We hope Bangladesh will be the role model of sustaining economic and humanitarian development in front of the world ousting the deadly coronavirus impact.

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Management of COVID-19 positive pregnant women with Severe ARDS in a Tertiary Care Hospital : A Near Miss case report

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ABSTRACT:

Background: Since emerging in December, 2019 in Wuhan, China, COVID-19 virus has done a global public health crisis by killing millions of people including pregnant women also. Due to physiological changes of cardiopulmonary system, pregnant women are more susceptible to respiratory tract pathogen and consequent pneumonia. Previous study showed that COVID-19 positive pregnant women usually develop mild symptoms like fever 50. 9%; cough 28.4%; no symptoms in 23.3%; Only 6.9% developed severe pneumonia

Objective of this case report was to observe the management of severe acute respiratory distress syndrome in a COVID-19 positive pregnant women.

Case : A 22 years old, primigravida covid-19 positive women presented at 37 weeks pregnancy with fever, cough and shortness of breath for 5 days. Initially, maternal and fetal condition was stable with facemask oxygenation. But on day 5 of her admission, she developed moderate respiratory distress with severe fetal distress. So emergency L.U.C.S was done. The baby was healthy but mother developed severe ARDS few hours after delivery. She had been managed in HDU and ICU by oxygenation through High Flow Nasal Canula(HFNC) first then by Non Invasive ventilation as her condition became graved.

Conclusion : The case was extremely critical, a near miss case. By taking appropriate prompt decision and judicious termination of pregnancy at right time – - both mother and baby were saved.

Key words: Pregnancy with covid-19, severe acute respiratory distress syndrome, management.

INTRODUCTION:

 Pregnant women are more susceptible to respiratory tract pathogen and consequently severe pneumonia due to physiological changes of the cardiopulmonary system e.g. diaphragmatic elevation, increased oxygen consumption, and edema of the respiratory tract mucosa. As a result, pregnant women become more intolerant to hypoxia.[1,2] Unlike other

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populations, pregnant women usually present with mild or moderate cold/flu-like symptoms in most of the cases and pneumonia in people having weak immune system.[3,4] Although it was assumed that pregnant women were not prone to develop severe disease due to COVID-19 but it had been found that they were at more risk of severe COVID-19 disease than nonpregnant population[4]. Yan J et.al studied 116 cases of COVID-19 positive pregnant women and described their symptoms like fever about 50. 9%; cough about 28.4%; no symptoms in about 23.3%. About 6.9% developed severe pneumonia.[1] Breslin et. al studied with 43 number covid positive pregnant women and found, about 67.4% cases presented with mild disease and about 9.3% cases developed severe disease leading to antenatal admission.[5] A number of studies found regarding management of severe

acute respiratory disease or respiratory failure in COVID-19 positive pregnant women.[6,7,8,9,10,11,12] A similar case report published by Chinen Y et.al stated about a 29 year old 34 +2wks primigravida covid 19+ve women with severe respiratory failure. This patient undergone emergency LUCS which not only decreased maternal oxygen consumption but also improved lung mechanics.[9]

CASE

Mrs. X, a 22 years old primigravida lady (P_{0+0}) hailing from Gulshan, North Badda got admission to Mugda Medical College Hospital on 23rd September 2020 with the complaints of 37 weeks pregnancy along with fever, cough , breathlessness for 5 days with COVID-19 positive status. She was married for 2 years. She was a regularly menstruating woman having had her L.M.P on 8th January 2020, so her E.D.D was on 15th October 2020. The patient had no hypertension, DM, thyroid, or any other medical disorder. From D_1 _ D_4 of admission, patient was complaining of fever which was intermittent in nature(temp ranging from 101°f $-$104°F) and also periodic respiratory distress which she overcame by oxygen supplementation provided by facemask although her SPO_2 was still then normal. Her Pulse was 76/min, B.P was 100/60mm Hg. Her fundal height corresponded with the period of amenorrhea, presentation was cephalic, F.H.R. was 150/min and fetal movement was adequate for 24 hours. Initially, we planned to treat this patient conservatively and expectantly so that she would have delivered in a non-COVID hospital after she becomes COVID-19 negative. She was getting Inj. Ceftriaxone 1gm i/v b.d and Inj. Enoxaparin 60 mg s/c daily along with other symptomatic treatment according to national guideline.

On 27th September morning, the patient developed moderate respiratory distress with falling of SPO_2 <90%. She complained of no fetal movement with evidence of severe fetal distress. Her F.H.R. ranged from 70$-$110/min. After counselling the patient's husband and taking a risk bond for patient and her fetus, termination of pregnancy was done by LUCS. The operation was uneventful with minimum blood loss and maintenance of optimum SPO_2 throughout the operation. A male baby of 2.9 kg was born and surprisingly he cried very loudly just after birth. The liquor color was clear. Baby was negative for RT-PCR of COVID-19.

 After the end of c/s, the patient was shifted to HDU. From that evening SPO_2 of the patient started falling from 88%$-$74%. Oxygen supplementation was given by HFNC. The patient was then diagnosed as a case of severe ARDS and shifted to ICU. At ICU to maintain optimum SPO_2, 80litre oxygen through HFNC and 15 liter oxygen through the nonrebreather mask was supplied to the patient simultaneously. The ratio of PAO_2: FIO_2 deteriorated badly up to 54. Then patient was ventilated by noninvasive ventilation. Her serial X-ray reports were showing severe bilateral consolidation. At ICU following drugs were added.

Inj. Remdisivir, inj Enoxaparin, Inj Meropenam, Inj Levofloxacin, Tab Baricitinib etc. Inj Ramdisivir was used for 5 days according to standard protocol.

The patient's condition was deteriorating so abruptly that, at times, it seemed, we might have been losing her. But by the grace of Almighty, the patient starts improving 3rd pod onwards from this grave condition. She was then weaned to Non Rebreather mask. From 4th Pod onwards oxygen was supplemented by face mask only. Significant improvement was noted from 6th POD The patient stayed in ICU for 12days, then again shifted to HDU for another 3 days. She was discharged from the hospital on 18th October after getting COVID-19 negative report. At that time she had no requirement for supplemental oxygen.

INVESTIGATIONS:

Date	Hb% gm%	TC of WBC	CRP µgm/ml	S Ferritin ng/ml	RBS mmol/l	S Creatininemg /dl	X-ray chest P/A view
26/09/20	8.5	13x10/µL	124.48	65.16	6.3	.76	Bilateral inflammatory change
29/09/20	10	27x10/µL	66.77	78.99	5.1	.57	Bilateral extensive consolidation

Date	D-dimer µgm/ml	APTT	INR	Bleeding time	Clotting time	Serum Albumingm/dl	Serum Electrolytes
26/09/20	.83						
29/09/20	.75	35	1.09			2gm	Normal study
06.08.20	3.04	35.2	2.59				
14.08.20	2.30	53.7	1.49	1min 53sec	5 min 03 sec		
18.08.20	3.06mg/L						
20.08.20	.72						

DISCUSSION:

SARS COVID-19 Is a single-stranded positive RNA virus that 1st emerged in late December of 2019 in Wuhan, China has taken away near about 1.8 million life by this time(Prothom ALO 2nd January 2021). In Mugda Medical College Hospital, Covid 19 affected pregnant women are being treated since April 21st, 2020. In this hospital, this was the 1st Remdisivir treated COVID-19 positive puerperal patient. This case was extremely critical and it was a near miss case. As soon as this patient developed falling of SPO_2 emergency LUCS not only saved the baby but also facilitated management of severe COVID-19 induced ARDS of mother at HDU and ICU. This patient came back to life from a grave condition. By literature review, similar case reports by Malderelli G et.al; Burwick M et.al;Chinen Y et.al were found.[6,7,9,10] Malderelli G et.al published a case report "Remdisivir Treatment for Severe COVID-19 in third trimester Pregnancy".[6] They mentioned a case report of 34 weeks 4 days pregnant women (an HCW) with COVID 19 associated pneumonia who initially reported in Emergency Department with worsening dyspnea on exertion and significant hypoxia with SPO_2 88%. This patient was also transferred to ICU and needed oxygen supplementation through HFNC and a nonrebreather mask. Her ratio of oxygen saturation to fraction of inspired oxygen (SPO_2: FIO_2) worsened significantly as in our case. That patient was initially treated with Hydrochloroquine which was standard practice at that time, then later by Inj. Remdisivir to reduce viral load. Their patient developed elevated transaminases to the highest level on Remdisivir day 4 and then declined to below the admission level. But our patient's transaminase levels were at normal range. Remdisivir is an intracellular prodrug metabolized into an adenosine triphosphate analog that inhibits viral RNA polymerase. Their patient did not develop fetal distress, so she delivered normally at term in a noncovid unit. But in our patient, severe fetal distress occurred due to sudden and abrupt fall of maternal SPO_2. So emergency termination of pregnancy was done by doing LUCS. Our patient was in ICU for a total of 12 days and it was a bit more than the mentioned patient who was about 9 days in HDU.

Burwick M et. al studied with 86 severely affected COVID -19 positive women who were treated with Remdisivir. Among them 67 were pregnant and 19 were postpartum who were treated in ICU[7]. Another study, "Use of Remdisivir for pregnant patients with Severe novel coronavirus disease 2019' done by Irogue I et.al described 3 case report on Remdisivir treated Pregnant women with severe coronavirus disease.[8]

Yukiko et.al published a case report where they described about a 29 year-old primiparous covid-19 positive Japanese women at 34 weeks and 2 days of gestation who presented with high fever and dyspnoea. Her admission CT scan revealed bilateral ground glass opacities with partial consolidation compatible with covid-19 pneumonia which was similar to our patient. Iniatially this patient was treated by 1 lit/min oxygen inhalation, inj. Remdisivir and tocilizumab. After 4 days of admission, this patient developed acute respiratory failure similar to our patient. So they terminated pregnancy by LUCS with an assumption that delivery might decrease maternal oxygen demand as well as would facilitate her breathing management. This patient was sent to ICU and was intubated but our patient was managed by noninvasive ventilation.[9]

Another case report by Yaqoub S et. al revealed that a 33 year old women with 32 weeks pregnancy with COVID-19 positive developed life threatening acute respiratory syndrome. This patient had multiple comorbidities like asthma, gestational DM etc. which were absent in our case. They treated this patient in a

negative pressure ICU initially with 15 liter oxygen through NRBM, Methyl prednisolone, hydroxychloroquine, Lopinavir, one dose of Tosilizumab (to reduce cytokine storm). This patient was also put to intubation with deep sedation by propofol and undergone preterm caesarean section. Post operatively, to combat life threatening hypoxia and respiratory failure, veno-venous ECMO bifemoral was initiated in this patient. She had to fight against elevated liver enzymes, hematuria, hematoma at c/s wound, subcutaneous emphysema which were absent in our case.[10]

Marwah et. al studied 4 cases of COVID-19 ARDS in pregnant patients which were extremely critical and needed multidisciplinary management at ICU and returned home alive.[11]

CONCLUSION:

Although in the last decade, millions of patients died from SARS, MARS, and Ebola viral regional epidemics in the world, SARS COV-2-19 viral Pandemic has done total devastation to the entire world. Initially there was dilemma regarding management of COVID-19 positive pregnant patients. So a number of maternal death occurred due to COVID-19 pneumonia due to lack of sufficient evidence-based data and treatment experience as it was a newly emerging disease. But now by practicing inj. Remdisivir, Inj Enoxaparine rationally for COVID-19 positive pregnant patients and timely judicious decision of termination of pregnancy, both mother and baby can be saved. Establishment of standard protocol for treatment and vigilant management can prevent maternal mortality due to COVID-19.

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INSTRUCTION TO THE AUTHORS

Points to consider before submission

Submissions are accepted on the understanding that they have not been published in their current form or a substantially similar form (in print or electronically, including on a web site), that they have not been accepted for publication elsewhere, and they are not under consideration by another publication.

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